

*The Effects of Infill Housing on Neighbours in
Christchurch*

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1.0 Executive Summary

- The results clearly showed that there are both sources of support for, and opposition to, infill housing. Section type was clearly the best predictor of attitudes towards infill as expressed using four indicative variables. Those already living in infill housing were more inclined to see infill housing in positive terms, while those living on residential quarter acre-type sections were quite reliably opposed. Furthermore, the longer one had lived at an address, the less likely one was to agree with positive statements about infill housing.
- Analysis of some general attitudes towards infill housing showed that more regulation of infill housing would suit at least some neighbours, particularly if it prevents new infill developments from being built too close or ensures that such housing is built to a higher standard. A major concern was that some infill housing was perceived to be built to low building standards and many residents expressed concern that they were living beside the “slums of the future”.
- Infill housing was seen by some as having a negative impact on neighbourly interactions and community spirit, with over half of the survey respondents agreeing that they didn’t really know the people living in the infill in their neighbourhood. Over two thirds also believed that infill housing would bring social problems later.
- Many neighbours of infill housing are not experiencing the strategic benefits that are believed to be the result of a compact city form. The most commonly experienced effects of infill housing were reduced privacy and sunlight and increased levels of traffic and noise. Many also believed infill housing was placing a strain on the neighbourhood infrastructure. Interviewees often described the overall effect as the invasion of the ‘rat race’ and the ‘concrete jungle’. Many of the new peri-urban developments appeal directly to this sentiment in their advertising.
- The protection of the Garden City image from the effects of infill housing emerged as a strong theme in this research. Some residents, because of what they believed to be the adverse bio-physical and socio-cultural effects of higher housing densities, did not support infill housing even if it was of good quality. These views strongly reflect New Zealand’s culture and history, which has emphasised the moral and physical benefits of detached family homes on sizeable residential sections.

2.0 Introduction

In general terms, infill housing can be described as new housing developments built within existing suburbs. As defined by Plew (1999, p.1), in her report to the Christchurch City Council, infill housing

includes one or more new townhouses built behind, in front of or beside an existing older house. It also includes developments of two or more townhouses where the original older house has been demolished.

Infilling usually occurs on small, subdivided freehold or cross-leased sections and has become a common feature of Christchurch's urban streetscape.

Terms of Reference

Infill housing appears to meet a number of bio-physical and social environmental objectives. This has made it extremely popular with planning authorities worldwide. The central problem is that there is a significant part of the population that is vehemently opposed to infill housing in their neighbourhood. In Christchurch anti-infill sentiment has been expressed in both the media and in submissions to the Council following the notification of the Proposed City Plan. Opposition to infill housing is still a regular feature of the *Press* and it remains a contentious issue. Following her survey of residents of infill housing which established that infill housing was meeting some people's housing needs, Plew (1999) recommended that further research be conducted into the impact such housing has on its surrounding area. Plew also suggested a survey of neighbours of infill housing to investigate their attitudes towards infill housing development. The Christchurch City Council was particularly interested in exploring neighbours' understandings of the positive and negative effects of infill housing.

Objectives

The objectives of this report are therefore:

- To examine New Zealand and overseas literature relating to urban infill;
- To document the nature of infill housing in Christchurch, its physical form and landscape effects;
- To outline the regulatory regime that allowed for infill development and the market conditions that led to its acceptance by developers and house purchasers; and
- To explore the local impacts of infill housing, particularly its positive and negative effects on neighbours.

Urban Consolidation

Infill housing is often seen as one way of creating a more compact urban form. There are a number of reasons why the compact city form and higher residential densities are promoted as ideal. These include:

- Making better use of public transport;
- Reducing motor vehicle emissions from private motor cars;
- Taking advantage of a compact building design to maximise energy efficiency;
- Increasing the “informal surveillance” that results from having more people on the streets;
- Reducing the sprawl of the city out onto agricultural land and natural habitats;
- Reducing the costs of installing and maintaining infrastructure at the urban periphery; and
- Greater neighbourhood vitality and vibrancy.

The promotion of a consolidated city form has now been formalised in the Christchurch City Plan, developed under the auspices of the Resource Management Act (1991). Infill housing is regarded as one way in which the Council may meet the biophysical environmental objectives of the Act and the “sustainable management” of New Zealand’s natural and physical resources.

Plew’s (1999) research was a response to the debate about how urban consolidation was affecting housing choice in Christchurch. The debate centred over whether infill housing development resulted from market demand or was simply the result of a lack of new, or “greenfield”, residential sites. Plew’s objectives were to ascertain why people choose to live in infill housing and whether this type of housing is meeting people’s needs. In relation to the first objective, she concluded that location and price play a significant role in housing choice. She also concluded that for a “niche market” infill housing was a popular choice because of its low maintenance aspects, its newness and its warmth. Of the respondents, 92 per cent were happy with their housing choice. This is consistent with Morrison and McMurray’s (1999) research, which established that apartment dwellers in central Wellington were generally satisfied with their housing situation despite its non-traditional form.

Other research conducted in the United Kingdom found that the impact of infill housing and intensified land use on the surrounding areas could be quite significant and not always welcome. Jenks, Burton and Williams (2000) concluded that while intensification could be acceptable to residents, the process had to be managed properly so as to avoid potential negative effects which included problems with parking, traffic, air pollution, noise, road safety, reduced open space and reduced quality of open spaces, privacy, greenery, crime, local character, and reduced neighbourliness. Of the 18 variables tested, the majority of residents believed that only public transport and the number of shops had improved with intensification.

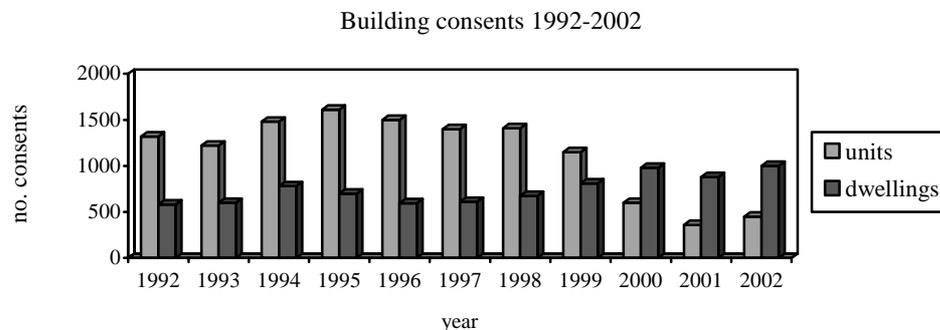
Why was this Research Necessary?

In his report *Curbing the Sprawl: Urban Growth Management in the United States-Lessons for New Zealand* (Ministry for the Environment, 2000) Gow acknowledges that urban planning should encompass not only environmental, but also social and economic considerations (p. 91). He also noted that a “critical ingredient” in successful planning strategies is that they are “built politically from the bottom-up and technically from the top down” (p. 93). This involves obtaining a reliable and genuine measure of people’s attitudes and views about issues.

Accurately gauging people’s views in Christchurch has taken on renewed importance since 1999 when 665 hectares of formerly rural land was rezoned residential (Plew, 1999). This has opened large tracts of land around Halswell and Belfast for residential development. An examination of *The Realtor* or Harcourt’s *Blue Book* (both Christchurch real estate magazines) show that the marketing of many of these new subdivisions appeals to those who need to feel “the pressures of daily life lift from [their] shoulders” (Seafield Park, *The Realtor*, 2003) or want “the enjoyment of a tranquil space” (Forest Park Estate, *The Realtor*, 2003). Importantly, there are often “covenants in place for your protection from unwelcome development.” (Brookside Estate, *The Realtor*, 2003)

This has all had a very real effect on the location and ratio of housing types being built in Christchurch. In 2002, the area units with the highest number of new dwellings included Styx, Styx Mill, Halswell East and Marshlands, all on the outskirts of the city. From 1986 to 1994, unit development was more prevalent than single dwelling development. Of the 14 900 dwellings built since 1985, only 5 700 (or a little over a third) were of the traditional single dwelling per site type. In contrast, in the 1998 to 2002 period, the number of dwellings has clearly outstripped unit development as shown in Figure 1. This trend shows no signs of abating as the reported figures for 2002 revealed 442 new unit resource consents but 1003 consents for dwellings.

Figure 1. Building Consents Issues from 1992-2002



(www.ccc.govt.nz/Buildingconsentsreportjune2002)

Other land use trends relate to areas in neighbouring districts, such as Prebbleton in the Selwyn District, which are within easy commuting distance of Christchurch and have recently seen the establishment of a significant number of new residential subdivisions. In addition, there has been an explosion in the number of “lifestyle blocks” of approximately four hectares (ten acres) around the urban periphery and beyond. Both greenfield and lifestyle block development direct growth away from urban existing areas.

Overall, these figures imply that peri-urban, low-density development is still a popular choice for a significant part of Christchurch’s population. This obviously has consequences for the Council’s policy of urban consolidation and the underlying reasons for these residential preferences therefore need to be explored.

3.0 Methods

The methods used in this research had to be flexible and comprehensive enough to meet the stated objectives of exploring the positive and negative effects of infill housing development and investigating how widespread those attitudes and opinions were. A two-stage ‘mixed methods’ approach was therefore adopted. In brief, qualitative research methods were used in order to meet the first objective of exploring the positive and negative effects of infill housing development as understood by a sample of 21 Christchurch residents living adjacent to some form of infill housing. This information was used in the design of a questionnaire distributed to a larger, random sample of the Christchurch population so as to meet the second objective of investigating how pervasive these beliefs about the effects of infill housing were among Christchurch residents.

Stage One

Stage One involved both the observation of areas of Christchurch with high levels of infill (St Albans, Merivale, Riccarton) and interviews with neighbours of infill housing. The observations were undertaken with the goal of documenting the different types of infill housing in Christchurch and its possible effects. Interviews were conducted with 21 Christchurch residents who lived on the traditional quarter acre section¹ and lived adjacent to some form of infill housing. These respondents were a mixture of people either known to us or who replied to an advertisement in *The Press* asking for interviews with interested parties.

The objective during the interviews with neighbours living adjacent to infill housing was to discover how they felt about that type of housing by collecting the richest possible data, achieving an intimate familiarity with the setting, and engaging in face-to-face interaction so as to participate in the minds of the settings’ participants (Lofland and Lofland, 1995). The desire here is to collect rich, in-depth information to facilitate a thorough understanding of the issue. The interviews always took place in the respondents’ homes and took approximately 1-3 hours (Appendix B contains the interview schedule). These interviews were transcribed and analysed along thematic lines. This information was then used to design a questionnaire that would be suitable for wider distribution.

Stage Two

Upon completion of the first stage, a postal survey was conducted in order to investigate how widespread were the opinions and attitudes of the interviewees. A postal survey was chosen because it is a relatively quick and inexpensive method of gathering a range of information from a large number of respondents. Depending on the nature of the questions, the responses can also be subjected to statistical analysis.

As in Plew’s (1999) survey of infill housing occupants, the central city zones (Living 4, 5 and CC) and residential areas on the Port Hills (Living Hills zones) were excluded because of the different densities and development issues associated

¹ “Quarter acre” is to be interpreted quite liberally throughout this report. This term is used to refer to the traditional type of section where outdoor space generously exceeds indoor space even though the total section size may be less than one quarter acre.

with these parts of the city. Again, as in Plew's (1999) study, all building consents issued for townhouses/units from 1994 to 2001 were searched using the Christchurch City Council's Building Consents Database. Having obtained the addresses of infill housing developments, a 'neighbours' population could also be generated using *Geomap*. Rather than taking a random sample of the resultant total population of neighbours, however, a random sample of 200 infill housing developments was obtained and a census of those neighbours was then attempted.

