Sense of Placelessness on the Christchurch Periphery Post-Earthquake

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Following the 2010 and 2011 earthquakes Christchurch is undergoing extensive development on the periphery of the city. This has been driven in part by the large numbers of people who have lost their homes. Prior to the earthquakes, Christchurch was already experiencing placeless subdivisions and now these are being rolled out rapidly thanks to the efficiency of a formula that has been embraced by the Council, developers and the public alike. However, sprawling subdivisions have a number of issues including inefficient land use, limited housing types, high dependence on motor vehicles and low levels of resilience and no sense of place. Sense of place is of particular interest due to its glaring absence from new subdivisions and its growing importance in the literature.

Research shows that sense of place has benefits to our feeling of belonging, well-being, and self-identity, particularly following a disaster. It improves the resilience and sustainability of our living environment and fosters a connection to the landscape thereby making us better placed to respond to future changes. Despite these benefits, current planning models such as new urbanism and transit-oriented design tend to give sense of place a low priority and as a result it can get lost. Given these issues, the focus of this research is *"can landscape driven sense of place drive subdivision design without compromising on other urban planning criteria to produce subdivisions that address the issues of sprawl, as well as achieving the benefits associated with a strong sense of place that can improve our overall quality of life?"*

Answering this question required a thorough review of current urban planning and sense of place literature. This was used to critique existing subdivisions to gain a thorough

understanding of the issues. The outcomes of this led to extensive design exploration which showed that, not only is it possible to design a subdivision with sense of place as the key driver but by doing this, the other urban planning criteria become easier to achieve.

Keywords: Sense of place, subdivision, urban planning, planning, residential development, new urbanism, design research, critique, Christchurch, Rolleston.

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Chapter 1

Introduction

1.1 Sense of Placelessness

Jane Jacobs (1961a) sums up the issue as I see it in the following quote:

> …the endless new developments spreading beyond the cities are reducing the city and countryside alike to a monotonous, unnourishing gruel… (p. 142).

This quote is referring to American cities but it seems to apply just as easily to New Zealand and increasingly so to Christchurch. Following the 2010 and 2011 earthquakes Christchurch is undergoing extensive development on the periphery of the city. This has been driven in part by the large numbers of people in the red zone[1] who have lost their homes. Prior to the earthquakes, Christchurch was already experiencing the placeless subdivision and now these are being rolled out with rapid speed thanks to the efficiency of a formula that has been embraced by the Council, developers and the public alike. But, you might ask, "If everyone is happy then what is the problem"? There are certainly some advantages to low density subdivisions; they provide access to cheap land, fast development of new housing, a large house and garden, a community of like-minded people and it is a development model which is widely accepted.

However, during my time at Lincoln University I have become increasingly aware of the issues of placeless sprawl and the impacts that this has on our lives. I too had embraced the arguably placeless subdivision and have made one of them my "home" but as my awareness of the issues has increased, it has challenged my perception of what I consider to be a healthy living environment. I started to notice new developments advertised as "the quarter-acre dream", and it made me wonder "is this still the dream or do we continue to aspire to this because it is the only option"? To paraphrase singer-songwriter Paul Weller, does the public get what the public wants or does the public want what the public gets? (P. Weller, 1982).

[1] The red zone is the name that has been given to areas of Christchurch where it has been deemed unsuitable to rebuild and dwellings have been purchased and demolished by the Government, leading to considerable displacement of residents.

To investigate this issue further it is worth defining sprawl. There are a lot of definitions of sprawl but one that summarises the issues well is this one by Oliver Gillham (2002):

> …a form of urbanisation distinguished by leapfrog patterns of development, commercial strips, low density, separated land uses, automobile dominance and a minimum of open space (p. 383).

I would argue in addition to this, the converting of green fields to urban landscape and similarity of design resulting in placeless developments. Building on this definition from the literature and my own observations, the issues associated with sprawl include inefficient land use, limited housing types, high dependence on motor vehicles, low levels of resilience and no sense of place. These are issues that I have become increasingly concerned about and as such, my research considers the following questions:

- What other living options are open to us?
- What other ways are there of living that might better meet the needs of ourselves and the planet?
- Can different people and situations be catered for?
- Does sense of place really matter?

1.2 The Value of Sense of Place

When I began my thesis the focus of my research was on housing density. My initial research question was "can we change the form of new subdivisions so that they have higher housing density, more housing options and therefore a greater diversity of people?" This remained the focus for the majority of my research despite the fact that in reality my focus had shifted quite markedly to the issue of sense of place and its glaring absence from new subdivisions, not just in Christchurch but around the world. I became aware of this issue through my own observations and through reviewing the literature.

Further research made me realise that sense of place has multiple benefits that can improve the quality of our lives and can help to address a number of the issues of sprawl mentioned in 1.1 above. The literature and my research show that sense of place has value in the following areas:

- Our sense of belonging and well-being
- Our self-identity

- Resilience and sustainability
- Biodiversity
- Connection to our local community
- Connection to, and understanding of our landscape

Given these benefits, the focus of my research has now become; *"can landscape driven sense of place drive subdivision design without compromising on other urban planning criteria to produce subdivisions that address the issues of sprawl, as well as achieving the benefits associated with a strong sense of place that can improve our overall quality of life?"*

Before examining this, it is important to have a brief understanding of how current planning models address sense of place, why Christchurch has become so dominated by low density developments, and further background to the issues related to sprawl.

1.3 Current Planning Models & Sense of Place

There is a range of planning models that can be applied when designing a new housing development. Some popular models include Transit-Oriented Design (TOD), New Town and Smart Growth. However one model that builds on all of these is New Urbanism and this is becoming widely used in New Zealand and around the world (Winstanley, Thorns, & Perkins, 2003).

These models incorporate sense of place to differing degrees. New town planning principles have very little interest in sense of place; they are focused on formulas relating to efficiency of layout. TOD developments are an improvement on New Towns but still limit sense of place to conserving ecological networks and using indigenous planting. Like TOD, Smart Growth values natural resources but goes further to include "foster[ing] distinctive, attractive communities with a strong sense of place" (The National Centre for Appropriate Technologies, 2014) as one of their guiding principles. However, their method of achieving this is to "make new development[s] *conform to their standards* of distinctiveness and beauty" [emphasis added] (The National Centre for Appropriate Technologies, 2014). This does not sound as though Smart Growth is encouraging sense of place to emerge from what exists, but rather from what is enforced.

Finally, New Urbanism talks very strongly of sense of place. In the "charter of the New Urbanism" the Congress for New Urbanism speak of the challenge of "placeless sprawl", the need for "conservation of natural environments" and they send a call for urban places to be

"framed by architecture and landscape design that celebrate local history, climate, ecology and building practice" (Congress for the New Urbanism, 1996).

However, these principles of sense of place only touch on the obvious facets of place like climate, ecology and history; but they miss the deeper expression of place which is the intangible character that makes it unique. It may be for this reason that sense of place is often given a passing glance when it comes to designing new developments. Further to this, despite some recognition of sense of place in most of the models discussed above, sense of place is not given priority in the design process and therefore it gets lost. The key driver for TOD is transport; the key driver for Smart Growth and New Urbanism are compact communities. This being the case, what outcomes could be achieved if sense of place was the key driver for the design?

1.4 The Christchurch Context

1.4.1 Our Colonial Past

The prevalence of home ownership and the quarter-acre section is attributed to the Canterbury Association in the 1840's. Edward Wakefield and John Godley planned the layout and social makeup of the city from England. Purchasers had to be members of the Church of England and 'of good character' and land was sold at 'sufficient price' to raise capital which also ensured that those with limited means could be excluded. To the settlers, land held mystical and moral properties and the single, detached dwelling on a residential section of a quarter acre was considered virtuous and intended to avoid the ills of urban industrial England (Vallance, Perkins, & Moore, 2005).

A further influence was from the Romantic Movement which abandoned the city to worship nature. In the new colony of New Zealand, the contrast between city and country could be reconciled if the country could be incorporated into the town and hence the popularity of the residential quarter-acre section. These early views have influenced the urban form of Christchurch where the idea of the "Garden City" has come to represent Christchurch as a whole. Despite changes in policy, most New Zealanders are still deeply immersed in a culture that values low-density, suburban living (Vallance et al., 2005).

In an attempt to address this, the introduction of the Resource Management Act 1991 (RMA) limited greenfield land for development and new land subdivision rules meant that there was a boom in infill development in the late 1980s to early 1990s. However, continued demand for

larger sections and objections to the infill housing resulted in rural land being rezoned for residential development on the periphery of the city. The results have been substantial with large amounts of peripheral subdivisions and lifestyle blocks being developed while infilling continues to decrease. As observed by Vallance et al. (2005) children, pets and gardens paint the picture of the New Zealand way of life by those living in quarter-acre sections and these same people felt that infill housing goes against this way of life.

It is interesting to consider that the importance of morality and social standing initiated by Wakefield and Godley is continued in modern subdivisions through the use of advertising, covenants and pricing which are still used in such a way as to exclude certain factions of society. In discussing new urban design principles Winstanley et al. (2003) refer to Lehrer and Milgrom (1996) who argue that the sameness of housing design and construction produce a semiotic code of class and ethnicity:

> …culturally biased in favour of the dominant classes and races of the model period, and, therefore, constitute a formal control mechanism in determining the communities that will populate developments… (p. 182).

1.4.2 The Christchurch Earthquakes

A further influence on the Christchurch urban form comes from the earthquakes that struck in 2010 and 2011; these had a profound impact on the layout and growth of the city. On 4th September 2010 Christchurch was struck by a magnitude 7.1 earthquake which caused extensive damage, the majority of which was in residential areas in the east of the city. This earthquake was followed by a magnitude 6.3 on 22nd February 2011. This caused further damage to residential areas and extensive damage to the city centre. Large areas of the city have been allocated as "red zone" meaning that it is "unlikely to be suitable for continued residential occupation for a prolonged period of time" (Canterbury Earthquake Recovery Authority, 2014). Approximately 25% of the 4,000 central city buildings have been demolished including 50% of the heritage buildings (Collins, 2011; RadioNZ, 2011). This loss has been felt by residents throughout Christchurch and the loss of so many landmarks has left people disoriented.

With approximately 10,000 homes demolished as a result of the earthquakes, the loss of whole communities in the residential red zone has also left many people distraught (Simcox, 2011). As observed in a Christchurch study carried out by a University of Canterbury student "They are mostly frustrated with being split up from their community and having to leave

everything behind to start afresh elsewhere in the city. It is the idea behind adjusting to a new lifestyle post-quake that is most difficult for them to cope with" (Brook, 2012). It is further illustrated by the fact that based on the 2013 census, over half of all movements by people in areas that experienced high earthquake damage were within 4 kilometres of their original communities (Canterbury Earthquake Recovery Authority, 2014).

However, despite this wish to remain close to their old homes, the reality is that a lot of people have to move further away. Large portions of the east of Christchurch have been red zoned and as a result there is a wave of people moving to the west of Christchurch where soils are more stable and there was less damage from the earthquakes. To accommodate this migration Councils and developers are rolling out large volumes of sprawling, placeless subdivisions. What impact is this having on residents who have left a place that was full of meaning to enter a subdivision that is part of the "monotonous, unnourishing gruel" (J. Jacobs, 1961a)?

1.5 The Issue of Placeless, Sprawling, Subdivisions

It is widely recognised that following a disaster identity becomes increasingly important to people's well-being (Chamlee-Wright & Storr, 2009; Cho, Rodríguez, & Khattak, 2009; Kamani-Fard, Ahmad, & Ossen, 2012; Sims, Medd, Mort, & Twigger-Ross, 2009). The connection to the home environment is vital to our sense of belonging and people can experience a period of grief when they are displaced from their homes and communities. The quality of the new surroundings can have a significant impact on how long it takes people to adjust and recover from this disruption. This being the case, at this stage of Christchurch's history it is even more important to build high quality living environments reflecting a strong sense of place that people can identify with and attach themselves to.

Unfortunately, this is not the case in Christchurch and I will use the township of Rolleston (Figure 1) to illustrate this and the other issues associated with sprawl described above. Rolleston is a town approximately 25 kilometres from the city of Christchurch, and growth over a short period of time has resulted in a town dominated by large subdivisions of low density residential housing. This growth began in the 1990's and is continuing at an enormous rate in part due to the displacement caused by the Christchurch earthquakes. Selwyn is now the fastest growing area in NZ with a large portion of that growth occurring in Rolleston (Statistics New Zealand, 2013).

Figure 1 Rolleston Context Map

1.5.1 Land Use

Two main issues with land use are that sprawl often converts agricultural soils into residential development (Figure 2) and zoning separates land uses (Figure 3) creating inefficiencies and a greater spread of development across the landscape. The map in Figure 2 shows the dominant soil types of Rolleston with the central strip consisting of high quality soils (allophanic recent soils) of which there are very low quantities in NZ (Hewitt, 2012; Landcare Research, 2014).

Figure 2 Rolleston Soil Types
Source: Landcare Research

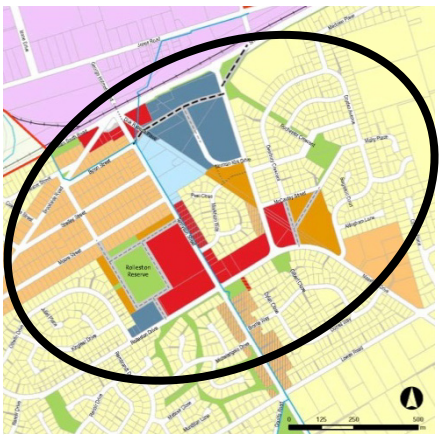


Figure 3 Rolleston Zoning Map
Source: Selwyn District Council

The dotted outlines on Figure 2 show the locations of new development and the circled area in the centre is the current Rolleston Township. This illustrates that the lowest quality soils on this map also have the lowest volumes of development.

1.5.2 Housing Types

High volumes of new housing in areas with restrictive covenants and council policy can result in a homogenous, sterile environment. The photos in Figure 4 and Figure 5 show a comparison between new housing in Rolleston and housing from the Christchurch red zone. Figure 4 shows houses in Linwood and Avonside that have a friendly frontage to the street, established trees, river outlooks and a range of house sizes and types. In contrast, Figure 5 is a typical new subdivision in Rolleston, it contains similar housing, garages and grass verges dominate the street front, the streets are almost empty and there are limited footpaths because they are likely to be too far away from amenities to walk there anyway. The earthquake has affected a broad range of communities which contained a wide diversity of people and housing types. Despite this, the majority of new housing that is being offered is of a single type of community with a single housing model; this either forces people into this environment or leaves them with nowhere to go.

Figure 4 Red Zone - Variety of design, friendly frontage, garage not visible, street trees

Figure 5 New Subdivision - Similar design, garage dominates, large set back, no street trees

A further issue is that these new developments produce larger and larger houses. The two graphs in Figure 6 show the change in average floor area compared to the change in household size over the last 40 years in New Zealand. The floor area per person has increased from 32sqm to 75sqm. With this comes higher material an energy use per dwelling. There are more options becoming available for building a smaller home but minimum house sizes in subdivisions restricts where these can be built and the choice around building coverage. For people who want a large garden and a small house there are limited options; likewise, for those who would prefer to live in an attached house with shared amenities.

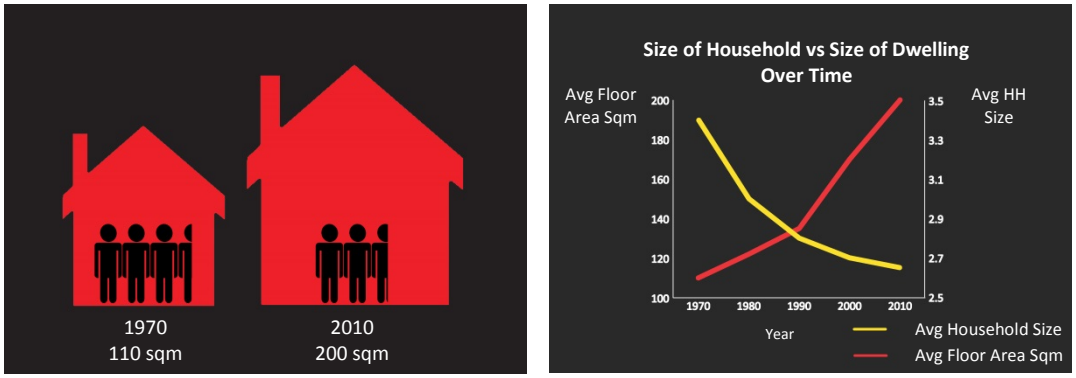


Figure 6 Change in dwelling and household size in New Zealand
Data Source: Statistics NZ and Housing NZ

This issue has been raised recently in the Christchurch Press which says that "In the midst of a housing shortage, greater Christchurch could be headed for a glut of big new homes" (McDonald, 2014). They say that the biggest shortage is for standard 3-bedroom homes rather than the larger, "fancy" homes specified in subdivision covenants which are unaffordable for a lot of people. Last year's census shows that 22% of all Canterbury homes have 8 or more rooms and that the largest of these are in the Selwyn district. There are fears that in the future people will be unable to sell these houses because they will be unaffordable for the younger generation; this is an issue that is already occurring in America where whole areas have been abandoned because people can no longer afford the costs associated with their homes and there is no-one to buy them (McCrone, 2013; McDonald, 2014). The building of these large homes has been blamed on increasing development costs which mean that developers have to build big to make money (McDonald, 2014).

This environment is repeated in towns and cities around the world and it begins with a generic master plan like the ones shown in Figure 7 (Christchurch subdivision plans) and Figure 8 (American subdivision plans). While the colours may change, the grid like forms of the sections, the form of the roads and the minimal green space remain monotonously similar.

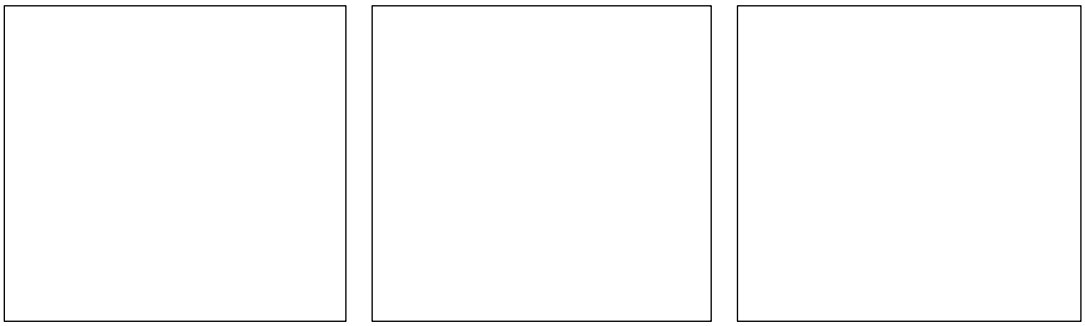


Figure 7 Standard Master Plans - Christchurch
Source: 1. Hughes Development, 2. CDL Land, 3. Prime Design

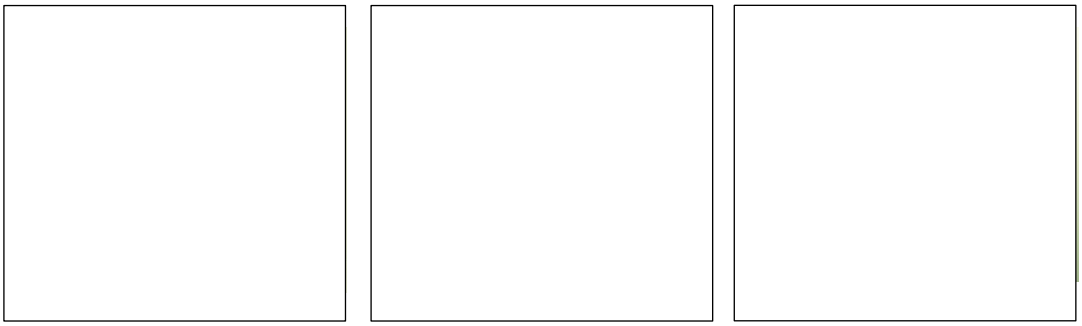


Figure 8 Standard Master Plans - America
Source: 1. Filinvest, 2. Robert Dyer blogspot, 3. Robinsons Homes

1.5.3 Streetscape and Public Space

As can be seen in Figure 5 in 1.5.2, and Figure 9 below, it is common for subdivisions to have wide roads, few footpaths, large housing set-backs and small (or no) street trees resulting in developments that are scaled for cars, not people. The dominance of garages and lack of windows facing the street means that there is little in the way of passive surveillance; this impacts on safety, security and community participation. This can make the streetscape an unwelcoming place to be.

Figure 9 Placeless Streets

The public open space is equally as generic and empty as the streets (Figure 10). There is very little to draw people into it and again to quote Jane Jacobs (J. Jacobs, 1961b) who rather scathingly says:

> …mush like this must be good for us, as long as it comes bedded with grass (p. 142)

The quantity of grass is the generic carpet of the landscape. The majority of public spaces in subdivisions consist of roads and footpaths, open green space tends to be small, generic and fragmented offering limited choice of activity; as a result they are often empty and provide little in the way of a community hub.

Figure 10 Placeless Public Space

1.5.4 Transport

The choice of transport options decreases the further out of the city you go. Bus services are extensive in the centre of Christchurch where density is higher but they taper off as density drops off and housing spreads out (Figure 11).

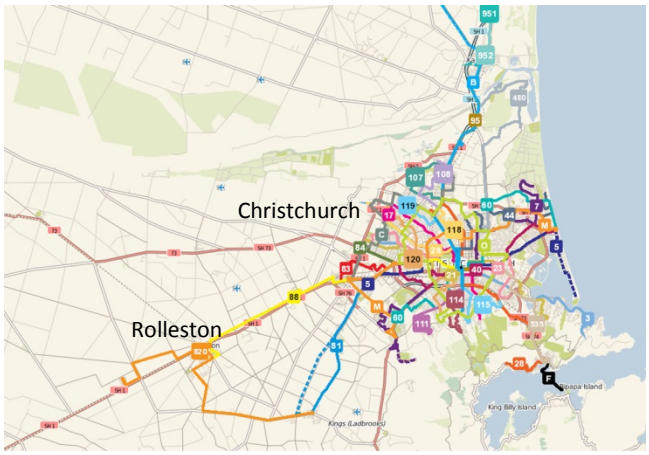


Figure 11 Christchurch Bus Routes
Source: Metroinfo

Figure 12 shows 5 minute walking circles to the bus stops in the Rolleston Township; it can be seen that a large portion of the existing town is outside of this zone as are new areas of development. Similar to Figure 12, Figure 13 shows a 10 minute walking circle from the central amenities; again illustrating that because the distance between houses and amenities is often large there is a reliance on cars even within the local community. As suggested above, subdivisions are generally designed for easy movement of cars with wide roads, cul-de-sacs and few footpaths making walking less attractive.

Figure 12 Rolleston 5 minute walking circles to bus stops

Figure 13 Rolleston 10 minute walking circle to centre

1.5.5 Infrastructure

New developments require a lot of new infrastructure to support them such as roads, public services, connection to power, water, phone and sewerage. The graphs shown in Figure 14 illustrate that costs associated with infrastructure in New Zealand are rising and this could be a reflection of the increased development that is taking place on the edges of New Zealand cities. This does not just pose an issue for the capital costs but also for the ongoing costs of maintenance which also fall to taxpayers to meet.

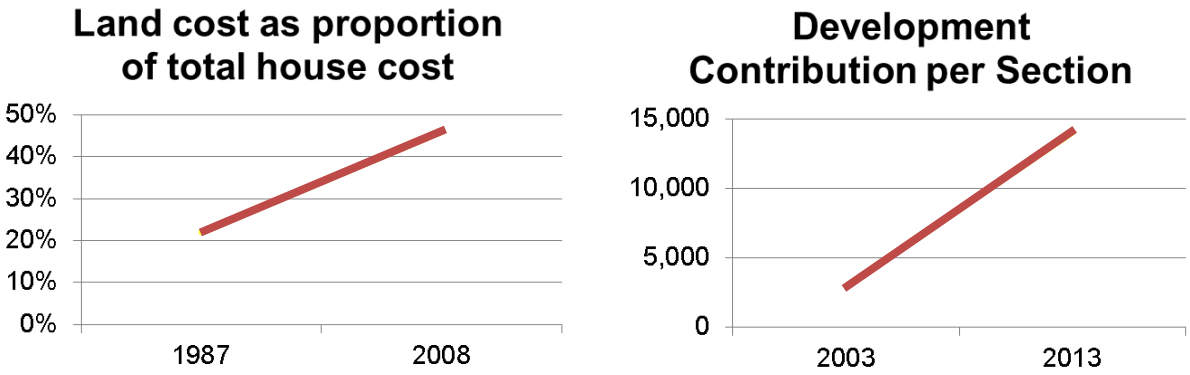


Figure 14 Graphs showing increasing development costs
Data Source: Ministry of Innovation & Business and Housing NZ

1.5.6 Sense of Place

Finally, sense of place is not well represented in new subdivisions as can be seen in these examples. There is generally very little within a subdivision that makes it distinct from the one next door or to give any clue as to which town you are in. It is uncommon for natural patterns or processes to be incorporated into the design; it is much more efficient to scrape everything away and start with a blank canvas. Due to the removal of established trees prior to development, landmarks are few as roofs tend to dominate the horizon. This combined with the curving streets that are common in subdivisions can add to a feeling of disorientation. Sensory cues within the subdivision are limited due to the similarity of the streets, terrain and housing.

The developments shown in these examples contain no evidence of unique qualities or a special character that would enable the residents to feel a sense of identity or connection with their neighbourhood. The last ditch gesture that developers make to try and distinguish their development from the next one is to erect an entranceway that provides a lonely landmark amongst the gruel (Figure 15).

Figure 15 Placeless Signage

1.6 Research Aims

This study seeks to determine whether subdivisions can be designed to reduce the issues of sprawl and at the same time reveal the unique qualities of their location in a meaningful way.

The key question is *"can landscape driven sense of place drive subdivision design without compromising on other urban planning criteria to produce subdivisions that address the issues of sprawl, as well as achieving the benefits associated with a strong sense of place that can improve our overall quality of life?"*

In order to answer this question it is necessary to determine:

1. What are the planning criteria?
2. What is landscape driven sense of place?
3. What is the value of sense of place?
4. Can sense of place drive subdivision design without compromising on other aspects of urban planning criteria?

1.7 Thesis Outline

To answer these questions the thesis will follow a similar structure to that outlined in the research aims. First Chapter 2 will briefly describe the methodology used to carry out this research. This is then followed by the literature review in Chapter 3 which introduces the theoretical basis for the urban planning criteria that are used later in the research. This review represents current thinking on the best practice of urban design including some of the conflicting opinions on these subjects. Chapter 4 digs deeper into the literature on sense of place to understand why it is worth researching in the context of subdivision design and what landscape architecture can bring to this. The chapter looks at the issues of placelessness, the meaning of sense of place and its value to society. Chapter 5 introduces a design process that prioritises sense of place as the key driver for subdivision design and discusses the challenges and opportunities associated with this approach. Chapter 6 then critically reviews the outcomes of the sense of place design process against a standard subdivision design to find out whether the research aims have been achieved i.e. *can landscape driven sense of place drive subdivision design without compromising on other urban planning criteria to produce subdivisions that address the issues of sprawl, as well as achieving the benefits associated with a strong sense of place that can improve our overall quality of life?* The answer to this question is yes it can and this is discussed in-depth in this chapter. Chapter 7 then concludes the thesis and suggests opportunities for further investigation.

Chapter 2

Research Methods

Swaffield and Deming (2011) have established a framework for classifying research methods used in the discipline of landscape architecture (Table 1). During the course of this research I have moved through a range of these methods including classification, interpretation, design projection and evaluation as highlighted in the table. These are discussed in more detail below.

Table 1 Research Methods

	Inductive	**Reflexive**	**Deductive**
Objective	Description	Modelling	Experimentation
Constructive	Classification	Interpretation	Evaluation & Diagnosis
Subjective	Engaged Action	Design Projection	Logical Systems

2.1 Literature Review (classification and interpretation)

The basis for my literature review is the second edition of Larice & Macdonald's *Urban Design Reader* (2013). This book contains a collection of classic and contemporary writings that are considered core to this subject (Araabi, 2014) and come from a range of disciplines including landscape architects, architects, urban planners and sociologists. The reader is made up of six parts which cover historical precedents in urban design, foundations of the field, the growth of a place agenda, design issues in urban development, addressing environmental challenges, and urban design practice now and tomorrow. This reader has been acknowledged by the *Journal of Urban Design* as "an appropriate text for urban design theory courses" and that current practitioners can also benefit from reading this text (Araabi, 2014). As such it provided me with an efficient and effective means of gaining an understanding of the broad scope of urban design theory.

To do this I identified chapters within the reader that were relevant to my research and I analysed these readings to determine the authors' frameworks. From here I looked for similarities so that I could see how the different theorists aligned and I organised these into themes. This helped me to see whether there were any urban design themes that had not been covered by the reader and where each theorist sat within these themes. Other chapters and articles that informed my research were also analysed according to this model.

2.2 Critique (interpretation and evaluation)

The purpose of critique is to open something out and reveal possibilities, bring forth a new reading or dimension, recognise a problem or establish a position (Bowring, personal communication, May 2, 2013). To bring forth these possibilities, I used the book *Architecture and Critical Imagination* by Wayne Attoe (1978), to develop a method for critique based on the outcomes of the literature review. I determined that the most appropriate method was to use a combination of normative and interpretative critique. The normative method relies on a model, standard or principle against which the quality or success of an urban setting can be assessed (Attoe, 1978). In contrast, interpretive criticism is highly personal; the critic acts as an interpreter for the viewer and attempts to mould their vision to make them see as the critic does (Attoe, 1978).

The reason for this mixed approach is to avoid the potential for the normative critique to be too quantitative, relying only on rules and measures to determine a successful outcome. By combining this with an interpretive approach, it enables the qualitative aspects of an urban setting to be considered as well. For example, when comparing two sites, the normative response to the question "does the development have street trees" might be "yes" for both; however, the trees on one site might be much better quality and quantity than the other site.

To create my set of measures I summarised the consolidated frameworks from my literature review into a series of criteria; one for each urban design theme with each criteria referenced back to its original authors (Appendix A). This gave me a list of criteria or attributes that – according to the literature – if these attributes are in place then the urban design would be a success. I then used these criteria to critique both proposed and existing developments as well as to generate design ideas.

2.3 Design Research (design projection and interpretation)

Swaffield and Deming (2011) define design research as that which "generates new possibilities through creative process, and subjects the outcomes to critical scrutiny and analysis" (p. 40). They go on to say that "design proposition is inherently active, engaged, situational and synthetic, and relies upon individual creativity, imagination and insight" (p. 40).

These activities outlined by Swaffield and Deming were key to the design research phase of this thesis. An existing subdivision site and context were used to generate numerous design iterations that explore a range of alternative scenarios and possibilities. The purpose of this exploration was threefold. First, it was to critique standard subdivision design; second, it was

to generate possibilities and test the theoretical and conceptual positions relating to urban planning; and third, it was to develop and test an approach which foregrounds landscape driven sense of place and explore how this might be achieved within the parameters of the urban planning literature.

Elizabeth Meyer considers that there are three key creative contributions of critical design research (McAvin et al., 1991):

1. it fosters precision of language;
2. it projects new directions;
3. it agitates for change

In order for critical research to have substance and wider implications Meyer argues that it needs to be carried out within "norms or codes upon which deviations or commentary can be measured and evaluated" (McAvin et al., p. 155). Margaret McAvin agrees that "significant design criticism in any mode…assumes a point of view situated within a theoretical infrastructure…" (McAvin et al., p. 155). The criteria established from the literature review provided me with the theoretical starting position and the "norms and codes" from which the design research could be evaluated. The criteria helped to drive the design exploration as well as being a means on which to measure and critique the design outputs.

Testing the design outcomes against Meyer's framework, design research enabled me to foster precision of language through applying and testing the criteria. It was necessary to be very clear about what the criteria really meant in terms of their influence on landscape form, so that the consequences of either aligning or deviating from them would be very apparent. Design research enabled me to project new directions by generating alternative outcomes for subdivision design that breaks away from the current mould. And finally, it agitates for change through illustrating that there are other ways to design subdivisions that meet a range of needs that standard subdivisions do not. This challenges people to reconsider the way future subdivisions are designed.

Through using the approach of designing, my research both evaluated existing conditions and generated new possibilities. For a field such as landscape architecture, designing is a research method which uses the discipline's own tools and techniques to create new knowledge. This design research process assisted with pushing through blocks and difficulties as they arose while attempting to move past the standard way of doing things to develop something new.

Chapter 3

Theoretical Framework

3.1 Introduction

This chapter introduces and explores relevant knowledge about contemporary urban planning and establishes the theoretical framework on which this study is based. As discussed in the methods section in Chapter 2, the investigation is centred on the *Urban Design Reader* (Larice & Macdonald, 2013) which contains a summary of key writings from a wide range of theorists and practitioners imbued in the field of urban design including landscape architects, architects, urban planners and sociologists. These include influential texts from people such as Ebenezer Howard, Jane Jacobs and Kevin Lynch through to more contemporary writings of Rem Koolhaas and Charles Waldheim.