To investigate whether or not living directly adjacent to infill housing influenced responses, a 'non-neighbours' population was also identified. More value judgements had to be made to identify these quarter acre properties that fulfilled the 'nearby but not adjacent' criteria. In most cases it was clear which properties should be selected according to the following criteria:

- The outdoor space exceeded indoor space, i.e. the property was not an example of infill housing;
- There was visual contact between the property and the randomly selected infill housing development; and
- The property was not contiguous to any infill housing development.

The number of non-neighbours chosen for each of the 200 infill housing developments was limited to two.

In total, 802 potential respondents were identified, however a further 13 were deemed unsuitable due to the fact they were outside the Christchurch area, or were in a living zone other than 1, 2 or 3 (for example LH). Having eliminated these, in July 2002, a total of 789 questionnaires and an accompanying cover letter were posted to those eligible addresses. Of the initial 789 questionnaires sent out, 34 came back marked "no such address" by New Zealand Post. The questionnaire was therefore sent to 755 possible respondents. Following the first issue in July 2002, in early August 2002 (before the "leaky building crisis") a reminder notice was sent to those who had made no response to the first questionnaire. By the cut-off date of August 31st 2002, 261 completed questionnaires had been returned which gave an overall response rate of 34.57 per cent.

Questionnaire Design

Although a very small number of surveys relating to various aspects of infill housing had been conducted in various cities worldwide, a complete set of measures with a specific focus on neighbours was unavailable. The approach in this stage was, therefore, to adapt the qualitative information gathered during the interviews into a format suitable for wider distribution in a questionnaire (see Appendix C). To facilitate statistical analysis, the format consisted largely of a series of statements to which subjects responded using a five point Likert-type scale. This had the advantage of allowing a wide range of items to be measured. Space for any additional comments was provided and many respondents took advantage of this to present extra information.

The cover letter explained the purpose of the research and contained both pictures and an explanation of what “infill housing” was. To randomise the type of respondents, the cover letter asked that the person at that address who had their birthday most recently and was over 18 years of age complete and return the questionnaire in the postage-paid envelope provided. Subjects were also assured that while the results may be published, their anonymity would be preserved and the confidentiality of the data maintained.

In Section A, Question 1, respondents were asked to indicate the level of importance they placed on certain features of their house and section. A very similar format was used in Question 2 about features of the neighbourhood. In Question 3, respondents were asked to indicate whether they agreed or disagreed with a series of statements about various aspects of infill housing, including several design features. This was followed by Question 4, which used a similar format, but contained 33 statements about infill housing but of a broader nature.

Section B was designed to explore the respondent’s current situation in terms of their own and neighbouring properties, and which of the types of infill depicted they most and least preferred. Section C collected basic demographic information and Section D provided space for respondents to write any additional comment. The consent form was attached in Section E.

Survey Limitations.

The Survey Population

While every attempt was made to be consistent in identifying the residents who lived nearby but not adjacent to infill housing, there were a number of problems with the selection of this sample. This may be because there were sites more suitable, but that were overlooked, or because it was unclear whether or not the site was also some kind of infill housing. There were also some difficulties involved in identifying which neighbouring properties were residential, commercial or, in some cases, institutions such as schools. These had to be assessed and eliminated using the visual evidence available in *Geomap*.

Questionnaire

One problem with the questionnaire was that many respondents had difficulties accepting the examples of infill housing as general types. Many respondents indicated a combination of the four examples provided or drew additional features on them. This made it difficult to make a final determination of least/most-preferred types and the kind of infill to which the respondent was adjacent. While Plew (1999) had encountered similar problems, the fact that they were general types was really emphasised here and it is likely that this helped to some extent as there were no actual inquiries about this aspect of the questionnaire.

It also possible that some respondents were still unclear about what infill housing was, or that they did not know there was infill housing in their area. The *Geomap* database used to find the neighbouring properties highlighted all neighbours, even if the boundary they shared was very small, as was generally the case on the corners.

Another problem with the questionnaire was the use of scales from 1 (Very Important/Strongly Agree) to 5 (Totally Unimportant/Strongly Disagree). It became obvious due to the small number of surveys where the respondent had corrected their answers that some people had misinterpreted the direction of importance/agreement and were using 1 to mean 'Totally Unimportant' and 'Strongly Disagree'.

In addition, there were several indications that some of the wording had confused a number of respondents. Some respondents indicated a "?" in response to the importance of the house and section as being "where the 'heart' is" (A:1:5), agreement that "developers should have to be registered" (A:3:12), "there's no difference between my infill housing neighbours and the others" (A:4:10) and "the Council's regulation of infill housing is adequate" (A:4:33). There was also a great deal of diversity in the responses to the question "How much longer do you intend to live at this address"? A better question would have been "Do you intend leaving this address in the foreseeable future"? This would eliminate such responses as "Until St Peter tells me to go".

Having conducted the analysis of the data, it became evident that a better understanding of the household type was necessary. Although the format used in this questionnaire allows for a comparison with the information gathered in Plew's (1999) survey, respondents whose children had left home fell into the same category

as those respondents who had never had children. There may, in fact, be an important distinction between these two groups.

Because this was largely an exploratory survey based on qualitative information, some items turned out to be less important than they were believed to be at the time of the questionnaire design. These could, in any future surveys, be left out.

Response Rates.

The initial questionnaire was sent out with a postage-paid return envelope to facilitate a higher response rate. This was followed by a second mail out to those respondents who had not yet replied to the initial questionnaire. It is generally accepted that mail out surveys have a low response rate, however, other techniques are commonly used to increase response rates such as incentives, advertising and another reminder letter. Unfortunately these could not be used in this study due to budget constraints.

4.0 Research Results

Results of the Analysis of Response Rates

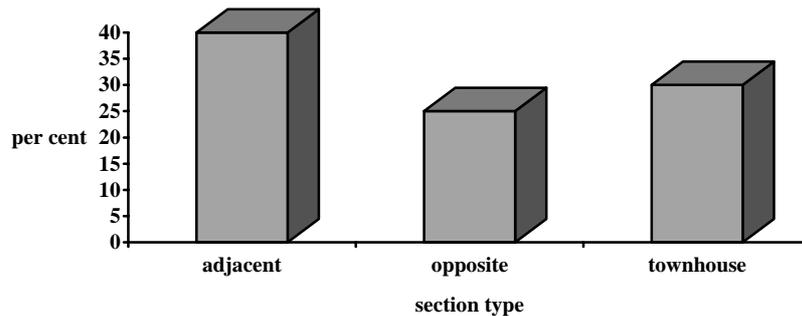
By the cut-off date of August 31st 2002, 261 completed questionnaires had been returned which gave an overall response rate of 34.57 per cent. A further breakdown of the respondents provides additional information on the respondents.

Response Rate by Section Type

- Of the 294 neighbours adjacent to infill living on a residential quarter acre type section, 109 replied giving the highest response rate of 41.8 per cent. This group comprised 37 per cent of the overall number of respondents.
- Of the 244 households on a residential quarter acre section within sight of, but not adjacent to the infill development, 69 responses were obtained which gave the lowest response rate (26.4 per cent). This group made up 28.3 per cent of the total responses.
- Of the 217 neighbours of infill housing also living in some kind of infill housing 83 replied giving a response rate of 31.8 per cent. This group comprised 38.2 per cent of the total number of respondents.

In brief, as Figure 2 shows, in general adjacent **neighbours were more likely to reply than non-neighbours with the highest response rate obtained from neighbours of infill housing living on a residential quarter acre.**

Figure 2. Response Rate by Section Type



Response Rate by Living Zone

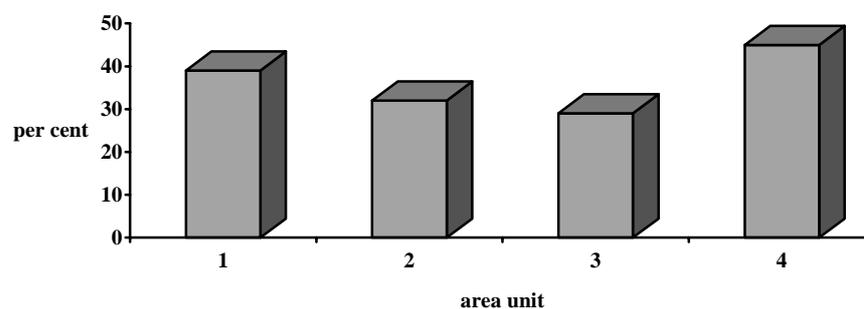
The majority of the survey respondents (n=167, 64 per cent) were residents in a Living One zone (with the lowest residential densities). Of the remainder, 53 respondents (20 per cent) lived in Living Two zones and the remaining 42 (16 per cent) came from Living Three zones which have higher residential densities. Further analysis was conducted in order to determine whether there were different response rates from each of the three zones. **A slightly higher response rate was obtained from residents in Living One zones (37.4 per cent) but fairly similar response rates were found for Living Two (31.1 per cent) and Living Three zone residents (32 per cent).**

Response Rate by Area Unit

Geomap also provides information on the Area Unit to which these properties belonged. This information, combined with other Christchurch City Council data provided the basis for a categorisation of respondents into area units with different levels of infill housing development. Of the 261 respondents:

- 107 lived in “level one” area units (defined here as area units with between 0 and 100 building consents issued for infill developments since 1991). The response rate from this group was the second highest at 38.6 per cent.
- 85 resided in “level two” area units (area units with 101 – 200 infill development building permits) with a response rate of 31.8 per cent.
- 52 were in “level three” area units (201-300 permits). This group had the lowest response rate (30 per cent).
- 17 lived in “level four” area units (301+) and it was this group that had the highest response rate at 44.7 per cent.

Figure 3. Response Rates by Area Unit.



In brief, as Figure 3 shows, **the highest response rates were obtained from respondents living in the area units with the highest and lowest levels of infill housing.**

Respondent Profiles

The largest group of respondents described themselves as part of a couple with either one or more children living at home (36 per cent) or no children at home (28.4 per cent). The remaining groups included one-person households (16.5 per cent), non-family households (4.6 per cent) and “others” (6.1 per cent).

Of the 261 survey respondents, 37 respondents (14.2 per cent) indicated that they might move within the next year and 38 subjects thought they would probably move within the next 2-5 years. Of the remaining subjects, 24 stated they would remain where they are for 6-20 years but, significantly, **a clear majority (n=143, 54.8 per cent) of the respondents stated that they had no intentions of moving elsewhere in the foreseeable future.**

The majority of the respondents (209 respondents or 80.1 per cent) owned the home in which they were currently living with a further 14.9 per cent renting the house. As a baseline figure, the Christchurch home ownership average is 65.7 per cent which suggests that home owners were more likely to participate in this study. A further 3.4 per cent rented a room in the house.

Respondent Profiles by Section Type

Further analysis was conducted in order to explore possible differences in demographic characteristics by section type. Table 1 shows an important difference between the residents living on a residential quarter acre and those living in infill housing: residential quarter acre residents are more likely to have children living at home than those living in infill housing. This is consistent with the results of Plew’s (1999) study of infill housing residents in Christchurch.

Table 1. Respondent Profiles by Section Type

Respondents on a quarter acre adjacent to infill housing							
	Zone	Age	Marital Status	Family Type	No. years in house	Income	Housing Tenure
Mean	-	47 ²	-	-	14 yrs	\$65 000 ³	-
Median	-	46-55	-	-	8 yrs	\$40-50 000	-
Mode	L1	46-55	married	couple with children	1 yr	\$30-40 000	home owner
Respondents living in infill housing adjacent to infill housing							
	Zone	Age	Marital Status	Family Type	No. years in house	Income	Housing Tenure
Mean	-	47	-	-	12 yrs	\$46 000	-
Median	-	46-55	-	-	7 yrs	\$30-40 000	-
Mode	L1	26-35	married	couple no children	1 yr	\$30-40 000	home owner

²This figure was obtained using the midpoint of each of the age categories given and a value of 70 years to the 65 years+ category.

³ this figure was obtained using the midpoint of each of the income bracket categories and a value of \$120 000.00 for the \$120 000.00+ category.

The table also shows a difference in the modal age groups of the two types of occupants. Although the mean and median age categories were the same for both housing types, the mode age category of infill housing residents was 26-35 years. Despite these differences, **it is interesting to note the overall similarities in the profiles in terms of income, housing tenure, marital status and number of years at that address.**

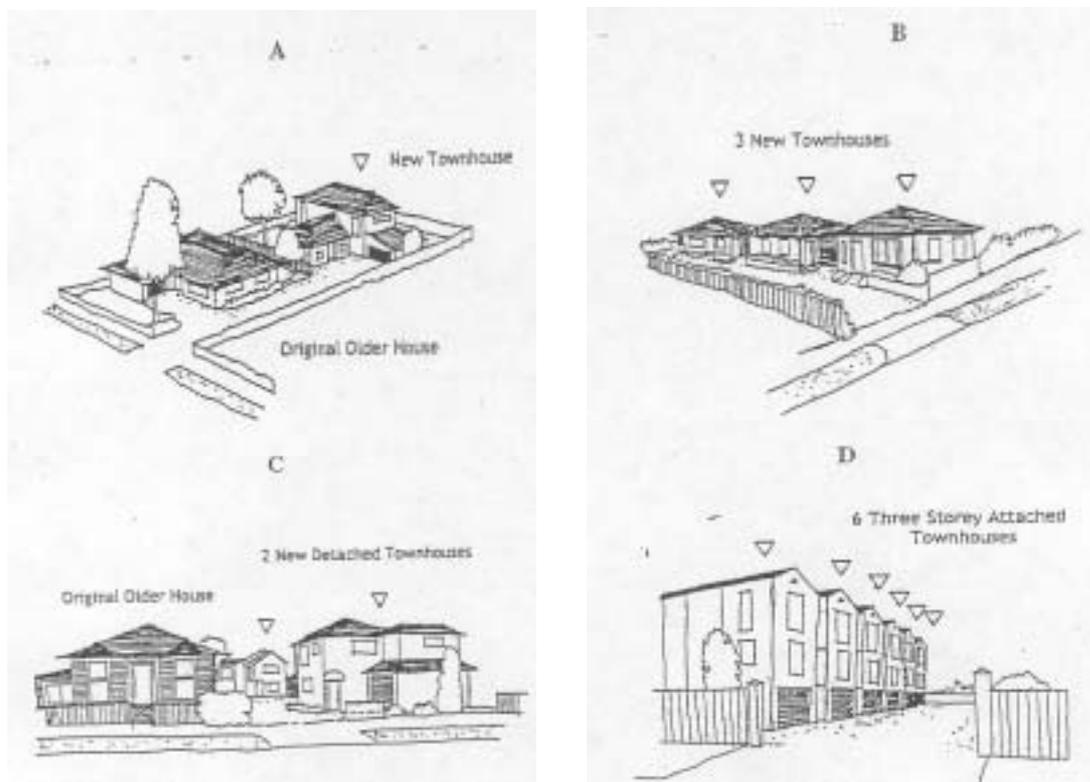
The Types of Infill Housing to which Respondents were Adjacent

Pictures of infill housing were provided in both the cover letter and in the accompanying questionnaire (Figure 4 and Appendix C). Based on these diagrams, **the majority of the respondents (n=162, 62 per cent) reported living next to only one infill housing development**, followed by 30 respondents (11.5 per cent) with two neighbouring infill housing projects.

Respondents were also asked to indicate how many infill housing developments had been built next door since they had come to live at that address. **The majority (60.2 per cent) had not experienced any new infill housing developments next door** but 31 per cent had noticed one new development. Only 5.7 per cent had experienced two new developments with a further 0.8 per cent reporting three or more new developments since they had begun their occupancy.

With pictures provided (see Figure 4 below) the respondents were also asked to indicate the types of infill to which they were adjacent. Of those actually living next to infill housing of some sort (n=194) the majority (58.2 per cent) reported living adjacent to type A, followed by 28.45 per cent on properties contiguous to Type B. A slightly lower number, 23.2 per cent lived next to Type C and 9.3 per cent had sections adjoining Type D infill housing (3.1 per cent made no response to this question).

Figure 4. Types of Infill Housing to which Respondents were Adjacent.



(Pictures from Plew, 1999)

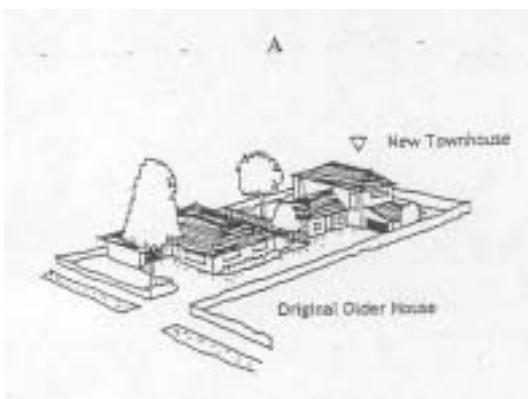
The Types of Infill Housing Respondents Preferred

Both the interviews and the survey results showed that residents living on a quarter acre section often had a clear dislike of the kind of infill housing which results in too much house on a property and an attendant lack of green, open, outdoor space. Figure 5 shows an overwhelming majority of people most disliked “Type D” infill housing and it displays many of the characteristics about which interviewees commonly complained: a large house foot print, lack of greenery, little outdoor space, and it is also of a height more likely to cause shadowing and interfere with neighbours’ privacy. It is also the type of infill housing that least resembles the traditional New Zealand single family home.

Figure 5. Most/Least Preferred Types of Infill Housing.

Most preferred = 47%

Least preferred = 3.4%



Most preferred = 25.3%

Least preferred = 2.3%



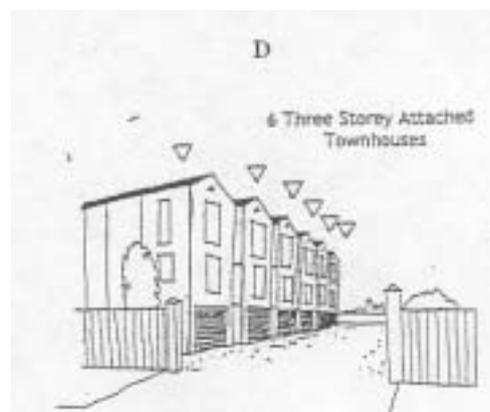
Most preferred = 14.2%

Least preferred = 2.7%



Most preferred = 0.4%

Least preferred = 87.0 %



While there was a clear dislike of a certain type of housing, housing preferences were slightly less distinct although Type A infill housing emerged as most acceptable. Offhand comments made during the interviews about these two housing types hinted that such housing developments were seen as more in keeping with the “New Zealand lifestyle”. The “New Zealand lifestyle” is “unpretentious”, has a garden offering some privacy and outdoor living (even if it was only quite small),

and housing like the “typical” New Zealand house with eaves, pitched roof and brick or weatherboard exterior.

Section Summary

In summary, the sample of 261 subjects was divided into three groups and categorised according to the type of housing in which they lived and whether they lived directly adjacent to, or nearby, infill housing. The highest response rates were obtained from those living on the traditional quarter acre section directly adjacent to an infill housing development. The largest group was comprised of couples with children living at home. The modal age category of infill housing residents was 26-35 years compared to 46-55 years for residents on quarter acre sections. Those living in infill housing were less likely to have children living at home. The majority of the respondents lived next to a solitary infill housing development and most had not experienced any new infill developments since they took up residence at that address. The respondents expressed a clear dislike of Type D infill housing which least resembles the traditional New Zealand detached house with pitched roof.

4.2 Results of the Analysis of ‘House and Section’

House and Section Frequencies

In order to provide some context for later answers about the positive and negative effects of infill housing, in Section A, Question 1, the respondents were first asked to rate the relative importance of a number of features of their house and section. A ‘1’ meant that feature was very important and a ‘5’ indicated that feature was totally unimportant. The results presented in Table 2 show an overwhelming majority of people feel the issues of **privacy and sunlight** to be extremely important. These two variables received the most ‘very important’ responses with 76.2 per cent reporting sunlight as very important and 62.5 per cent stating privacy as very important. These two variables were followed by ‘**house quality**’ (58.6 per cent).

While a clear majority saw these three features as very important, approximately half of the respondents thought outdoor living (47.9 per cent) was very important, and over a third of respondents saw ‘greenery’ (42.1 per cent) and ‘room for children to play’ (41 per cent) in these terms. Although ‘a vegetable garden’ received the least ‘very important’ responses, it was still described as such by 20.3 per cent of the respondents.

Table 2. Importance of Features of the House and Section

Variable	Very Important	Important	Neutral	Unimportant	Totally Unimportant
<i>Per cent of respondents</i>					
Sunlight	76.2	14.2	1.9	3.4	4.2
Privacy	62.5	23.0	5.4	4.6	4.2
House quality	58.6	23.8	8.8	2.7	5.4
Outdoor living	47.9	28.4	13.62	6.23	3.89
Greenery	42.1	33.3	15.7	6.9	1.9
Room for kids to play	41.0	21.8	16.9	9.2	10.3
Where the ‘heart’ is	36.8	26.4	20.3	6.5	3.1
Long term investment	35.2	26.8	18.8	9.2	8.8
Low maintenance house	33.7	26.4	26.1	10.0	3.4
Distance from neighbours	30.3	36.0	24.1	6.1	3.4
A house that ‘fits in’	28.4	32.2	24.5	8.0	5.4
House style	25.3	29.1	31.8	8.8	3.8
Low maintenance section	23.4	22.6	30.3	14.9	8.0
A vegetable garden	20.3	19.2	21.5	18.4	20.7

These results strongly suggest that any new infill housing development is likely to be understood in negative terms if it is seen to adversely affect access to sunlight, privacy, the quality of housing or the amount of greenery around existing residents’ sections.

Qualitative Research Results

Privacy

The survey results reinforce the significance of a number of themes that emerged during the interviews, namely the importance of privacy, sunlight and building quality. Giddens (in Saunders and Williams, 1988, p.88) has suggested that the importance of privacy lies in “the regional isolation of... individuals... from the ordinary demands of the monitoring of action and gesture”. Rachel⁴, one of the interviewees, put this in rather more simple terms:

[Home is] a good place to come home to after all else is going on, a good place to come and be yourself and unwind.

The invasion of privacy was resented enormously and was often the first point raised during the interviews. **This invasion of privacy was often presented in terms of “theft” with infill housing neighbours being accused of “taking my backyard” or “stealing the landscape”** and parts of the interviewees’ house and section. This roused feelings of hostility and anger as the following quotation shows:

Julie. We used to have perfect privacy. Now we’ve got apartments which have full length windows and bedrooms that look down over our garden and into our house.
Interviewer. How does that make you feel?
Julie. I hugely resent the loss of privacy. I hugely resent it!

Much of this resentment sprang, at least in part, from the changes many of the interviewees had made to their **daily habits** due to the infilling next door (or to the habits they would like to establish but couldn’t). The lack of control was felt every time they tried to look out a window that was now covered in curtains or when they wanted to sit in a chair that was now situated under the neighbour’s window. Perhaps the most poignant example of the loss of privacy came from a dignified, elderly female respondent who said she no longer feels comfortable hanging her “small things” out on the washing line. Because a single-storey townhouse now looks over her washing line, she separates her underclothes from the rest of the washing and hangs them on a separate line inside. She was unable to overcome the embarrassment that she felt at the thought of people seeing her underwear and this loss of privacy affected her every time she did her washing. This had an enormous negative impact on her established habits and freedoms.

Sunlight

Another issue frequently raised during interviews was the effect infill housing was having on the amount of sunlight reaching people’s properties. Although in some cases it was the interviewees’ actions that had caused the amount of sun reaching a property to be reduced (such as planting trees to maintain a certain level of privacy), in other cases it was simply perceived as **a regulatory failure**. Recession plane regulations were not always adequate due to peculiarities of the site, or in many cases, neighbours were simply not asked for their consent even though, in their view, the development fell outside the requirements of the City Plan.