Using the *Urban Design Reader* was an efficient and effective means of sampling a range of literature relating to approaches of urban design, I identified chapters relevant to my research, and analysed these readings to identify the authors' frameworks. In turn, these frameworks were used to identify key themes which were consolidated to get an understanding of the spread of ideas and similarities between the writers. This enabled me to develop a set of criteria that could be used in the next phase of research. Other literature that informed my research was also analysed according to this model.

As mentioned in Chapter 2, I have structured the urban design frameworks into a number of themes; in this chapter these themes have been organised into four categories. Section 3.2 Built Environment discusses density, built form, inclusivity and perception and highlights the strong level of co-dependency between these themes. Section 3.3 Identity shows the increasing importance that sense of place and experience play in any new development. Section 3.4 Orientation identifies how crucial the transportation network and legibility are to a future that can no longer depend on fossil fuels and how closely this is dependent on density. And finally, section 3.5 Resources discusses the strong link between built form, public space and resilience in creating a successful future.

These themes reflect the areas of focus that current theorists see as important in today's urban environment. Some theorists attempt to provide guidelines for all aspects of urban design while others hone in on one aspect that they consider to be most important. This

reflects a tendency by theorists to simplify urban planning issues, however it is important to note that while it is convenient to separate these aspects into themes; in reality these are overlapping with each of them influencing how the others perform.

3.2 Built Environment

3.2.1 Density

The literature on designing higher density urban form is extensive. The majority of writing on urban design includes some reference to density which illustrates how density impacts on nearly all aspects of urban development; this includes transport, built form, resilience, diversity, public space, legibility, health, sense of place and a sense of community. The majority of these writings are from disciplines outside of landscape architecture; furthermore, these theories tend to originate overseas and a large bulk of the writing on this subject relates to the United States of America (USA) and the United Kingdom (UK). New Zealand appears to have followed the USA model of urban development so some of these writings have relevance here.

Density is a difficult thing to define because as observed by Hall (cited in Lozano, 1990, p. 406) it is highly influenced by culture with different nationalities having different density preferences. Here in New Zealand 20 dwelling units per hectare (du/ha) is considered high density (Selwyn District Council (SDC) policy) whereas Bramley, Dempsey, Power, Brown, and Watkins (2009) from the UK consider 20 du/ha to be low density as do a large number of other cultures and theorists[2]. Some theorists suggest making a variety of densities available (Congress for the New Urbanism, 1996; A. B. Jacobs & Appleyard, 1987; Lozano, 1990; Perry, 1929) while attempting to avoid the two extremes of density (Lozano, 1990). Different levels of density have different trade-offs; providing a range of living environments enables people to make the trade-offs that suit their needs.

There is a strong body of theory that supports a higher density model rather than the current condition of sprawl (Beatley, 2008; Congress for the New Urbanism, 1996; Howard, 1902; A. B. Jacobs & Appleyard, 1987; J. Jacobs, 1961b; Lozano, 1990). It is argued that higher density can improve access to public transport and amenities, better land use and an enhanced sense of

[2] Examples of recommended densities by other theorists (dwelling units per hectare):

Ebenezer Howard (1902)	England	30	Ideal
Clarence Perry (1929)	America	36-210	Low to high
Allan Jacobs & Donald Appleyard (1987)	America	37	Minimum
Eduardo Lozano (1990)	Argentina	30-247	Minimum to maximum

community. Even Ebenezer Howard, who is thought by many to have been the instigator of sprawl, recommended a density of 79 people per hectare[3] (Howard, 1902). He, like many others, recognised that density is a key aspect in creating healthier, more self-reliant communities (Beatley, 2008; Congress for the New Urbanism, 1996; Frank, Engelke, & Schmid, 2003; Howard, 1902; A. B. Jacobs & Appleyard, 1987). However, a number of the theorists who support higher density are often accused of being nostalgic and trying to apply models from the past that are no longer relevant to our current cultural conditions (A. B. Jacobs & Appleyard, 1987; Scheer, 2010).

Some of these critics offer another body of theory that suggests that we accept sprawl based on the argument that there is very little we can do to stop it (Koolhaas, 1994; Richardson & Gordon, 2000; Waldheim, 2006). Koolhaas (1994) suggests that the "generic city" reflects our contemporary society and that rather than trying to re-engineer society towards some mythical ideal outcome, we should try to find virtue in the places of the present. Waldheim (2006) agrees with this and suggests that landscape's vast scale supports the contemporary approach of low density living and therefore makes landscape the ideal organizing element of the contemporary city. While there are some virtues to these views, the issues of providing adequate public transport and access to amenities in a future where resources may be scarce suggests that this model is unfeasible (Beatley, 2008; Newman, Beatley, & Boyer, 2009).

These arguments raise a question for designers; do we embrace our current conditions of sprawl and find ways to work within them or do we continue to fight against it in an attempt to achieve an alternative outcome (Larice & Macdonald, 2013)? Following on from the views of Charles Waldheim, can landscape architecture contribute more towards the urban design discourse on density and bring a new perspective to this issue?

3.2.2 Built Form

Urban design theory shows that the quality of the environment and the ability to provide for both density and diversity is significantly affected by the built form (J. Jacobs, 1961b; Lozano, 1990; Talen, 2008; Vallance et al., 2005). Both historic and contemporary writings recommend the provision of a variety of housing types, an environment that feels safe and is human in scale, maintains a sense of privacy while still encouraging community interaction and enables access to sunshine.

[3] This is the equivalent of 30 hh/ha using the NZ average of 2.6 people her household.

Incorporating a variety of densities and housing types into a development provides options for people who have different needs thereby bringing a range of people into the community (J. Jacobs, 1961b; Perry, 1929; Talen, 2008). For example, a detached house provides maximum privacy and control but is more expensive, compared to a row house which enables greater community interaction and access to services but less control over their environment (Bramley et al., 2009; Lozano, 1990). However, new developments tend to provide a single housing type which attracts a specific group of people thereby excluding those from different cultural and socio-economic groups (Winstanley et al., 2003). This is further exacerbated by the increasing house sizes which cost more to build and run (Rees, 2009). As discussed in chapter 1, New Zealand houses have almost doubled in size since the 1970's despite the people per household dropping by almost 50%.

To encourage community participation along with other desirable activities such as the use of alternative forms of transport, it can help to have a built form that feels safe and is human in scale (Bartlett, 2001; Kelbaugh, 2002; Rees, 2009; Talen, 2008). As Kelbaugh (2002) explains, "boundless architectural and urban space has less nearness, less presence. Limits are what differentiate place from raw space" (p. 303). Human scale helps improve the pedestrian environment and can bring more people into the public arena. While Howard (1902) and Perry (1929) had the good intentions of protecting people from over-crowding, pollution and traffic, their models were not human in scale and influenced many of the car-scaled landscapes which we are struggling with today (Gehl, 2010; A. B. Jacobs, 1993; A. B. Jacobs & Appleyard, 1987; J. Jacobs, 1961b; Kelbaugh, 2002; Lozano, 1990; Rees, 2009).

Enabling passive surveillance in the built form can also improve the sense of safety and self-care within the neighbourhood which is further accentuated through the increase of people on the street (J. Jacobs, 1961b; Talen, 2008). It follows from this that the transition between public and private zones is important to maintain a sense of privacy while still encouraging community interaction (Lozano, 1990; Vallance et al., 2005). In a Christchurch study it was determined that the two most important factors for residents were privacy and access to sunshine (Vallance et al., 2005). However, despite a lively streetscape being promoted as one of the benefits of higher density, in this same study people communicated their dislike of the increased activity on the street saying that they preferred a quieter neighbourhood.

Jane Jacobs (1961) argues that privacy in a dwelling is easy to achieve, it is privacy in the public arena that is at risk. Jacobs explains that if there is a concentration of people from a range of backgrounds, residents can satisfy their need for people contact while retaining a certain

amount of privacy and anonymity; but if there are few people in public spaces then it becomes uncomfortable. In this situation Jacobs suggests that people will either cut themselves off or become very selective about whom their neighbours are. The Christchurch study completed by Vallance et al. (2005) supports this view. Jacobs suggests that a built form that supports a minimum density and diversity of people and provides reasons for being on the street such as retail and community amenities can help with this.

In contrast, Winstanley et al. (2003) suggest that new technologies are doing away with the need for the public realm to be located in a physically bounded space and suggest that this is not taken into account in contemporary design. I would question whether technology is taking away our need for a public life or whether it is a substitution in response to the declining quality of built form. Historically architecture has provided the building blocks of the built form with urban designers and architectural theorists providing recommendations for placement, size and use of buildings to improve the urban environment (A. B. Jacobs & Appleyard, 1987; Kelbaugh, 2002; Koolhaas, 1994; Lozano, 1990). But what if landscape created the framework for the built form, intrinsically leaving the mark of that place on all that follows (Hough, 1990; McHarg, 1967; Waldheim, 2006)?

3.2.3 Inclusivity

A number of theorists compare a city to an ecological system and McHarg (1967) makes the observation that a system that is simple, uniform, has a low number of species and high uncertainty is dying; whereas a complex, diverse and stable system is healthy and evolving. This is a key indicator of our current cities which are becoming increasingly homogenous.

There are two aspects of inclusivity which can help address this homogenous state. The first encourages a built form that enables a diverse range of people to live in a community, as opposed to one that meets the needs of a select group. The second is related to the ability of people to participate in their community and the level of autonomy that people have within their environment of subdivisions. Currently these are not well met in the built environment. New subdivisions tend to target a certain social group to the exclusion of others and within these communities the environment is strongly controlled through the use of covenants and privatisation (Madanipour, 2010; Winstanley et al., 2003).

Providing a range of housing types and different levels of density can help people to find a living environment that suits their needs (Congress for the New Urbanism, 1996; J. Jacobs, 1961b; Lozano, 1990; Perry, 1929; Talen, 2008). These needs may arise from a range of

circumstances including life stage, financial means, family type, culture or health. This increases the diversity of people who are able to live in an area and can have flow on effects to the commerce and street life of a community (A. B. Jacobs & Appleyard, 1987; J. Jacobs, 1961b). Through providing this range of living environments different social and cultural groups are acknowledged as important and help to strengthen our society.

Further diversity can be encouraged and acknowledged through the provision of communal facilities. These provide places for people to come together and interact as well as provide for those cultures that are based on a philosophy of community rather than the western philosophy based around the individual. However, the goals associated with creating an environment for all are both individual and collective and as such they are frequently in conflict. A. B. Jacobs and Appleyard (1987) suggest that the more a city promises the individual the less it seems to have a public life. They consider that a good urban environment is one that balances these goals "allowing individual and group identity…remaining open to outsiders while sustaining a strong sense of localism" (A.B. Jacobs & Appleyard, 1987, p. 224).

However, while on one level the focus is on the individual, the built environment has taken on a group identity through pressure to conform to a single community aesthetic. The Congress of New Urbanism (CNU), and to a lesser extent Gordon Cullen, feels that it is important for planners to have a tight control over the design and visual quality of communities. In contrast, there are a growing number of theorists who believe that it is important for people in the community to feel a sense of control over both private and public space, including participation in the design and development of these areas, the ability for self-expression, the temporary appropriation of these spaces and a shift of power between professionals and the community (Crawford, 2008; Hough, 1990; A. B. Jacobs & Appleyard, 1987; Lynch, 1981; Madanipour, 2010).

Further issues of gentrification and discrimination can undermine these efforts to create diverse communities. In a Christchurch study it was shown that even different house types could create feelings of separation between groups; that those who live in a townhouse rather than in a suburban house and garden are "not like us" (Vallance et al., 2005). The study highlights the importance of recognising historically embedded conventions when making changes to urban form and the potential impact on the sense of place associated with these changes.

As an alternative to a planned environment, landscape architect Michael Hough (1990) recommends doing as little as possible. He says that "the greatest diversity and identity in a place…comes from minimum, not maximum interference" (p. 531). He suggests providing a structure that will encourage the development of diversity and then "let natural diversity evolve on its own where it will" (p. 532). By allowing this to happen, the true essence of a place has the opportunity to develop rather than being predetermined. Unlike models such as New Urbanism, the medium of landscape can support this process because wild landscapes also evolve in response to place. Given these attributes, can landscape centric design create the structure recommended by Hough to enable an environment that encourages diversity without resorting to social engineering?

3.2.4 Perception of Density

A key aspect of density is perceived density; depending on how an area is designed it can give the impression of being a higher or lower density than it actually is and as mentioned above, people will have different preferences for that level of density (Buys & Miller, 2011; Hester, 2006; Lozano, 1990; Sivam, Karuppannan, & Davis, 2012). A further aspect to this is the confusion between high-density and crowding (Hester, 2006; Lozano, 1990); sprawl is partially a reaction to the over-crowding that occurred during the industrial period and that stigma has attached itself to the term high-density. Lozano (1990) defines density as the ratio of people or dwelling units to a land area and is a quantitative measure whereas crowding is the ratio of people to dwelling units or rooms and is highly subjective.

The perception of density can be influenced by a number of factors including a person's level of control over their environment, the configuration of the built form and the outlook from the dwelling. According to Lynch (1981) the ability to exert control over an individual's environment is an important dimension to a successful city. It is suggested by the literature that the level of privacy and quantity of people in the area should enable an individual to maintain their behavioural freedom, exert control over their social and physical environment and control their visual and auditory interaction. When these things are threatened people can begin to feel crowded (Buys & Miller, 2011; Hester, 2006; Lozano, 1990). In modern subdivisions these factors are usually controlled by building guidelines and covenants leaving residents with very little control to manage these factors themselves. Covenants tend to reinforce the importance of property boundaries and private space without offering residents the opportunity to negotiate these social configurations on their own.

This issue of control was highlighted recently in an article in a Christchurch newspaper called *Strict Rules of Canterbury's Subdivisions* where they highlighted the concerns that some people have about the level of control wielded by property developers (Dally, 2013). The author made the following comment:

> Want to paint your house purple, own three cats and fix up a vintage car? You may not be welcome in many of Canterbury's subdivisions, where uniformity trumps creativity in the lifestyle stakes (Dally, 2013).

They observed a number of common themes emerging such as use of particular building materials, keeping washing out of view and not owning certain breeds of dog. Other covenants include letterboxes that are consistent with the house in design, colour and cladding, and no relocating of any fence, tree or shrub without the vendor's written consent (Dally, 2013). The covenants for the Faringdon subdivision in Rolleston are similar to these and state that "All approvals or consents required by these Covenants shall be in writing from Faringdon…and *shall be given or refused in the sole, absolute and unfettered discretion of Faringdon*" (Hughes Developments, 2012) [Emphasis added]. These covenants control where fences can, can't and must go; how high they are and what materials are used. Letterboxes cannot be erected without prior approval of the developer (even the lettering), and no reused or recycled materials are allowed.

As already mentioned, a Christchurch study showed that the two most important factors for residents is privacy and access to sunshine (Vallance et al., 2005). However, these feelings could be exaggerated due to the inability of residents to control other aspects of their environment as described above. In the face of such limited control residents perhaps cling to the policies that legitimise their right to privacy and sunshine and resent it when these get put at risk. Due to the level of subjectivity surrounding these factors, there is benefit in having a flexible built environment that can provide a variety of living options. This enables people to make their own decisions and trade-offs, perhaps reducing the overzealous protection of just a few aspects.

In contrast, while, Vallance et al. (2005) agree that the built form influences perception they feel that planners put too much emphasis on the biophysical aspects of the built environment and "ignore the historical and sociocultural aspects of urban life" (p. 715). They further argue (when speaking about Christchurch) that resident's interpretations of infill housing and compact cities "cannot be separated from the cultural history that has emphasised the virtues of suburban or low-density urban living" (p. 716). As such, the benefits of compact living

which are promoted in urban planning literature such as increased safety and activity on the street, may not be considered of benefit by those who live in that environment.

3.3 Identity

3.3.1 Sense of Place

When discussing place-based design McHarg (1967) made the following observation:

> Cup is form and begins with the cupped hand. Design is the creation of the cup…never denying its formal origins (p. 524).

He goes on to say that in the arbitrariness of landscape architecture designs:

> We could not see the cupped hand as giving form to the cup, the earth and its processes as giving form to our works (p. 524).

Observations such as these led designers and theorists to push back against what is seen by some as the increasingly homogenous designs resulting from the modernist period with no connection to location or form (Hough, 1990; A. B. Jacobs & Appleyard, 1987; Koolhaas, 1994; Norberg-Schulz, 1976). To counter this trend designers are looking to the local context with a focus on patterns and processes, orientation and legibility and identification and belonging to create something that is of that place.

There is a variety of approaches that are taken to achieve this. Some look to historical methods that have worked well in the past (Congress for the New Urbanism, 1996; Hough, 1990; McHarg, 1967; Scheer, 2010). However if it comes to replicating the past it has been argued that this can be just as placeless as modernist design because it is not responding to our current cultural conditions (A. B. Jacobs & Appleyard, 1987; Koolhaas, 1994; Scheer, 2010). Koolhaas (1994) questions this postmodern approach; he asks: while the generic city might be "placeless" is attempting to "create place" just as contrived and artificial?

Both Koolhaas (1994) and Crawford (2008) believe that it is important to have a full understanding and acceptance of the life that takes place in a community before attempting to change it. This highlights the fact that sense of place is often intangible and does not have to be a physical representation of a *thing*. The natural, social and cultural processes of a region can assist in creating an environment that is authentic and retains those aspects that are most important to those who live there without attempting to recreate something arbitrary (Hester, 2006; Hough, 1990; McHarg, 1967). By utilising the natural processes of the landscape it can enable the essence to show through and the earth and its processes to give form to the design (Hough, 1990; Kelbaugh, 2002; McHarg, 1967). Through following this approach we can

perhaps prevent the pitfalls of trying to “create” a place, but rather, let an authentic sense of the place grow from what is already present.

If sense of place can be achieved in this way it will also retain those aspects that are important to orientation and legibility. As Lynch explains, different cultures have developed systems of orientation which are often derived from a given natural structure. It is suggested that to gain a sense of security individuals need to be able to orient themselves through a combination of spatial structures and environmental character. When these elements are weak it can create uncertainty and make orientation difficult (Lynch, 1960a; Norberg-Schulz, 1976). According to A. B. Jacobs and Appleyard (1987) a legible and authentic city is one where the origins and contents are clear, where the city is a readable story and people understand where they are and where they are heading. However, in an environment where places are built with no consideration of what exists, these means of orienting ourselves become eroded along with our identity with our surroundings.

It is argued by some that the identity of a person is defined in terms of their surroundings and their perception of the world that is accessible to them (Norberg-Schulz, 1976). Human identity is therefore strongly linked to the place that they belong and their ability to orient themselves within that place. Opportunities to establish meaning and identity with the city enable us to feel a sense of belonging; and the quality of the character of that place - the material substance, shape, texture and colour - impact on the strength of that relationship (A. B. Jacobs & Appleyard, 1987; Norberg-Schulz, 1976). Yet despite this understanding of sense of place, there is a tendency for developers to continue with the post-modern approach of “creating” places or to ignore sense of place completely. If the theorists are correct, this ongoing degradation of our living environment is going to have a significant impact, not just on our connection to place but our connection with ourselves.

3.3.2 Experience

Sense of place and identity can be further enhanced through the use of experience. It can be easy to switch off as we move through our daily lives; rather than engaging with our surroundings we go into auto-pilot, particularly when our surroundings don’t capture our imagination. By incorporating elements of mystery, surprise and opportunities for interaction we can greatly enhance our experience of moving through the landscape.

Sensory cues such as vision, smell, sound, touch, kinaesthetic and gravity can all assist with way-finding as well as improving our experience of moving through space (Lynch, 1960b).

These cues can produce an emotional response as we instinctively react to the changing position of our body in its environment (Cullen, 1961). If this occurs within a structured framework, changes between existing and emerging views, changing levels, aspects of exposure and enclosure, height and width and rhythm can produce enjoyable, stimulating and sometimes challenging experiences. In these and other ways Cullen (1961) suggests that effects can be created through the relationship between here and there; a sense of identity coupled with an awareness of "somewhere else" (Lynch, 1960b; Norberg-Schulz, 1976). This further enhances the idea of sense of place because; in order to have an awareness of somewhere else there has to be somewhere that is different from here. The continuing development of placeless subdivisions and the conversion of the particular into the generic can reduce our ability to orient ourselves in this way.

A. B. Jacobs and Appleyard (1987) argue that people should have the ability to expand their experiences in their own city; to have access to opportunity, imagination and joy, where they can break from traditional moulds, learn from other viewpoints and have fun. They suggest that the city is a theatre where people can react to moods, lights and fantasy, and encounter the truly exotic (A. B. Jacobs & Appleyard, 1987). This can be further influenced by incorporating different temporalities that influence everyday life. Changing rhythms of nature, the linear time-measured schedules and the temporary and spontaneous moments can all be enhanced and incorporated into the design of spaces to create experiences for interest, way finding, learning and joy (Crawford, 2008).

In a similar vein, Hough (1990) also looks for the possibilities that design can generate for people to learn about places through experience. This could be through the natural processes of a region such as weather or seasons; or through the social processes that exist such as traditions or local habits. This form of design can help to educate users about the environmental or cultural significance of a place resulting in normally overlooked or undervalued landscapes becoming memorable and cared for (Hough, 1990). But can these elements in fact be "designed" or are they the result of other factors such as increased diversity and greater autonomy; do these experiences in fact develop over time as part of the special character of a place?

3.4 Orientation

3.4.1 Legibility

Legibility has strong ties with experience and sense of place. If a place is clearly legible it is likely that its sense of place is also well articulated (A. B. Jacobs & Appleyard, 1987). In this sense legibility can refer to how the unique local conditions are reflected in the built form which further assists legibility for movement. This can be enhanced through the use of clear boundaries and thresholds combined with sensory cues within an overall framework.

Understanding when you arrive at or exit a place helps to establish a sense of location and movement through the landscape. Boundaries through a town or city tend to be most effective when they are welcoming, permeable and distinct while still retaining a sense of belonging to the wider landscape (Congress for the New Urbanism, 1996; Cullen, 1961; Howard, 1902; Lynch, 1960b; Madanipour, 2010; Norberg-Schulz, 1976; Perry, 1929; Talen, 2008). To further assist movement and legibility Hester (2006) recommends a neighbourhood size of approximately 10-30 households. This is further supported by Alexander, Ishikawa, and Silverstein (1977) and Downton[4] (personal communication, July 7, 2012). However, in his writing *A City is not a Tree* Christopher Alexander appears to take an opposing view to the creation of distinct neighbourhoods. Alexander (1965) talks about the benefits of overlapping neighbourhoods where amenities are used by different people both inside and outside the official boundaries and points out that defining areas as neighbourhoods can limit these multiple uses.

Thresholds and sensory cues help to create a transition from one neighbourhood to the next or between public and private spaces. These transitions make the movement through space less abrupt by providing cues to change and helping people to determine where they can and cannot go (Lozano, 1990; Lynch, 1960b). Visual cues such as fences, paving changes and colour can assist with the legibility of a space. These can be assisted further by sensory cues such as smell, touch, kinaesthetic and gravity – scented plants, the smell of a bakery or coffee shop, changes in surface under foot or level changes can all help to indicate the entry into a different realm (Cullen, 1961; Lynch, 1960b).

[4] Downton – developed the co-housing development called Christie Walk in Adelaide, Australia. He is interested in urban fractals and he believes that 10-30 households is the traditional size of a tribe and therefore the ideal size for a pocket neighbourhood.

For these elements of boundary, threshold and senses to be most effective it is important that the overall framework is well structured, and well connected, with few empty spaces. The path between two destinations can seem very long if a person must move from one to the other with almost nothing to guide them (Calthorpe, 1993; Lynch, 1960b). Lynch's (1960b) framework of path, landmark, edge, node and district continues to provide a good basis for legibility. However, while these methods are helpful for improving the legibility of a place from a wayfinding perspective, they can easily become generic responses losing their connection with the local conditions and their contribution to sense of place.

3.4.2 Transport

When considering legibility and orientation it is becoming common to cater for multiple transport methods. Being reliant on one main form of transport can put communities in a vulnerable position (Lynch, 1981). Following the Second World War the motor vehicle has become the dominant mode of transport and as a result it has been prioritised in the design of public space. However, current trends are moving away from designing for the car in preference of designing for pedestrians, cyclists and public transport.

The scale when designing for a car is very different than the scale for people. When designing for motor vehicles, large distances, wide roads and low visual detail are preferable. However, travelling by foot in those same spaces make travel times long, boring and often unsafe. There is a strong trend in returning public spaces to the human scale where density is higher, streets are narrower, there is activity with spaces to stop and blocks are smaller to enable ease of movement. As well as encouraging people to walk rather than to take their car it increases the activity on the street improving community connections, safety, health and well-being (Beatley, 2008; Calthorpe, 1993; Congress for the New Urbanism, 1996; Frank et al., 2003; Gehl, 2010; A. B. Jacobs, 1993; J. Jacobs, 1961b; Newman et al., 2009). However, this does not always work in practice. In a Christchurch study on attitudes to urban infill, it was discovered that while people did not need to use their cars as much as previously they still continued to use them. As a result, the increased people meant increased vehicle activity which was perceived negatively by the residents (Vallance et al., 2005). This illustrates the risk of changing things in isolation of other factors – it is not enough to increase density to change people's transport habits; further design is needed to assist with this as well.

Through designing human scale, highly connected public space for pedestrians, cyclists and public transport the ability to travel by car becomes less and less convenient. Narrow roads,

more intersections and lots of pedestrian movement slow cars down and make manoeuvring more difficult. Combined with providing fewer parking spaces it starts to become more convenient to use other methods of movement (Beatley, 2008; Calthorpe, 1993; Congress for the New Urbanism, 1996; Gehl, 2010; Rudlin & Falk, 2009). These changes, as well as encouraging better travel habits can also contribute to a community's sense of place through building stronger community connections and gradually improving the local environment.

Where public spaces are designed for pedestrians they will generally be good for cyclists as well, however cyclists do have some specific requirements. Providing clearly marked cycle lanes helps improve safety for cyclists particularly when they are separated from cars and are given priority at intersections; Copenhagen and the Netherlands are great examples of this. Providing quality bike stands at key locations and transit stops encourages the use of bikes and their integration with public transport (Calthorpe, 1993; Gehl, 2010). The use of public transport can be further encouraged through easy access to transit stops, providing a good waiting experience and making it more convenient than the car (Beatley, 2008; Calthorpe, 1993; Congress for the New Urbanism, 1996; Newman et al., 2009).

The literature on this subject does not talk about creating transport systems that respond to the local landscape or existing patterns, but this too can contribute to the sense of place of a community.

3.5 Resources

3.5.1 Public Space

Public streets and markets used to be a focal point for trade, politics, performance, entertainment and socialisation. However, as our lives have become increasingly private the use and meaning of public space has changed, itself becoming increasingly privatised (Madanipour, 2010). This has been exacerbated through the removal of people from the streets into designated public spaces to make streets more conducive to traffic movement (A. B. Jacobs & Appleyard, 1987; J. Jacobs, 1961a). With the majority of travel occurring in private cars and more of our needs being met in our own homes, both streets and parks are becoming devoid of people. This can reduce safety and erode our sense of community. J. Jacobs (1961b) was one of the first to raise these issues and they have continued to be debated; some suggest that we need to reclaim the streets for pedestrians while others suggest that public space needs to be made accessible to all.

When people think of public space they often think of a local park, playground or public square, however the streets are also public space. A. B. Jacobs (1993) has calculated that in the USA streets can be as much as 25-30% of the built form and yet the majority of this space is dedicated to traffic movement rather than its social potential. Good streets provide opportunities for exercise, transport, community identity, socialisation, business, performance, participation, building trust and tolerance. However, for these things to happen streets need to be appealing, comfortable and safe, and contain a certain level of activity (Frank et al., 2003; Gehl, 2010; A. B. Jacobs, 1993; J. Jacobs, 1961a, 1961b). J. Jacobs (1961b) agrees that public space in the form of parks and squares is important to a town but that they need to be an extension of the activity on the street, not a substitute for it. Jacobs is concerned with the use of parks as a method of tidying people away so that streets can be more efficient for cars. Furthermore she fears that without the activity on the street parks also become empty and unsafe, providing opportunities for people to engage in unsociable behaviour (J. Jacobs, 1961a).

Madanipour (2010) is particularly concerned about the increasing privatisation of public space. He proposes that a place cannot be called public unless it is "…equally accessible to everyone, irrespective of their physical abilities, age, gender, ethnicity, income level and social status…" (p. 457). However, gentrification and privatisation of public space has narrowed the range of groups who can use these spaces often judged by their ability to pay. Crawford (2008) has a different view; she suggests that even though traditional public space may no longer be democratic, people find new places to appropriate where they can still enjoy a sense of autonomy even if only for a temporary period of time. Crawford believes that the perception of loss results from extremely narrow and normative definitions of public and private that derive from an insistence on unity and a desire for fixed categories of time and space. Crawford (2008) talks about a third space – apparently empty of meaning, it bears the possibility of new meanings activated through social action and imagination "appearing, reappearing, or disappearing within the rhythms of everyday life" (p. 354). This point made by Crawford can be seen in Christchurch through organisations such as GapFiller[5]; temporary use of space can add excitement and interest to an area that might otherwise be depressing if left empty. They provide opportunities for people to express themselves who might otherwise not have the resources to do it and through this they can add something special to the neighbourhood. However, it seems important that these temporary spaces be supplements to other permanent forms of public space rather than the only option; if they are the only option

[5] A Christchurch group who assist others to set up temporary activities in empty sites around the city.

they could be dissatisfying. As such, I don't agree entirely with Crawford's viewpoint as it seems unequitable for the less advantaged people of the city to have access only to these temporary places and not the more developed sites.

3.5.2 Resilience

With the expected impacts of climate change and peak fossil fuels it is increasingly important to build resilience into new developments (Buys & Miller, 2011; Newman et al., 2009). Allan and Bryant (2011) suggest a good definition of resilience for designers is:

> …the capacity of a system to absorb disturbance and reorganise while undergoing change so as to still retain essentially the same function, structure, identity and feedbacks (p. 39).

To achieve such a system requires a number of attributes, many of which have been recognised and utilised throughout history, but not necessarily under the title of "resilience" (Howard, 1902; Lynch, 1981). These attributes can be summarised under a modified version of the framework utilised by Allan and Bryant (2011) which include diversity, modularity and autonomy, feedbacks and open systems, ecosystem services, natural systems, and redundancy and access.

Diversity of people and resources are essential for resilience (Allan & Bryant, 2011; McHarg, 1967; Talen, 2008). Diversity of people ensures that there are a range of skills and attributes within a community and diversity of resources means there are multiple options for survival and recovery. In the case of an emergency, quality public open space is an important attribute which can provide a place of refuge, community support and access to community resources and information (Allan & Bryant, 2011). Public open space can be in the form of streets, public squares and local parks each of which can perform a different function. High quality local parks provide resources such as a water supply, toilets, a viewing point, flat land for camping and are close to people's homes. Streets can be used as collection points, temporary shops, temporary infrastructure and spaces for cooking (Allan & Bryant, 2011).

A degree of modularity and autonomy is vital for a resilient community (Allan & Bryant, 2011). Independent infrastructure, multiple transport options, a variety of local jobs, businesses and services, along with access to local agriculture, a local water supply and community services enable a community to support themselves in the event of a disaster (Allan & Bryant, 2011; Congress for the New Urbanism, 1996; Howard, 1902; A. B. Jacobs & Appleyard, 1987; Lynch, 1981; Newman et al., 2009). Small neighbourhoods with distinct boundaries assist with

creating modularity; it has been shown that following disasters people instinctively establish barricades to create distinct communities within which to function and survive (Allan & Bryant, 2011). In a centralised system where people live and work in different locations, where they are reliant on cars for transport and dependent on supermarkets for food and the government for infrastructure then communities are helpless with little they can do but to wait for the assistance of others.

The resilience attributes of tight feedbacks and social capital are closely linked. Tight feedbacks enable communities to respond and adapt quickly to a disturbance (Allan & Bryant, 2011). Social networks assist this feedback to travel quickly and the strength of these networks determines the capacity of people to respond together. It is too late for these networks to develop once a disaster has struck, therefore it is important to design communities that support these networks (Allan & Bryant, 2011). Integrated activities, an active streetscape and distinct neighbourhoods enhance and encourage a healthy public life (Frank et al., 2003; Gehl, 2010; A. B. Jacobs, 1993; J. Jacobs, 1961b).

The resilience of a community can be enhanced through designing for ecosystem services and taking account of local natural systems (Allan & Bryant, 2011; Beatley, 2008; Hough, 1990; A. B. Jacobs & Appleyard, 1987; McHarg, 1967; Newman et al., 2009; R. Weller, 2008). If the design fits the site and is driven by natural landscape processes it can assist with water collection, waste water and stormwater management (Allan & Bryant, 2011; Beatley, 2008; Newman et al., 2009; R. Weller, 2008). By having a good understanding of the site it minimises unpleasant surprises; areas that flood can be utilised or avoided and emergency areas can be designed to remain dry (Allan & Bryant, 2011; Hough, 1990; McHarg, 1967; Waldheim, 2006). This helps users to better understand the landscape and makes management easier through working with the landscape rather than against it.