⁴ Pseudonyms have been used to ensure the anonymity of respondents.

The effect on the inhabitants of these properties was, in some cases, quite damaging. In one case, a glass house was now shaded in the wintertime, and other interviewees pointed to areas, including pathways, that had become covered in moss because of the reduced sunlight reaching the area. In addition to these easily quantified consequences of infill housing are other, perhaps less readily measurable effects. While commenting on Christchurch's urban development, Pawson (2000, p.70) noted that new housing developments of the 1960s and 1970s were often advertised as receiving "All the Sun that Shines". As Pawson (2000, p.79) pointed out, on the flat Canterbury Plains where everything gets all the sun that shines, this "can only be a metaphor for the prospects of a good life". Both the survey results and the interview data suggest that this is still a powerful metaphor for many Christchurch residents.

Section Summary

Sunlight, privacy and house quality were the three variables receiving the most 'very important' responses. The interviews provide more in-depth information as to why these features were seen as being more significant. The invasion of privacy and loss of sunlight can make residents feel like parts of their house and section have been "stolen" from them. Ensuring that these features are maintained is essential if infill housing is to be accepted.

4.3 Results of the Analysis of the ‘Neighbourhood’

‘Neighbourhood’ Frequencies

An initial review of the literature suggested that the effects of infill housing were not necessarily limited to the house and section, but could also extend to the neighbourhood as well. The potential for improvements to the neighbourhood is, in fact, one of the basic arguments for urban consolidation.

Once again, in order to provide some context for later questions about the positive and negative effects of infilling, Section A, Question 2 addresses the relative importance of certain features of the neighbourhood. As the table below shows, ‘**safe streets**’ received the most ‘very important’ responses (66.7 per cent) followed by ‘**houses built to last**’ (47.1 per cent) and ‘**well maintained streets**’ (43.3 per cent). ‘Neighbourly relations’ (39.5 per cent) also rated highly in terms of importance, as did the ‘neighbourhood reputation’, the amount of ‘greenery’ and ‘outdoor space’ and ‘not too much traffic’. That the neighbourhood was not too crowded and fairly quiet also received a significant degree of support. **Conversely, ‘lots of activity’ received the least support.**

Table 3. The Importance of Features of the Neighbourhood

Variable	Very Important	Important	Neutral	Unimportant	Totally Unimportant
	<i>Per cent respondents</i>				
Safe streets	66.7	21.8	6.5	1.9	2.7
Houses built to last	47.1	31.8	14.9	1.1	4.6
Well maintained streets	43.3	36.8	12.3	5.4	1.9
Neighbourly relations	39.5	33.0	19.5	4.6	3.4
Neighbourhood reputation	33.7	31.8	26.4	5.4	2.3
Greenery	33.7	36.4	22.2	6.1	1.1
Good facilities	33.0	36.8	22.2	5.0	2.7
Not too much traffic	33.0	37.9	20.7	6.9	0.0
Not too crowded	31.8	38.3	23.8	3.1	2.7
A quiet neighbourhood	31.0	38.3	24.1	5.4	1.1
Access to public transport	29.1	26.8	21.8	14.2	8.0
Neighbourhood character	27.2	40.2	25.3	3.8	2.3
Open space	20.3	29.9	34.9	11.5	2.7
Community spirit	13.4	30.3	34.9	14.6	6.1
Ethnicity of neighbours	6.5	6.9	24.1	24.5	37.5
Lots of activity	3.1	10.7	37.9	29.5	16.9

Many of the variables listed in the table show a high level of support, particularly if the ‘important’ and ‘very important’ figures are combined (with the exceptions of community spirit, neighbours’ ethnicity and lots of activity). Any new developments that are seen to adversely affect these neighbourhood features are therefore unlikely to be accepted by residents.

Qualitative Research Results

Street Safety

The interviewees provided some indication of why many of the neighbourhood features mentioned above were seen to be threatened by infilling. First, the safety of the streets was generally seen as being compromised by the **increased number of vehicles that accompanied higher residential densities**. It was no longer regarded as safe to send children to the dairy unaccompanied and a number of interviewees reported the loss of pets to traffic. The following observations were quite typical:

May. I wouldn't like to have wee toddlers with something like that. You'd have to have pretty well fenced section. You couldn't have kids on this street.

Fred. Because of the traffic.

May. The traffic density is ... Since I've been here it's gone up about a 1000 or so. There's been a big change.

The dangers were seen to be compounded by the height of many of the fences surrounding the new unit and infill housing developments. At approximately 1.8 metres (or six feet) cars reversing out of driveways are unable to see pedestrians.

The Quality of Infill Housing

The second reason infill housing was believed to have a negative effect on the neighbourhood was due to the quality of new townhouse developments and the type of tenants such developments were inclined to attract. Put simply, **there was a firm belief that modern infill housing developments are often substandard**⁵. As these interviews were conducted at the interviewees' home, they were able to point out examples from around the neighbourhood of cracking, rusting and rotting exteriors and fixtures. The consequence of this was seen to have wide-ranging effects. Gerry made this clear:

My greatest concern is that there's no quality in the construction [of much of the infill]. They are sold as upmarket residences for \$200-250,000 each and there's actually no quality in the construction. They're all untreated timber, wire netting, polystyrene and plaster sprayed over it. Already, for those that have been there for 5 years plus, you look down the road and you can see all the studs and dwangs through the plaster as though it's been breathing or something. And I think it's a time bomb. All of this. The value of this[our house] could plummet quite dramatically. What concerns me is that we'll be left living in a slum area. Because the walls will start to leak and they'll depreciate quite rapidly and they'll become cheap rental hovels. And that will not happen in 80 or 90 years as it did with this type of housing. It will happen in 20 years.

⁵ This research had been completed before the "leaky housing" crisis of September/October 2002

These anecdotal reports have been substantiated, in part at least, by what has come to be known as the Hunn Report (2002). In February, 2002, the Building Industry Authority appointed a Weathertightness Overview group to be chaired by Don Hunn to investigate reports of substandard housing in New Zealand. Their report stated that:

Change in the building industry has accelerated in the last decade. The housing market, and in particular the multi-unit or condominium sector, has become highly cost-competitive...With the collapse of the commercial building boom in the late 1980s, property developers turned their attention to this new demand for condominium living. Holding prices down (cost cutting) ...has become paramount and has led to some inadequate practices (pp. 8-9).

Many interviewees were not only extremely concerned that they were now living in the “**slums of the future**”, they also believed there was a link between poor quality housing and poor quality neighbours. First, it was believed that real estate developers tended to buy up properties and rent them out until they were ready to develop. With minimal upkeep, these properties were mostly let to students or other undesirables in the interim. Second, infill housing of inferior quality degenerated very quickly and soon became cheap rental accommodation. According to some interviewees poor quality infill housing quickly begins to look “sick” and, when no one wants to buy it, renting it out is the only option. Tenants also become disheartened by the condition of the house and move on, perpetuating a cycle of gradual decay. The tenants of these cheap rentals were seen as the least desirable of neighbours and the most serious threat for the future. **Such housing thus had consequences for the appearance of the neighbourhood and street maintenance because of the perceived lack of commitment to the house, section and neighbourhood.**

Leslie. And the change over! They move out just as quickly and then it gets to the stage where they become rental properties because they can't actually sell them on.

Me. How do owners and tenants differ?

Regina. In the sense of whether they're better looked after.

Rental properties as a rule are just...There's no desire to keep any kind of a nice landscape. If they mow the lawns that's a plus. And basically they're just tired and they become run down. These are the ones that end up being like slums.

Neighbourly relations were also affected as the high turnover of occupants precluded the development of meaningful relationships.

Open Spaces and Greenery

A third reason behind anti-infill attitudes related to open spaces and natural features of the neighbourhood. While the survey results showed that residents living on traditional quarter acre sections tended to see open spaces and greenery as more important than those living in infill housing, the interviews provided in-depth information as to why this might be the case. Interview data suggests infilling was seen as having a significant, detrimental effect on neighbourhood open spaces due to

the developer's desire for a clean site. Obtaining a clean site often meant the **clear-felling of mature trees**. Many interviewees scoffed at the Council's Protected Trees by-law stating that there were ways of poisoning or damaging trees so that they died anyway. While the practical value of greenery was easily articulated in terms of providing shade and combating pollution, the less tangible effects were harder to describe. Mrs Donald tried her best to convey some of her thoughts on the value of trees:

Because you're constantly surrounded by dead things: buildings, walls. It's a bit like a rat in a maze. The typical rat race. Where do I go? I'm surrounded by walls. If I turn this way I see walls, if I look this way I see a wall, if I turn this way I see a wall. And that is fine if you're living in the city and you come home at night and the curtains are drawn because you've been working all day or whatever. But when you're in a suburb. In Christchurch. The Garden City! You lose privacy, you lose your sense of roots, your sense of establishment, it's very unsettling.

Additional research into the language and rhetoric used in real estate sales magazines reveals that **real estate agents and marketers are well aware of such sentiments**. One need only take a casual glance through the *Realtor* (a weekly real estate magazine) to get some idea of the associations the purveyors of many of the new suburban estates are trying to make between their product and the traditional ideal of the detached family, suburban home that has dominated much of New Zealand's urban history. The following are just a selection of quotations from such advertisements as found in the *Realtor* (March, 2003):

“Feel the pressures of daily life lift from your shoulders” (Seafield Park).

“Enjoy being part of an established community” (ForestPark Estate).

“Sick of the rat race? Look no further...Covenants in place for your protection” (Brookside Estate)

“This lifestyle opportunity offers a peaceful relaxing environment. Fishing, boating and walks all at your doorstep” (Brooklands)

Section Summary

Safe streets, houses built to last and well maintained streets received the most 'very important' responses. Many other variables, however, also received high levels of support including good neighbourly relations, the good reputation of the neighbourhood, greenery, good facilities, not too much traffic, not too crowded and a quiet neighbourhood. Many interviewees described such changes as the invasion of the concrete jungle or the rat race, a view also shared by many survey respondents. The interviews highlighted the links some residents made between building quality, street safety, the type of people living in infill housing and the inability to develop a meaningful relationship with them because of the high turnover of infill housing occupants. A great source of anxiety was that they felt they were living in the “slums of the future” and it is clear that many new peri-urban subdivisions appeal directly to those who wish to escape the “rat race” to find peace and a sense of community.

4.4 Results of the Analysis of ‘Features of Infill Housing’

‘Features of Infill Housing’ Frequencies

During the interviews, a number of comments were made about specific aspects or attributes of infill housing, for example, “Infill housing should have eaves”. While some of these preferences were aesthetic, others had deeper significance, such as eaves contributing to a building’s weather-tightness. Interviewees’ comments about features of infill housing comprised Section 1, Question 3 of the questionnaire and the survey respondents were asked to indicate their level of agreement with those statements. Strong agreement was represented with 1, and strong disagreement with 5.

The results of the analysis of this section are presented in Table 4 and show **the two variables receiving the highest levels of strong agreement were ‘Infill housing shouldn’t be built too close to neighbours’ boundaries’ (61.7 per cent) and ‘Developers should be registered’ (61.7 per cent)**. Other variables receiving high levels of support were ‘I don’t like infill that destroys trees’ (47.5 per cent) and ‘I don’t like infill housing with too much blank wall’ (35.2 per cent). According to several interviewees, this is because big, blank walls look “hostile” and “secretive”. They also highlight the lack of vegetation.

Although more survey respondents ‘strongly agreed’ that they didn’t like garages at the front of houses, **the dislike of big houses on small sections and infill housing where the original house remains received more overall agreement**. A site with “too much house” can appear to dominate its neighbours or, in the words of one interviewee, “they look like a pumpkin on a pimple”. In cases where the original house remains, the new house can simply accentuate the dilapidated and run-down appearance of the original house.

Table 4. Levels of Agreement with Statements about Infill Housing.

Variable	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	<i>Per cent respondents</i>				
Infill shouldn’t be built too close	61.7	21.8	8.8	5.0	2.3
Developers should be registered	61.7	13.8	13.0	2.3	7.3
Don’t like infill destroying trees	47.5	24.5	21.1	5.0	1.9
Don’t like blank walls	35.2	31.0	24.1	5.4	4.2
Don’t like garages in front of houses	25.3	11.1	29.1	16.1	16.9
Don’t like old house on same site	24.9	22.2	31.0	12.3	9.2
Don’t like big houses on small sections	24.9	22.2	31.0	12.3	9.2
Prefer houses with eaves	24.9	16.5	46.7	6.5	3.1
Prefer interesting roofline	16.1	25.7	41.4	12.3	3.1
Infill makes good use of land	14.2	18.8	29.5	18.8	18.8
Prefer houses made of brick	11.9	8.8	44.8	18.0	14.6
Prefer low fences	9.6	12.3	33.0	19.9	23.4

Section Summary

The two variables receiving the highest levels of strong agreement were 'Infill housing shouldn't be built too close to neighbours' boundaries' and 'Developers should be registered'. The variables 'I don't like infill that destroys trees', 'I don't like infill housing with too much blank wall', 'I dislike big houses on small sections' and 'I dislike infill housing on the same site as an old house' also received strong support.

Results of Analysis of Statements About the Effects of Infill Housing.

Section A, Question 4 was devoted to exploring both the positive and negative effects of infill housing, and levels of agreement with certain comments about this type of housing and its inhabitants. These remarks related to the Garden City image, the types of people who tended to live in infill housing, the role of the Council, and so on. These comments were categorised, coded and converted to a format suitable for a questionnaire in a five-point Likert scale format.

Effects of Infill Housing: ‘People’ Frequencies

Just over half of the survey respondents (53.7 per cent) gave some indication of agreement with the statement ‘I don’t really know the people who live in the infill housing around here’. A related question shows, however, that a very similar number (51.3 per cent) saw no difference between their neighbours who lived in infill housing and those who lived on a residential quarter acre. These results have to be viewed in the context of both the qualitative information gathered during the interviews and earlier questions regarding the importance of certain features of the house, section and neighbourhood. In this light, not knowing one’s neighbours can impinge upon neighbourly relations (which were seen as important to some degree by 72.5 per cent of the respondents) and community spirit. According to interviewees, “transients” and the high turnover of people living in infill housing can also have a negative effect upon neighbourliness and community spirit. On a more positive note, as shown in Table 5, **approximately a third of the respondents agreed that infill had brought some nice people to the neighbourhood.**

In light of compact city advocates’ claims about urban intensification increasing the number of pedestrians, it was interesting to note that the **survey respondents were fairly evenly split between those who agreed there were more people walking about on the streets and those who disagreed.**

Table 5. Levels of Agreement with Statements about Infill Housing: People

Variable	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	<i>Per cent respondents</i>				
I don’t know my infill neighbours	25.3	28.4	30.7	7.7	6.5
No difference between neighbours	24.1	27.2	27.2	11.9	6.5
Infill brings a mixture of people	14.2	26.8	44.4	8.8	3.4
Infill has brought nice people	12.3	19.2	53.6	6.1	4.6
More people walking since infill	8.8	20.3	37.5	17.2	13.4
There’s a high turnover in the infill	8.8	16.5	44.1	16.9	10.0
Infill residents don’t give time of day	8.0	7.3	45.6	15.3	20.3
Infill residents are transients	4.6	10.0	37.2	18.0	26.8

Effects of Infill Housing: ‘Neighbourhood’ Frequencies

One of the most significant features to emerge from the analysis of these variables was **the clear majority of respondents who agreed with the statement ‘Infill housing will bring social problems later’**. This is particularly important as most respondents had also reported that they had no intentions of moving. They will therefore most likely remain to experience some of these perceived effects of infill housing. The nature of these problems, according to the interviewees, might include an invasion of tenants or renters and other “irresponsible sorts”, disease due to overcrowding and decaying buildings, or disputes over maintenance, the sharing of driveways and the provision of parking spaces.

Although a large number of respondents (41.0 per cent) indicated that they thought infill housing in their area was “nice looking”, they did not necessarily believe infilling was appropriate for their neighbourhood. **A majority agreed with the statement that they resented the loss of character homes to infill housing, a result which is reinforced by the similar number of respondents who disagreed that infill “fits in” with the character of this neighbourhood.** Interviewees’ comments suggest that this resentment springs not only from the way in which this removal or dismantling of character homes affects the feel of the neighbourhood, it also influences the ways in which residents make sense of their neighbourhood. Character homes are often seen as landmarks that help residents navigate the neighbourhood, give it meaning, and enhance the area’s legibility. **The loss of such homes can therefore alter residents’ sense of place**, i.e. place attachment and the meanings attributed to places.

It is a positive sign that nearly one fifth (19.9 per cent) of the respondents agreed that infill housing had actually made the neighbourhood better, however, more than twice that number (41.4 per cent) disagreed. Similar numbers also indicated disagreement with the statements that infill housing had improved the neighbourhood’s identity and that community spirit had increased since the infilling began.

Table 6. Levels of Agreement with Statements about Infill Housing: Neighbourhood

Variable	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	<i>Per cent respondents</i>				
Infill leads to social problems	42.5	25.7	19.2	4.6	5.7
I resent loss of character homes	29.1	25.7	23.4	10.0	9.6
Infill makes neigh. overcrowded	16.1	21.1	33.3	17.6	10.3
Infill has made neigh. better	6.9	13.0	37.5	18.8	22.6
Infill fits in with this neighbourhood	4.2	9.6	33.7	28.7	21.5
Infill improved neighbourhood id	3.8	13.8	33.7	26.1	19.5
Infill has increased comm.. spirit	2.7	7.3	44.4	23.0	20.7
Most infill is nice looking	10.3	30.7	29.1	19.2	8.8

Effects of Infill: ‘General’ Frequencies

Although the highest levels of strong agreement were found for the variable ‘Infill should be kept to specific areas’ (21.8 per cent), Table 7 shows that **higher levels of overall agreement were obtained for the variable ‘Infill housing goes against the New Zealand way of life’** to which over one third of the survey respondents (37.1 per cent) either agreed or strongly agreed. The interview data suggest that a “Kiwi” way of life includes having pets and enjoying outdoor living spaces, such as barbeque areas, swimming pools and so on. Infill housing, with more limited outdoor spaces, often makes such habits and traditions less likely or impossible. Almost a third of the respondents believed that infill housing ends up as rental properties which, according to the interviewees, tend to be occupied by people who are less responsible and less committed to the neighbourhood.

Although they were a minority, a not insignificant number of survey respondents (14.6 per cent) believed that because of the infill housing in the area, they were now living in the slums of the future, but most survey respondents disagreed (52.9 per cent). Approximately equal numbers agreed, had no special feeling or disagreed that infill housing made good use of land.

Table 7. Levels of Agreement with Statements about Infill Housing: General

Variable	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
<i>Per cent respondents</i>					
Infill should stay in specific areas	21.8	12.6	28.7	16.5	17.2
Infill goes against NZ way of life	17.2	19.9	28.4	17.7	14.9
Infill ends up as rental properties	13.8	18.4	36.8	18.0	10.3
Most infill is good quality	10.7	34.5	29.1	15.3	8.0
Infill will become the future slums	5.4	9.2	29.1	21.5	31.4
Infill makes good use of land	14.2	18.8	29.5	18.8	18.8

Frequencies of Statements About Effects of Infill Housing

Unfortunately for consolidation enthusiasts, **many neighbours saw infill housing in a negative way, particularly because of the effects of reduced privacy and sunlight, and increased levels of traffic and noise.** Earlier analysis had already shown the high levels of importance the survey respondents attached to sunlight (a combined 90.4 per cent indicated this was either important or very important) and privacy (combined 85.5 per cent). Unfortunately, almost one third of the survey respondents indicated they either agreed or strongly agreed that infill housing had invaded their privacy and just over one fifth felt that the neighbouring infill housing was taking their sunlight.

Just over 40 per cent of people also expressed agreement with the statement ‘Infill housing places a strain on infrastructure’ and some interviewees reported

actually experiencing problems with sewers, storm water drains and parking in their areas.

These factors combined to generate an overall negative view of infill housing, and this opinion was summarised by the effect of the “concrete jungle” and the “rat race” invading the suburbs. **Almost half the respondents (a combined 46.8 per cent) indicated they believed infill housing was allowing the concrete jungle into the suburbs.** The impact this can have on people was perhaps most clearly articulated during an interview with Mrs Donald:

Because of the infill, because there are more people living here, you lose privacy, you lose your sense of roots, your sense of establishment and it's very unsettling... The typical rat race.

These results strongly suggest that while residents of infill housing may be experiencing the advantages of such housing (Plew, 1999), many neighbours have not yet experienced the potential benefits of more consolidated urban living as outlined in Table 8.

Table 8. Agreement with Statements about Infill Housing – Effects

Variable	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	<i>Per cent respondents</i>				
Infill brings concrete jungle	21.5	25.3	30.7	13.8	7.7
Infill has invaded my privacy ⁶	17.6	14.6	16.5	10.0	12.6
Infill strains infrastructure	17.2	24.5	33.0	13.0	9.6
Infill increased neigh. noise	12.3	18.8	29.1	19.5	18.0
Infill has taken my sunlight	11.9	9.2	10.7	12.3	20.7
Infill brings more traffic	8.4	13.8	33.7	19.2	21.8
Infill has changed my daily habits	8.4	7.7	24.1	16.1	39.5
Infill brings more public transport	7.3	11.5	37.2	18.0	23.0

Section Summary

For the purposes of analysis and reporting, variables relating to the effects of infill housing were divided into sections: People, neighbourhood, and general.

Just over half of the survey respondents (53.7 per cent) gave some indication of agreement with the statement ‘I don’t really know the people who live in the infill housing around here’. This is significant because, as the interviews demonstrated, not knowing one’s neighbours can adversely affect neighbourly relations and community spirit. More positively, about a third of the respondents agreed that infill had brought some nice people to the neighbourhood. Compact city theorists may be interested to note that opinion was evenly divided between those who agreed there were more people walking about on the streets and those who disagreed.

⁶ This option only applied to neighbours.

Unfortunately, a majority of respondents agreed with the statement 'Infill housing will bring social problems later'. This is disturbing for the clear majority of respondents who had indicated that they had no intention of moving elsewhere, and were therefore likely to witness such difficulties as the invasion of tenants or renters and other "irresponsible sorts", disease due to overcrowding and decaying buildings, or arguments over maintenance, the sharing of driveways and the provision of parking spaces. Other aspects of the neighbourhood were also affected by infill development, including the ill-defined, but very important *neighbourhood character* which ultimately contributes to residents' sense of place. Overall, over 40 per cent of the respondents disagreed that infill housing had made the neighbourhood better compared to 20 per cent who agreed. Similar numbers also indicated disagreement with the statements that infill housing had improved the neighbourhood's identity and that community spirit had increased since the infilling began.

The highest levels of overall agreement about the general effects of infill housing in this section were obtained for the variable 'Infill housing goes against the New Zealand way of life'. Infill housing, with more limited outdoor spaces, often makes certain Kiwi traditions, such as barbecues, large gardens, swimming pools and so on, less likely or impossible. Almost a third of the respondents believed that infill housing ends up as rental properties which, according to the interviewees, tend to be occupied by people who feel less responsibility for, and commitment to, the neighbourhood. Opinion was evenly divided as to whether or not infill housing made good use of land.