Building redundancy into a community is extremely important when it comes to resilience (Allan & Bryant, 2011). Redundancy means that if something is damaged or inaccessible there are other resources that can meet those needs (Allan & Bryant, 2011). For example, ensure that there are multiple access points with well-connected streets so that if one becomes blocked there are alternatives. Access can be the difference between a slow or a fast recovery. Other redundancies to consider include local and widely dispersed ecosystem services (food from urban gardens, multiple sources of water) and local urban spaces (parks, streets, squares) (Allan & Bryant, 2011; Hester, 2006; Howard, 1902).

The very nature of designing for resilience requires an in-depth understanding of the landscape and community. Through this understanding systems can be developed that respond to local conditions and as such, this cannot help but build the local sense of place.

3.6 Conclusion

This chapter provides an overview of the current theoretical thinking on urban planning. As mentioned previously, while it is useful to separate these ideas into themes for the purpose of review, it is clear that there is significant overlap. This suggests that attempting to apply these in isolation is unlikely to be successful. Despite this, it is evident when looking at current examples of subdivision design that developers are doing exactly that. As discussed in the introduction, it is usually necessary to prioritise one design driver which will lead the rest of the design, however there is the risk when doing this that other design drivers will be forgotten or in the face of efficiency they will be deemed as 'nice to have' and therefore disposable. Unfortunately, this is a common issue with sense of place which tends to be at the bottom of the design hierarchy and it is evident in current subdivision design that not only is it at the bottom of the hierarchy, in the face of competition from other drivers, sense of place tends to drop out of the hierarchy altogether.

From a landscape architecture perspective, sense of place is extremely important and deserves to have greater priority. What difference would it make to subdivision design if sense of place were the key driver to design instead of transport or housing? What difference would it make if all drivers were considered in subdivision design, not just the basics of transport, housing and public space? The next chapter digs deeper into the theory of sense of place to establish its importance in urban planning; to understand why it is worth researching in the context of subdivision design; and what landscape architecture can bring to this. The chapter looks at the issues of placelessness, the meaning of sense of place and its value to society. In short, it establishes why sense of place is not just 'nice to have'; it is in fact essential.

Chapter 4

Landscape Driven Sense of Place

4.1 The Issue of Placelessness

As described in the introduction, it is clear that sense of place is neglected in the majority of housing developments. The move to placeless design has resulted from a number of societal and technological changes. Prior to the industrial revolution it was necessary to work around existing landscape elements due to technological constraints. As technologies developed, the engineering of landscapes to remove obstacles such as topography or waterways has become possible and enabled existing landscape features to be ignored in the name of efficiency and economy (Hough, 1990; Relph, 1976).

Another change towards placeless design was the Modernist movement. The modernists believed in wiping the slate clean by ignoring local context in preference of creating something independent of place. As an illustration of this movement, Tom Turner (1996) in his book *City as Landscape*, provides a parody of how the modernist architect views context (Figure 16). This is further discussed by Kenneth Frampton (1985) in his chapter *Towards a Critical Regionalism: Six Points for an Architecture of Resistance* when he notes that, "the tabula rasa tendency of modernization favors the optimum use of earth-moving equipment…a technocratic gesture which aspires to a condition of absolute *placelessness*..." (p. 26). He argues that the invention of freeways and elevators allowed things to be the same everywhere while air-conditioning removed the need to be concerned with microclimate (Frampton, 1985). But in the landscape, aspects such as microclimate are not so easy to ignore.

Post-modernism is a movement that has reacted against this modernist mind-set and attempts to bring back an emphasis on place and traditional design. However, as Nan Ellin (1996) points out, like modernism, post-modernism also ignores the current day context by trying to re-create the past. In fact

Figure 16 Tom Turner's Parody of the Modernist Architect's view on context
Source: City as Landscape, (Turner, 1996)

a number of theorists agree with Ellin that post-modern design is inappropriate as it ignores our current cultural conditions (Crawford, 2008; A. B. Jacobs & Appleyard, 1987; Koolhaas, 1994; Scheer, 2010).

When sense of place *is* attempted it tends to be superficial or lacks meaning. As so eloquently put by R. Weller (2008) "in deference to a "sense of place," the landscape that the new suburb almost invariably erases is returned to the new development as thematic veneer, a symbolic pastiche or hapless remnant of its former self. Indeed, many suburbs draw their names from the very landscape they destroy or some other unlikely Arcadian reference" (p. 248). When sense of place is expressed in this way - by oversimplifying its identity - it becomes generic and "transparent, like a logo" (Koolhaas, 1994, p. 362). If a place is water-facing then water-based symbols are distributed over its entire territory…"its identity is like a mantra" (Koolhaas, 1994, p. 369).

Placeless developments in part result from a focus on efficiency and maximising economic gain (Ellin, 1996; Relph, 1976). Starting from the viewpoint that a site is a blank canvas and then applying a standard formula to "design" a subdivision on that site enables developers to generate and implement plans very quickly. By marketing these places as being for "those who have earned the right to a life of leisure" (Northwood marketing material as cited in Winstanley et al.2010, p. 184) and to "remind you constantly of all you've achieved" (Tamara Park marketing material as cited in Winstanley et al.2010, p. 184) people start to believe that these placeless places are the ultimate dream. However, as Relph (1976) points out "the overall result is the undermining of the importance of place for both individuals and cultures, and the casual replacement of the diverse and significant places of the world with anonymous spaces and exchangeable environments" (p. 268). As a result, people lead increasingly individual lives and they become "geographically alienated" (Relph, 1976).

Allan Jacobs & Donald Appleyard (1987) agree. They have observed that:

> Cities are becoming meaningless places beyond their citizens' grasp. We no longer know the origins of the world around us. We rarely know where the materials and products come from, who owns what, who is behind what, what was intended. We live in cities where things happen without warning and without our participation. It is an alien world for most people. It is little surprise that most withdraw from community involvement to enjoy their own private and limited worlds (p. 222).

The issue of placelessness is summed up by Sinclair Gauldie (1969) (as cited in Relph 1976, p. 270), "To live in an environment which has to be endured or ignored rather than enjoyed is to be diminished as a human being." How do we avoid this diminished experience? If this is what it means to be placeless, what does it mean to have a sense of place?

4.2 What is Sense of Place?

There are multiple definitions of sense of place which seems fitting; while sense of place does exist at a community level, it is still very much related to personal perceptions. These perceptions are affected by the attitudes, beliefs, meanings, and interpretations that people associate with a particular place (Steele, 1981 as cited in Chamlee-Wright et al, 2009). As such, the wide ranging theoretical positions of what it means to have sense of place are affected by personal perceptions of the practitioner as well as the wider perceptions of the discipline to which they belong.

For example, landscape architect Michael Hough (1990) describes sense of place as:

> …what a place has when it somehow belongs to its location and nowhere else (p. 527).

Other definitions are more prescriptive such as this definition by geographer Edward Relph (1976), (paraphrased by Larice and Macdonald (2013)):

> …meaningful experience, a sense of belonging, human scale, fit with local physical and cultural contexts and local significance...(p. 266)

In support of Hough and Relph's definitions above, architects Allan Jacobs and Donald Appleyard (1987) consider an authentic city as one where the origins of things and places are clear. The term authentic in this context refers to "a direct and genuine experience" of a place, not mediated or distorted through arbitrary fashions or stereotyped conventions (Relph 1987, as cited in Seamon & Sowers, 2008, p. 4). Hough (1990) further considers that regional identity is connected with the peculiar characteristics of a location that tell us something about its physical and social environment. These characteristics are the result of the collective adaptation of people to their living environment over time; as such, sense of place is made up of both natural and social processes. However, when these characteristics are scraped away to be replaced by an efficiently designed subdivision, this connection to location is severed and people are left unanchored, without meaning.

As referred to by Relph (1976), meaningful experience and a feeling of belonging is a key component for sense of place to develop. Unlike a tourist who has a superficial experience, an insider establishes routines, relationships, memories and associations that determine their overall experience and feelings. As observed by Norberg-Schulz (1976), the character of a place is greater than its parts and cannot be reduced to its individual qualities without losing its "concrete nature". As such, a place that may seem unpleasant to an outsider may be cherished by those who live there and vice versa.

Building on this idea, Relph (1976) quotes Alan Gussow (1917) who writes "The catalyst that converts any physical location…into a place, is the process of experiencing deeply. A place is a piece of the whole environment that has been claimed by feelings" (p. 267). As such, a sense of place is not just established by experiences but by the meanings and feelings that are created through those experiences. Douglas Kelbaugh (2002) believes that sense of place begins with a love of place, however a sense of place will not always be positive. As observed by Relph (1976) "our relationships with places are just as necessary, varied and sometimes perhaps just as unpleasant, as our relationships with other people" (p. 267). Placeless developments can make it very difficult for people to establish the meaningful connections with their environment that are so vital to a sense of belonging.

4.3 The value of sense of place

As touched on already, sense of place is important for providing people with a feeling of belonging. Taking this further, Kamani-Fard et al. (2012) suggest that"…the physical environment can define one's self-identity" (p. 224). Norberg-Schulz (1976) agrees and argues that this is demonstrated by a common linguistic usage: when a person wants to tell you who they are they are likely to say "I am a New Yorker" or "I am a Cantabrian", establishing their connection with their home and community. Heidegger (as cited in Norberg-Schulz 1976, p. 282) considers that a sense of belonging and a connection to the landscape is vital to people's ability to exist. Heidegger considers that a human's primary need is to "dwell" meaning to belong to a concrete place (Norberg-Schulz, 1976). Johnson and Zipperer (2007) consider the loss of place to be a form of cultural loss and they are concerned with the lack of value placed on this by Western societies; "People do not have an inherent right to a perpetual connectedness to place although numerous scholars argue that place…is integral to the development of the self"(p. 461).

This issue is further debated by Ray Oldenburg (1989) who argues that the lack of meaningful places mean that the typical suburban home is easy to leave behind; what people cherish most can be taken with them. There are no sad farewells because there is no community; in fact there is often more encouragement to leave a subdivision because they are not equipped to see families or individuals through the cycle of life. They are designed for families of particular sizes, incomes and ages; "there is little sense of place and even less opportunity to put down roots" (Oldenburg, 1989, p. 287).

Sense of place also creates value for biodiversity, resilience and sustainability. The use of plants suitable to the location provides habitat for local wildlife as well as increasing their chance of survival. Designing around natural landscape systems can help avoid areas unsuitable for certain land uses and can improve capacity for storms by leaving those areas most vulnerable to flooding or other natural cycles (Beatley, 2008; Hough, 1990; McHarg, 1967). And by having greater attachment to the local environment, residents are more likely to develop a sense of community that is so vital in the case of disaster (Allan & Bryant, 2011).

An indication of our increasing need for meaningful places while the number of them continues to decline is illustrated in this quote from Rem Koolhaas (1994):

> This thinning [of history] is exacerbated by the constantly increasing mass of tourists, an avalanche that, in a perpetual quest for "character," grinds successful identities down to meaningless dust (p. 361).

Can this need for a sense of place be satisfied in the everyday environment to remove this feeling of desperation?

4.3.1 Sense of place and the home, community and disaster

As already established, the connection to the home environment is vital to our sense of belonging. In a disaster this connection becomes even more important to our well-being and ability to cope and recover. As proposed by Sims et al. (2009) "the social, cultural, and emotional dimensions of place are now considered to be just as important as its material and physical qualities…Such evolving and complex meanings result from the fact that "homes" are highly emotional landscapes with a strong degree of personal significance for their occupants" (p. 305).

This is further illustrated by Sims et al. (2009) when describing what happens to care when the home is disrupted:

> …disruptions to the meanings, objects, and routines that help make up the home also can have profound consequences for the material and affective landscapes of care. When you disrupt the home…you also disrupt the reference point by which [carers] make sense of themselves and their role in relation to friends, family, and the community more generally (p. 313).

This affect could be extrapolated to apply to all people who have had their home disrupted.

This is particularly relevant in the case of Christchurch where approximately 10,000 homes have been lost as a result of the 2010 and 2011 earthquakes (Simcox, 2011). Many of these homes were in older, established parts of the city with distinct characters and communities. The areas where replacement homes are being built are, to paraphrase Hough (1990), standard subdivisions for standard people, with a single housing type in a controlled and sterile environment. The people who have been displaced from their homes and communities have already suffered the disconnection from their sense of place, and the environments that they are moving to are likely to increase this feeling of loss and slow their speed of recovering.

As reported by Kamani-Fard et al. (2012) in their study of post-Bam[6] earthquake reconstruction "...post-traumatic stress disorder (PTSD) is reported as a common psychological impact of home loss" (p. 223). Also noted was the deep attachment to nature that residents had developed due to the number of established trees and gardens that were part of their daily lives and was the thing they missed most from their homes that they had lost (Kamani-Fard et al., 2012). This suggests a further impact on Christchurch residents who are relocating from areas of large established trees and gardens to subdivisions where all trees have been removed to be replaced with small street trees, or in some cases, no trees at all. As observed by Johnson and Zipperer (2007) "…such interruptions can cause extended periods of grief and severely threaten self-identity" (p. 461). They go on to say that attachment to objects or places… are vital for psychological and social well-being.

In their study of New Orleans after Hurricane Katrina Chamlee-Wright and Storr (2009) found that displacement from the community can result in widespread grief and the evacuation experience can separate people from their identity as well as their homes, i.e. their role in their community has gone and their new role is determined by the perceptions of the people

[6] The city of Bam is located in Iran and was hit by a 6.6 magnitude earthquake in December 2003 resulting in extensive damage to buildings (Kamani-Fard et al., 2012)

in their new community. Further to this they suggest that "Disasters can…lead to dissatisfaction with any (temporary) replacement site" (p. 618). I would suggest that this would lead to even greater dissatisfaction from a permanent site if it did not attempt to provide some of the elements that people have left behind.

It is important to consider as part of this issue that large scale subdivisions built in rural areas can impact on the sense of place of those who already live there. Bengston et al. (2005) remark that "…the core of the debate about sprawl…is the emotional impact people experience when they lose places in their own communities they feel deeply attached to" (as cited in Johnson & Zipperer, 2007, p. 462). They go on to say that "When such growth occurs in a relatively short time span, it can destabilize rural community social, cultural and environmental/ecological structures" (Johnson & Zipperer, 2007, p. 463). As such, to create healthy and successful environments, sense of place is an important issue to consider in any development both for the people moving into the area and for the people who already live there.

4.3.2 Sense of place, resilience and sustainability

Sense of place design is not only important to our identity but also to biodiversity, resilience and sustainability (Hough, 1990). Hough (1990) asserts that "the connections between regional identity and the sustainability of the land are essential and fundamental" (p. 526). He suggests that design philosophy should be tied to the notions of environmental and social health and the essential bond of people to nature. Through employing techniques similar to Ian McHarg's (1967) ecological layering method described in his book *Design with Nature*, and by increasing native planting, it is possible to incorporate natural systems into new developments; this can help protect key amenities from storm events and improve the microclimate and biodiversity. Randy Hester (2006) considers that "Self-aware design likely serves biological and cultural diversity in the same actions; it creates internal unity and worldwide diversity" (p. 187).

Sense of place can further improve resilience by providing visibility and understanding of our landscape through revealed processes and history; this can help us to remember important events that we may otherwise forget. In his article *Trauma Within the Walls*, Andrew Benjamin (2010) states that trauma does not come from the outside, the thing that will unravel a town is already within it as a repressed memory. He suggests that the urban field

has been “constituted by a form of systematic forgetting” and that “the city will always have contained that which falls beyond the work of the memory” (p. 27).

This speaks of our ability to forget about historical disasters over time, therefore making ourselves more vulnerable from future events. For example, Christchurch is built on a swamp in a seismically active landscape; the 7.1 magnitude earthquake of 4th September 2010 came as a complete shock to residents, most of who did not realise that Christchurch is in a seismically active area. This is despite the fact that a similar sized earthquake in 1888 caused the spire of the Christchurch Cathedral to fall and extensive damage to buildings (GeoNet, 2014). By 2010 this event was long forgotten; the Cathedral and buildings were repaired, all traces of the 1888 earthquake removed. As a result of this memory loss, numerous developments had been built on unstable land, city infrastructure was buried with few (if any) natural systems making repairs time-consuming and damage wide-reaching, resident’s lifestyles had become highly dependent on centralised systems, emergency kits were not in place. By keeping those memories alive in the landscape we can retain that knowledge which falls away from the human consciousness helping us to live in a more appropriate manner in our uncertain landscape.

As explained by Benjamin (2010), the source of our trauma is here and internal and it requires wisdom to negotiate with the unaccustomed or unpredictable events that will occur again in our future. However, our forgetting becomes the repressed memory which is destructive to this very future; we need wisdom to keep our memories at the forefront of our projects, to reduce the destruction that the unpredictable can create.

4.4 How can urban sense of place be generated through the landscape?

Following the modernist period, sense of place has received increasing attention from a wide range of disciplines; however, it is not always called sense of place, rather it might be there as part of other allied ideas such as “legibility”, “ecological design methods”, “perceptual qualities”, “dwelling”, “critical regionalism”, “typology”, “morphology”, “regional design”, “cultural expression”, “memory”…but all of these writings bring something to the understanding and generating of a sense of place.

It is common in urban planning to apply principles associated with architecture, urban typologies, geography and social science among others; but it is less common to apply those from a landscape perspective. Given the issues of placeless design discussed earlier, could landscape be the key to bringing sense of place to the forefront? Landscape has the advantage

of being broad in scale and as such, it provides the context for all other activity. All built form must sit on the landscape and it seems logical that the landscape would drive the form and placement of these elements.

A key issue in relation to the landscape and sense of place is summed up by this question raised by R. Weller (2008):

> Why…is the landscape so often trivialised in suburban development? (p. 248).

As seen throughout this chapter, this trivialisation can result in the landscape being scraped clean of all identifying qualities to result in a generic wasteland, ready to receive "standard subdivisions for standard people". It also results in small quantities of low quality open space, high dependence on engineered systems for water, power and heating; stormwater, greywater and sewerage. But what could a development look like if these landscape qualities were retained and enhanced? How would this drive the outcome of the urban form, the sense of place of the site and the sense of well-being for those who will eventually live there?

One movement that has attempted to raise the profile of landscape for planning is Landscape Urbanism, a phrase coined by Charles Waldheim (2006). Landscape urbanism is the idea that the landscape should be the fundamental building block for city design in which cultural and natural processes help to organise the urban form (Steiner, 2011). It attempts to shift the focus from form to process and encourage greater attention to urban ecology and surface conditions (Waldheim, 2006). Landscape urbanism embraces the concept of flexibility and indeterminacy where the focus of the urban planner is to set up the scaffolding for urban development rather than the 'landscape' being the bits left over at the end (Waldheim, 2006).

However to date, Landscape Urbanism has not been applied in practice to an urban setting but has primarily been applied to post industrial parks. This may be due to the lack of guiding principles which make it difficult to apply in a practical sense; or it may rest with the view of R. Weller (2008) who suggests that "…urbanism per se is a far more dangerous program to leave *open-ended* than a piece of post industrial parkland" (p. 251). Despite this, the principles of Landscape Urbanism are moving in the right direction; can these ideas be combined with other landscape and urban principles to generate a sense of place in the urban environment?

Like others, landscape architect, Michael Hough (1990) is concerned that the sameness of urban developments makes it difficult to see the unique qualities that have established a regions identity; an identity that he suggests is "the collective reaction of people to their

[natural] environment over time" (p. 527). However, he goes on to say that a place's identity is rarely completely destroyed, that there are always remnants of the original landscape that remain and on which an identity can be rebuilt. Hough (1990) suggests that designers need to make a conscious decision to create a sense of place, that there is no such thing as a blank canvas when it comes to design; something is always there before: a history, a certain character, a meeting place. To develop a sense of place, design inevitably builds on what is there in the process of change.

R. Weller (2008) echoes these sentiments when he says "…does not that real difference lie enduringly with an acute sense of site specificity, a sense that the site itself is, as Sebastien Marot (2001, 7) says, "the regulatory idea of the project". In this world view there is no such thing as an anonymous site" (p. 254).

When using landscape as the medium for generating sense of place the focus is on reflecting the underlying landscape, respecting and utilising natural and social processes and incorporating the local microclimate. There is a wish to retain and emphasise local landmarks and the changing rhythms of nature and society. In talking about design through critical regionalism, architect Douglas Kelbaugh (2002) says that "It honours local climate, topography, vegetation, building materials, and building practices. It prefers local authenticity to sophisticated imitation. That which makes a place unique is worth celebrating and protecting…" (p.299).

And finally, landscape architect Ian McHarg (1967) sums it up with the following observation that we saw in chapter 3:

> Cup is form and begins with the cupped hand. Design is the creation of the cup…never denying its formal origins (p. 524).

But when sense of place is ignored:

> We could not see the cupped hand as giving form to the cup, the earth and its processes as giving form to our works (p. 524).

By foregrounding sense of place in subdivision design, can we de-trivialise the landscape to create meaningful and resilient places where the origin of ourselves and our surroundings is clear?

Chapter 5

Sense of Place as the Key Driver to Urban Planning

As discussed in the introduction, planning methods such as New Urbanism (NU) and Transit-Oriented Design (TOD) are widely accepted by the planning profession. These methods begin with a key driver such as housing or transport which determine the critical pathway for the rest of the design process and as such, these drivers significantly affect the final outcome of the subdivision.

In an attempt to avoid the placeless developments that so often result from standard planning methods and instead to generate living environments that "…somehow belongs to its location and nowhere else" (Hough, 1990, p. 527), this research establishes a planning method where sense of place is the key driver that determines the critical pathway for the rest of the design. The outcome of this is a subdivision that is unique while meeting the planning criteria established by the urban design literature; in fact, it not only meets the goals of standard subdivision design but it goes beyond these to meet the goals of resilience, diversity and legibility.

This chapter will outline the research process that I undertook in my efforts to bring sense of place to the forefront of planning. It will begin with my very early attempts to apply the urban planning criteria to a specific site; it then moves into the design probes that developed out of a matrix approach; and finally it will look at how I brought all this together to design a subdivision based on a sense of place philosophy. However, before discussing this process, the first part of this chapter will introduce the local context that formed the site for this design work.

5.1 Site Context for Design Exploration and Case Study

5.1.1 Rolleston

Since the 1970's Rolleston in Canterbury has been earmarked as "the town of the future"; however this development did not begin until the late 1990's. What had been a small collection of houses has become an area dominated by large subdivisions of low density residential housing. This area is continuing to grow at an enormous rate particularly following the Christchurch earthquakes where approximately 10,000 homes were lost. The Selwyn

district is now the fastest growing area in New Zealand with a large portion of that growth occurring in Rolleston (Statistics NZ, 2013).

The proximity to Christchurch city, stable soils and continued commercial development makes Rolleston an attractive place to move to. An additional incentive for prospective residents is the iZone, a large industrial and innovation park at the north end of Rolleston which has received recent investment of $20million from the Tauranga Port and a similar investment from the Lyttelton Port (Wood, 2014). However despite these attractions, the urban form of Rolleston and the placeless subdivisions leave a lot to be desired.

The wave of people moving to Rolleston is resulting in a number of challenges. The earthquake has affected a broad range of communities which contained a wide diversity of people and housing types. In Rolleston, the majority of new housing is of a single type of community with a single housing model; this either forces people into this environment or leaves them with nowhere to go. A further issue with this model is the large volume of low density housing that is being produced which results in sprawling cities increasing the reliance on cars due to limited access to amenities and public transport (Beatley, 2008; Gillham, 2002; Lozano, 1990).

5.1.2 Faringdon New Urbanism Subdivision

Following the Christchurch earthquakes there have been a large number of new subdivisions being built across the city to house displaced residents. Faringdon is one of these subdivisions and is located 3km from the retail district of Rolleston, contains 1050 sections and is intending to house up to 4,000 people (Figure 17). The area surrounding the subdivision consists of

Figure 17 Faringdon Master Plan
Source: Hughes Development

farms and lifestyle blocks however the vast majority of this is planned for future residential development. (See Appendix D for a larger version of the Master Plan).

Faringdon is a typical example of a modern subdivision with wide roads, large houses, fragmented green spaces and a target market of families with young children (Figure 18). There is a range of section sizes available, however these are restricted by minimum house sizes and do not enable attached dwellings. Despite targeting a range of densities from 10-20 households per hectare the "high density" sections are only 14% of the total, meaning that the average density remains low at 13 households per hectare.

Figure 18 Faringdon Marketing Image
Source: Faringdon.co.nz

This subdivision is currently outside the catchment of the city bus service, but is part of the local Selwyn service. The furthest resident is 1.8 kilometres (25 minute walk) from the closest school and 3.2 kilometres (40 minute walk) away from the local shops.

5.1.3 Faringdon Site

The Faringdon site was purchased by John Foster in 1937 and was operated as a farm until it was purchased for development in 2011. In 1973 the NZ government declared their intention to purchase the land as part of their Rolleston New Town proposal but later withdrew their offer (faringdon.co.nz).

This recent activity can be seen on the site in the form of paddock boundaries and shelter belts, however a much older feature of the site is little known by those living in or visiting Rolleston. The Waimakariri River, formed 10,000 years ago following the ice age, used to flow

through Rolleston and the Faringdon site. As Figure 19 illustrates, while the surface traces of this have been removed, the form on the landscape is still clearly seen from the air and quickly revealed in the soil which is a mixture of well-draining river stones and sand. The water race network that flows through Rolleston and Faringdon is still fed by the Waimakariri River and so retains this link with its past.

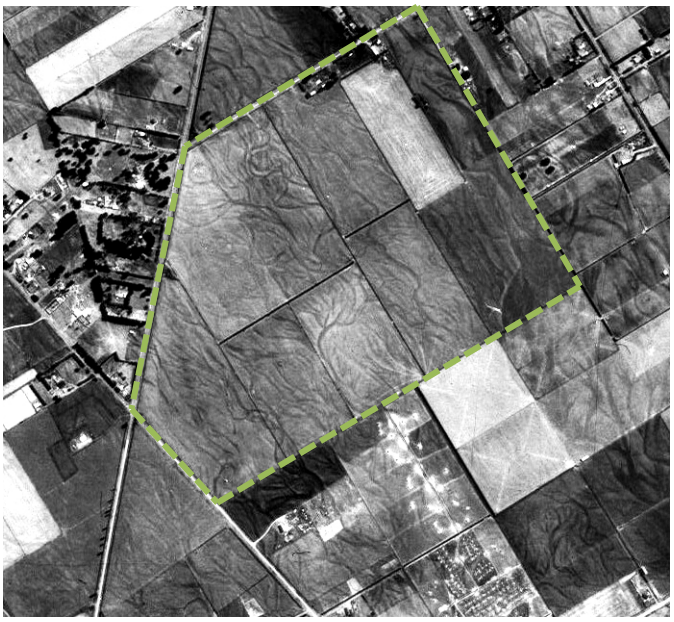


Figure 19 Braids on Faringdon Site
Source: Google Earth

In the 1850's the braided river system divided the area into a mosaic of wetland and non-wetland areas which provided abundant supplies for Maori as well as being an important means of access by waka (doc.govt.nz). Braided rivers are in constant movement with shingle bars appearing and disappearing, river channels shifting and water flows varying. All of this movement is part of what makes the river such a -productive ecosystem (doc.govt.nz).

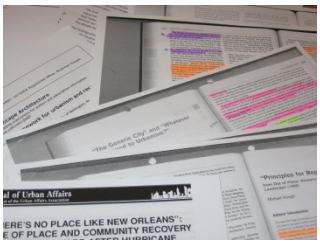
These aspects of a productive and healthy river are similar to those aspects that create a productive and healthy community. These aspects include the need for flexibility and access to resources in a changing and uncertain environment so that it can continue to function into the future. This is a key focus of this design exploration and the following sections will discuss how these aspects were brought to the forefront during the design process.

5.2 Research Process – Design Exploration

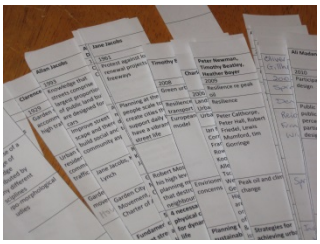
5.2.1 Urban Planning Criteria

As discussed in the research methods section, the first step of the process was to review the relevant urban planning literature. I then used this to generate a set of criteria that can be used to critique both proposed and existing developments as well as to generate design ideas. It also created a consolidated summary of the current urban design thinking. To achieve this I:

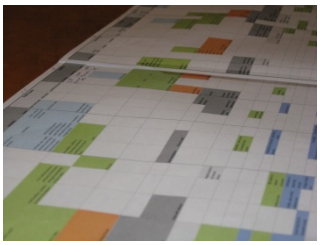
1. Analysed the literature;



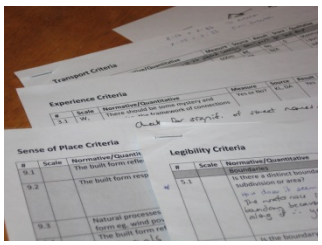
2. Identified the authors' frameworks;



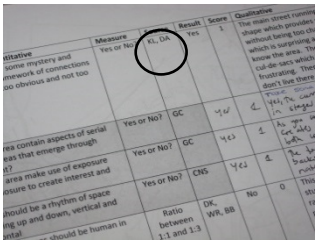
3. Consolidated the frameworks into themes;



4. Extracted the relevant criteria; and



5. Each criteria was referenced to one or more theorists.



The criteria developed through these steps became central to the research that followed; both written and design based. Phase 1 of the design research involved applying these criteria to an existing site as described below.

5.2.2 Planning Approach – Rolleston Park Subdivision

The Rolleston Park subdivision was the first design site that I used to test the criteria developed from the literature. I selected this site because it exemplifies many of the characteristics of Rolleston subdivisions, with cul-de-sacs, winding roads and low density, detached housing; it is also close to the Rolleston amenities and is bordered by an historic water race (Figure 20).

Figure 20 Rolleston Park Subdivision
Source: Google Earth

When I began this process I was deeply immersed in urban planning literature and I had ten lists consisting of approximately 180 criteria. These ranged from broad guidelines such as "are there a variety of housing types" to very specific guidelines such as "footpaths on residential streets are a minimum width of 1.8 metres". My intention was to apply these to Rolleston Park to see how they would improve the layout and functioning of the subdivision. At this stage the key drivers for my design process were higher housing density and increased diversity.

The first thing I did was a thumbnail sketch of the subdivision as it currently is; I then carried out a series of small changes attempting to morph the layout closer to the design criteria with

each iteration (Figure 21). I did this over a period of 6 sessions. I began by attempting to apply the criteria generally but this proved to be too broad as an approach and lacked the precision needed when working at street scale. I then focused on a particular theme such as transport or legibility in an attempt to narrow it down, all the while aiming to increase density and diversity. The intention of this early design phase was to be loose and generative in an attempt to develop something new.

There were a number of issues with the approach I used for this:

- Some of the criteria, particularly relating to things like density and transport are very specific and therefore difficult to apply in a loose, unscaled format.
- A lot of the criteria are only visible at ground level so trying to generate ideas for these in plan view did not work.
- I was losing sight of the landscape architecture perspective which emphasises the ground level experience and human scale, and instead focused on a planning perspective which tends to work at a different scale.

The result of this approach was designs that were grid-like, static in their layout and reliant on zoning. Density and diversity were catered for through housing types rather than through forms and configurations. I applied these urban planning criteria under the status quo which defeated the intention of trying to generate something new.