Unfortunately for consolidation enthusiasts, many neighbours saw the effects of infill housing in a negative way, particularly the effects of decreased privacy and sunlight, and increased levels of traffic and noise. Just over 40 per cent of people also expressed agreement with the statement 'Infill housing places a strain on infrastructure' and some interviewees reported actually experiencing problems with sewers, storm water drains and parking in their areas. This had the overall result of making many respondents feel that the "rat race" was invading their area. Almost half the respondents (a combined 46.8 per cent) indicated they believed infill housing was allowing the concrete jungle into the suburbs. These results strongly suggest that while residents of infill housing may be experiencing the advantages of such housing (Plew, 1999), many neighbours have not yet experienced the potential benefits of more consolidated urban living.

4.6 The Role of the Council

The Role of the Council Frequencies

As shown in Table 9, a clear majority of people (72.0 per cent) were unwilling to see the Council allow developers to damage the Garden City image. This adds weight to the findings of the Council's *Annual Residents Satisfaction Survey* which highlighted the importance this image still has for many Christchurch residents.

It is significant that nearly half the survey respondents (47.5 per cent) disagreed or strongly disagreed that 'Provided it is of good quality, the Council should encourage infill housing'. Conversely, almost one quarter (23.8 per cent) agreed or strongly agreed with this statement. It is therefore possible that infill housing might receive a better reception with the general public if concerns about the quality of such buildings are meaningfully addressed. It also appears that many respondents (39.8) would accept more regulation of infill housing.

Table 9. Levels of Agreement with Statements about Infill Housing – The Role of the Council

Variable	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	<i>Per cent respondents</i>				
CCC must protect Garden City image	47.1	24.9	13.8	8.4	8.6
Infill makes money for the CCC	18.0	18.4	37.5	12.3	10.3
CCC should encourage quality infill	9.2	14.6	25.7	26.4	21.1
CCC's regulations are adequate	7.3	11.5	35.2	19.9	19.9

5.0 Four Indicative Variables

Of the numerous variables mentioned above, four were chosen to represent broad opinions about infill housing. These were:

- Provided it is of good quality, the Council should encourage infill housing.
- Overall, infill housing has made the neighbourhood better.
- Infill housing makes good use of land.
- The Council's regulations of infill housing are adequate.

Further analysis was then conducted in order to discover whether certain factors, such as section type, length of time in the house, income, household type, age, area unit or whether there had been new infill developments built next door had some relationship with the level of opposition to, or endorsement of, infill housing.

Section Type

One of the main findings of this research was the **high number of statistically significant differences in responses by section type** and this is reflected in the analysis of this section. Those living on residential quarter acre-type sections were more likely to disagree that providing it is of good quality the Council should encourage infill housing ($X^2=11.240$, $df=2$, $p<0.005$), that infill housing has made the neighbourhood better ($X^2=10.131$, $df=2$, $p<0.01$) and that infill housing makes good use of land ($X^2=13.813$, $df=2$, $p<0.001$) as Table 10 shows. No statistically significant difference by section type was found for the variable 'The Council's regulation of infill is adequate', however, Appendix A contains a list of the substantial number of areas where there were differences between those living on quarter acre sections and those living in infill housing. The areas in which differences by section type occurred included the importance placed on room for children to play, open spaces, greenery, community spirit and neighbourliness, and so on. There were also a considerable number of areas where levels of agreement with certain statements tended to differ by section type, such as infill housing going against the Kiwi way of life, infill placing a strain on infrastructure and so on. **A clear pattern emerged whereby those living in infill housing tended to view infill housing more positively while those living on quarter acre sections were more likely to interpret infill in more ambivalent or negative terms.**

Table 10. The Four Variables and Section Type

		Agree	Neutral	Disagree
		<i>Per cent respondents</i>		
The Council should encourage infill	quarter acre	20.2	23.7	56.1
	infill	33.8	32.5	33.8
Infill has made neighbourhood better	quarter acre	15.3	37.9	46.9
	infill	30.9	38.3	30.9
Infill makes good use of land	quarter acre	25.8	30.9	43.3
	infill	48.2	26.5	25.3
The Council's regulations are OK	quarter acre	17.4	37.7	44.9
	infill	25.6	37.2	37.2

Length of Time in this House

The responses to the four indicative variables were correlated with the length of time the survey respondent had lived at their current address. **The results showed that, in simple terms, the longer one had been living at that same address, the less likely one was to agree with these positive statements about infill housing.** The results of this analysis are presented in the following table.

Table 11. Correlations: The Four Variables and Length of Time in this House

Variable X time in this house	Spearman's Rho
Infill has improved the neighbourhood	r(254)=.207, p<0.001
Infill makes good use of land	r(251)=.127, p<0.05
The Council should encourage infill	r(250)=.175, p<0.005
The Council's regulations are adequate	r(242)=.160, p<0.05

Income

Correlation analysis was conducted in order to explore possible relationships between the four indicative variables and the respondents' household income. The results of this analysis showed **no statistically significant relationships** between these variables. Table 12 presents the details of this analysis.

Table 12. Correlations: The Four Variables and Income

Variable X time in this house	Spearman's Rho
Infill has improved the neighbourhood	r(236)=-.088, p>0.05
Infill makes good use of land	r(238)=-0.079, p>0.05
The Council should encourage infill	r(232)=0.020, p>0.05
The Council's regulations are adequate	r(227)=0.091, p>0.05

Age

Table 13 shows the results of correlation analysis that was conducted in order to explore possible relationships between age and the four indicative variables. No statistically significant relationships were found, i.e. **age does not appear to have any significant influence over the types of answers provided in response to the four statements.**

Table 13. Correlations: The Four Variables and Age

Variable X Age	Spearman's Rho
Infill has improved the neighbourhood	r(255)=0.029, p>0.05
Infill makes good use of land	r(258)=0.011, p>0.05
The Council should encourage infill	r(251)=-0.004, p>0.05
The Council's regulations are adequate	r(243)=.049, p>0.05

Household Type

Chi square analysis was conducted to establish whether household type (i.e., whether or not the respondents had children under the age of 16 living at home) had any relationship with responses to the four indicative statements about infill housing. While the responses to the first three variables were generally similar for those respondents both with and without children, those with children were less likely to agree (or be neutral) that the Council's regulation of infill housing was adequate ($X^2=6.834$, $df=2$, $p<0.05$). **Generally speaking, however, the presence or absence of children did not appear to have a great influence over people's attitudes towards infill housing.** The details of this analysis are presented in Table 14.

Table 14. The Four Variables and Household Type

		Agree	Neutral	Disagree
		Per cent respondents		
Infill has improved the neighbourhood	with children	18.3	39.4	42.2
	no children	21.5	36.8	41.7
Infill makes good use of land	with children	30.6	32.4	36.9
	no children	34.5	26.9	38.6
The Council should encourage infill	with children	26.9	25.9	47.2
	no children	23.2	26.1	50.7
The Council's regulations are adequate	with children	13.9	45.4	40.7
	no children	24.4	31.1	44.4

Area Unit

Correlation analysis was also conducted to investigate the relationship between the amount of infill development occurring in an area and neighbours' responses to the four indicative variables (see Table 15). The level of infill development figures were based on Christchurch City Council permits issued for each area unit with 'level one' area units being those area with the least infill development (0-100 units), level two being those areas with 101-200 cases of infill, level three being those area units with 201-300 infill developments, and level four comprising those areas with the most (301+) infilling. No statistically significant relationships were found between the levels of development in a given area unit and responses to the four variables i.e. **the amount of infilling in an area does not appear to affect the survey participants' responses.**

Table 15. Correlations: The Four Variables and Area Unit

Variable X Area Unit	Spearman's Rho
Infill has improved the neighbourhood	$r(258)=0.173$, $p>0.05$
Infill makes good use of land	$r(261)=-0.045$, $p>0.05$
The Council should encourage infill	$r(253)=-0.063$, $p>0.05$
The Council's regulations are adequate	$r(245)=0.044$, $p>0.05$

New Developments

Finally, Table 16 shows the results of chi square analysis that was conducted in order to determine whether or not the addition of a new infill housing development next door played a role in people's responses. **No statistically significant relationships were found between responses to the four indicative variables and whether or not there had been a new infill housing development next door.**

Table 16. The Four Variables and New Developments Next Door

		Agree	Neutral	Disagree
		<i>Per cent respondents</i>		
Infill has improved the neighbourhood	new dev.	21.6	30.9	47.4
	no new dev.	19.9	42.3	37.8
Infill makes good use of land	new dev.	31.6	29.6	38.8
	no new dev.	34.4	29.3	36.3
The Council should encourage infill	new dev.	24.2	22.1	53.7
	no new dev.	25.5	28.8	45.8
The Council's regulations are adequate	new dev.	23.1	29.7	47.3
	no new dev.	18.1	42.3	39.6

Section Summary

From the variables section type, length of time in this house, income, household type, age, area unit and experiencing new developments next door, section type and the length of time the respondent had been at their current address were the best predictors of support for infill housing. Those living in infill housing were more likely to agree with positive statements about infill housing, for example, that it makes good use of land, that it had made the neighbourhood better, and so on. The opposite is true of those living on traditional quarter acre sections, however, and this group could be described as generally less positive about infill housing and appeared to experience more negative effects such as reduced access to sunlight and privacy, increased traffic and noise pollution, and so forth. They also tended to express disapproval of other effects of intensification such as the loss of character homes, mature trees and a certain way of life associated with suburbia. The correlation analysis also showed that those who had lived for greater lengths of time at the same address tended to interpret infill housing in less positive terms.

6.0 Discussion

This section summarises the key results from this survey with particular emphasis on the positive and negative effects of infill housing on neighbours and the surrounding area. These results are evaluated in terms of the original research objectives which were:

- To examine New Zealand and overseas literature relating to urban infill;
- To document the nature of infill housing in Christchurch, its physical form and landscape effects; and
- To explore the impact infill housing has on the surrounding area, particularly the positive and negative effects on neighbours of infill housing development.

Objective One: What can we learn from New Zealand and overseas literature relating to urban infill?

There is clear consensus in much overseas literature that a compact, consolidated urban form has the potential to meet many bio-physical environmental and social goals, including more efficient use of public transport and therefore reduced vehicle emissions and noise, the protection of agricultural land and reduced infrastructure costs at the urban periphery, increased vitality, vibrancy and informal surveillance at the neighbourhood level. Research conducted here in New Zealand also suggests that infill housing and inner city living are popular with particular markets. An emergent body of literature now cautions that some residents may experience negative effects of intensification if the process is not well managed.

Objective Two. What is the Nature of Infill Housing in Christchurch, its Physical Form and Landscape Effects?

Since the mid 1980s, parts of Christchurch have experienced high levels of infill development, particularly Riccarton, Merivale and other areas close to the Central Business District. This has slowed since the rezoning of substantial tracts of land in 1999, increased minimum site sizes and a consequent reduction in eligible sites. Most infill housing occurs on cross leased or subdivided sections, and its development sometimes requires the removal of the original house. This can substantially alter the character of the neighbourhood. Another common feature of infill housing is the loss of open spaces and greenery, and again, this can have a significant effect on the ways in which the neighbourhood is understood and interpreted by residents.

Although this research was undertaken before the “leaky housing crisis” of September 2002, the proliferation of substandard building practices was already well-known to many residents. The Hunn report acknowledges that the highly competitive nature of multi-unit and condominium development had led in some cases to cost cutting that was having a severe adverse effect on building quality. A source of anxiety was that these poor building practices would lead to the “slums of the future”

Objective Three: What effects does infill housing have on neighbours and the surrounding area?

A section of the survey population appeared to experience a number of benefits from living in intensified areas, including an improvement in public transport and an increase in the number of people walking in the neighbourhood. For a significant number, however, infill housing was seen as having more negative impacts including increased traffic and noise and a consequent reduction in pedestrian safety, a loss of privacy and access to sunlight, reduced feelings of neighbourliness and community spirit, overcrowding, a strain on infrastructure and an unwelcome change to the neighbourhood's character. A substantial number also agreed with the statement that infill housing goes against the New Zealand way of life. This shows how important it is to place interpretations of infill housing in the context of New Zealand's urban history where, until recently, successive governments have emphasised the moral and physical benefits of detached "family" homes on sizeable sections.