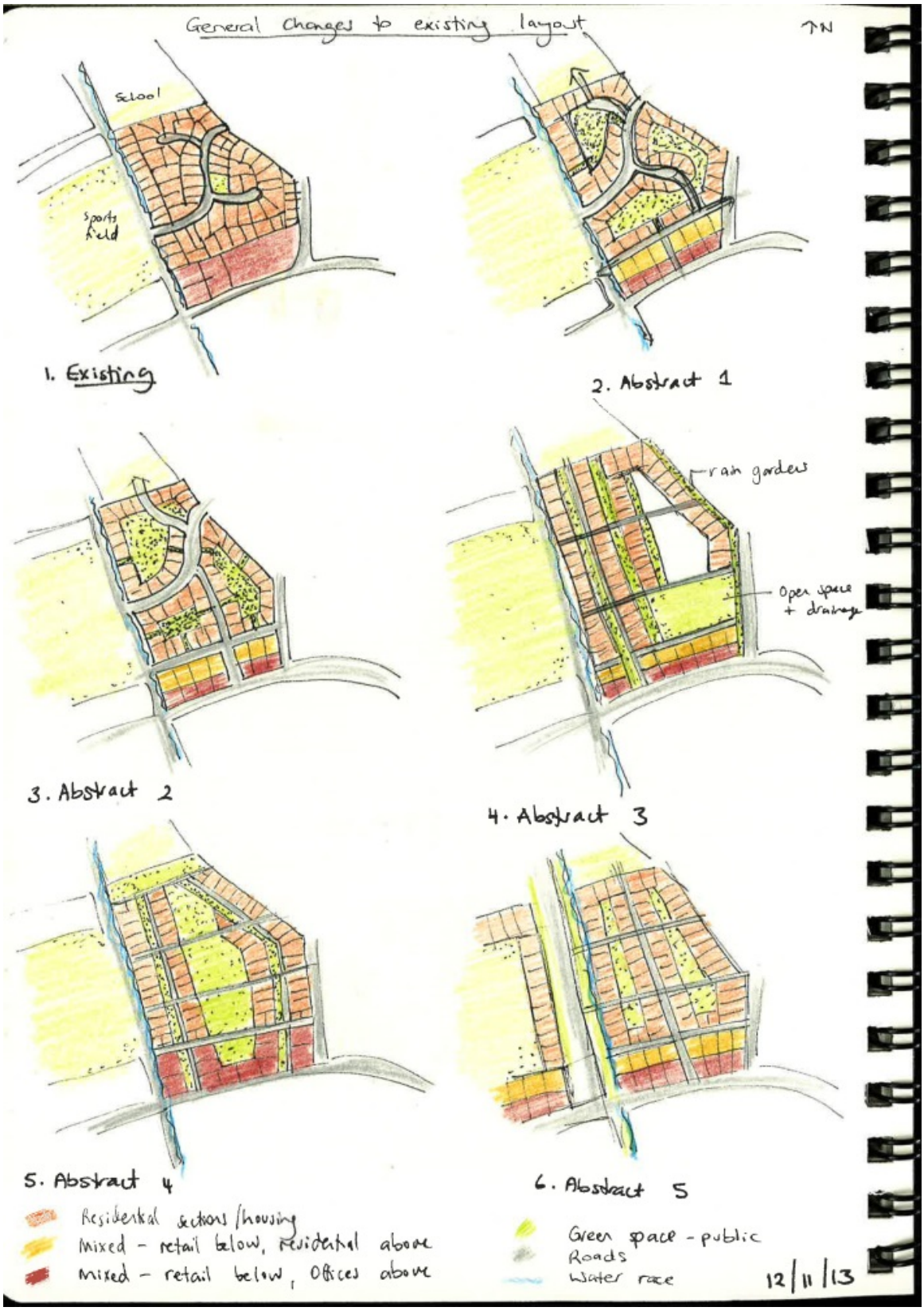
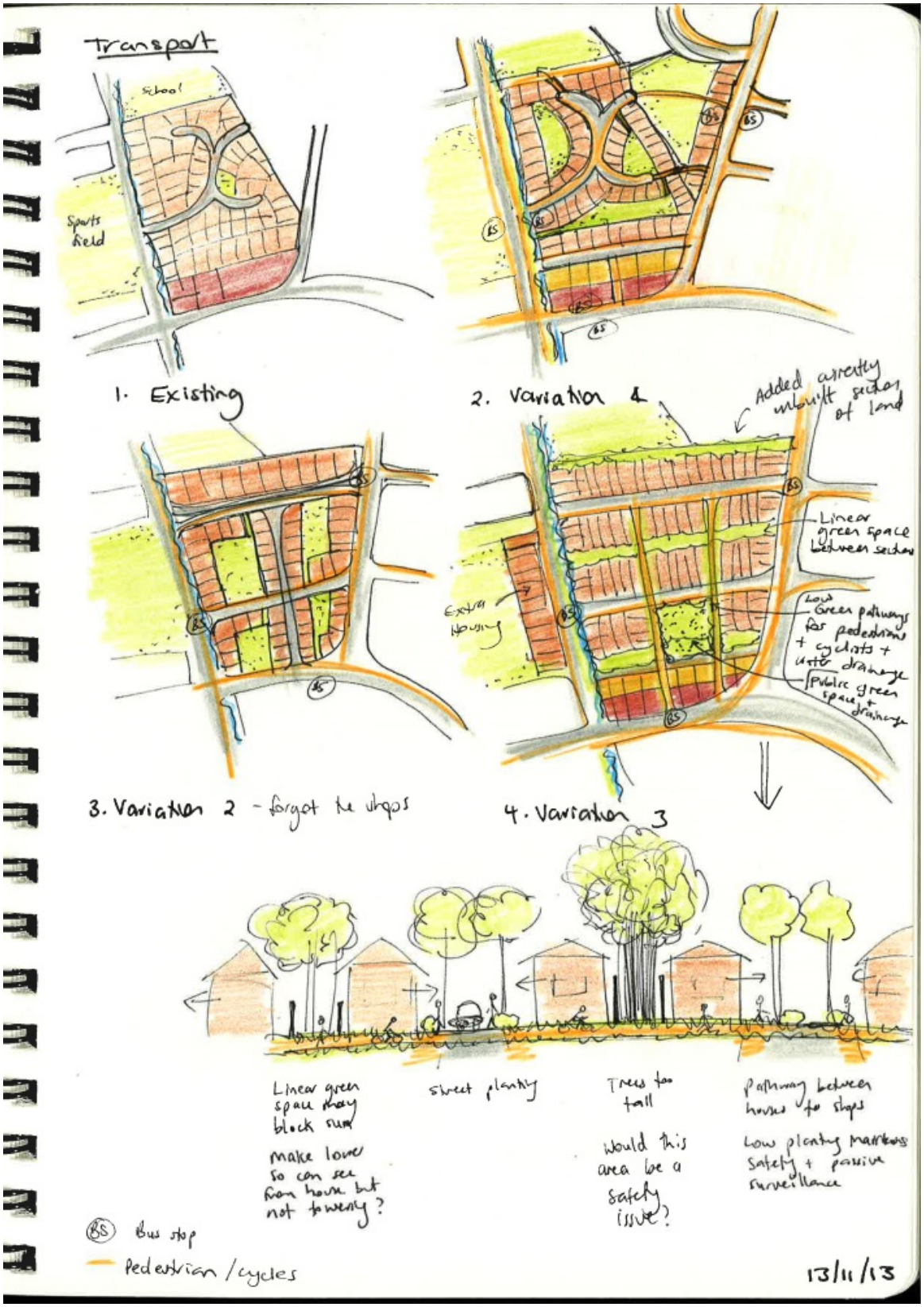


Figure 21 Examples from my design work exploring a planning approach


Transport
School
Sports field
1. Existing
2. Variation 4
Added currently unbuilt section of land
Linear green space between section
Low Green pathways for pedestrians + cyclists + water drainage
Public green space + drainage
Extra housing
3. Variation 2 - forgot the shops
4. Variation 3
Linear green space may block sun
make lower so can see from house but not towering?
street planting
Trees too tall
would this area be a safety issue?
Pathway between houses to shops
Low planting maintains safety + passive surveillance
BS Bus stop
Pedestrian / cycles
13/11/13

5.2.3 Matrix Approach – Re-order the Criteria

Following the critique of my initial design outcomes I realised that my process needed significant adjustment to overcome the challenges I was facing. The first thing I changed was the key drivers from housing and diversity to sense of place and experience. However, I also needed to develop a more creative way of using the planning criteria and of expressing my design ideas.

To achieve this I created a matrix as shown in Figure 22 so that two design themes could be selected and used together. One of the themes selected was always from sense of place or experience and these were matched up with one of the other planning themes. In an attempt to avoid the tendency to rationalise everything as I went, I developed a system of random selection so that I never knew which themes and criteria I would select; once the themes were selected one criterion was chosen from the planning theme and from there the design process began.

	Resilience	**Transport**	**Density**	**Legibility**	**Built Form**	**Perception**	**Public Space**	**Inclusivity**
Sense of Place	X			X			X	
Experience		X		X				

Figure 22 Urban Planning Matrix

To illustrate the way in which the process generated new possibilities, I will describe my first design experiment. The two themes that were randomly selected were “experience” and “transport” (Figure 23). Continuing with the random technique I selected three criteria from transport which were:

1. Good waiting experience for public transport
2. Bike paths are well identified by signs and symbols
3. Footpaths on main streets are a minimum width

By selecting three criteria I was able to select the one which had the best potential to generate ideas; this was important in the early stages of the process to help me get some traction. In this example the criterion selected was “good waiting experience for public transport” (Figure 23); this was then combined with “experience” to generate the design question *“How can*

waiting for public transport become an experience"? I responded to this brief by sketching as many ideas as would fit on an A2 page using all the criteria relating to experience to stimulate designs (Figure 24). A key aspect to these sketches was that they were quick and not in plan view. I no longer tried to apply them to a specific site but used the context of Rolleston in a general sense. This meant that I was able to contextualise them according to the qualities of the local landscape, but not to be limited by site-specific aspects.

Transport Criteria

Normative/Quantitative	Measure	Source	Result	Score	Qualitative	Score
Public Transport						
Maximum walk to transit stop	600m	**PC**				
Transit service available for very first resident	Yes or No?	TB				
Frequency of service (minimum)	15mins	**PC**				
Bus shelter provided	Yes or No?					
Park and ride transit stops	Yes or No?	PC				
Good waiting experience	Yes or No?					
Wide range of destination options	Yes or No?					
Reliable service	Yes or					

Experience Criteria

Normative/Quantitative	Measure	Source	Score	Qualitative	Score
There should be some mystery and surprise, the framework of connections should be not too obvious and not too complex.	Yes or No?	KL, DA			
Does the area contain aspects of serial vision? Areas that emerge through movement?	Yes or No?	GC			
Does the area make use of exposure and enclosure to create interest and drama?	Yes or No?	GC			
There should be a rhythm of space including up and down, vertical and horizontal	Yes or No?	CNS			
Ratios of spaces should be human in scale	Ratio between 1:1 and 1:3	DK, WR, BB			
Spaces should feel physically comfortable – **CPTED?**	Yes or No?	AJ			
There should be access to opportunity, imagination and	Yes or No?	AJ & DA			

Figure 23 Criteria Selected for Design Probes

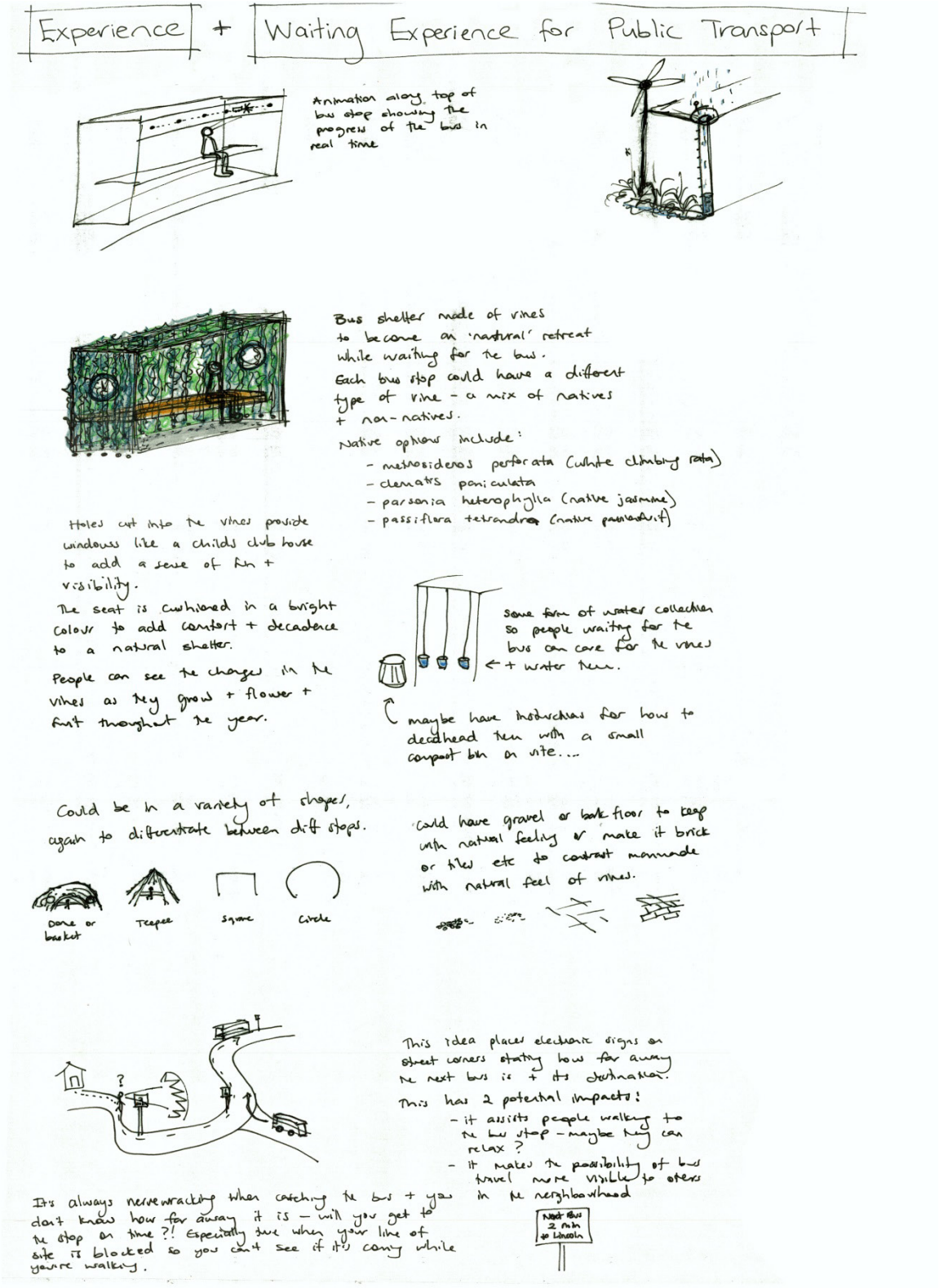


Figure 24 Design Probes "How Does Waiting for Public Transport Become an Experience?"

: How Does Waiting for Public Transport Become an Experience?

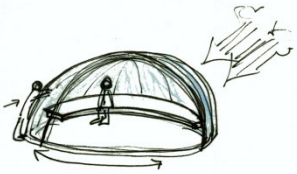
Natural processes

Clear tube at corner(s) of bus stop collect water as it rains and record mm of rain fall.

It has a sensor on the top + when it stops raining a valve releases at the base and channels the collected water into the garden.

Or... the water remains + as it gets hotter + the water evaporates it somehow provides a measure of the temperature?

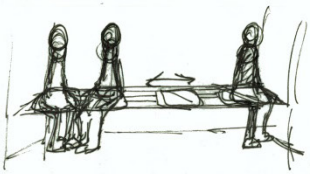
A mini wind turbine attached to the bus stop runs the sensor



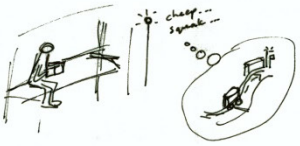
transparent

The bus shelter is a dome so runners + people waiting can turn the shelter to the optimum position to block the wind or other elements.

Social processes



Seats slide along so that people can adjust them to suit their personal space. Reflects social + cultural processes eg. NZers have large personal space, Asians tend to sit close together.



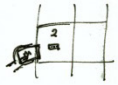
When waiting at the bus stop it isn't relaxing to read etc in case the bus comes and you don't notice / don't have warning.

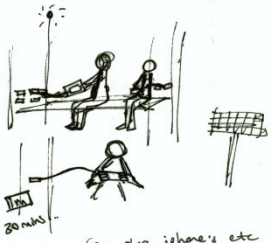
Have a sensor on the road that when the bus crosses it a speaker in the bus stop lets out the noise of a native bird from that locality as a cue to those waiting that they need to get ready.

Maybe need a different noise otherwise if have tui or kereru in the trees it might not be clear.

A very natural noise maybe, that contrasts with the urban area.

Warm blankets provided at bus stops which you can access with metro cards. Charged a certain amount which is given back when you return the blanket to the cupboard.



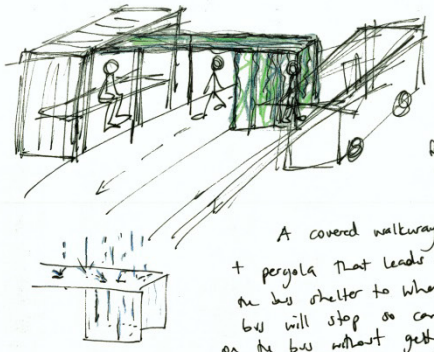


Can plug iphone's etc into parts on side of bus stop. Powered by solar panels on roof or wind turbine.

Provide free wifi at bus stop

How to stop people not using the bus seat from charging the shelter + using the wifi?

scan metro card to access wifi. If on bus within 30 mins of accessing wifi then not charged for wifi...



A covered walkway + pergola that leads from the bus shelter to where the bus will stop so can get on the bus without getting wet.

Could be a traditional pergola with vines on it or a hard material that will accentuate the sound of the rain - if transparent it will provide visual + audial effect. It will also run down the sides of the shelter.

Also provides experience for pedestrian walking through the 'tunnel' created by the walkway

Roof would need to be transparent for safety...

Seats of bus stop sitting in a peaceful native garden with pathways + pathways leading in through the garden + umbrellas on large poles. As it starts to rain the sensors on top of the umbrellas kick into action + the umbrellas open to provide shelter to those sitting on the seats.

5.2.4 Landscape Approach – Design Probes

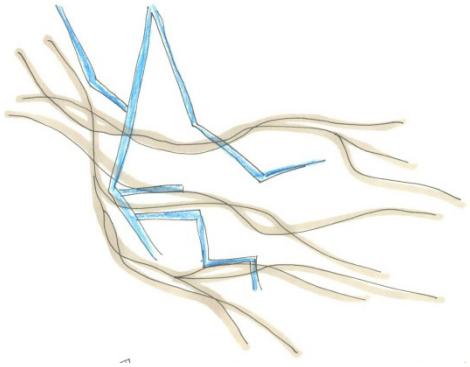
By implementing the matrix approach set out in Figure 22 and establishing the key drivers of sense of place and experience, the resulting design explorations were grounded, landscape driven and human in scale. When generating outcomes for these design questions the issues of density and diversity were no longer the main focus but the awareness of these and other criteria meant that they became an underlying driver behind the designs being generated; i.e. to be successful the design probes could not rely on a single criterion, and needed to be mindful of other considerations.

This process helped me to generate a large quantity of ideas that were grounded in small-scale, everyday spaces. It also enabled me to step outside of the limitations of using only practical drivers, and meant I could consider other imaginative possibilities. As Carl Abbott (2007) discusses in his article *Cyberpunk Cities: Science Fiction Meets Urban Theory*, the speculative power of fiction applied to urban planning can capture society's imagination and generate change more effectively than practical, realistic outcomes. This was the attitude I brought to my designing.

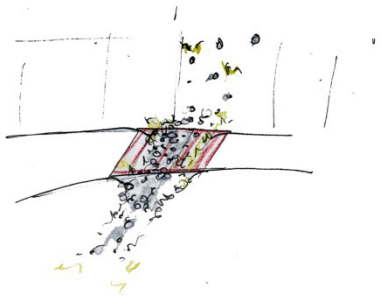
However, I also noticed that despite moving away from a plan view there was still a tendency in my sketches towards grid-like patterns and standard urban forms; and where I tried to incorporate historic or local attributes they were represented in quite an obvious way. I needed a further strategy to encourage innovation, and it became clear that it would be useful to bring my ideas to a specific site. As discussed previously, the site selected for this is the Faringdon subdivision described in 5.1.2. The existing subdivision has been designed in a way which reflects many of the principles of New Urbanism and as at June 2014 the building is well underway. My design process makes the assumption that development of this site has not yet begun.

Before looking at the Faringdon project, there are a number of design ideas that came from this process that were key sources of inspiration when I moved into the next phase.

1. Combining the braids with circulation – this sketch explores the juxtaposition of the braids and the water race system. In this sketch the roads are curving and organic while the water is straight and angular – this contrasts with what we would usually expect.



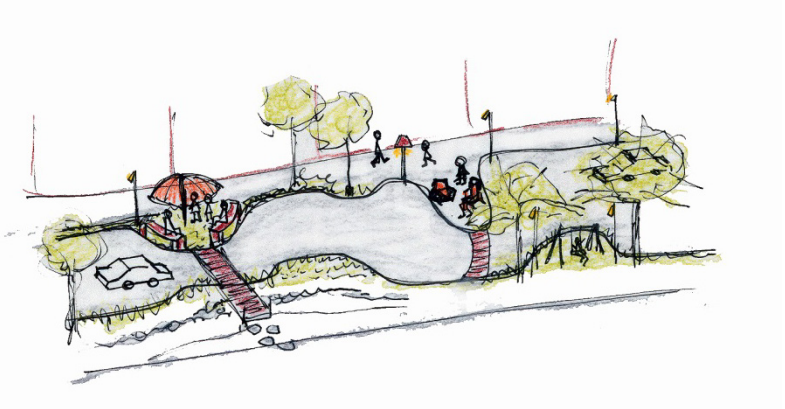
2. Revealing the braids – removing the surface layer to show what lies beneath and gives us some clues to the past.



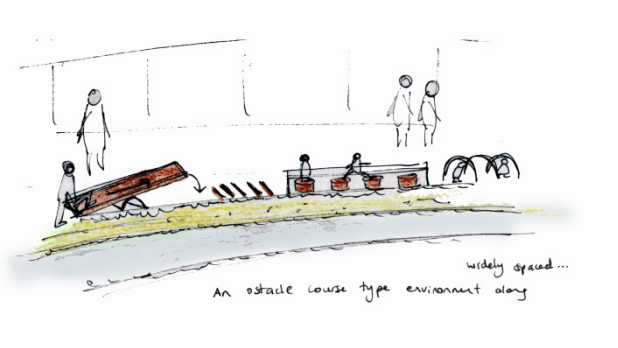
3. Removing the block – how could places be configured if we did not have to line houses up in a block along a street?

4. Remove the fences – how would taking down the fences enable us to better utilise our landscape and build community?

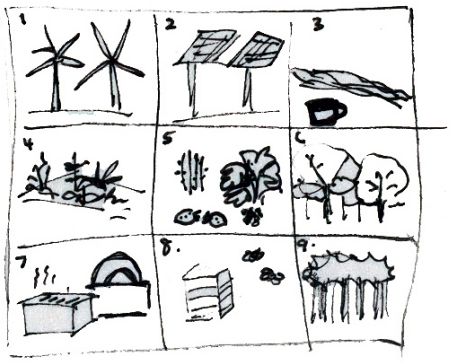
5. Prioritise the pedestrian – this sketch is exploring ways to reclaim the streets for pedestrians and send messages to drivers that they are not the priority.



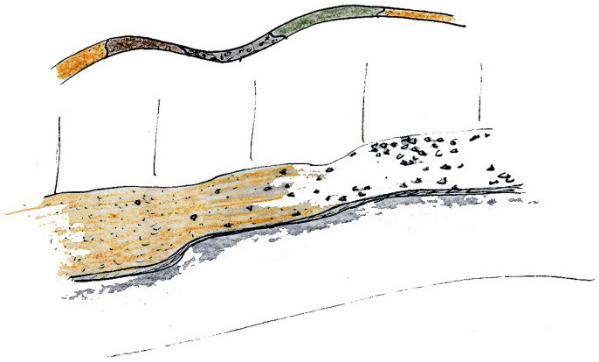
6. Experiential wayfinding – providing obstacle courses along footpaths to provide fun for kids and to help them recognise where they are depending on the equipment that is there.



7. Resilient systems – incorporate different aspects of self-sufficiency to improve resilience such as solar panels, wind turbines, community orchards and community firewood trees.



8. Revealing the landscape – creating pathways out of materials that represent the soil types beneath our feet rather than covering it up with asphalt.



5.2.5 Case Study – Redesign Faringdon

When I first began researching Rolleston I was looking for something special that I could build upon to create a subdivision that was unique and related to its location. I was also conscious of the fact that a lot of new residents would be moving from the earthquake red zone of Christchurch (Figure 25) where there is a close association with the Avon River and the sea; as such, I was particularly interested in any aspects that related to water.

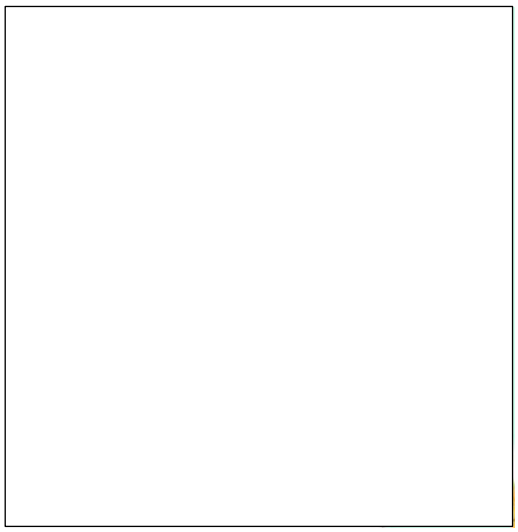


Figure 25 Christchurch Red Zone
Source: 3news.co.nz

The one historic element that I found was the water race system that still runs through parts of Rolleston today (Figure 26). This was once an extensive system and was established in the 1800's; I had hoped to find further details about the history of this network known as the Paparoa system however, there was little information to be found. What I did discover is that it is fed by the Waimakariri river and this began to build what I hoped would become my connection to the water ways. When reading the original Rolleston town plan developed in 1975 I found a historic map of the water race system for the immediate Rolleston area (Figure 27).

Figure 26 Rolleston Water Races

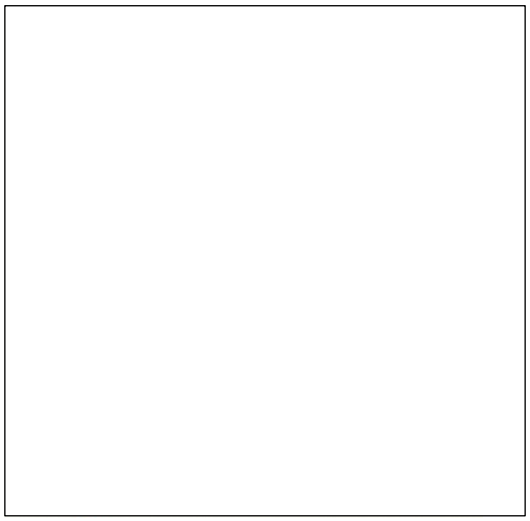


Figure 27 Historic Rolleston Water Race Network
Source: New Zealand Ministry of Works & Development (1975)

Beyond the evident potential of the waterways for connecting places, I found an even more powerful expression of the landscape in this location. I found references to the fact that the Waimakariri river once flowed through Rolleston and during the survey's in 1975 the braids were still visible in the landscape (New Zealand Ministry of Works & Development, 1975). I began looking for maps or diagrams that would reveal the historic course of the river so that I could start to bring this into my design work in a more concrete way.

Eventually it was the landscape itself that provided me with the information that I was looking for. Aerial photos from 1995 and 2001 show very clearly where the path of the river flowed (Figure 28 & 29) and gave me a starting point that I was looking for. Here was something very special about this landscape, something that most people probably are not aware of and the water races that run through Rolleston still provide that link to the Waimakariri river. The next question became, what can I make of this?

Figure 28 River braids running through Rolleston Township
Source: Google Earth

Figure 29 River braids running through the Faringdon subdivision site
Source: Google Earth

The Braided Structure

The first step in designing a new Faringdon that focuses on sense of place was to spend some time getting to know the braided landscape. I traced over them digitally and by hand and I separated them into hierarchies of major, medium and minor braids (Figure 30). I looked for other patterns on the site and noticed the form of the paddock boundaries (Figure 31). I decided to look at the different ways that these two sets of patterns – the natural and the manmade – could work together on the site.

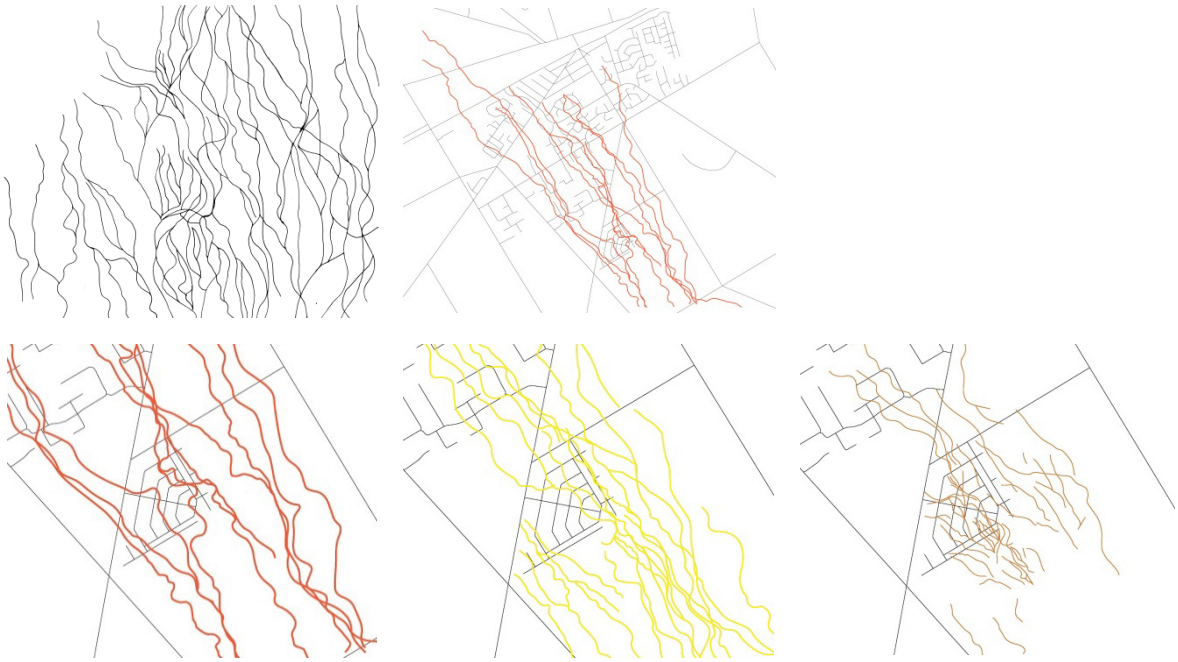


Figure 30 Braid sketches and hierarchies

My primary patterns became a combination of the paddock boundaries and the major braids. I overlaid these and generated a series of diagrams exploring different programs of uses for these patterns (Figure 32-34). These uses included greenways, movement systems, recreation and resilience structures. All of these initial diagrams concentrated on the braids being sites of activity, but what about looking at the braids as definers of space instead?

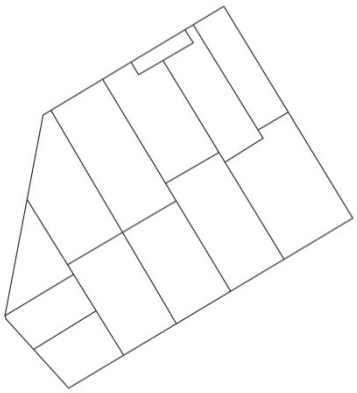


Figure 31 Paddock boundaries

I began to look at the braids as a way of organising the site. This change in focus helped me to define my areas of urban forest (originally intended to be habitat for Canterbury braided river species) within a circulation system provided by the braids and paddock boundaries (Figure 35); from here, these aspects drove the rest of the site design.

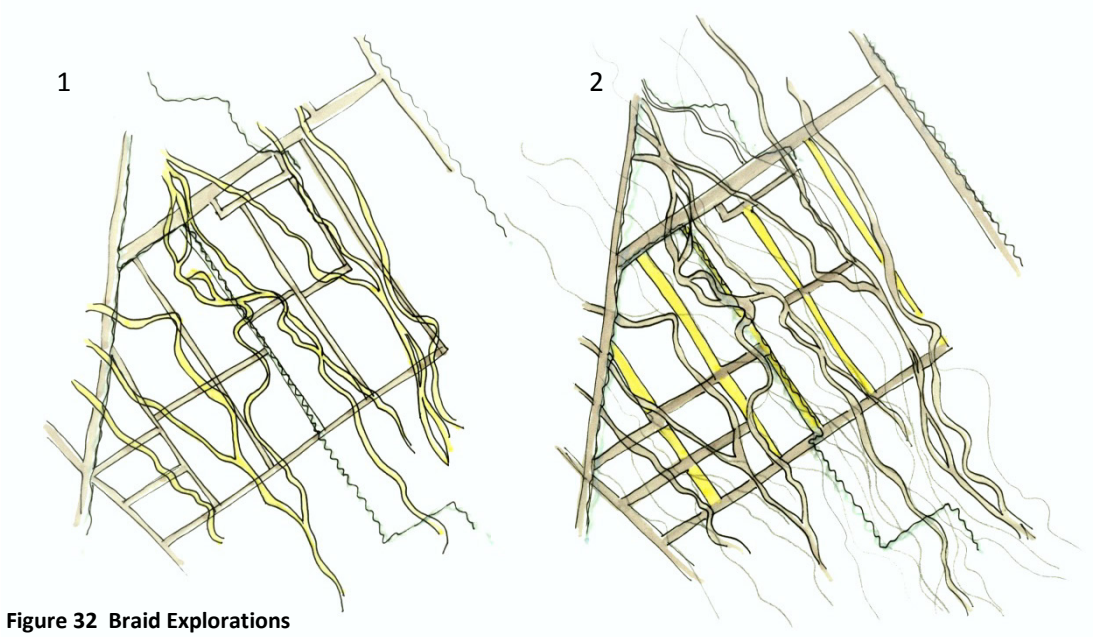


Figure 32 Braid Explorations

1. Braids are a mixture of greenways, walking and cycle paths and stormwater systems. Paddock boundaries are the primary movement system for vehicles and provide some structure to the layout.