While it is notable that nearly one fifth (19.9 per cent) of the respondents agreed that infill housing had actually made the neighbourhood better, more than twice that number (41.4 per cent) disagreed. Those who disagreed were more likely to live on quarter acre residential sections, while those living in some form of infill housing were more likely to agree. Those living on quarter acre sections were more likely to see infill housing as an invasion of the rat race and the concrete jungle. It is interesting to note how many of the new peri-urban subdivisions appeal to those who want to "escape the rat race" and find a renewed "sense of community".

7.0 Conclusion

Infill housing has become an established feature of many Christchurch suburbs, particularly those closest to the Central Business District. Recent years, however, have seen a growth in greenfield development which goes against the Council's goal of encouraging a more consolidated urban form. If living in a compact city presents so many benefits, why are so many people going to live in these new peri-urban subdivisions?

An important part of the answer is that, for many residents, consolidated urban living is not presenting them with any benefits, rather, they feel infill housing has had a significant negative impact on their house and section, neighbourhood and even the Garden City image. These effects included both bio-physical consequences, such as the loss of greenery and open space, and socio-cultural effects, for example, reduced neighbourliness and community spirit. One of the main findings of this research is that simply manipulating the built form of urban areas will not necessarily promote a more sustainable city if these socio-cultural aspects of the environment are neglected. As noted by Jenks, Williams and Burton (1998), to be truly sustainable, the compact city must have a reasonable degree of support from local residents. If not, "those who can will leave the city, and only the most disadvantaged will be left: a scenario which is unsustainable" (Jenks *et al.*, 1998, p.84).

The careful management of infill housing development must be balanced against the provision of a range of housing choices, and there is no doubt that infill housing meets some people's needs very well. They enjoy the greater levels of activity and better access to facilities associated with consolidated living. This is not, however, why most people choose to live in suburbia where the quiet life on a quarter acre section and an environment that is perceived to be safe for children becomes more important. Such sentiments are consistent with government rhetoric found throughout New Zealand's post-European housing history. Given this context, sudden change, with the kind of adverse effects noted by the respondents in this study, is unlikely to be found acceptable in the short-term.

8.0 Future Research

These findings point to several areas where future research is needed. An investigation should be conducted into the ways in which the negative effects of infill housing, such as increased traffic, have been successfully mitigated in certain areas and for certain groups. This could include evaluating the efficacy of certain measures undertaken by various local bodies such as ‘living streets’, the preservation of character homes’ facades, garage frontage, fence height restrictions, protected trees, and the like.

Research could also be conducted into the reasons behind people’s move to the new peri-urban subdivisions described in this study, such as Northwwoods, Aidanfield and so on. Are these new developments meeting people’s expectations and housing needs?

At another level, research should also be conducted into the efficacy of the submissions process as an indication of people’s views. It became clear during this research that some people simply do not understand recent legislative changes, how it affects their rights, and the potential impacts on their properties and the neighbourhood.

9.0 References

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Appendix A: Statistically Significant Differences

During analysis, statistically significant differences by section type were found for a high number of variables. While it should be kept in mind that there were exceptions, further analysis showed that while those already living in some form of infill housing tended to agree with positive statements about infill housing (and can therefore be seen as supporting infill housing in general terms), those living on the more traditional quarter acre-type sections were quite reliably opposed to infill development in their area.

House and Section Chi Square Analysis

The importance of:

Greenery ($X^2=7.193$, $df=2$, $p<0.05$).

Room for children to play ($X^2=22.119$, $df=2$, $p<0.001$).

A vegetable garden ($X^2=31.682$, $df=2$, $p<0.001$).

A low maintenance section $X^2=17.184$, $df=2$, $p<0.001$).

'Neighbourhood' Chi Square Analysis

The importance of:

Community spirit ($X^2=11.302$, $df=2$, $p>0.005$).

Open spaces ($X^2=8.042$, $df=2$, $p>0.05$).

'Features of Infill Housing' Chi Square Analysis

Agreement with the statements:

Infill housing should not be allowed too close to neighbours' boundaries ($X^2=8.909$, $df=2$, $p<0.05$).

I don't like infill housing on the same site as an old house ($X^2=6.634$, $df=2$, $p<0.05$).

I don't like big houses on small sections ($X^2=9.627$, $df=2$, $p<0.05$).

'Effects of Infill Housing: Neighbourhood' Chi Square Analysis

Agreement with the statements:

Infill housing fits in with the character of the neighbourhood ($X^2=17.457$, $df=2$, $p<0.001$).

Overall infill has made the neighbourhood better ($X^2=10.131$, $df=2$, $p<0.01$).

Infill housing has changed the neighbourhood's identity for the better ($X^2=7.510$, $df=2$, $p<0.05$).

I resent the loss of character homes to infill ($X^2=7.278$, $df=2$, $p<0.05$).

Infill housing is making the neighbourhood overcrowded ($X^2=6.143$, $df=2$, $p<0.05$).

'The Effects of Infill Housing: General' Chi Square Analysis

Agreement with the statements:

Infill housing goes against the New Zealand way of life ($X^2=8.838$, $df=2$, $p<0.05$).

Infill housing usually ends up as rental property ($X^2=6.877$, $df=2$, $p<0.05$).

Because of the infill housing, I am now living in the slums of the future ($X^2=10.799$, $df=2$, $p<0.005$).

Infill makes good use of land ($X^2=13.813$, $df=2$, $p<0.001$).

‘Statements About Infill Housing - Effects’ Chi Square Analysis

Agreement with the statements:

Infill housing has allowed the concrete jungle into the suburbs ($X^2=8.062$, $df=2$, $p<0.05$).

Infill housing is placing a strain on infrastructure ($X^2=13.705$, $df=2$, $p<0.001$).

Infill housing has brought too much traffic to the area ($X^2=7.256$, $df=2$, $p<0.05$).

Infill housing has invaded my privacy ($X^2=6.306$, $df=2$, $p<0.05$).

The Role of the Council Chi Square Analysis

Agreement with the statements:

Provided it is of good quality, the Council should encourage infill housing ($X^2=11.240$, $df=2$, $p>0.005$).

The Council should not let developers ruin the Garden City image ($X^2=8.148$, $df=2$, $p<0.005$).

Table 17. Chi Square: Statistically Significant Differences by Section Type

		Important	Neutral	Unimportant ⁷
		<i>Per cent respondents</i>		
Greenery	quarter acre	80.3	12.4	7.3
	infill	65.1	22.9	12.0
Room for children	quarter acre	72.9	13.0	14.1
	infill	42.7	25.6	31.7
Vegetable garden	quarter acre	49.4	22.8	28.1
	infill	18.1	19.3	62.7
Low maintenance section	quarter acre	38.1	33.0	29.0
	infill	63.9	25.3	10.8
Community spirit	quarter acre	51.1	30.7	18.2
	infill	28.9	44.6	26.5
Open space	quarter acre	54.5	35.2	10.2
	infill	42.2	34.9	22.9
Houses shouldn't be too close	quarter acre	88.2	7.3	4.5
	infill	74.4	12.2	13.4
Dislike infill on same site as old house	quarter acre	46.6	35.4	18.0
	infill	48.8	22.0	29.3
Dislike big houses on small sections	quarter acre	69.3	21.0	9.7
	infill	59.0	16.9	24.1
Infill fits in with this neighbourhood	quarter acre	40.8	32.2	27.0
	infill	32.1	22.2	45.7
Infill has made neighbourhood better	quarter acre	15.3	37.9	46.9
	infill	30.9	38.3	30.9
Infill improved neighbourhood identity	quarter acre	15.0	32.4	52.6
	infill	25.0	40.0	35.0
I resent loss of character homes	quarter acre	61.1	22.9	1.6
	infill	45.0	26.3	28.8
Infill makes neighbourhood crowded	quarter acre	75.1	20.3	4.5
	infill	60.2	31.3	8.4

⁷ Combined ‘important/very important agree’ and ‘unimportant/totally unimportant’ figures have been used in the chi square analyses

Infill goes against NZ way of life	quarter acre	40.8	32.2	27.0
	infill	32.1	22.2	45.7
Infill becomes rental property	quarter acre	37.1	38.3	24.6
	infill	24.1	36.7	39.2
Infill becomes slums	quarter acre	14.0	36.6	49.4
	infill	17.5	16.3	66.3
Infill makes good use of land	quarter acre	25.8	30.9	43.3
	infill	48.2	26.5	25.3
Infill brings the concrete jungle	quarter acre	52.5	29.9	17.5
	infill	35.8	33.3	30.9
Infill strains infrastructure	quarter acre	47.7	35.6	16.7
	infill	32.5	30.0	37.5
Infill increases traffic	quarter acre	26.6	36.4	37.0
	infill	15.0	31.3	53.8
Infill has invaded privacy	quarter acre	48.0	26.0	26.0
	infill	39.0	16.9	44.1
The Council should encourage infill	quarter acre	20.2	23.7	56.1
	infill	33.8	32.5	33.8
CCC protect Garden City image	quarter acre	37.1	38.3	24.6
	infill	24.1	36.7	39.2

Appendix B: Interview Schedule

Section 1. Current Housing Situation

1. How long have you lived in this house?
2. What features of the house and section do you particularly dis/like?
3. Do you own the house?
4. How would you describe your household? How does your household situation affect your housing choice?
5. How has infill housing affected your home?

Section 2. The Neighbourhood.

1. What aspects of this neighbourhood did you dis/like when you first came to live here?
2. How would you have described the neighbourhood then?
3. How has the neighbourhood changed over that time? (Community feeling, safety, traffic, shops, public transport, greenery, open spaces)
4. How do you feel about these changes? What features of the neighbourhood do you dis/like now?
5. How would you describe the neighbourhood now?
6. What sort of social interaction do you have with neighbours?
7. Will you continue to live here? If not, what sort of place/neighbourhood would you move to? Why

Section 3. Urban Form.

1. What sort of changes have you noticed in the physical form of the neighbourhood? (Roads, trees, townhouses). When did you start to notice these changes? What made you notice them?
2. There are quite a few townhouses around here. How do you feel about that? (Do you like the look? Why/not? What about the materials, size, colour, style, amount of new neighbours? ; Do you know the people that live in any of these townhouses? Would you live in a townhouse? Why/not? What impact, if any, have townhouses had on your lifestyle/housing situation?)
3. What sort of people do you think live in townhouses? How do you interact with them?
4. What do you think would be ideal living conditions for city-dwellers like you and your household?
5. Should townhouses and apartments be kept out of suburban areas like this?
6. Some people think that urban sprawl is a bad thing because of the loss of natural habitats and agricultural land. Others think that's nonsense. What do you think? (If it is a bad thing, what do you think is the best way to accommodate everyone without having sprawl?)

Thank you for your time.

Appendix C: Cover Letter and Questionnaire

Dear Resident,

You are invited to participate as a subject in a project entitled *Residents' Responses to a New Urban Form: The Case of Christchurch*.

The aim of this project is to explore and investigate the impact some new housing forms are having on nearby residents. One example is infill housing where one or more extra 'houses' or 'units' are built on an existing residential site. Some typical examples include townhouses complexes, subdivisions where another dwelling is built behind or in front of an older house, or where an older house is removed and two or more new dwellings are built. This research seeks a better understanding of what residents believe are the positive and negative effects of this kind of housing and is being undertaken as a requirement for a Masters of Applied Science at Lincoln University with the support of the Christchurch City Council.

Participation in the project is voluntary and will involve the completion of the accompanying questionnaire, which will take about 20 minutes to fill in. In order to obtain a good cross-section of responses, I ask that the person at this address who had their birthday most recently and is over 18 years of age complete and return this questionnaire in the envelope provided.

You may or may not have particularly strong views on infill housing, but your participation would be very much appreciated and your opinion is very important.

The results of the project may be published, but you may be assured of the complete confidentiality of data gathered in this investigation: the identity of participants will not be made public without their consent. To ensure anonymity and confidentiality, all completed questionnaires will be kept in a locked cabinet during the research, and subsequently destroyed. Except for your signature on the last page, please do not make any identifying marks on the questionnaire. This last page will be detached and kept separate from your questionnaire in another locked file.

The research is being carried out by Suzanne Vallance who can be contacted at (03) 325 2811, extn 8761, or email vallancs@lincoln.ac.nz. She will be pleased to discuss any concerns you have about participation in the project or any other matter relating to the research that you believe is important. Alternatively, you may contact her supervisor Associate Professor H. C. Perkins at perkins@lincoln.ac.nz.

The project has been reviewed and approved by Lincoln University Human Ethics Committee.

Section A

No. _____

1. Using the scale from 1 to 5 below, please circle the number that best indicates how important or unimportant you believe the following features are regarding your house and section.

Very Important 1 2 3 4 5 Totally Unimportant

1. Outdoor living	1	2	3	4	5	8. Low maintenance house	1	2	3	4	5
2. Privacy	1	2	3	4	5	9. Building quality	1	2	3	4	5
3. Sunlight	1	2	3	4	5	10. A house that 'fits in'	1	2	3	4	5
4. Greenery	1	2	3	4	5	11. A vegetable garden	1	2	3	4	5
5. Where the 'heart' is	1	2	3	4	5	12. Room for kids to play	1	2	3	4	5
6. Low maintenance section	1	2	3	4	5	13. Long term investment	1	2	3	4	5
7. House style	1	2	3	4	5	14. Distance from neighbours	1	2	3	4	5

2. Using the scale from 1 to 5 below, please circle the number that best indicates how important or unimportant you believe the following features are regarding your neighbourhood.

Very Important 1 2 3 4 5 Totally Unimportant

1. Neighbourhood character	1	2	3	4	5	9. Lots of activity	1	2	3	4	5
2. Good neighbourly relations	1	2	3	4	5	10. Community spirit	1	2	3	4	5
3. The good reputation of the area	1	2	3	4	5	11. Lots of open space	1	2	3	4	5
4. Neighbours of the same ethnicity	1	2	3	4	5	12. Safe streets	1	2	3	4	5
5. A quiet neighbourhood	1	2	3	4	5	13. Lots of greenery	1	2	3	4	5
6. Well maintained streets	1	2	3	4	5	14. Not too crowded	1	2	3	4	5
7. Not too much traffic	1	2	3	4	5	15. Facilities nearby	1	2	3	4	5
8. Access to public transport	1	2	3	4	5	16. Houses built to last	1	2	3	4	5

3. Using the scale from 1 to 5 below, please circle the number that best indicates whether you agree or disagree with the following statements about infill housing.

Strongly Agree 1 2 3 4 5 Strongly Disagree

1. I prefer infill housing to have eaves	1	2	3	4	5
2. I prefer infill housing to have an interesting roofline	1	2	3	4	5
3. I prefer infill housing to have a low fence (or none at all)	1	2	3	4	5
4. I prefer infill housing to be made of brick	1	2	3	4	5
5. I don't like garages at the front of houses	1	2	3	4	5
6. I don't like infill housing development that destroys trees	1	2	3	4	5
7. I don't like infill housing on the same site as an old house	1	2	3	4	5
8. I don't like infill housing with too much blank wall	1	2	3	4	5
9. I don't like big houses on small sections	1	2	3	4	5
10. Infill housing makes good use of land	1	2	3	4	5
11. Infill should not be allowed too close to neighbours' boundaries	1	2	3	4	5
12. Infill housing developers should have to be registered	1	2	3	4	5

4. Using the scale below, please circle the number that best indicates whether you agree or disagree with the following statements.

Strongly Agree 1 2 3 4 5 Strongly Disagree

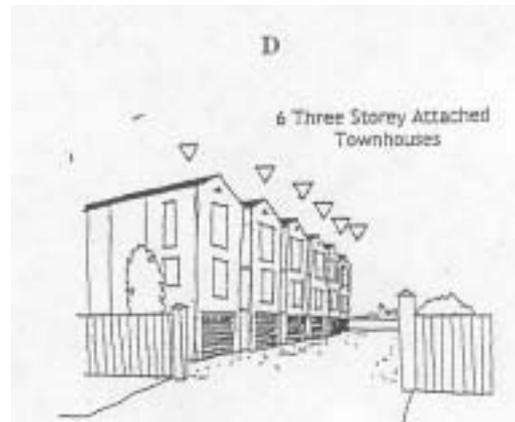
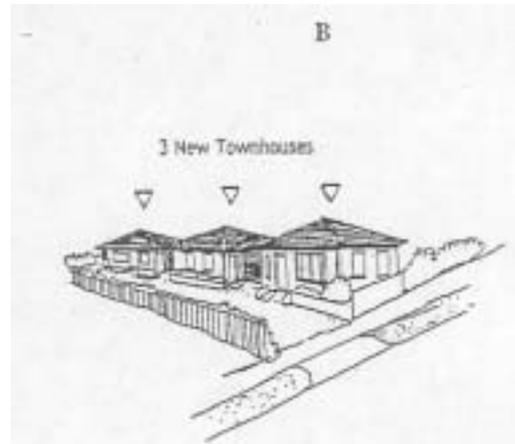
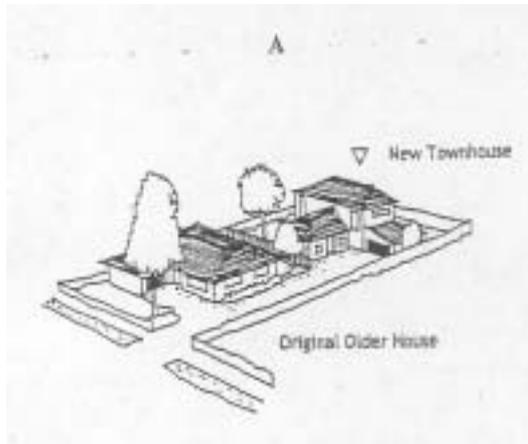
1. Overall, infill housing has made the neighbourhood better	1	2	3	4	5	
2. The infill housing is making this neighbourhood over-crowded	1	2	3	4	5	
3. Community spirit has improved since the infill housing began	1	2	3	4	5	
4. There is a very high turnover of people in the infill housing	1	2	3	4	5	
5. Infill housing has changed the neighbourhood's identity for the better	1	2	3	4	5	
6. Poor quality infill housing will bring social problems later	1	2	3	4	5	
7. The infill housing has brought some very nice people to this neighbourhood	1	2	3	4	5	
8. People in the infill housing are 'transients' who don't care about this area	1	2	3	4	5	
9. The people living in the infill housing don't give me the time of day	1	2	3	4	5	
10. There's no difference between my infill housing neighbours and the others	1	2	3	4	5	
11. Infill housing has resulted in more people walking about on the streets	1	2	3	4	5	
12. I don't really know the people who live in the infill housing around here	1	2	3	4	5	
13. Infill housing has brought a mixture of people to the area	1	2	3	4	5	
14. Infill housing goes against the New Zealand way of life	1	2	3	4	5	
15. Infill housing fits in with the character of this neighbourhood	1	2	3	4	5	
16. Infill housing is placing strain on local infrastructure (roads, sewers, etc.)	1	2	3	4	5	
17. Most infill housing is of good quality	1	2	3	4	5	
18. I resent the loss of character homes to infill housing developments	1	2	3	4	5	
19. Infill housing has allowed the concrete jungle into the suburbs	1	2	3	4	5	
20. Most of the infill housing around here is nice to look at	1	2	3	4	5	
21. Infill housing usually ends up as rental properties	1	2	3	4	5	
22. Because of the infill housing, I am now living in the slums of the future	1	2	3	4	5	
23. Infill housing should be kept to very specific areas of the city	1	2	3	4	5	
24. Infill housing has invaded my privacy	NA	1	2	3	4	5
25. Infill housing has brought more public transport to the area	1	2	3	4	5	
26. I have had to change some daily habits since the infill housing was built	1	2	3	4	5	
27. The infill housing takes my sunlight	NA	1	2	3	4	5
28. Infill housing has brought too much traffic to the area	1	2	3	4	5	
29. Infill housing has made the neighbourhood noisier	1	2	3	4	5	
31. The council shouldn't let developers ruin the Garden City image	1	2	3	4	5	
32. Infill housing is just a way for the council to save/make money	1	2	3	4	5	
33. The council's regulations governing infill development are adequate	1	2	3	4	5	

Section B

1. With which of the infill types pictured at the bottom of the page do you share a boundary (if any)? (E.g. A and B) _____
2. Please circle any infill housing types (pictured below) that have been built next door since you came to live at this address (if any).
3. Of the infill housing pictured below, which would you most prefer to live next to? (A, B, C or D) _____
4. Of the infill housing pictured below, which would you least prefer to live next to? (A, B, C or D) _____
5. What kind of housing do you live in currently? (please tick one)

a) A below _____ (go to Q.6)	b) B below _____ (go to Q.6)
c) C below _____ (go to Q.6)	d) D below _____ (go to Q.6)
e) on a "quarter acre" section with a single dwelling _____ (go to section C.)	
6. Did you or a member of your household build (or hire a builder to do) the infill housing development you live in now?

a) Yes _____	b) No _____ (tick one)
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Section C

1. Are you a) male _____ b) female _____ (*please tick one*).
2. Into which age bracket do you fall? (*please tick one*)
a) 18-25 yrs ___ b) 26-35 yrs ___ c) 36-45 ___ d) 46-55yrs ___ e) 56-65 yrs ___ e) 66+ yrs ___
3. What is your marital status? _____
4. With which ethnic group do you identify? (*please tick one*)
a) New Zealand European ___ b) Maori ___ c) Samoan ___ d) Cook Island Maori ___ e) Tongan ___
f) Niuean ___ g) Chinese ___ h) Indian ___
i) other _____ (*please state*)
5. Which of the following best describes this household? (*please tick one*)
a) couple without children ___ b) one person household ___
c) 2 parent family with one child or more at home ___ d) non- family household ___
e) 1 parent family with one child or more at home ___
f) other _____ (*please state*)
6. What are the sources of income for this household? (*tick all that apply*)
a) wages and/or salaries _____ b) superannuation _____
c) government benefit (excluding superannuation) _____ d) student allowance _____
e) other (*please state*) _____
7. Into which income bracket does your combined household income, before tax, fall? If you are flatting, indicate your income only.
a) \$0 _____ b) \$5 000 – 10 000 _____ c) \$ 10 001 – 15 000 _____
d) \$15 001 – 20 000 _____ e) \$20 001 – 25 000 _____ f) \$ 25 001 – 30 000 _____
g) \$30 001 – 40 000 _____ h) 40 001 – 50 000 _____ i) \$50 001 – 70 000 _____
j) \$70 001 – 100 000 _____ k) 100 001 – 120 000 _____ l) 120 001 or more _____
8. How long have you lived in:
a) this house? _____ b) this neighbourhood? _____
9. How much longer do you intend living at this address? _____
10. Do you: (*tick one of the following*)
a) own this house _____ b) rent this house _____
c) rent a room in this house _____ d) other _____ (*please state*)
11. What street/road do you live on (*please do not write your house number*) _____

Section D

Please use the space below to write any additional comments you have relating to this survey or infill housing.

Section E

Residents' Responses to a New Urban Form: The Case of Christchurch.

I have read and understood the description of the project described in the attached cover letter. On this basis I agree to participate as a subject in the project, and I consent to publication of the results of the project with the understanding that anonymity will be preserved. I understand also that I may at any time withdraw from the project, including withdrawal of any information I have provided.

Signed: _____ Date: _____

Please return your completed questionnaire and this consent form in the envelope provided
(S. Vallance, Human Sciences Division, Lincoln University, PO Box 84, Lincoln University).

Thank you for completing this questionnaire. Your participation is appreciated