2. Braids are the primary vehicle movement system with secondary braids providing walkways and cycle paths. Horizontal paddock boundaries are part of the vehicle systems while vertical paddock boundaries are greenways.

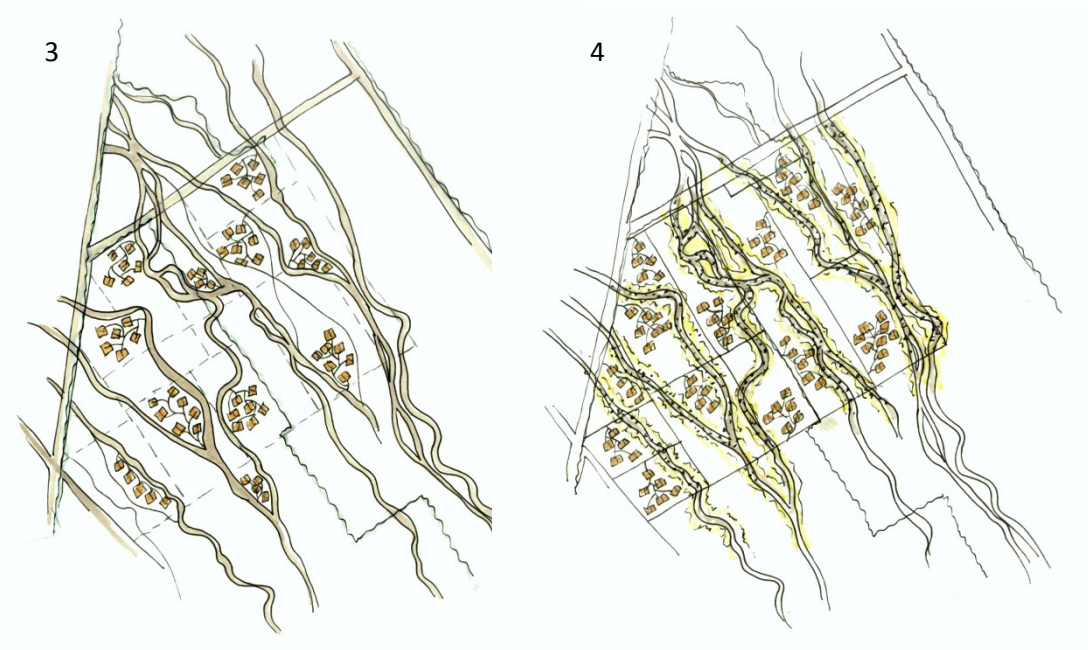


Figure 33 Braid Explorations

3. Major braids create the movement system with paddock boundaries providing connections between the braided system. Housing is clustered in groups without the use of blocks or fencing. Greenways, urban forest, gardens and stormwater management are incorporated into the areas between housing clusters.

4. Braids provide habitat for Canterbury braided river species. Paddock boundaries are for vehicle movement and define the neighbourhoods, each of which will be focused on a specific species or set of species. Secondary braids provide walking tracks and cycle paths.

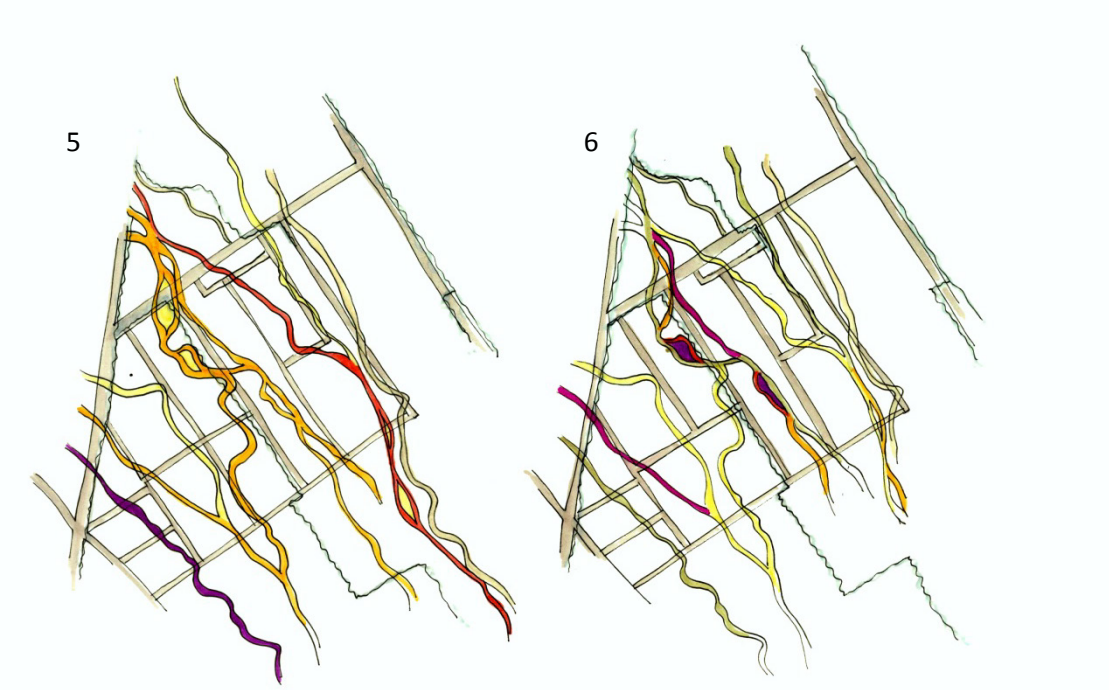


Figure 34 Braid Explorations

5. Each braid is used for a different activity including walking/cycle path, off-road mountain bike track, skateboard track, urban forest and an off-road running track. The paddock boundaries are for vehicle movement.

6. Each braid is used for a different resilience function such as vegetable gardens, outdoor cooking facilities, emergency camping areas, water collection, firewood plantations, urban beehives, orchards and berries. Again, the paddock boundaries are for vehicle movement.

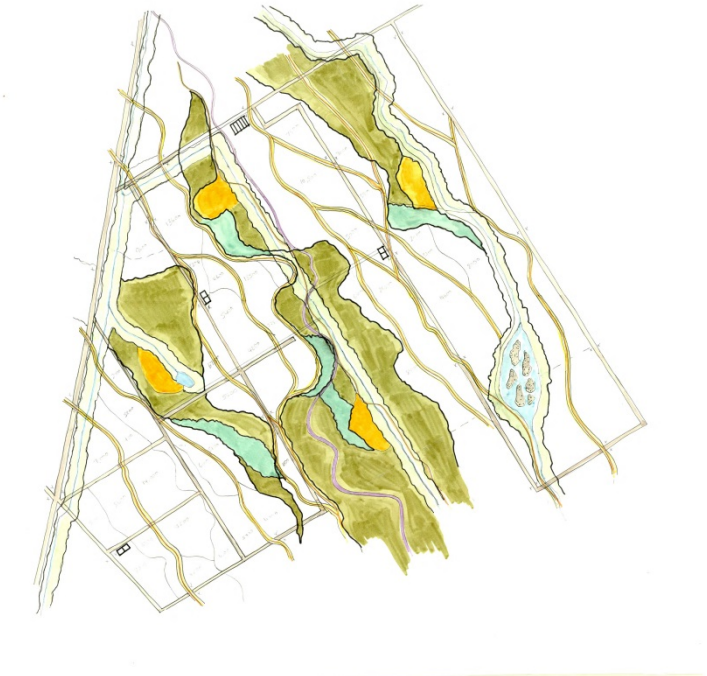


Figure 35 Initial structure of the subdivision with urban forest and circulation defined by the braids

Braided Housing

With the basic structure determined, the next challenge was to look at the smaller scale and work out how to incorporate the housing so that density was increased and other planning criteria could be met. With the site being so large I decided to select a 1 hectare area and work out how 30 houses (my density target) could be incorporated into that space. As can be seen in Figure 36, by selecting a square site this went completely against the braided nature of the landscape. I managed to fit in the correct number of houses but the layout is still quite typical – almost grid-like – and not good for sunshine or privacy. As well as the shape of the site, my attempts to provide vehicle access to all houses placed further restrictions on my layout.

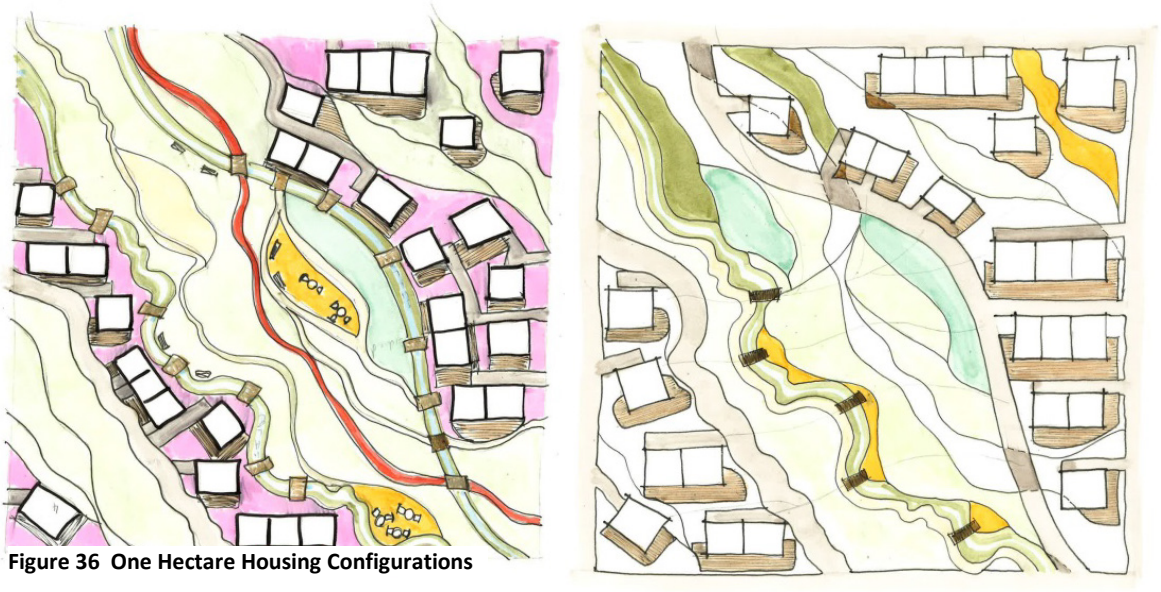


Figure 36 One Hectare Housing Configurations

During the critique of these early attempts at site layout I took a step back to think about the braided form and other ways it can be interpreted. In Figure 36 I have used the braids as a separating mechanism, siting houses between the braids and cutting the braids off when they meet the roads. There is no intention for fences in this subdivision and yet the above layout looks very much like fences could apply. Instead of using the braids to separate, an alternative approach is to consider the braids as connectors, bringing things and people together.

Another critique of Figure 36 is that the houses on these plans are too dominant; they are sitting over the top of the landscape rather than nestling within it. What if the braids went through the houses and became the joining factor between architecture and landscape as well as the joining factor between people and communities?

To test these ideas I carried out another series of design explorations. Now that I know that 30 houses will fit in that space I can start to look at even smaller scale configurations. I began looking at what relationships the braids can create between two neighbours or a group of neighbours, specifically focusing on the braids as connectors. At first I still struggled to let go of the block but as I continued to draw I managed to lose this need for a container (Figure 37).

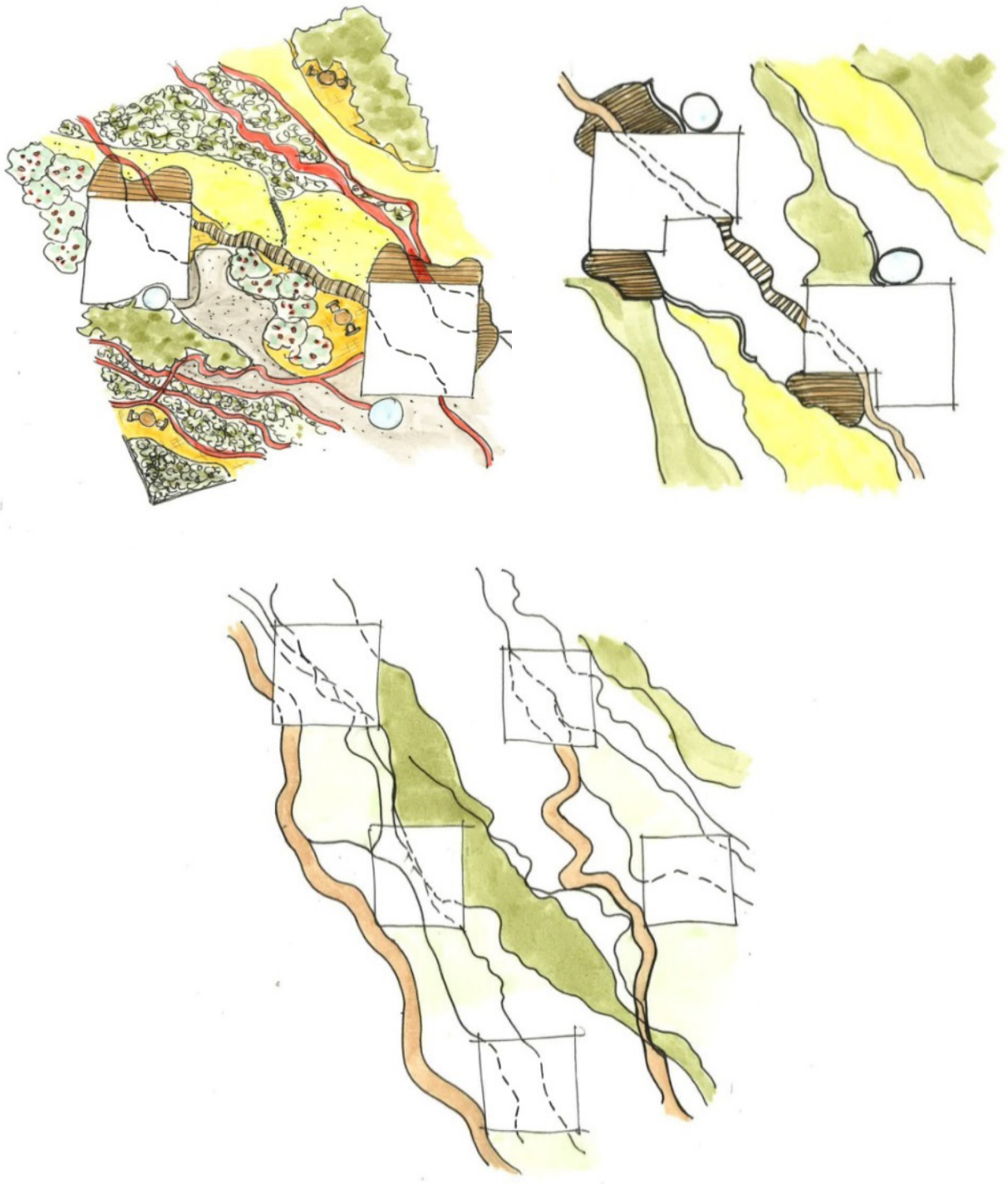
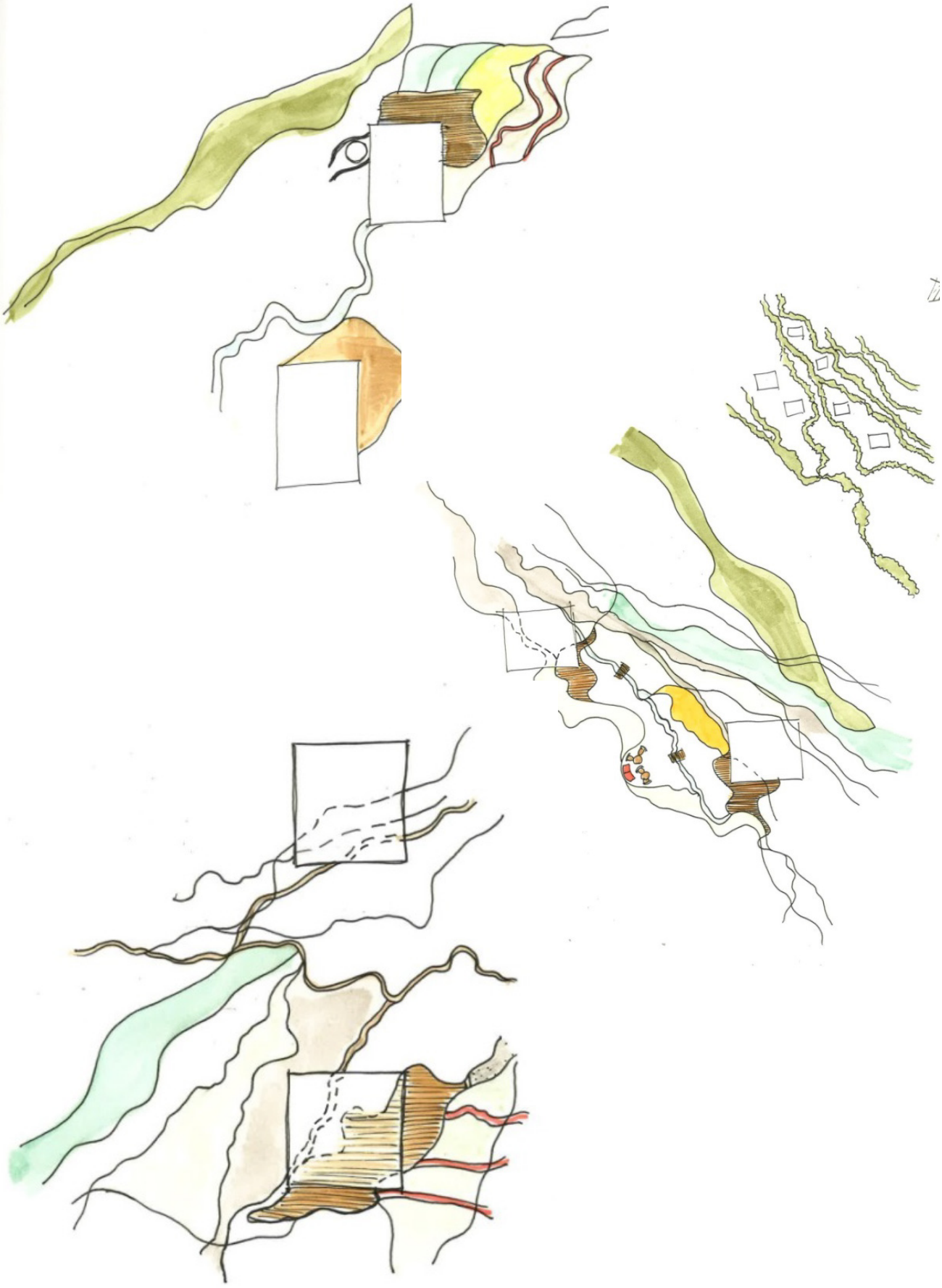


Figure 37 Design Explorations - Braids as Connectors



The Braided District

Taking this idea of connections a step further, I was interested in the wider system outside of the subdivision and outside of the town. I wondered if there was an opportunity to strengthen the broader district as well as providing alternative transport options; both of which can help increase resilience.

I began by looking at the distance from Rolleston to the closest towns (Figure 38) to determine if it was feasible to propose cycle ways between these destinations. This investigation proved that it is feasible and in fact it could create far wider connections between multiple towns in the Selwyn district (Figure 39) providing alternative ways for people to get to work, share resources and recreate. This could also connect with the railway line if this were reinstated. This became another key aspect of the new design for Faringdon.

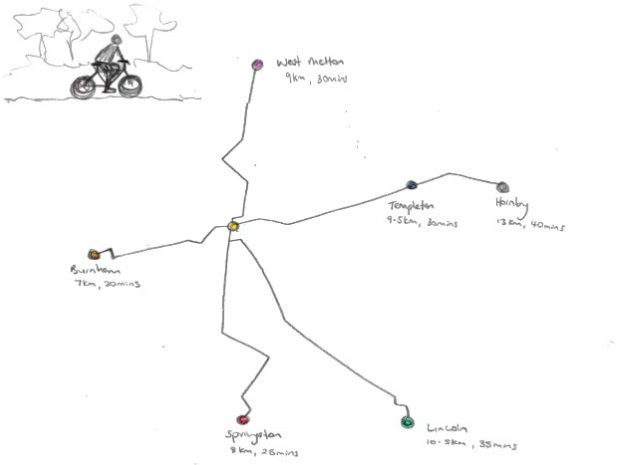


Figure 38 Rolleston and the closest towns

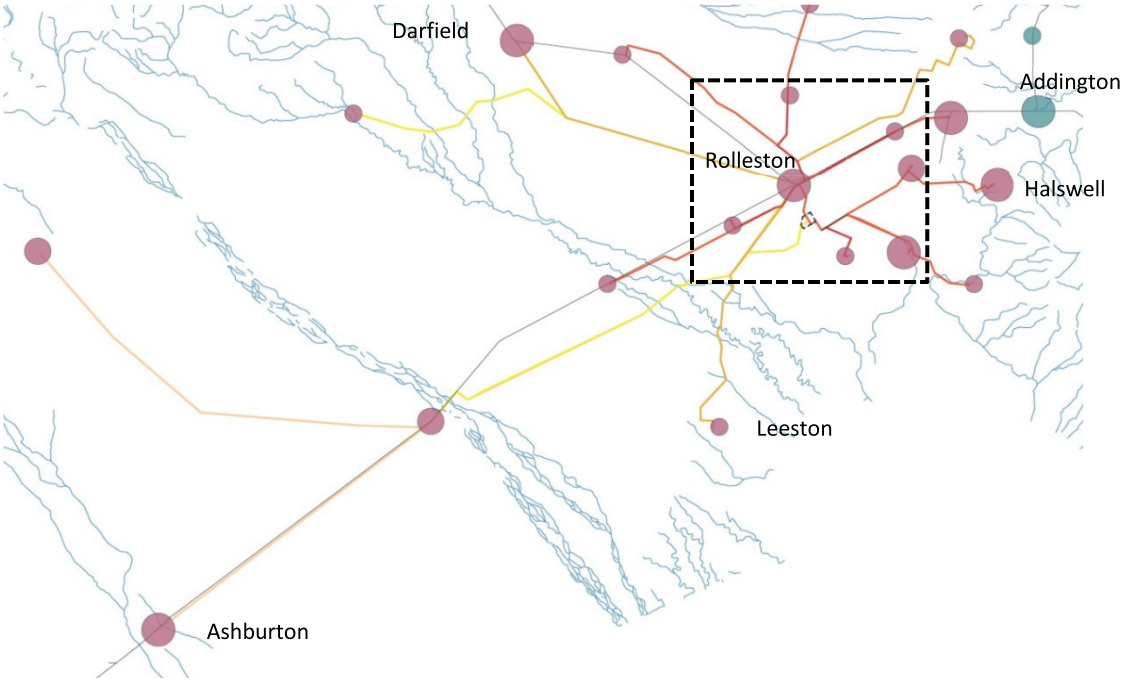


Figure 39 Wide scale potential cycle routes

The Process

Following a design process for a subdivision where sense of place is the key driver creates some interesting challenges. It was difficult to move away from the standard design formula of putting in a grid, some roads and a park. It took a process of concentrated effort and ongoing critique to be able to push through each stage of design to eventually free myself of the "standard formula" mind-set that is so seductive with its rules and formulas, to finally create something that was truly based on a unique sense of place. Something that this process highlighted is that – for this place at least – to try and incorporate elements of place into a standard design just does not work; it comes across as arbitrary or an unnecessary complication. However, when the whole design is developed on the basis of sense of place and it is allowed to drive the whole philosophy of the site, then it comes together in a synergy that makes the place really special.

This echoes Richard Weller's (2008) critique of subdivision design discussed in chapter 4 that "in deference to a "sense of place," the landscape that the new suburb almost invariably erases is returned to the new development as thematic veneer, a symbolic pastiche or hapless remnant of its former self" (p. 247). The design process described in this chapter supports the view that this applique, 'lite' version of sense of place does little to enhance subdivision design. To further illustrate the strengths that a deeper reading of place can bring to a site, the outcome of this design process is discussed in depth in the following chapter.

Chapter 6

NU vs SOP

This chapter critiques both the existing plan for the Faringdon subdivision which reflects new urbanist principles (NU), and my proposal based on sense of place as a key driver (SOP). Following the SOP design process described in Chapter 5 enabled a unique living environment to develop that is sensitive to its setting and responds to the special features that make its location unique (Figure 40). The form creates an environment that is flexible and welcoming, provides a variety of living options and enables people to establish a sense of community that is vital for our resilience. The design incorporates local resources, flexible spaces and a level of independence that is reassuring and empowering for those who live there. People have the ability to configure spaces to suit their needs while having visibility of the needs of others. People who live here have little need for cars and enjoy the cost savings and health benefits associated with alternative forms of transport (See Appendix E & F for the Intermediate and Detail Plans).

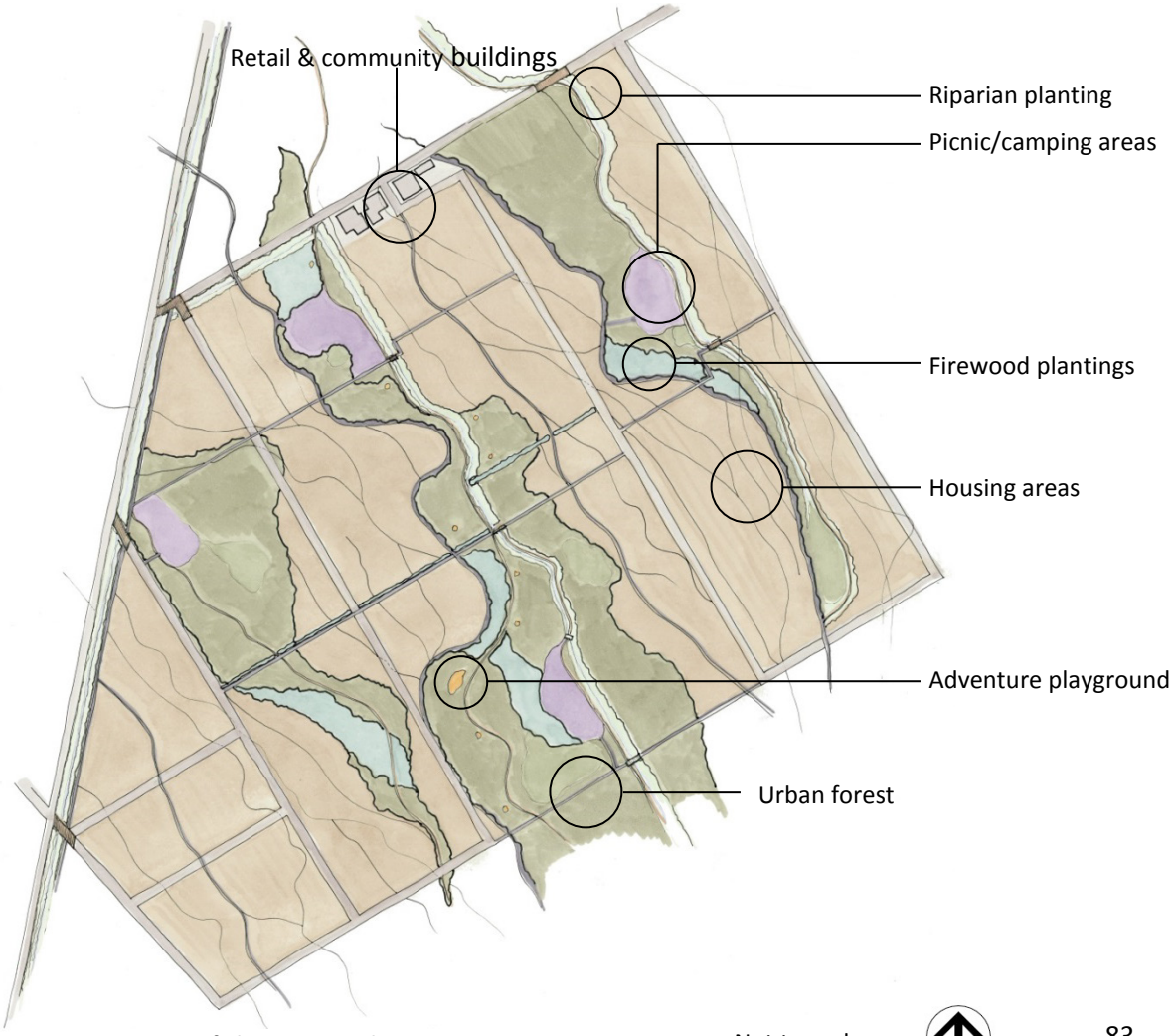


Figure 40 Sense of Place Master Plan

Not to scale

6.1 Sense of Place Subdivision

The sense of place design proposal provides a contrast to the existing proposal which reflects many new urbanist principles. It contains 1,429 households (379 more than Faringdon) and is intended to house up to 4,000 people (the same target as Faringdon). The area surrounding the subdivision consists of farms and lifestyle blocks, the vast majority of which is planned for future residential development (Figure 41).

Figure 41 Rolleston Zoning & Future Development
Coloured areas show future residential development

In the Sense of Place design proposal, the roads have been narrowed and are minimised to discourage use of cars. Instead, dedicated pedestrian and cycle pathways have been proposed. There is a range of housing sizes and types to cater for a range of people and living environments. The land is not divided into fenced sections but left open to enable flexible configuration of neighbourhoods. The urban forest creates three concentrated areas of high quality green spaces which provide daily access to nature as well as biodiversity and improved water quality and management. Density is not zoned but is left to be determined organically. This proposal is designed to achieve an overall density of 25 dwellings per hectare while retaining the same population target as the original Faringdon design.

Both the city and local bus service come right through the development so that the furthest distance travelled by a resident is 250 metres to a bus stop. Pedestrian and cycle pathways have been extended outside of the development to improve access to local schools, retail centres and the wider district. Retail and community amenities within the subdivision provide local services.

6.2 Critique of Faringdon and Sense of Place Design against planning criteria

The New Urbanism (NU) and Sense of Place (SOP) design methods have produced two very different subdivisions. This section conducts an in-depth analysis of these designs against the planning criteria that was developed from the literature review (see Appendix B & C for the full critiques). This is followed by a table which summarises the outcomes under each planning theme and provides a quick understanding of how these two designs compare. Finally, there is a discussion of how using the sense of place method enabled the design to better meet the planning criteria compared to the standard New Urbanism model.

6.2.1 Built Environment

Density

A. B. Jacobs and Appleyard (1987) suggest that a minimum density of 74 people per hectare (26 dwelling units per hectare) is needed to support local business and transit as well as to enable a public life, diversity and community. Lozano (1990) suggests that cities need to offer a range of densities and that density is a critical variable because it "determines the accessibility of people to people, of people to work, of people to services and recreation; in short it allows urban relationships to flourish" (p. 403).

In the NU development the density is much lower than this at an average of 53 people per hectare (13 dwelling units per hectare). However, this is based on an inflated assumption of 3.8 people per household which is 1 person per household higher than the Rolleston average. This being the case, it is more likely that the density is even lower than this at only 39 people per hectare. There is a range of densities from 10 dwellings per hectare (sections over 650sqm) up to 20 dwellings per hectare (sections below 550sqm) however only 14% of sections are at this higher density. Section sizes range from 400sqm – 982sqm.

The SOP development's density is similar to that suggested by Jacobs and Appleyard at an average of 70 people per hectare (25 dwelling units per hectare). This is calculated using the

Rolleston average of 2.8 people per household. The development offers a range of densities, housing types and living environments.

Built Form

Kamani-Fard et al. (2012) has observed that "…house form, internal layouts, and layouts of dwelling in the neighbourhood's environs could have positive or negative impacts on the culture of residents…" (p. 222) and that dwellings "meet the need for both personal identity and bonds with the local community" (p. 222).

In the NU design, housing is laid out in a grid along the street; each house is built within a 1.8 metre paling fence and is detached with a double garage. There are tight controls around built form, with only 4% of the houses allowed to be 2-storey and no dwellings are to be attached. To ensure this the covenants state that only one dwelling per lot is allowed. Containing houses within paling fences discourages interaction between residents, and the nature of the houses tends to restrict the kinds of households which can occupy them. Due to the placement of large garages and minimal windows at the street front there are often areas with low passive surveillance despite the lack of fencing along the front of the section. This could make the area feel unsafe at night and provides low security during the day. The wide roads, large housing set-backs and small street trees create an environment that is not human in scale which further discourages community interaction. However, these wide spaces do mean that access to sunshine within the subdivision is good.

Hough (1990) suggests that "Over-regulation of what can be done to private property has an inherent potential to generate tedium" (p. 531). People need to be able to control the environment around them and in the process of doing so "the designed landscape becomes a vernacular one, responding to practical needs" (p. 531). Randy Hester (2006) agrees with this; he says that cultures need a certain amount of space to create a traditional community form and planning policies may prevent this.

The SOP design enables a high level of control over the built form including housing type, layout and neighbourhood configuration. Housing types range from 1-5 bedrooms, up to 3 storeys and can be attached, semi-detached or detached. This provides a range of pricing

options as well as living environments for a broad range of demographics. Garages are minimal and fences are few providing good passive surveillance and opportunities for community interaction. The roads and pathways are narrow with no setback requirements, good quality street trees and other plantings create a development which is human in scale. Access to sunshine and privacy within the subdivision is managed through building placement and the use of transition zones, path hierarchies, paving changes, planting and moveable screens.

As observed by Relph (1976) "It is not possible to design rootedness nor to guarantee that things will be right…but it is perhaps possible to provide conditions that will allow roots and care for places to develop" (p. 270). The SOP design provides the possibility for this outcome to be achieved.

Inclusivity

Hough (1990) considers that wide-scale design doctrines have resulted in a "tradition of standard landscapes for standard people," (p. 528), and don't recognise that diverse groups need diverse landscapes.

The lack of variety in section sizes, housing types and configurations in the NU subdivision seems to be based on this assumption of "standard landscapes for standard people," meaning that many people will be excluded. There is little opportunity for personal or cultural expression in the development due to the high level of control by the developers; personal touches such as sculptures or other decorative elements must be kept out of sight of the street. The houses appear to be very closed off and there is little evidence of community interaction despite the marketing material that tells us to "love the community". There is limited need to be in the subdivision unless you live there, however the walkway along the water race and playground may bring people into the subdivision to use these facilities.

R. Weller (2008) suggests that "perhaps what is needed in suburbia then is greater freedom at the level of individual expression with regard to built form and private property, but greater limitation with regard to broad-scale ecological site conditions" (p. 264).

This is provided for in the SOP design. As discussed above, residents have the ability to configure their neighbourhoods in a way that best suits their needs. They can take part in the management of the neighbourhoods' communal spaces and the activities that take place there. Due to the flexible nature of each neighbourhood there is plenty of opportunity for personal and cultural expression. Pathways for pedestrians and cyclists encourage movement of "outsiders" through the site while still enabling the neighbourhood to function as a unit. While each neighbourhood can be unique, the overall structure of the development such as the urban forest, water races, circulation pattern and amenities still retain an overall sense of identity. There is a range of activities and communal facilities throughout the development which enable different forms of experience and expression.

The SOP design meets the conditions called for by Relph (1976) "…for a self-conscious planned diversity that allows people to make their own places, rooted in local contexts and filled with local meaning" (p. 266). While some may be uncertain about the impact of a broad range of people living in close proximity, Hester (2006) argues that diversity probably will not create conflict because by expressing cultural difference it makes it concrete and easier for people to understand it. This may enable the celebration rather than the fear of differences.

Perception of Density

When discussing the perception of density Lozano (1990) suggests that it is "related to one's ability to exercise behavioural freedom and to exert control over one's social and physical environment" (p. 406). This is supported by the study of Christchurch residents reaction to infill housing completed by Vallance et al. (2005) where interviewees most resented changes to their spatial habits as a result of less privacy and they noted that "New Zealanders are vehement about protecting their privacy and it is arguably this aspect, along with access to sunshine that Christchurch residents most treasure" (p. 721).

The detached nature of the housing in the NU development means that it is easy for people to maintain their privacy and behavioural freedom. However, there is limited freedom for residents to control their own property; all screens and other landscaping features must be approved by the developer. Because of the high level of building coverage there is little in the way of an open outlook except for those who are next to the "reserve".

Despite the open nature of the SOP development each dwelling has access to private space. The high level of control that residents have over their environment means that they are in a position to manage the majority of issues that they may encounter such as privacy, noise,

social interaction and their own physical environment. The majority of dwellings have an open outlook either onto the urban forest or local open space helping to create a feeling of lower density. The flexible layout of dwellings and range of building heights helps to support this.

6.2.2 Identity

Sense of Place

Relph (1976) summarises the situation well when he says:

> …proceeding from an appreciation of the significance of place and the particular activities and local situations, it would perhaps provide a way of outlining some of the main directions and possibilities, thus allowing scope for individuals and groups to make their own places, and to give those places authenticity and significance by modifying them and by dwelling in them (p. 270).

In the NU subdivision there is no evidence that the developer has shown any appreciation of the local conditions; the only signs of the historic river bed are the river stones in the bottom of the water race and there is no sign of the farming activity that used to take place on the site; they have even removed the shelter belt. Natural processes have been incorporated into the development with the use of a swale, but the majority of stormwater is managed with drains. Deciduous trees provide a cue to seasonal change and the general aesthetic fits with other Rolleston developments due to their similar nature of design. Overall there is little to distinguish it from other towns or subdivisions in the district.

In contrast, the built form of the SOP development reflects the historic patterns of the braided river as well as the more recent agricultural patterns. The braids and urban forest along with the unique layouts of the neighbourhoods provide a distinctive character to the development. The character of the setting is visually exciting and creates a feeling of belonging and of living somewhere that is unique and special. Natural processes have been incorporated into the design wherever possible such as stormwater management, water harvesting, solar panels and native planting. Aspects of the site are revealed through path surfaces, riparian planting, and the braided form of the development. People have the ability to live here in their own way, enabling them to create something that is not only of the land but of the social processes people have applied to the land.

To finish again with Relph (1976) who quotes Georges Matore (1966), "…let the occupied, lived-in space acquire more cohesion, become as rich as possible , and grow large with the experience of living" (p. 269).

Experience

When discussing the way a town can create an emotional response in the user, Cullen (1961) observes that "A long straight road has little impact because the initial view is soon digested and becomes monotonous. The human mind reacts to a contrast, to the difference between things, and when two pictures are in the mind at the same time…a vivid contrast is felt and the town becomes visible in a deeper sense. It comes alive through the drama of juxtaposition" (p. 120).

There is very little in the way of positive experience offered by the NU development. It is flat, open and highly controlled meaning that the opportunity for surprise and variation is slim to nil. The subdivision illustrates the social condition of the times where the individual dominates over community life with the umbrella of social conformity restricting individual expression. As observed by Jane Jacobs (1961b) and Ali Madanipour (2010), the social bonds between individuals have become weakened to the point where cities have become "agglomerations of atomized individuals" (Madanipour, 2010, p. 445) until there is no public life, just "differing degrees of extended private life" (J. Jacobs, 1961b, p. 146). Jacobs suggests that this is because in areas of concentrated residential housing there is no life on the street where you can enjoy contact with other people without the risk of "unwelcome entanglements" (J. Jacobs, 1961b, p. 145). In this situation Jacobs (1961b) argues that when people must choose between sharing all or nothing, they will generally choose nothing.

In contrast, the use of the braids in the SOP development for the primary means of movement provides interest and change as people move through the landscape. The curving of the braids and different heights created by the trees and buildings create rhythm and drama as some areas become quite enclosed only to open up again as you move further along. Aspects such as community living, the urban forest, and native plantings provide a unique quality to this subdivision that gives a very clear sense of location. The weather is reflected in the design through the use of passive housing techniques, rainwater tanks, natural storm management and neighbourhood layouts. Time is represented through the growing forest, the seasonal changes of the native trees through their cycles of flowering and fruiting as well as the changes in the firewood forest.

These experiences open up possibilities to bring back a community life; this development provides many reasons to be in the public environment with opportunities for informal contact with your neighbours. Jane Jacobs (1961b) suggests that a good neighbourhood "achieves a marvel of balance between its people's determination to have essential privacy and their

simultaneous wishes for differing degrees of contact, enjoyment or help from the people around them" (p. 144). The SOP development creates an environment where this is possible; however, Jacobs may argue that the communal arrangement of the housing may encroach on peoples need for privacy and a certain social distance. As Jacobs puts it, "a certain degree of contact is useful or enjoyable; but you do not want them in your hair" (J. Jacobs, 1961b, p. 142).

6.2.3 Orientation

Legibility

Kevin Lynch (1960a) proposes that "…the sweet sense of home is strongest when home is not only familiar but distinctive as well" (p. 128). He goes on to discuss the fact that people like some mystery and surprise but that it needs to be within an overall framework, not complete chaos with no connection.

When arriving at the NU subdivision the entranceway and signage make it clear that you are entering a new location. Although Lynch highlights the importance of distinctiveness as part of the feeling of home, for many subdivisions this is more often an attempt to create an ostentatious claim to exclusiveness, and differentiate them from the subdivision next door. Faringdon echoes this, as although there are elements of distinctiveness at the boundary, this is revealed to be a mere applique, with the water race and houses providing an edge but once inside the subdivision other boundaries or neighbourhoods are not obvious. The flat, open form of the development along with the tight restrictions on personal expression leaves little opportunity for surprises. The grid-like nature of the roads combined with the water race and strong axis assists residents with way-finding and provides good connections both within the subdivision and to the surrounds.

The SOP development has no need for special entranceways; it has a unique quality and character which creates a distinct boundary all on its own. The subdivision is large but is broken down into quadrants differentiated by the forests and then into smaller areas with boundaries created by path hierarchies and the unique configuration of each neighbourhood. This creates a feeling of intimacy within the larger whole. There are a number of sensory cues to assist movement through the development including landmarks, surface textures, smells created by different plant groupings and the sound of the water races and the wind. The movement system consists of curving pathways created by the braids which provide

opportunities for mystery and surprise while the straight roads created by the paddock boundaries provide an organising structure to balance this.

Transport

When discussing the importance of urban patterns Brenda Scheer (2010) points out the significant impact that new subdivisions have had on the continuity of the underlying urban tissue. Because subdivisions are privately developed and therefore less well scrutinised they are left to a certain extent to their own devices. And to exacerbate this, due to increased car usage and low (or no) access to public transport these subdivisions are often stand-alone, "barely anchored to the old system of roads that connected towns…" (Scheer, 2010, p. 321).

The NU subdivision offers no connections to the rest of the township other than by car. That the subdivision is designed for cars is made clear with its wide roads, no access to public transport, limited footpaths and no cycle lanes. This reflects the whole of Rolleston which is car dominated with little amenity for pedestrians and cyclists. Faringdon residents have to walk between 2-3 kilometres to the nearest city bus stop and 2-3 kilometres to the central retail area, again on roads that are dominated by cars. The subdivision has multiple access points and the streets are well connected making movement within the subdivision reasonably easy, however this does not extend outside its borders. As observed by Jan Gehl (1987) (cited in Frank et al 2003, p. 432) "Streets that have bland architecture and that are dominated by long featureless horizons will not only be less interesting to the non-motorist but will also increase the perception of the distance that one needs to cover to reach a particular destination."

In the SOP subdivision, facilities for vehicles are limited so that the environment for pedestrians and cyclists can be maximised. Only 15% of houses in the development have access to a garage with other parking being limited to the street or informal gravel areas. Although this might be at first concerning, this concern reminds us how fixated we are on having our own car and relying on it. This is reinforced by the kinds of places in which most of us live, places that are designed around car ownership. However, the SOP subdivision proposes a radical rebalancing of the relationship between residents and local amenities and

for a more accessible public transport system, walking and cycling facilities. All roads are well connected with multiple access points. There are a number of shared pedestrian and cycle paths, some of which have right-of-way on primary routes and these paths extend outside of the development to enable easy walking and cycling to other areas both within Rolleston and the surrounds. The bus route comes right through the development with all residents being within a 2-3 minute walk of a bus stop.

6.2.4 Resources

Public Space

In his book *Great Streets* A. B. Jacobs (1993) calls for streets to be reclaimed from the car and returned to the public realm. On a similar vein, Larice and Macdonald (2013) raise the question "Given the scale of the chronic obesity problems, might built form be a culprit, particularly the automobile-oriented cities and neighbourhoods that dominate so much of the American landscape?" (p. 415). This could be just as easily applied to the New Zealand context.

There is no access to a quality neighbourhood park within the NU subdivision due to the fragmented, linear nature of the green space. The green space consists of small or narrow grassed areas and some children's play areas. The play areas are attractive and close to housing which provides easy access and good surveillance; however the play areas are also highly prescribed with little opportunity for imaginative play. The total quantity of green space is 8% of the total development which is consistent with other local subdivisions. The majority of public space consists of roads and footpaths which prioritise the car, not the pedestrian. The restrictive nature of the subdivision and the sterile nature of the open space will likewise tend to result in restrained uses. As Randy Hester (2006) argues, the design of public space attempts to bring other cultures into line and in addition to this, new comers are eager to fit in. This can be seen in new subdivisions where a certain type of behaviour is expected of people; a tone that is set early on by the developers and is reflected in the public space that is provided to residents. By keeping the open space understated the hope is that the behaviour will be as well.

In contrast, at least 25% of the SOP development consists of high quality public open space which provides for multiple activities including walking, playing, adventure, sitting, picnics, gardening, ball games and community events. All public open space has activity along its borders creating high levels of passive surveillance, while still providing a feeling of privacy through layout and plantings. The flexible and inclusive nature of the development creates an environment where people can feel comfortable taking part in a wide range of activities. The 20 hectares of urban forest creates an important resource providing daily access to nature as well as improving natural systems and biodiversity. As discussed by Marcus (1986) in her book *Housing as if people mattered "*Children need safe, uninhibited outdoor play for their physiological and mental health" (p. 110). She goes on to say that children should have the pleasure of finding bugs, picking leaves and collecting things in unmaintained ground away from direct supervision and that through this contact with nature they may develop an understanding of basic ecological principles. The urban forest provides access to these activities that are seldom available to children living in a standard subdivision. A further benefit promoted by Marcus (1986)is that "…trees are essential elements in residential areas, to provide a link to nature, organic cycles and seasonal rhythms…" (p. 226). This view is supported by Kamani-Fard et al. (2012) who observed when discussing residents in Iran, "…the presence of palm dates in all aspects of citizen's daily life has created a deep sense of attachment to nature by them…" (p. 230). This shows the value of this asset in generating greater care and respect for our natural environment, something that can be lost in the urban lifestyle. Christian Norberg-Schulz (1976) refers to this when he says "For modern urban man the friendship with a natural environment is reduced to fragmentary relations. Instead he has to identify with man-made things, such as streets and houses" (p. 281). When these streets and houses cannot even be personalised as in the case of the NU subdivision, what does that do to our feeling of identity?

Resilience

As observed by Allan and Bryant (2011) in their study of Chile post-earthquake, "Concepcion's open space network played an important role in supporting the resumption of commerce and the establishment of emergency housing" (p. 38). However, as discussed above the open space in the NU development is of low quality, spatially fragmented, and unlikely to sustain these activities. The recreation park that is proposed to be built opposite Faringdon could provide this service, but is likely to be under pressure with competition for this space from surrounding subdivisions. Other aspects of resilience are also low with the water race providing the only alternative source of water; there are few local jobs and alternative forms

of transport are not well catered for. Road and building coverage mean that the ability to grow local produce is limited and infrastructure appears to be centralised as part of the district system. However, the well-connected street system means that access is good to enable repairs or escape where necessary.

Newman et al. (2009) suggest that, "Those cities that are prepared with short-term contingencies, alternative transport availability, alternative fuel programs, household awareness programs, will be resilient" (p. 577). In response to this the SOP development has been designed with resilience in mind. Picnic areas double as emergency camping facilities and contain emergency compost toilets, wood fired barbeques, firewood and a local power and water supply. Housing areas have ample space to grow fruit and vegetables and accommodate local stormwater management. Houses also have solar panels, rainwater tanks, grey water recycling and are positioned to work with the local microclimate. The layout provides opportunities to strengthen community connections which are vital for resilience in times of disaster.

Summary of Outcomes

Figure 42 shows a visual comparison of land use between the NU and SOP designs. The area available for housing is very similar but the use of the balance of the site is very different with the largest difference being volume of roads versus volume of green space.

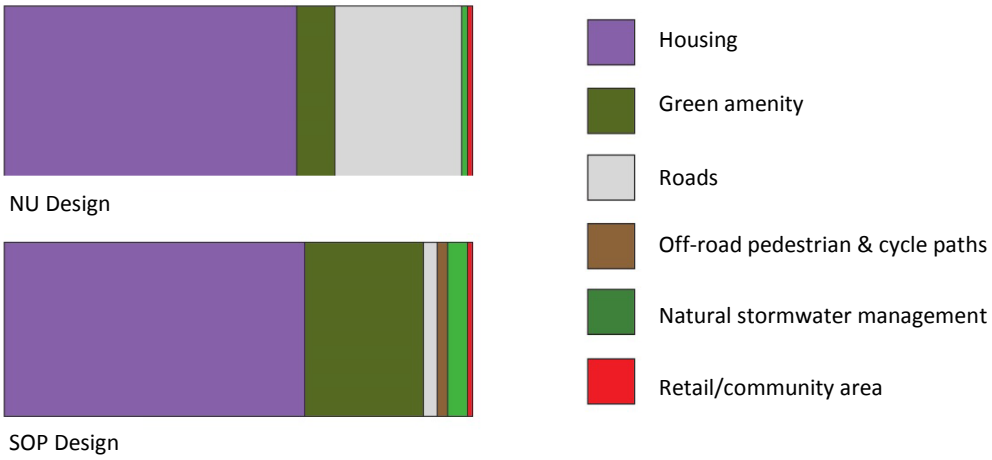


Figure 42 Comparison between NU and SOP

Table 2 provides a summary of the above discussion rating each design theme as stronger, weaker or similar when comparing the two methods. This clearly shows that using a method that prioritises sense of place as the key design driver has produced a superior result. It can be seen from this table that the sense of place method was stronger in almost all respects. The following section discusses how prioritising sense of place made this outcome possible.

Table 2 Summary of outcomes for the two planning methods

Planning Theme	New Urbanism Method		Sense of Place Method	
Density	Density is very low with only 13 dwellings per hectare with only slight variation in densities.	Weaker	The development is medium density with 25 dwellings per hectare and a mix of housing & living types.	Stronger
Built Form	All housing is detached with a double garage on a single section with little variation in form. This layout provides good access to sunshine and privacy.	Weaker	There is a broad range of housing types and neighbourhoods which are human in scale and provide access to sunshine and privacy.	Stronger
Inclusivity	The lack of variety in the built form limits the people who can live in this neighbourhood. There is little evidence of community interaction.	Weaker	Residents can configure their neighbourhoods to best suits their needs which enables a broad range of people to live there.	Stronger
Perception of Density	Due to the detached nature of the housing it is easy for people to maintain their privacy and behavioural freedom.	Similar	The high level of control that residents have over their environment and the open outlook creates a feeling of lower density.	Similar
Sense of Place	The only evidence of sense of place is the historic water race but overall there is little to distinguish it from other towns or subdivisions.	Weaker	The built form reflects the historic patterns of the braided river and recent agricultural patterns. This has influenced the philosophy of the whole development.	Stronger
Experience	The development is flat, open and highly controlled meaning that the opportunity for surprise and variation is limited.	Weaker	The curving of the braids and different heights created by the trees and buildings create rhythm and drama through the site. The development reflects a clear sense of location and time.	Stronger
Legibility	The entrance to the subdivision makes it clear that you are entering a new location and the grid-like nature of the roads and the axis assist with wayfinding.	Similar	The subdivision is broken down into neighbourhoods with boundaries created by path hierarchies and the unique configuration of each neighbourhood.	Similar
Transport	The subdivision is designed for cars with wide roads, no access to public transport, limited footpaths and no cycle lanes.	Weaker	Facilities for vehicles are limited so that the environment for pedestrians and cyclists can be maximised and easy access is provided to public transport.	Stronger
Public Space	The quality and volume of open space is low and fragmented and the majority of public space consists of roads which prioritise the car.	Weaker	At least 25% of the development is high quality public open space which provides for multiple activities and high levels of passive surveillance.	Stronger
Resilience	Other than a connected street system and a stormwater swale there is little in the way of resilience built into the development	Weaker	The development has been designed for resilience and includes aspects that improve self-sufficiency for daily and emergency situations. The community layout strengthens community connections.	Stronger

6.3 How did sense of place improve the application of planning criteria?

The landscape-based sense of place drove not just the form of the subdivision design but the whole philosophy of the site. The flowing lines created by the braids lend themselves to a more flexible housing layout; fenced square sections do not fit in this environment. The lack of fencing and communal layout suggested a much more community based design which opened up possibilities for increasing resiliency and reducing vehicle amenities. A different landscape is likely to have produced a different design philosophy for the subdivision.

6.3.1 Built Environment

The flexible layout created by the braids enables housing to be configured in groupings that create a perception of lower density and enables neighbourhoods to maximise their surrounding land. The lack of fencing, higher density and configuration of the built form enables spaces that are human in scale and makes dedicated pedestrian and cycle paths possible due to increased surveillance. The flexibility in layout allows residents to retain access to sun and privacy more effectively than may otherwise be possible in a more traditional higher density development where dwellings are lined up next to each other.

Density could have been zoned in this design, but this would not fit with the overall philosophy of the site. The lack of zoning and flexible nature of the development make it easier for people to design and configure a living environment that suits their needs without ending up with large areas of similar groupings. The volume of urban forest and layout of the housing areas mean that a lot of residents can obtain an open outlook. In a typical development, access to sunlight and privacy is easily catered for but large house sizes can give the impression of crowding.

6.3.2 Identity

Revealing the braided form of the river and the historic paddock boundaries creates a clear sense of identity in the development. It would be possible to reflect this in a standard subdivision by forming the roads to match the paddock boundaries and the braids, but this easily becomes an empty gesture if the deeper meaning of this was not brought into the design as a whole.

Due to the variety of building heights, plantings and personal expression allowed in the development, it is easy to establish a unique experience when moving through the subdivision; aspects of exposure and enclosure are created almost without trying. It would be difficult to

incorporate the features of this design into a typical development because they are unique to the place that has been created from the landscape's form and history.

6.3.3 Orientation

The uniqueness of the design assists with legibility; landmarks are created by the urban forests and neighbourhood variety, differing paving surfaces help people to understand where they are as well as transitions between public and private space. In a typical design the neighbourhoods are very similar with confusing circulation systems making it difficult for people to orient themselves. This could be particularly difficult for children, elderly and visitors.

Due to the flexible nature of the housing and increased density it makes sense to minimise car access to properties; this improves the possibilities for layout and efficiency of land use. The community focused nature of the development makes walking and cycling the preferred means of transport to increase possibilities for meeting neighbours and improving community connections. To improve conditions for pedestrians and cyclists, facilities for cars are minimised. While this system could be put in place in a standard subdivision design, there is a need for it to be integrated within the overall philosophy, which makes it more likely to be accepted by those who would choose to live there as opposed to those who would choose to live in a more typical development.

6.3.4 Resources

The higher density housing and lower volume of roads allows 25% of the site to be dedicated to high quality, connected public green space. This compares to approximately 10% of a standard subdivision where the green space tends to be low quality and fragmented and public space generally consists of roads which are dominated by motor vehicles.

The braided form of the development reminds us that, like a river, the landscape can also change. This highlights the importance of building in resilient systems and resources that can be used during times of change. The organic forms of the development and large quantities of green space provide a great foundation for the natural management of wind, water and other natural systems. The inclusion of firewood plantings, emergency camping areas, local water supplies and local food fit with the sense of place created by this design. For a community to be resilient it is important to have connections with neighbours and the layout and resources included in this design help to strengthen these connections.

Chapter 7

Conclusion

As illustrated in Chapter 6, using sense of place as the key design driver produced a unique development that is sensitive to its setting, community focused, resilient and inclusive and yet is still able to meet the other key planning drivers. The higher net density of the SOP design combined with the lower volume of roads enables a more efficient use of the land. This land is used to provide access to nature, improve resilience through utilising natural landscape systems, as well as providing room for local agriculture; wherever possible land uses are multi-functional. The flexible urban form means that access to sunshine and privacy can still be maintained even at the higher density and provides opportunities for a broad range of people and living environments to be created. The reduced amenities for cars and improved amenities for pedestrians, cyclists and public transport offers more choice of transport options and encourages a more active streetscape.

But in achieving these outcomes, what else might have to be compromised? Despite the benefits gained from reducing access for cars, this may be a challenge for some people, as may the lack of fencing and increased focus on the community. Of course the beauty of the development is that it is flexible, so for those who cannot give up the convenience of their car, there are houses that will facilitate that, and while there are no fences on the boundaries, there are opportunities to create privacy.

A further challenge is that the SOP design may be more expensive to develop; subdivisions like Faringdon rely on repetition of forms in an attempt to make things economic – simple forms and straight streets are both easier and cheaper to build. A further concern could be the higher housing density versus the quantity of open space – developers may be concerned that this will result in lower income from section sales and higher costs of green space implementation. However, as illustrated in Figure 42, the area set aside for housing is almost the same in the NU and SOP developments, it is the change in land use between roads and green space that is most significant; something that could actually increase demand for property. Further, it is quite possible that the cost of implementing green space is at least the same as, if not cheaper than, installing roads. This is an area that would need further analysis; as suggested above, the gains achieved by the SOP design could easily outweigh the costs. This

is an important aspect from a developer's point of view but from a societal viewpoint the financial and social gains of a sustainable SOP design far outweigh the NU design.

Another potential criticism of the SOP design comes from an observation by Brenda Scheer (2010) in relation to exemplary urban-style projects. Scheer suggests that projects which are leaps rather than evolutions can only be achieved through control of a single large site and must overcome enormous resistance to be built at all. Even though they may be successful they are much riskier than "normal" developments and therefore are less likely to be taken on by other developers. This is illustrated by a Christchurch group called the Viva Project who has been trying to develop a high density urban neighbourhood in the central city since 2011. This development is a huge leap from the Christchurch "norm" and the potential success is dependent on the personal drive by those implementing the design and it is meeting regular road blocks due to the untested nature of the development. However, I would argue that without these huge leaps we will move forward far too slowly. With the future issues of climate change, increasing natural disasters and peak fuel looming ever closer and the number of placeless sprawling subdivisions growing ever larger, we need some huge leaps. Newman et al. (2009) argue that a burst of innovation is needed to respond to these issues and the steps towards this come from a mixture of visionary grassroots initiatives, innovative business, and strong political leadership. However they go on to warn that "Some cities will not make the transition. They will be left waiting for the magic technology or the mystical market to sweep in with the solutions" (Newman et al., 2009, p. 577).

The question that this thesis attempts to answer is "can landscape driven sense of place drive subdivision design without compromising on other urban planning criteria to produce subdivisions that address the issues of sprawl, as well as achieving the benefits associated with a strong sense of place that can improve our overall quality of life?" The answer to this question is yes it can but it is going to take a leap of innovation to get there.

As discussed in the introduction, sprawl has a number of drawbacks. It tends to result in inefficient land use through zoning and the conversion of quality soils to urban uses; houses become bigger, more similar and of a single type; the streetscape and public space tend to be empty due to the dominance of cars; public transport is limited due to low numbers of users and poor access; long distances between local amenities make walking unfeasible or unattractive; infrastructure costs are high; and last but not least, the sense of place tends to be almost non-existent due to the efficient rolling out of "standard subdivisions for standard people".

On reviewing the literature in chapter 3, it was noted that the majority of planning criteria attempts to resolve the issues created by sprawl and to encourage different ways of designing that could either retro-fit existing places or improve the design of new places. The literature can be summarised into ten overlapping drivers of density, built form, inclusivity, perception of density, sense of place, experience, legibility, transport, public space and resilience. These drivers reflect the areas of focus that current theorists see as important in today's urban environment. It is important to note that while it is convenient to separate these aspects into categories, in reality these are all overlapping and impact on one another. This is illustrated in the fact that often the same planning criteria shows up in multiple categories.

As a landscape architect, the area of greatest importance to me is sense of place and how this can influence the other aspects of urban form. Michael Hough (1990) describes sense of place as "…what a place has when it somehow belongs to its location and nowhere else" (p. 527). A common thread between sense of place theorists is that regional identity grows over time from the interaction between natural and social processes as each moulds and is moulded by the other. As part of this, meaningful experience and a feeling of belonging is a key component for sense of place to develop. The value associated with this feeling of belonging is widely recognised, and especially comes to the foreground following a natural disaster. Sense of place affects people's connection to their home, community and sense of identity as well as having benefits for resilience, sustainability and biodiversity.

Given the issues of sprawl, the increasing focus on density in the literature, and the benefits associated with sense of place, the next stage of the research was to explore how landscape driven sense of place could be put together with planning criteria to produce alternatives to a standard subdivision; one that caters for different people as well as improving our resilience and standard of living. To again quote Sinclair Gauldie (1969) who said:

> To live in an environment which has to be endured or ignored rather than enjoyed is to be diminished as a human being (Relph, 1976, p. 270).

By foregrounding sense of place as the key planning theme the design research resulted in a subdivision proposal that reflected and respected the form of the landscape. This created a design philosophy centred on autonomy, community, resilience and self-sufficiency while still meeting the other key planning themes. The criteria played a key role in the design process; some providing a generative tool during the design phase and later acting as reminders as the design was refined. While all of the criteria were helpful in different ways, there were some

that were particularly influential in the design. These criteria include providing a variety of housing types, creating multi-functional spaces, evidence of historic patterns, creating a network of open space and giving pedestrians and cyclists' priority over motor vehicles.

However, applying these criteria offers no guarantee of achieving the desired outcome. While some criteria contain measurements, they all have an aspect of subjectivity and therefore require judgement by the designer for them to be applied successfully. A further note is that that they need to be applied together. For example, if the criteria "subdivision has a distinctive boundary" is met but "the boundary is welcoming" is not, then the outcome will not necessarily be successful.

This thesis applies these criteria to just one hypothetical scenario; it will be valuable to see these applied to further scenarios to see what other outcomes may result. An aspect of the Sense of Place design is to offer up an alternative future and to engage people's imagination. Referring back to Carl Abbott (2007) who discusses in his article *Cyberpunk Cities: Science Fiction Meets Urban* Theory, the speculative power of fiction applied to urban planning can capture society's imagination and generate change more effectively than practical, realistic outcomes.

This thesis began with Jane Jacob's (1961a) critique of "endless new developments". This research identifies ways in which sense of place criteria can generate value in developments. As such, I do not believe that we can capture society's imagination with "monotonous unnourishing gruel" but instead by using sense of place in design, we can create exciting and sustaining places for people to live and thrive.

Appendix A

Urban Planning Criteria

A.1 Built Environment

Density Criteria

#	Normative/Quantitative	Measure	Source[7]
1.1	People per hectare	70-80	AJ&DA, EL, EH, CP
1.2	Dwelling units per hectare	27-31	AJ&DA, EL, EH, CP
1.3	There are a range of densities available	Y or N?	CP, EL

Note: All measures based on net density (density per residential land use), not gross density (density per whole area)

Built Form Criteria

#	Normative/Quantitative	Measure	Source
	Residential		
2.1	There are a range of housing types available.	Y or N?	CP, JJ, ET
2.2	There are attached dwellings.	Y or N?	GB,ND,SP,CB & DW
2.3	There is a transition between public and private zones eg. - Front garden - Fences - Entrances to buildings - Balconies - Plazas/squares	Y or N?	EL, SV, HP & KM
2.4	The transition between public and private zones provides privacy while still encouraging community interaction.	Y or N?	EL, SV, HP & KM
	Community Buildings		
2.5	Community buildings are distinct	Y or N?	CNU
2.6	It is clear that community buildings are for public service or use	Y or N?	CNU
2.7	There are communal facilities available.	Y or N?	IS
2.8	Communal facilities are available for all residents and are easy to access.	Y or N?	IS
	General		
2.9	The built form fits in with their surroundings.	Y or N?	CNU, AJ
2.10	Historic/character buildings are being preserved or well cared for.		CNU
2.11	The built form is human scale.	Ratio between 1:1 and 1:3	DK, WR
2.12	The design and spatial form enables access to sunshine for at least 50% of the hours of daylight.	Y or N?	SV, HP & KM
2.13	All areas of the built environment enable passive surveillance.	Y or N?	ET
	Urban Form		
2.14	There is an integration of land uses.	Y or N?	EH, AJ & DA, CA, IM, RW, IS

[7] See Source Key at the end of Appendix A

2.15	The development contains mixed use areas.	Y or N?	JJ, AJ & DA, CNU, IS
2.16	Spaces are multi-functional.	Y or N?	JJ, CA, IM

Inclusivity Criteria

#	Normative/Quantitative	Measure	Source
3.1	There are a range of housing types available	Y or N?	CP, EL, CNU, ET
3.2	There are a range of densities available	Y or N?	CP, EL
3.3	There is a level of control by users on the use, access, creation, modification and management of spaces and activities	Y or N?	KL, EL, AM, MC
3.4	There are opportunities for people to express themselves in the urban environment	Y or N?	AJ & DA
3.5	Different social groups and cultures are acknowledged in the site	Y or N?	AJ & DA
3.6	There is a balance between individual and group identity remaining open to outsiders while sustaining a strong sense of localism	Y or N?	AJ & DA
3.7	There is a minimum density to support a diverse community	26du/ ha	AJ & DA, JJ
3.8	There is an integration of activities & amenities within walking distance to bring in a broad range of people	Y or N?	AJ & DA, JJ, ET
3.9	Small scale development to increase diversity of built form	Y or N?	AM, AJ & DA
3.10	Diversity of land use	Y or N?	RH
3.11	There are communal facilities available	Y or N?	IS, JJ, EH
3.12	There are transitions between diverse areas	Y or N?	ET

Perception of Density Criteria

#	Normative/Quantitative	Measure	Source
4.1	Residents have the ability to exert some control over their social environment.	Y or N?	EL, RH
4.2	Residents have the ability to exert some control over their physical environment.	Y or N?	EL, RH
4.3	There is a minimum distance between front-to-front, multi-storey houses.	24m	LD
4.4	Residents have the ability to exert some control over their visual interaction.	Y or N?	EL, RH, LB & EM
4.5	Residents have the ability to exert some control over their auditory interaction.	Y or N?	EL, RH, LB & EM
4.6	Residents able to maintain their behavioural freedom.	Y or N?	EL
4.7	Multi-storey buildings don't overlook single-storey residential living.	Y or N?	SV, HP & KM
4.8	The built form provides privacy.	Y or N?	SV, HP & KM
4.9	The built form enables access to sunlight.	Y or N?	SV, HP & KM
4.10	There street trees on all streets.	Y or N?	AS,SK & MD
4.11	There is an open outlook from housing.	Y or N?	AS,SK & MD, LD, RH
4.12	There is public open space.	Y or N?	RH
4.13	Blocks are a maximum width & length	90m	LD
4.14	The road enables parking on at least one side.	Y or N?	LD
4.15	There is outdoor space between the front, back and end of rows for attached residential housing	Y or N?	LD, RH

A.2 Identity

Sense of Place Criteria

#	Normative/Quantitative	Measure	Source
5.1	The built form reflects the underlying landscape	Y or N?	IM, DK, GC
5.2	The built form respects natural processes	Y or N?	MH, MC, DK, GC, RK, RW, PN, TB & HB
5.3	Natural processes have been utilised in the built form eg. wind power etc	Y or N?	RW, PN, TB & HB
5.4	The built form reflects cultural processes	Y or N?	MH, MC, RK, SV, HP & KM
5.5	A sense of history is visible including historic buildings, districts and landscape	Y or N?	MH, CNU, DK, SV, HP & KM, AJ & DA
5.6	The urban form integrates with existing urban patterns	Y or N?	CNU, BS
5.7	The built form reflects the local microclimate	Y or N?	CNU, GC
5.8	The built form reflects the topography of the area	Y or N?	CNU, DK, GC
5.9	The changing rhythms of nature are incorporated into the site	Y or N?	MC
5.10	The linear time measured schedules of life are incorporated into the site	Y or N?	MC
5.11	The discontinuous and spontaneous moments are incorporated into the site	Y or N?	MC
5.12	There are spatial boundaries – you know when you are moving from one 'place' to another	Y or N?	DK
5.13	Local landmarks are present	Y or N?	ET, CNS
5.14	There is a distinctive character to a setting	Y or N?	CNS
5.15	Orientation within the site is readily discernible	Y or N?	CNS, AJ & DA
5.16	There is a visual harmony that creates a sense of wholeness	Y or N?	GC
5.17	There is evidence of symbolism/assigned meanings and appropriation of space	Y or N?	WF & RK, CNS, AJ & DA

Experience Criteria

#	Normative/Quantitative	Measure	Source
6.1	There is some mystery and surprise, the framework of connections is not too obvious and not too complex.	Y or N?	KL, DA
6.2	The area contains aspects of serial vision - using exposure and enclosure to create interest and drama; areas that emerge through movement.	Y or N?	GC
6.3	There is a rhythm of space, both vertical and horizontal	Y or N?	CNS
6.4	Ratios of spaces are human in scale	Ratio between 1:1-1:3	DK, WR
6.5	Spaces feel physically comfortable	Y or N?	AJ
6.6	There is access to opportunity, imagination and joy	Y or N?	AJ & DA
6.7	Natural processes are legible.	Y or N?	MH
6.8	Social processes are legible.	Y or N?	MH
6.9	The experience of moving through the area improves the understanding of the place.	Y or N?	MH
6.10	The place provides users with a clear sense of location, weather and time.	Y or N?	CNU
6.11	The following temporalities are visible or catered for: - Cyclical – nature - Linear – schedules - Spontaneous – opportunistic	Y or N?	MC

A.3 Orientation

Legibility Criteria

#	Normative/Quantitative	Measure	Source
	Boundaries		
7.1	There is a distinct boundary to the subdivision or area.	Y or N?	EH, CP, KL, GC, CNS, CNU, ET
7.2	The boundary is welcoming and inclusive.	Y or N?	AM
7.3	The size of the neighbourhood created by the boundary shouldn't be too big	10-30 house holds	RH
7.4	The boundary fits in with the rest of the district.	Y or N?	KL
7.5	The boundary is permeable.	Y or N?	CA
7.6	The boundary provides a transition from one area to another.	Y or N?	ET
	Thresholds		
7.7	There are clear transitions between public and private zones eg. - Front garden - Fences - Entrances to buildings - Balconies - Plazas/squares	Y or N?	EL, SV, HP & KM
7.8	The transitions between public and private zones provide a range of levels of public interaction.	Y or N?	EL, SV, HP & KM
	Framework		
7.9	There is an overall framework to the area made up of a: 1. Path 2. Landmark 3. Edge (see boundary above) 4. Node 5. District	Y or N?	KL
7.10	There are no "gaps of identity" where a person must move from one area to the next with nothing to guide them	Y or N?	KL
7.11	There are good connections between areas with few cul-de-sacs and any cul-de-sacs should have a walkway through them.	Y or N?	KL, ET
7.12	There is some mystery and surprise, the framework of connections isn't too obvious and nor too complex.	Y or N?	KL, DA
7.13	The area contains aspects of serial vision - using exposure and enclosure to create interest and drama; areas that emerge through movement.	Y or N?	GC
7.14	The area makes use of juxtaposition to create interest.	Y or N?	GC
	Sensory Cues		
7.15	The area contains a number of sensory cues to assist way-finding such as: - Visual - Auditory - Smell - Touch - Kinaesthetic - Gravity	Y or N?	KL
7.16	There is evidence of historic patterns or boundaries.	Y or N?	CNU

7.17	The area effectively manages and celebrates the local microclimate and conditions.	Y or N?	CNU
	Provide a Centre		
7.18	The area or district contains a distinct centre.	Y or N?	CNU, CNS, PC, RH, EH, ET
7.19	There are direct routes from all parts of the district to the centre.	Y or N?	PC

Transport Criteria

#	Normative/Quantitative	Measure	Source
	Public Transport		
8.1	Maximum walk to transit stop	600m	PC
8.2	Good quality bus shelter provided	Y or N?	PC
8.3	Park and ride transit stops	Y or N?	PC
8.4	Good waiting experience	Y or N?	PC
8.5	Wide range of destination options	Y or N?	IS
8.6	Development along transit corridors	Y or N?	PC
8.7	Transit service available for very first resident	Y or N?	TB
8.8	Minimum frequency of service	15 mins	PC
	Cycle Facilities		
8.9	Bicycle lanes are provided on several primary routes	Y or N?	PC
8.10	Quality bike stands are provided next to amenities	Y or N?	PC
8.11	Quality bike stands are provided next to key transit stops	Y or N?	PC
8.12	Intersections give cyclists priority	Y or N?	CCC Cycle Guidelines
8.13	Bicycle lanes are safe	Y or N?	CCC Cycle Guidelines
8.14	Cyclist given priority over cars	Y or N?	CCC Cycle Guidelines
8.15	Connected streets for pedestrians & cyclists	Y or N?	PC, DR & NF
8.16	Bike paths well identified by signs & symbols	Y or N?	PC
8.17	Bike paths provided along greenways	Y or N?	PC
8.18	Bike paths provided where local streets converge on commercial or transit areas	Y or N?	PC
	Walkability		
8.19	Footpaths are provided on both sides of the road (CCC pedestrian guidelines).	Y or N?	CCC
8.20	Footpaths on residential or secondary streets are a minimum width	1.8m	DR & NF
8.21	Footpaths on main streets are a minimum width	2.5m	DR & NF
8.22	Blocks are a maximum width & length	40-50m wide 90-120m long	DR & NF
8.23	Pedestrian given priority	Y or N?	AJ
8.24	Pedestrian street networks directly connect local destinations	Y or N?	PC
8.25	There are no “gaps of identity” where a person must move from one area to the next with nothing to guide them	Y or N?	PC, KL
8.26	Main routes to transit stops should be lined with activities	Y or N?	PC
8.27	Maximum walk to shops & community services	600m	PC
8.28	Connected streets for pedestrians & cyclists	Y or N?	PC, DR & NF

8.29	Commercial, housing, jobs, parks & civic uses in walking distance of transit stops	600m	PC
	Vehicle Access		
8.30	Maximum parking spaces per 100 sq/m of office space	2-4	PC
8.31	Maximum parking spaces per 100 sq/m of retail space	3-5	PC
8.32	Maximum parking spaces per 100 sq/m of industrial space	1-3	PC
8.33	Residential roads are a maximum width	6m	DR & NF
8.34	Secondary roads are a maximum width	7m	DR & NF
8.35	Main roads are a maximum width	10m	DR & NF
8.36	Speed limit on residential streets	30km/hr	DR & NF
8.37	Speed limit on secondary and main streets	50km/hr	DR & NF
8.38	Car sharing facilities are available	Y or N?	TB
	General		
8.39	Multiple transport methods available	Y or N?	EH, AJ & DA

A.4 Resources

Public Space Criteria

#	Normative/Quantitative	Measure	Source
	General		
9.1	Minimum public open space per 1,000 residents	1.5 hectares	PC
9.2	Minimum public open space per development	5-10%	PC
9.3	Maximum distance of residents from pocket park (less than 1ha in size per CCC policy)	200m	PC
9.4	Maximum distance of residents from neighbourhood park (size should be 1ha per 1000 people per CCC policy)	600m	PC
9.5	The development provides a variety of open space	Y or N?	PA & BM
9.6	Public space is accessible to all	Y or N?	AM, AJ & DA,
9.7	Public space has active borders	Y or N?	JJ, AJ & DA, LF, PE, & TS
9.8	Public space feels safe	Y or N?	CNU, JJ, AJ
9.9	Public space contains more than one exit/entrance point	Y or N?	ET
9.10	Public space provides for multiple activities and shared uses	Y or N?	JJ, AJ & DA, LF, PE, & TS, AM, MC
9.11	Users have the ability to interact with and change the public space	Y or N?	AJ, MC
9.12	Public space allows for spontaneous activity	Y or N?	LF, PE, & TS, MC
9.13	Public space prioritises the pedestrian	Y or N?	CNU, AJ & DA, TB
	Public Green Space		
9.14	There is access to public green space	Y or N?	SV, HP & KM, RW, RH, CNU, TB
9.15	Trees are of high quality and volume	Y or N?	TB, RH
9.16	There is a network of open space rather than the green space being fragmented	Y or N?	TB, RH
9.17	Open space provides biodiversity	Y or N?	DR & NF
	Public Streets		
9.18	There are street trees on all streets	Y or N?	AS,SK & MD, PC
9.19	Street trees are of high quality and volume	Y or N?	TB, RH

Resilience Criteria

#	Normative/Quantitative	Measure	Source
	Diversity of open space		PA & BM
10.1	Open space contains an independent water supply that can support the local population	Minimum of 3 days (3L per person per day)	PA & BM, NZ Civil defence
10.2	There is a variety of open space and resources	Y or N?	PA & BM, EH, RH
10.3	Open space has public toilets	Y or N?	PA & BM
10.4	Open space has cooking facilities	Y or N?	
10.5	Open space provides an elevated view point	Y or N?	PA & BM
10.6	Open space has a flat area that can be used for camping or other emergency activities	Y or N?	PA & BM
10.7	All residents are within close proximity to good quality open space	Y or N?	PA & BM, EH, CP, CNU, AJ & DA, AM, RH
	Modularity & Autonomy		PA & BM
10.8	The development provides local employment	Y or N?	EH, AJ & DA, CNU,
10.9	The development has multiple transport options	Y or N?	EH, AJ & DA
10.10	The development provides access to local agriculture/access to food	Y or N?	EH
10.11	The development has independent infrastructure	Y or N?	PA & BM
10.12	The development contains a variety of local businesses and services	Y or N?	EH, AJ & DA
10.13	The development has access to a local water supply	Y or N?	PA & BM
10.14	The development provides local community services	Y or N?	EH
10.15	The urban form is adaptable to future change	Y or N?	KL, CW
	Tight Feedbacks & Social Capital		PA & BM
10.16	Activities are integrated to enhance a healthy public life	Y or N?	AJ & DA, RW, IS, CNU, JJ, CA
10.17	There are distinct neighbourhoods with clear boundaries	Y or N?	PA & BM, KL, CP, GC, CNS, CNU, RH, ET
	Ecosystem services & Natural systems		PA & BM
10.18	The design fits the site and is driven by natural landscape processes	Y or N?	AJ & DA, IM, CW, KL
10.19	The development form reveals landscape processes	Y or N?	IM, GC, MH, CW, DK
10.20	Rain water collection systems are in place	Y or N?	TB, PN, TB & HB, RW, WR
10.21	Grey water recycling processes are in place	Y or N?	TB, PN, TB & HB, RW, WR
10.22	The area manages storm water with natural systems	Y or N?	TB, PN, TB & HB, RW, WR
10.23	Waste energy is recycled for heating or other purposes		PN, TB & HB
	Redundancy & Access		PA & BM
10.24	Streets are connected		PA & BM, JJ
10.25	Public space is multi-functional	Y or N?	PA & BM, IM, CW, RK, IS, AJ & DA, RW, MC
10.26	The development contains multiple entry and exit points to the wider region		PA & BM, ET

Source Key

Source Initials	Source Name
AJ	Allan Jacobs
AJ&DA	Allan Jacobs & Donald Appleyard
AM	Ali Madanipour
AS,SK & MD	Alpana Sivam, Sadasivam Karuppannan & Michael Davis
BS	Brenda Scheer
CA	Christopher Alexander
CCC	Christchurch City Council
CNS	Christian Norberg-Schulz
CNU	Congress of the New Urbanism
CP	Clarence Perry
CW	Charles Waldheim
DA	Donald Appleyard
DK	Douglas Kelbaugh
DR & NF	David Rudlin & Nicholas Falk
EH	Ebenezer Howard
EL	Eduardo Lozano
ET	Emily Talen
GB,ND,SP,CB & DW	Glen Bramley, Nicola Dempsey, Sinead Power, Caroline Brown, David Watkins
GC	Gordon Cullen
IM	Ian McHarg
IS	Ilaria Salvadori
JJ	Jane Jacobs
KL	Kevin Lynch
LB & EM	Laurie Buys & Evonne Miller
LD	Linda Day
LF, PE & TS	Lawrence D. Frank, Peter O. Engelke, & Thomas L. Schmid
MC	Margaret Crawford
MH	Michael Hough
PA & BM	Penny Allan & Martin Bryant
PC	Peter Calthorpe
PN, TB & HB	Peter Newman, Timothy Beatley & Heather Boyer
RH	Randy Hester
RK	Rem Koolhaas
RW	Richard Weller
SV, HP& KM	Suzanne Vallance, Harvey Perkins & Kevin Moore
TB	Timothy Beatley
WF & RK	Wardlow Friesen & Robin Kearns
WR	William Rees

Appendix B

New Urbanism Critique

B.1 Built Environment

Density Criteria – NU

#	Normative/Quantitative	Measure	Source[8]	Result	Qualitative	Evaluation
1.1	People per hectare	80	AJ&DA, EL, EH, CP	49	High density housing in Faringdon is defined as 20 dwellings per hectare which makes up only 14% of total sections. Secondly, the Faringdon target of 3.8 people per dwelling (which produced the result of 49 people per hectare) is unrealistic and well above the Rolleston average of 2.8 people per hectare.	Degrades
1.2	Dwelling units per hectare	31	AJ&DA, EL, EH, CP	13	This is the average density based on a range of 10, 15 and 20 dwellings per hectare.	Degrades
1.3	There are a range of densities available	Y or N?	CP, EL	Yes	Densities are calculated by section sizes with high density being 550sqm or less and low density being 650sqm or more. Similarly, house sizes range from 140sqm up to an almost unlimited size. Overall, the range of densities isn't large.	Strongly degrades

Note: All measures based on net density (density per residential land use), not gross density (density per whole area)

[8] See Source Key at the end of Appendix A

Built Form Criteria – NU

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
	Residential					
2.1	There are a range of housing types available.	Y or N?	CP, EL, CNU, ET	No	There is a single housing type of detached dwellings with a maximum of one dwelling per section; the only variation is in the size which is highly restricted. The smallest house size allowed is 140sqm (on a section 550sqm or less) up to a minimum of 200sqm on a section size of 200sqm or more. Small sections of 550sqm or less make up only 14% of the sections available. 2 storey houses are only allowed on 4% of the sections and no single garages are allowed.	Strongly degrades
2.2	There are attached dwellings.	Y or N?	GB,ND, SP,CB & DW	No	All houses are detached, townhouses are not allowed. The covenants state only one dwelling per lot.	Degrades
2.3	There is a transition between public and private zones.	Y or N?	EL, SV, HP & KM	Yes	The transitions between public and private space consist of grass edging, footpath, lawn/garden and entranceway. No fencing is allowed along the front of the section.	Neutral
2.4	The transition between public and private zones provides privacy while still encouraging community interaction.	Y or N?	EL, SV, HP & KM	No	The front gardens generally put residents directly into the public realm. These front areas aren't active places, they are "for show". It's the backs of the houses where there is fencing that the activity takes place. As such, people are only likely to use the front garden for checking the mail, putting out the rubbish or maintenance work on the property.	Degrades
	Community Buildings					
2.7	There are communal facilities available.	Y or N?	IS	Yes	The only communal facilities are parks and playgrounds.	Degrades
2.8	Communal facilities are available for all residents and are easy to access.	Y or N?	IS	Yes		Neutral
	General					
2.9	The built form fits in with their surroundings.	Y or N?	CNU, AJ	Yes	The houses generally tie in with each other and the surrounding subdivisions – detached, single storey, large houses.	Neutral

2.11	The built form is human scale.	Ratio between 1:1 and 1:3	DK, WR	No	The average street has a ratio of 1:5 which goes up to 1:12 on the double streets.	Degrades
2.12	The design and spatial form enables access to sunshine for at least 50% of the hours of daylight.	Y or N?	SV, HP & KM	Yes	Visually the subdivision seems to provide access to sunshine and the developers reserve the right to refuse certain built forms if they believe it will impact on other properties.	Strongly Improves
2.13	All areas of the built environment enable passive surveillance.	Y or N?	ET	No	The lack of fencing along the front of sections should provide reasonable passive surveillance and where houses are next to a reserve they are required to have a low permeable fence and an active room facing this area. While some houses do provide good passive surveillance, the houses are generally dominated by large garages with only small or under-used rooms such as dining rooms fronting the street.	Neutral
	Urban Form					
2.14	There is an integration of land uses.	Y or N?	EH, AJ & DA, CA, IM, RW, IS	No		Degrades
2.15	The development contains mixed use areas.	Y or N?	JJ, AJ & DA, CNU, IS	No	There is no mixed use development; it is primarily single storey, detached residential housing with two areas of separate retail areas.	Neutral
2.16	Spaces are multi-functional.	Y or N?	JJ, CA, IM	No		Degrades

Inclusivity Criteria – NU

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
3.1	There are a range of housing types available	Y or N?	CP, EL, CNU, ET	No	See 2.1 Built Form	Strongly degrades
3.2	There are a range of densities available	Y or N?	CP, EL	No	See 1.3 Density	Strongly degrades

3.3	There is a level of control by users on the use, access, creation, modification and management of spaces and activities	Y or N?	KL, EL, AM, MC	No	There are some grass areas and a playground that people can access at any time but there is no control over creation, modification or management of these spaces.	Neutral
3.4	There are opportunities for people to express themselves in the urban environment	Y or N?	AJ & DA	No	There are very strict guidelines as to what can be the house looks like as well as the landscaping and street front. Everything must be approved by the developer and anything other than standard "decoration" must be kept out of sight of the street.	Strongly degrades
3.5	Different social groups and cultures are acknowledged in the site	Y or N?	AJ & DA	No	This subdivision targets a single social group and there is little room for cultural expression. There is a very specific aesthetic that the developers are striving for.	Strongly degrades
3.6	There is a balance between individual and group identity remaining open to outsiders while sustaining a strong sense of localism	Y or N?	AJ & DA	No	There is little feeling of community interaction. Outsiders have no need to be here. There is no sense of identity as the development is very similar to others in Rolleston. The main point of difference is the water race.	Degrades
3.7	There is a minimum density to support a diverse community	26 du/ha	AJ & DA, JJ	13 du/ha	The NU subdivision has an average of 13 du/ha which is half the recommended minimum. See 1.2 Density.	Degrades
3.8	There is an integration of activities & amenities within walking distance to bring in a broad range of people	Y or N?	AJ & DA, JJ, ET	No	This subdivision is isolated from the rest of Rolleston with very car dominated streets both within the subdivision and outside of it. However there is an intention in the future for the recreation park opposite the subdivision to improve this connection as well as further residential development nearby. It is also intended that a retail area will be built sometime in the future.	Neutral
3.9	Small scale development to increase diversity of built form	Y or N?	AM, AJ & DA	No	This is a very large development with very little diversity of built form.	Degrades
3.10	Diversity of land use	Y or N?	RH	No		Neutral
3.11	There are communal facilities available	Y or N?	IS, JJ, EH	Yes	See 2.5 Built Form	Degrades

Perception of Density Criteria – NU

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
4.1	Residents have the ability to exert some control over their social environment.	Y or N?	EL, RH	Yes	Residents have a high level of control over their social environment due to housing being detached. However, houses are not allowed front fences and must have screens and other features approved by the developers.	Improves
4.2	Residents have the ability to exert some control over their physical environment.	Y or N?	EL, RH	Yes	This is possible on their own property but only if it's approved by the property developer even to the extent of the lettering on the letterbox! There does not appear to be the ability to exert control over the environment outside their own property.	Degrades
4.3	There is a minimum distance between front-to-front, multi-storey houses.	24m	LD	21m	There are not enough multi-storey houses in this development to make this distance appropriate.	Neutral
4.4	Residents have the ability to exert some control over their visual interaction.	Y or N?	EL, RH, LB & EM	Yes	This is possible through the use of blinds, net curtains, trees/planting, side and rear fences, and a lot of houses have tinted windows. Other factors include placement of house on the property to improve the ability of these strategies being successful. Eg. angled placement of the house or placement of the garage puts less frontage on the street and a smaller area to screen. Being detached houses with few 2-storey buildings makes it easier to implement these strategies however these strategies also degrade the interaction with the street.	Degrades
4.5	Residents have the ability to exert some control over their auditory interaction.	Y or N?	EL, RH, LB & EM	Yes	These are all detached houses and therefore there is no immediate neighbour noise through the walls. Fences, plantings and sound proofing can all be used to control auditory interaction.	Improves
4.6	Residents able to maintain their behavioural freedom.	Y or N?	EL	Yes	This is achieved primarily through strategies to maintain privacy such as those listed in 4.4. Being detached housing and only a small number of 2-storey buildings make this reasonably easy to achieve. However, strict covenants set certain expectations by the developers which could restrict some behavioural freedom of residents.	Improves

4.7	Multi-storey buildings don't overlook single-storey residential living.	Y or N?	V,P& M	Yes	There are some instances where 2 storey dwellings will be next to single-storey dwellings however privacy can be managed through house position, plantings, positioning of rooms etc.	Improves
4.8	The built form provides privacy.	Y or N?	V,P& M	Yes	As for various strategies above, plus garages dominating the street means that the house has a good level of privacy. All properties have side and back fences (as required by the covenants) and use the house position to obtain a private back yard space.	Improves
4.9	The built form enables access to sunlight.	Y or N?	V,P& M	Yes	See 2.9 Built Form	Strongly improves
4.10	There street trees on all streets.	Y or N?	AS,SK & MD	Yes	There appear to be a good number of street trees on the main axes. Other streets have trees but they tend to be low in numbers and are only on the side of the street that doesn't have a footpath. The trees are still very small but will improve with age. All trees are deciduous.	Neutral
4.11	There is an open outlook from housing.	Y or N?	AS,SK & MD, LD, RH	Yes	Houses next to the "reserve" have an open outlook however; the reserve is just a wide expanse of grass with a few trees and the water race which creates a wide double road. Other houses don't have an open outlook.	Neutral
4.12	There is public open space.	Y or N?	RH	Yes	1.65 hectares per 1000 people and 8% of total development is open space. However, this 1.65 hectares is very fragmented and the majority of it is in narrow linear corridors. The CCC Open Space strategy suggests that a neighbourhood should have a park with a minimum size of 1ha per 1000 people. This development does not meet these guidelines.	Degrades
4.13	Blocks are a maximum width & length	40-50m wide 90-120m long	DR & NF, LD	No	12 blocks meet this criteria, the rest (approx. 43 blocks) are between 130m up to 400m. Block width varies from 55-75m.	Strongly degrades
4.14	The road enables parking on at least one side.	Y or N?	LD	Yes	The roads have a 15m total reserve and the roadways themselves provide plenty of space for parking on both sides of the road.	Degrades

B.2 Identity

Sense of Place Criteria – NU

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
5.1	The built form reflects the underlying landscape	Y or N?	IM, DK, GC	No		Degrades
5.2	The built form respects natural processes	Y or N?	MH, MC, DK, GC, RK, RW, PN, TB & HB	No	Contains a few swales	Degrades
5.3	Natural processes have been utilised in the built form eg. wind power etc	Y or N?	RW, PN, TB & HB	No	There is no evidence of wind turbines, solar panels or any other natural processes.	Degrades
5.4	The built form reflects cultural processes	Y or N?	MH, MC, RK, SV, HP & KM	Yes	Individualism, and the domination of the car are reflected in the built form of Faringdon. Deciduous street trees align with our colonial past.	Degrades
5.5	A sense of history is visible – including historic buildings, districts and landscape	Y or N?	MH, CNU, DK, SV, HP & KM, AJ & DA	No	One aspect that could be considered a sense of history is the stone entranceway to the subdivision. These are made from river stones which could be intended to reflect the historic land form.	Degrades
5.6	The urban form integrates with existing urban patterns	Y or N?	CNU, BS	No	Nearby developments have much windier roads and a lot more cul-de-sacs than Faringdon. Faringdon is currently surrounded by paddocks and lifestyle blocks so it varies significantly from these as well.	Neutral
5.7	The built form reflects the local microclimate	Y or N?	CNU, GC	No		Degrades
5.8	The built form reflects the topography of the area	Y or N?	CNU, DK, GC	Yes	The site of Rolleston is fairly flat and this is reflected in the built form. However, the undulations of the old river bed are not represented.	Neutral
5.9	The changing rhythms of nature are incorporated into the site	Y or N?	MC	Yes	Deciduous trees provide evidence of the changing seasons and the growth of the trees over time will provide further cues to time and change.	Neutral
5.10	The linear time measured schedules of life are incorporated into the site	Y or N?	MC	Yes	The easy of movement of cars through the subdivision reflects the importance of schedules as do the low maintenance houses and gardens.	Degrades

5.11	The discontinuous and spontaneous moments are incorporated into the site	Y or N?	MC	No	I could not see any evidence of this.	Degrades
5.12	There are spatial boundaries – you know when you are moving from one 'place' to another	Y or N?	DK	Yes	You know when you are entering and leaving the subdivision due to the gateway that has been built. However, once in the subdivision the main cues for change are street signs.	Degrades
5.13	Local landmarks are present	Y or N?	ET, CNS	Yes	The water race, retail area and port hills (if they remain visible) provide landmarks.	Neutral
5.14	There is a distinctive character to a setting	Y or N?	CNS	No		Degrades
5.15	Orientation within the site is readily discernible	Y or N?	CNS, AJ & DA	No	Only through orientation to the site axis and potentially to the port hills. When not near to the axes it is easy to get disorientated.	Degrades
5.16	There is a visual harmony that creates a sense of wholeness	Y or N?	GC	Yes	The subdivision goes together well due to the tight control held by the developer.	Degrades

Experience Criteria – NU

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
6.1	There is some mystery and surprise, the framework of connections is not too obvious and not too complex.	Y or N?	KL, DA	No	The layout is very open with few trees or variation in height other than the occasional 2-storey dwelling. The road system is primarily grid-like with very little surprise as you move through it.	Degrades
6.2	The area contains aspects of serial vision - using exposure and enclosure to create interest and drama; areas that emerge through movement.	Y or N?	GC	No	Most of the streets are quite straight with a flat and open layout. Other than houses and fences there is very little to hide or reveal views or to create changes between enclosed and exposed.	Degrades
6.3	There is a rhythm of space, both vertical and horizontal	Y or N?	CNS	No	There are very few trees and those that are there are small; this will improve as they grow. There are very few 2-storey buildings, they are only permitted on the widest streets which somewhat reduces their impact.	Degrades

6.4	Ratios of spaces are human in scale	Ratio between 1:1-1:3	DK, WR	No	See 2.8 built form	Degrades
6.5	Spaces feel physically comfortable	Y or N?	AJ	No	The streets are pretty empty and the public areas are highly groomed which creates a feeling of restriction and discomfit. The vast open spaces and straight lines create a feeling of exposure and long distances.	Strongly degrades
6.6	There is access to opportunity, imagination and joy	Y or N?	AJ & DA	No	This subdivision is extremely controlled and anything that expresses individuality must be kept out of view of anyone else in the subdivision per the covenants. There is a playground and a water race which has been naturalised however I'm not sure if people would feel comfortable to interact with it.	Strongly degrades
6.7	Natural processes are legible.	Y or N?	MH	Yes	There are some swales and the water race has been semi-naturalised.	Degrades
6.8	Social processes are legible.	Y or N?	MH	Yes	It reflects the dominance of the individual over the community with social conformity restricting expression.	Degrades
6.9	The experience of moving through the area improves the understanding of the place.	Y or N?	MH	No	Not of the 'place' but you can get a view of how people live and the importance of privacy, separateness and seclusion in the home.	Degrades
6.10	The place provides users with a clear sense of location, weather and time.	Y or N?	CNU	No	There is no sense of location in Faringdon, I could be anywhere. However, it does provide a clear sense of the weather due to the exposed nature of the site. There is little to provide shade or protection from the wind or rain. In regards to a sense of time, this is provided by the modern houses and vehicles. There is no evidence of history to better communicate the contrast and movement of time to the user.	Degrades
6.11	The following temporalities are visible or catered for: - Cyclical – nature - Linear – schedules - Spontaneous – opportunistic	Y or N?	MC	Yes	See 5.10-5.12 Sense of Place	Degrades

B.3 Orientation

Legibility Criteria – NU

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
	Boundaries					
7.1	There is a distinct boundary to the subdivision or area.	Y or N?	EH, CP, KL, GC, CNS, CNU, ET	Yes	There are water races on almost all boundaries which are being "naturalised" to create a pleasing aesthetic look to the development. There is also a large entranceway stating the name of the subdivision.	Improves
7.2	The boundary is welcoming and inclusive.	Y or N?	AM	No	The entranceway is a stone gateway suggesting that you are entering a grand "estate"; this could be intimidating for some. The gateway seems to have the purpose of discouraging people from coming in that "don't belong".	Degrades
7.3	The size of the neighbourhood created by the boundary shouldn't be too big	10-30 house-holds	RH	1050 HH	The total boundary of the subdivision contains 1050 households and it reads as one giant neighbourhood. It may be possible to break these down into smaller quarters however there doesn't appear to be any intention to do this.	Strongly degrades
7.4	The boundary fits in with the rest of the district.	Y or N?	KL	Yes	The gateway is typical of Rolleston subdivisions and the swale/water race is also seen in other areas although this one is more elaborately upgraded.	Neutral
7.5	The boundary is permeable.	Y or N?	CA	Yes	The boundary when complete will be differentiated by a row of housing which is likely to block the view into the subdivision from the outside. There are some walkways leading into the subdivision around the periphery which helps with permeability.	Improves
7.6	The boundary provides a transition from one area to another.	Y or N?	ET	Yes	The gateway at the entrance provides a clear message that you are moving into a new area as does the water race/swale around the outside.	Improves
	Thresholds					
7.7	There are clear transitions between public and private zones.	Y or N?	EL, SV, HP & KM	Yes	See 2.3 of built form	Neutral

7.8	The transitions between public and private zones provide a range of levels of public interaction.	Y or N?	EL, SV, HP & KM	Yes	I can see the following possible levels of interaction: 1. Talking to someone at the gate who walks past while you are there 2. Waving to someone from the garden as they go past, don't need to talk because further way. 3. Talking to someone who has arrived at the front door	Neutral
	<u>Framework</u>					
7.9	There is an overall framework to the area made up of a: 1. Path 2. Landmark 3. Edge (see boundary above) 4. Node 5. District	Y or N?	KL	Yes	1. Path - is created by the footpaths which lead you around the subdivision. All footpaths are edged by kerbs and grass. 2. Landmark – the axis through the site referred to as the "reserve" helps with orientation as well as the retail areas and the port hills if they can still be seen after the building is complete. 3. Edge - consists of the water race and roads. The kerb creates a clear edge. 4. Node - the park at the centre of the subdivision where the axes cross along with a retail centre at the same location. 5. District - From above the area seems to be a clear district. From the ground it feels like a district because it's so isolated and so large. The areas within don't feel like districts which is disorienting.	Improves
7.10	There are no "gaps of identity" where a person must move from one area to the next with nothing to guide them	Y or N?	KL	Yes	There are no "gaps of identity" in regards to blank areas because you are generally walking past houses with open front gardens. However, the houses are very similar and the front gardens tend to be empty so you could argue that the whole subdivision is one big identity gap. The wide spaces and long straight roads also add to this feeling.	Degrades
7.11	There are good connections between areas with few cul-de-sacs and any cul-de-sacs should have a walkway through them.	Y or N?	KL, ET	Yes	The road system seems slightly less confusing than a standard subdivision with a more grid-like structure. There are only 5 cul-de-sacs, none of which have walkways through them.	Improves
7.12	There is some mystery and surprise, the framework of connections isn't too obvious and nor too complex.	Y or N?	KL, DA	No	See 6.1 experience	Degrades

7.13	The area contains aspects of serial vision - using exposure and enclosure to create interest and drama; areas that emerge through movement.	Y or N?	GC	No	See 6.2 experience	Degrades
7.14	The area makes use of juxtaposition to create interest.	Y or N?	GC	Yes	There is a main axis through the site which is much wider than the rest of the subdivision so it's possible that this openness creates juxtaposition to the rest of the subdivision but it is a very minor one.	Neutral
	<u>Sensory Cues</u>					
7.15	The area contains a number of sensory cues to assist way-finding such as: - Visual - Auditory - Smell - Touch - Kinaesthetic - Gravity	Y or N?	KL	Yes	Visual cues include the water race, and axes through the site. There could be an auditory cue if water is running through the water race however I couldn't hear the water when I was there. Occasional bridges also create a change in sound and texture under foot. The texture mainly changes between footpath and grass so there is not much to assist way-finding with touch, kinaesthetic or gravity.	Neutral
7.16	There is evidence of historic patterns or boundaries?	Y or N?	CNU	Yes	The only historic element in the site is the water race.	Neutral
7.17	The area effectively manages and celebrates the local microclimate and conditions.	Y or N?	CNU	No		Degrades
	<u>Provide a Centre</u>					
7.18	The area or district contains a distinct centre.	Y or N?	CNU, CNS, PC, RH, EH, ET	Yes	There is a central area created by the axes through the site, the playground and the location of a retail centre.	Improves
7.19	There are direct routes from all parts of the district to the centre.	Y or N?	PC	Yes		Improves

Transport Criteria - NU

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
	Public Transport					
8.1	Maximum walk to transit stop	600m	PC	No	3 kilometres	Strongly degrades
8.2	Good quality bus shelter provided	Y or N?	PC	No	There are no bus stops in the subdivision	Strongly degrades
8.3	Park and ride transit stops	Y or N?	PC	No	There are no park and ride transit stops but they are planning one in the next 10-15 years in the Rolleston township	Neutral
8.4	Good waiting experience	Y or N?	PC	No	There are no bus stops	Neutral
8.5	Wide range of destination options	Y or N?	IS	No	There are two bus routes that go through Rolleston, one is a local service that goes between Burnham and Lincoln via Rolleston and the other one goes between Rolleston and the City with main destinations along the way being Templeton, Hornby, Church Corner, Riccarton, Christchurch Hospital, Central City and the Polytech. However, the city route doesn't come near to Faringdon.	Degrades
8.6	Development along transit corridors	Y or N?	PC	No	There is no transit near Faringdon	Strongly degrades
	Cycle Facilities					
8.9	Bicycle lanes are provided on several primary routes	Y or N?	PC	No	There are no bike lanes	Degrades
8.10	Quality bike stands are provided next to amenities	Y or N?	PC	No	There are no bike stands	Degrades
8.11	Quality bike stands are provided next to key transit stops	Y or N?	PC	No	There are no transit stops	Degrades
8.12	Intersections give cyclists priority	Y or N?	CCC Cycle Guidelines	No	Cyclists are not catered for.	Degrades
8.13	Bicycle lanes are safe	Y or N?	CCC Cycle Guidelines	No	There are no bike lanes	Degrades

8.14	Cyclist given priority over cars	Y or N?	CCC Cycle Guidelines	No		Degrades
8.15	Connected streets for pedestrians & cyclists	Y or N?	PC, DR & NF	No	There are only 5 cul-de-sacs, the rest is well connected.	Improves
8.16	Bike paths well identified by signs & symbols	Y or N?	PC	No	There are no bike paths	Neutral
8.17	Bike paths provided along greenways	Y or N?	PC	No	There are no bike paths	Neutral
	Walkability					
8.19	Footpaths are provided on both sides of the road (CCC pedestrian guidelines).	Y or N?	CCC	No	Footpaths are only on one side of the road through the majority of the subdivision. Generally the only roads with two footpaths are those on the main axis.	Degrades
8.20	Footpaths on residential or secondary streets are a minimum width	1.8m	DR & NF	No	The majority of footpaths are approx. 1.3m with some such as on the main axes being 1.8m wide.	Neutral
8.22	Blocks are a maximum width & length	40-50m wide 90-120m long	DR & NF, LD	No	See 4.13 Perception of Density	Strongly Degrades
8.23	Pedestrian given priority	Y or N?	AJ	No	No, there are minimal footpaths and roads are wide	Strongly degrades
8.24	Pedestrian street networks directly connect local destinations	Y or N?	PC	Yes		Improves
8.25	There are no “gaps of identity” where a person must move from one area to the next with nothing to guide them	Y or N?	PC, KL	Yes	See 7.10 Legibility	Degrades
8.26	Main routes to transit stops should be lined with activities	Y or N?	PC	No	There are no transit stops	Degrades
8.27	Maximum walk to shops & community services	600m	PC	Yes		Improves

8.28	Connected streets for pedestrians & cyclists	Y or N?	PC, DR & NF	Yes	There are only 5 cul-de-sacs, the rest is well connected.	Improves
8.29	Commercial, housing, jobs, parks & civic uses within walking distance of transit stops	600m	PC	No	There are no transit stops in Faringdon	Degrades
	Vehicle Access					
8.30	Maximum parking spaces per 100 sq/m of office space	2-4	PC		This hasn't been built yet and details aren't available	
8.31	Maximum parking spaces per 100 sq/m of retail space	3-5	PC		This hasn't been built yet and details aren't available	
8.33	Residential roads are a maximum width	6m	DR & NF	No	No, the minimum road width is 7m with some being wider than this.	Degrades
8.36	Speed limit on residential streets	30km/hr	DR & NF	No	50km/hr speed limit	Degrades
	General					
8.39	Multiple transport options available	Y or N?	EH, AJ & DA	Yes	There are some walking paths within the subdivision and cyclists would also be safe within it however once outside of the subdivision it is much busier with no cycle facilities. The distance to the Rolleston township or iZone makes walking prohibitive given the lack of facilities. The city bus route doesn't come to the Faringdon subdivision. It is possible to catch the bus to Lincoln or Burnham from a stop near to the subdivision. Cars are the dominant form of transport.	Strongly degrades

B.4 Resources

Public Space Criteria - NU

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
	General					
9.1	Minimum public open space per 1,000 residents	1.5 hectares	PC	Yes	Faringdon meets this requirement if it doesn't have to be in one piece. Total public open space is 1.65 hectares per 1,000 people assuming a population of 4.000.	Degrades
9.2	Minimum public open space per development	5-10%	PC	Yes	The public open space is 8% of the total subdivision, however it is very fragmented and primarily made up of linear parks.	Degrades
9.3	Maximum distance of residents from pocket park (less than 1ha in size per CCC policy)	200m	PC	Yes		Improves
9.4	Maximum distance of residents from neighbourhood park (size should be 1ha per 1000 people per CCC policy)	600m	PC	No	There is no neighbourhood park that meets the definition in the Faringdon subdivision. At a population of 4,000 this would require a park 4ha in size or a minimum of 4 x 1ha parks. The largest green space is 0.9ha but is only 25m wide, bordered on each side by roads, is domed for water run-off is dotted with trees. This and other similar green space runs through the main axes of the site and appear to be for show rather than for play or recreation. The main park which contains a playground and grassed area is only 0.6 ha.	Strongly degrades
9.5	The development provides a variety of open space	Y or N?	PA & BM	No	There are two types of open space – grass with trees and path or grass with playground.	Degrades
9.6	Public space is accessible to all	Y or N?	AM, AJ & DA,	Yes	The walkway along the water race which leads to the playground could be a nice route for people to take who live outside of the subdivision. There are no fences or anything else to exclude people being in the public space and they have good surveillance from houses. However, the openness and emptiness makes it feel like a very long distance and very exposed. I can't imagine all people feeling comfortable in the highly groomed environment.	Neutral

9.7	Public space has active borders	Y or N?	JJ, AJ & DA, LF, PE, & TS	Yes	The majority of open space is on the main roads of the subdivision and/or next to housing however, during the day when a lot of people are at work this could still be quiet and potentially uncomfortable.	Neutral
9.8	Public space feels safe	Y or N?	CNU, JJ, AJ	Yes	The streets are quite empty and not all houses provide effective passive surveillance so while I didn't necessarily feel unsafe I didn't feel entirely comfortable.	Degrades
9.9	Public space contains more than one exit/entrance point	Y or N?	ET	Yes	The public space isn't fenced and the subdivision itself has multiple exit points and connected streets.	Improves
9.10	Public space provides for multiple activities and shared uses	Y or N?	JJ, AJ & DA, LF, PE, & TS, AM, MC	Yes	The linear nature of the open space means that the activities that can be carried out there are limited. Main activities catered for are walking or playing on playground equipment.	Degrades
9.11	Users have the ability to interact with and change the public space	Y or N?	AJ, MC	No	The public space is highly prescribed and seating and equipment is not able to be moved or changed.	Degrades
9.12	Public space allows for spontaneous activity	Y or N?	LF, PE, & TS, MC	No	The subdivision is very controlled and the open space is not very big.	Degrades
9.13	Public space prioritises the pedestrian	Y or N?	CNU, AJ & DA, TB	No	No, the main areas of open space are bordered on both sides by roads.	Degrades
	Public Green Space					
9.14	There is access to public green space	Y or N?	SV, HP & KM, RW, RH, CNU, TB	Yes	See 9.1 and 9.2 above	Degrades
9.15	Trees are of high quality and volume	Y or N?	TB, RH	Yes	See 4.10 Perception of density	Neutral
9.16	There is a network of open space rather than the green space being fragmented	Y or N?	TB, RH	No	Open space is fragmented by roads and neighbourhoods.	Degrades
9.17	Open space provides biodiversity	Y or N?	DR & NF	No		Strongly degrades
	Public Streets					
9.18	There are street trees on all streets	Y or N?	AS,SK &MD, PC	No	See 4.10 Perception of density	Neutral

9.19	Street trees are of high quality and volume	Y or N?	TB, RH	Yes	See 4.10 Perception of density	Neutral

Resilience Criteria – NU

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
	Diversity of open space		PA & BM			
10.1	Open space contains an independent water supply that can support the local population	Min. of 3 days	PA & BM, NZ Civil defence	No	The water from the water race is unlikely to support the whole population of Faringdon for 3 days given the low volumes flowing through it.	Degrades
10.2	There is a variety of open space and resources	Y or N?	PA & BM, EH, RH	No	See 9.5 Public space	Degrades
10.3	Open space has public toilets	Y or N?	PA & BM	No	There will probably be some in the recreation park that is intended to be built opposite to the Faringdon subdivision but there will be competition for these resources and they may not be functioning in an emergency.	Degrades
10.4	Open space has cooking facilities	Y or N?		No		Neutral
10.5	Open space provides an elevated view point	Y or N?	PA & BM	No		Neutral
10.6	Open space has a flat area that can be used for camping or other emergency activities	Y or N?	PA & BM	No	There's not really anywhere suitable for camping in the Faringdon subdivision however the proximity of the recreation park when it opens may allow space for this. Of course, there will be competition from all the surrounding subdivision including those not yet built.	Degrades
10.7	All residents are within close proximity to good quality open space	Y or N?	PA & BM, EH, CP, CNU, AJ & DA, AM, RH	Yes	Not at the moment but there are plans to develop a recreation park opposite the Faringdon subdivision. When this happens the furthest resident will be about 800m away from it.	Neutral
	Modularity & Autonomy		PA & BM			

10.8	The development provides local employment	Y or N?	EH, AJ & DA, CNU,	No	Only a few retail opportunities in the subdivision. However, there are an increasing number of jobs in Rolleston but the lack of transport options to reach them is an issue.	Degrades
10.9	The development has multiple transport options	Y or N?	EH, AJ & DA	Yes	See 8.30	Strongly degrades
10.10	The development provides access to local agriculture/access to food	Y or N?	EH	No	There are no community gardens. Some people are likely to have their own vegetable gardens but they're not visible from the street. With the size of the houses on the sections it is likely that any vegetable gardens are small.	Degrades
10.11	The development has independent infrastructure	Y or N?	PA & BM	No	All infrastructure appears to be on the district network other than a few swales	Strongly degrades
10.12	The development contains a variety of local businesses and services	Y or N?	EH, AJ & DA	No		Degrades
10.13	The development has access to a local water supply	Y or N?	PA & BM	Yes	There is access to water from the water race however the flow seems to be very low in Faringdon so not sure if it's a viable source. There are no rain water tanks in public areas.	Degrades
10.14	The development provides local community services	Y or N?	EH	No		Degrades
10.15	The urban form is adaptable to future change	Y or N?	KL, CW	Yes	The open space could be built on or expanded. The streets could be narrowed to create more garden or public space or to install natural storm water systems. The sections are generally well covered in house so there is not much chance of further subdividing.	Degrades
	<u>Tight Feedbacks & Social Capital</u>		PA & BM			
10.16	Activities are integrated to enhance a healthy public life	Y or N?	AJ & DA, RW, IS, CNU, JJ, CA	No	The only activity in the subdivision is residential with a small amount of retail development in the future.	Degrades
10.17	There are distinct neighbourhoods with clear boundaries	Y or N?	PA & BM, Kl, CP, GC, CNS, CNU, RH, ET	No	See 7.1-7.6 Legibility	Degrades

	Ecosystem services & Natural systems		PA & BM			
10.18	The design fits the site and is driven by natural landscape processes	Y or N?	AJ & DA, IM, CW, KL	No		Degrades
10.19	The development form reveals landscape processes	Y or N?	IM, GC, MH, CW, DK	No		Degrades
10.20	Rain water collection systems are in place	Y or N?	TB, PN, TB & HB, RW, WR	No	No visual evidence of this but it's possible that there are systems in place that I can't see.	Degrades
10.21	Grey water recycling processes are in place	Y or N?	TB, PN, TB & HB, RW, WR	No	No visual evidence of this but it's possible that there are systems in place that I can't see.	Degrades
10.22	The area manages storm water with natural systems	Y or N?	TB, PN, TB & HB, RW, WR	Yes	There are some swales as well as drains to manage stormwater	Degrades
	Redundancy & Access		PA & BM			
10.24	Streets are connected		PA & BM, JJ	Yes	See 8.13 Transport	Improves
10.25	Public space is multi-functional	Y or N?	PA & BM, IM, CW, RK, IS, AJ & DA, RW, MC	No		Degrades
10.26	The development contains multiple entry and exit points to the wider region	Y or N?	PA & BM, ET	Yes		Improves

Appendix C

Sense of Place Critique

C.1 Built Environment

Density Criteria – SOP

#	Normative/Quantitative	Measure	Source[9]	Result	Qualitative	Evaluation
1.1	People per hectare	70-80	AJ&DA, EL, EH, CP	70	The net people per hectare are 70 however some neighbourhoods will be more than this and some less due to the mix of housing types and living environments. My literature review shows that this is within the range of what is considered an optimum density to enable better land use, better access to amenities, public transport and community values. Faringdon is unlikely to meet the population target of 4000 with their model therefore my population will be higher than theirs. The sense of place model is focused on alternative forms of transport and therefore car ownership is likely to be low. This being the case, more people are likely to use the public transport system than the Faringdon model would thereby increasing demand and commercial viability of providing a better service.	Strongly improves
1.2	Dwelling units per hectare	27-31	AJ&DA, EL, EH, CP	25	The measure of 25 dwelling units per hectare is calculated using the NZ average people per household of 2.6 to convert people per hectare to dwellings per hectare. The target for this development is slightly lower	Improves

[9] See Source Key at the end of Appendix A

					than this measure because the Rolleston average people per household is 2.8. As such, this brings the sense of place development in line with the people per hectare target with less dwellings. Note that the Faringdon target of 3.8 is completely out of line with statistical measures and reflects their target market of 4 person families. In reality they are unlikely to meet this target.	
1.3	There are a range of densities available	Y or N?	CP, EL	Yes	The average net density is 70 people per hectare however some neighbourhoods will be more than this and some less due to the mix of housing types and living environments that are available.	Strongly improves

Note: All measures based on net density (density per residential land use), not gross density (density per whole area)

Built Form Criteria – SOP

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
	Residential					
2.1	There are a range of housing types available.	Y or N?	CP, JJ, ET	Yes	Housing ranges from 1-5 bedroom homes of 1-3 storey's high. They range in size from 78m2 with no garage up to 186m2 with a double garage (footprint range from 45m2-186m2). This provides a range of pricing options as well as living options for a broad range of demographics. Housing types and quantities tie back to info from statistics NZ relating to family types: One person 14% Multi-person 5% Couple without children 33% Single parent 7% Two parent 41% Based on this and with reference to the CCC/Jasmax alternative living options which promotes sharing of bedrooms I have provided the following ratio of housing is this design: 1 bedroom 34% (1-2 person hh's) 2 bedroom 49% (1-4 person hh's)	Strongly improves

					3 bedroom 15% (3-6 person hh's) 4 bedroom 3% (4-8 person hh's) A mix from 1-3 storey's in the following ratios: 1 storey – 40% 2 storey – 45% 3 storey – 15%	
2.2	There are attached dwellings.	Y or N?	GB, ND, SP, CB & DW	Yes	Some houses are attached to improve use of space as well as the other benefits that come from attached housing such as better energy usage and community interaction.	Strongly improves
2.3	There is a transition between public and private zones.	Y or N?	EL, SV, HP & KM	Yes	Paving/material surface changes between public and private areas Hierarchy of pathways phase between public and private. Other transitions consist of paving surfaces, screens, decks, patio's and trees/gardens. Within neighbourhoods some boundaries are purposely blurred through the use of pergola's connecting housing with public pathways.	Improves
2.4	The transition between public and private zones provides privacy while still encouraging community interaction.	Y or N?	EL, SV, HP & KM	Yes	Transitions consist of paving surfaces, screens, decks, patio's and trees/gardens. Some of the screens are moveable to enable control over interaction. All gardens have areas that are open and public and others that are enclosed and private to enable that choice.	Improves
	<u>Community Buildings</u>					
2.7	There are communal facilities available.	Y or N?	IS	Yes	There are community buildings that can be used for activities such as shared office space, public meetings, plunket rooms etc. There are community resources such as: - firewood plantations - picnic areas - clothesline facilities - garden sheds & equipment - vege gardens - community orchards There will be space available for these facilities but the development will also be flexible enough that people can configure their neighbourhoods to match the way they would like to live.	Strongly improves

2.8	Communal facilities are available for all residents and are easy to access.	Y or N?	IS	Yes	The majority of communal facilities are within close range of dwellings, some being within the neighbourhoods themselves. In regards to picnic areas and firewood plantations, 93% of people are within a 5 minute walk of these. Firewood plantings and picnic areas are located within each quadrant of the development and other facilities are located within each neighbourhood.	Strongly improves
	General					
2.9	The built form fits in with their surroundings.	Y or N?	CNU, AJ	No	This is a unique subdivision that responds to the sense of place of the site and the town however, the rest of the district is designed to standard guidelines with grids and houses facing the street with no reference to place.	Improves
2.11	The built form is human scale.	Ratio between 1:1 and 1:3	DK, WR	Yes	Buildings are a maximum of 3 storey's high with the majority being 1-2 storey. All ratio's at the 1:100 scale are between the range of 1:1 and 1:3	Strongly improves
2.12	The design and spatial form enables access to sunshine for at least 50% of the hours of daylight.	Y or N?	SV, HP & KM	Yes	All dwellings in the 1:100 scale have been positioned to maximise access to sunshine. The intention is for buildings to be designed to passive building standards which require good positioning for solar gain.	Strongly improves
2.13	All areas of the built environment enable passive surveillance.	Y or N?	ET	Yes	Passive surveillance is good and there are multiple pathways through the urban forest that have been designed for safe passage at night. All areas have multiple exit points. The design is intended to increase community interaction so that people know their neighbours at least by sight which helps to increase the feeling of safety. There are only a few spots when crossing the urban forest where passive surveillance isn't possible and in this instance other security features have been built in and the distance to travel in this environment has been minimised as much as possible. There are alternative routes which avoid the urban forest however these would require some people to go a long way out of their way if on foot or bike.	Strongly improves

	Urban Form					
2.14	There is an integration of land uses.	Y or N?	EH, AJ & DA, CA, IM, RW, IS	Yes	Land uses include natural stormwater management, urban agriculture, urban forest, firewood growing, recreation areas, housing, transport, retail and community facilities.	Strongly improves
2.15	The development contains mixed use areas.	Y or N?	JJ, AJ & DA, CNU, IS	No	This area is primarily residential with only one area of retail/commercial.	Neutral
2.16	Spaces are multi-functional.	Y or N?	JJ, CA, IM	Yes	The picnic areas double as emergency camping spots or other activities, areas within neighbourhoods can be multi-functional depending on how it's configured, gravel areas along the street can be used for parking or other functions.	Improves

Inclusivity Criteria – SOP

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
3.1	There are a range of housing types available	Y or N?	CP, EL, CNU, ET	Yes	See 2.1 Built Form	Strongly improves
3.2	There are a range of densities available	Y or N?	CP, EL	Yes	See 1.3 Density	Strongly improves
3.3	There is a level of control by users on the use, access, creation, modification and management of spaces and activities	Y or N?	KL, EL, AM, MC	Yes	Residents of the development have the ability to configure their neighbourhoods in a way that best suits their needs. They take part in the management of the neighbourhoods' communal spaces and the activities that take place there.	Strongly improves
3.4	There are opportunities for people to express themselves in the urban environment	Y or N?	AJ & DA	Yes	Through a relaxing of the covenants and the flexibility of the neighbourhood and urban spaces and layout and through the quantity and variety of public open space and the varying levels of public vs private eg. the public square would be quite public whereas the urban forest would provide a more private experience.	Strongly improves

3.5	Different social groups and cultures are acknowledged in the site	Y or N?	AJ & DA	Yes	Due to the flexible nature of the development model it provides opportunities for different cultures to set up their living spaces in ways that suit them for example, an extended family could settle in a neighbourhood and live in multi-family houses while providing separate communal buildings. They can set up their spatial layout to suit their cultural preferences. They might have fewer houses because they're happy to live in closer proximity and therefore they will have a greater area to use for gardens or other uses as they see fit.	Strongly improves
3.6	There is a balance between individual and group identity remaining open to outsiders while sustaining a strong sense of localism	Y or N?	AJ & DA	Yes	The neighbourhoods have both private and public domains so residents are able to create an individual identity while also having a say in the wider neighbourhood. Pathways for pedestrians and cyclists encourage movement of "outsiders" through the site while still enabling the neighbourhood to function as a unit. While each neighbourhood can be individually configured for individual expression, the overall structure of the development such as the urban forest, water races, circulation pattern and amenities will still retain an overall sense of identity.	Strongly improves
3.7	There is a minimum density to support a diverse community	26 du/ ha	AJ & DA, JJ	25 du/ ha	The SOP design achieves 25 du/ha which is very close to this recommended target. See 1.2 Density.	Strongly improves
3.8	There is an integration of activities & amenities within walking distance to bring in a broad range of people	Y or N?	AJ & DA, JJ, ET	Yes	The activities and amenities catered for within and close to the development include: - Nature walks - Adventure playground - Local playgrounds and public spaces - Community buildings and retail areas - Bus stops - Seating areas at the water races and other areas - Walking and cycling - Community gardening - Picnic areas - Recreation park - Sports ground - Swimming pool	Strongly improves

3.9	Small scale development to increase diversity of built form	Y or N?	AM, AJ & DA	Yes	Development is essentially by neighbourhood with input from individual residents of that neighbourhood	Improves
3.10	Diversity of land use	Y or N?	RH	Yes	Forest, waterways, housing, vegetable gardens, orchards, firewood plantings, public space, roads, retail and walkways/cycleways.	Improves
3.11	There are communal facilities available	Y or N?	IS, JJ, EH	Yes	See 2.5 Built Form	Strongly improves

Perception Criteria - SOP

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
4.1	Residents have the ability to exert some control over their social environment.	Y or N?	EL, RH	Yes	Residents can put in plantings, screens etc to create privacy at their dwelling. They also have control over the public space within the neighbourhood and so can negotiate with neighbours to make changes to improve their privacy. There are communal spaces for gathering which people can choose to join or not.	Improves
4.2	Residents have the ability to exert some control over their physical environment.	Y or N?	EL, RH	Yes	Residents have a high level of control over their surroundings and the ability to personalise their dwelling and outdoor space.	Improves
4.3	There is a minimum distance between front-to-front, multi-storey houses.	24m	LD	No	This seems like too large a distance. Houses are closer together but have other means to create privacy and a feeling of openness in their environment.	Improves
4.4	Residents have the ability to exert some control over their visual interaction.	Y or N?	EL, RH, LB & EM	Yes	Residents can put in plantings, screens, curtains and blinds to create privacy at their dwelling. They also have control over the public space within the neighbourhood and so can negotiate with neighbours to make changes to improve their privacy.	Improves
4.5	Residents have the ability to exert some control over their auditory interaction.	Y or N?	EL, RH, LB & EM	Yes	Due to the joint management of neighbourhoods residents are in the position to negotiate rules within their area and to put in measures either on private or public areas to mitigate noise concerns.	Improves
4.6	Residents able to maintain their behavioural freedom.	Y or N?	EL	Yes	Privacy measures should assist with this and in fact due to the flexible and communal nature of the communities their behavioural freedom will probably be enhanced.	Strongly improves

4.7	Multi-storey buildings don't overlook single-storey residential living.	Y or N?	SV, HP & KM	Yes	Buildings can be positioned to retain privacy for single-storey dwellings.	Improves
4.8	The built form provides privacy.	Y or N?	SV, HP & KM	Yes	All dwellings have their own private space with transitions between public and private areas.	Improves
4.9	The built form enables access to sunlight.	Y or N?	SV, HP & KM	Yes	The flexible nature of the layout enables all dwellings to retain access to sunlight even when near multi-storey buildings.	Improves
4.10	There street trees on all streets.	Y or N?	AS,SK & MD	Yes	There are good quality street trees and rain gardens on all roads and plenty of plantings within the neighbourhoods.	Strongly improves
4.11	There is an open outlook from housing.	Y or N?	AS,SK & MD, LD, RH		The majority of dwellings have an outlook either to the urban forest or to local plantings, orchards and gardens.	Improves
4.12	There is public open space.	Y or N?	RH	Yes	Urban forests, picnic areas, communal spaces in neighbourhoods and public square in the retail area. As well as all the shared paths.	Strongly improves
4.13	Blocks are a maximum width & length	90m	LD	Yes		Improves
4.14	The road enables parking on at least one side.	Y or N?	LD	Yes	Parking can occur on at least one side of the road and both sides when required for events. There are also informal gravel spaces which can be used for a variety of purposes including parking.	Improves

C.2 Identity

Sense of Place Criteria - SOP

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
5.1	The built form reflects the underlying landscape	Y or N?	IM, DK, GC	Yes	The built form reflects the historic patterns of the braided river as well as the more recent agricultural patterns.	Strongly improves
5.2	The built form respects natural processes	Y or N?	MH, MC, DK, GC, RK, RW, PN, TB & HB	Yes	Where possible it utilises porous surfaces, buildings are positioned for solar gain and microclimate, stormwater systems are managed naturally where possible. Riparian planting has been installed to assist water quality.	Improves

5.3	Natural processes have been utilised in the built form eg. wind power etc	Y or N?	RW, PN, TB & HB	Yes	Use of rain water tanks in public and private spaces, use of solar panels and solar gain.	Improves
5.4	The built form reflects cultural processes	Y or N?	MH, MC, RK, SV, HP & KM	No	This model reflects a change in our current cultural processes by moving back to a more community based method of living rather than the increasingly individualistic model that modern society has embraced. This mode of living has a number of advantages such as greater resilience through better neighbourhood connections, better utilisation of the land through alternative placement of buildings and sharing of the land. All of these things also combine to have a lower impact on the environment.	Strongly improves
5.5	A sense of history is visible including historic buildings, districts and landscape	Y or N?	MH, CNU, DK, SV, HP & KM, AJ & DA	Yes	As for 5.1	Strongly improves
5.6	The urban form integrates with existing urban patterns	Y or N?	CNU, BS	No	This urban form is very different from the surrounding Rolleston landscape with its land sharing, volume of forest, volume of roads etc. However, on one level it is similar in that a lot of subdivisions employ the serpentine design structure to their road systems which relates to the curving nature of the braids.	Improves
5.7	The built form reflects the local microclimate	Y or N?	CNU, GC	Yes	Buildings positioned for solar gain and protection from cold winds.	Improves
5.8	The built form reflects the topography of the area	Y or N?	CNU, DK, GC	Yes	The topography is flat with only a very gradual slope of 0.6% and the development retains this flat form while integrating slopes for stormwater management and in response to the braided form. Plantings have also been selected which best suit the soil types and the stormwater management reflects the highly-draining soils.	Strongly improves
5.9	The changing rhythms of nature are incorporated into the site	Y or N?	MC	Yes	The weather is reflected in the design through the use of passive housing techniques, rainwater tanks, natural storm management and neighbourhood layouts. The rhythms of nature are represented through the gradually growing forest, the seasonal changes of the native trees through their cycles of flowering and fruiting as well as the changes in the firewood trees (particularly if they are deciduous). Changes in the levels of the water race are also likely to change through the seasons and the	Strongly improves

					use of solar power and rain water will make people more aware of seasonal changes and its impact. Changes through the cycles of the vegetable gardens and orchards will provide further cues to time.	
5.10	The linear time measured schedules of life are incorporated into the site	Y or N?	MC	Yes	The access to public transport and ease of movement through the development reflect the importance of schedules. In regards to the communal nature of the neighbourhoods, this should help to lower the individual maintenance of a traditional individual property because there are multiple people working a smaller area (ie ratio of people to land). For those who don't want to be part of the vegetable gardens etc, they don't have to have them or can choose not to be involved.	Strongly improves
5.11	The discontinuous and spontaneous moments are incorporated into the site	Y or N?	MC	Yes	The organic nature of the design, the relaxing of covenants and the vast areas of open space and communal spaces provide plenty of opportunity for spontaneous activities.	Strongly improves
5.12	There are spatial boundaries – you know when you are moving from one 'place' to another	Y or N?	DK	Yes	The path hierarchies tell you at what level you are at within the development. Secondary pathways define each of the neighbourhoods and carry people past them or into them. Cues from the urban forest also assist ie. there are four distinct areas defined by the sections of forest and moving through these forests provides a clear cue that you've moved from one section to the next. . Furthermore, each neighbourhood will be slightly different to the next due to the flexible nature of the design model. As such, these will provide further spatial cues as a user moves through the landscape.	Strongly improves
5.13	Local landmarks are present	Y or N?	ET, CNS	Yes	The urban forest, 3 storey buildings will likely be distinct, community/retail areas, parks/public areas	Improves
5.14	There is a distinctive character to a setting	Y or N?	CNS	Yes	The braids and urban forest along with the unique layouts of the neighbourhoods provide a distinctive character to the development. The character of the setting is relaxing, visually exciting, and has a feeling of belonging and acceptance and of living somewhere unique and special.	Strongly improves
5.15	Orientation within the site is readily discernible	Y or N?	CNS, AJ & DA		This is provided by the urban forests, the view of the mountains from the site, and the structure provided by the paddock roads.	Improves
5.16	There is a visual harmony that	Y or N?	GC	Yes	The neighbourhoods have both private and public domains so residents	Strongly

	creates a sense of wholeness				are able to create an individual identity while also having a say in the wider neighbourhood. Pathways for pedestrians and cyclists encourage movement of "outsiders" through the site while still enabling the neighbourhood to function as a unit. While each neighbourhood can be individually configured for individual expression, the overall structure of the development such as the urban forest, water races, circulation pattern and amenities will still retain an overall sense of identity.	improves

Experience Criteria - SOP

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
6.1	There is some mystery and surprise, the framework of connections is not too obvious and not too complex.	Y or N?	KL, DA	Yes	The use of the braids for the primary means of movement through the development provides interest and change as you move through the landscape due to curves and texture changes and moving through different neighbourhoods. Changing colours, textures and surfaces indicate the hierarchy of the movement system to assist with wayfinding. The overlying grid pattern which comes from the historic paddock boundaries provides some structure to what might otherwise be a confusing movement pattern.	Strongly improves
6.2	The area contains aspects of serial vision - using exposure and enclosure to create interest and drama; areas that emerge through movement.	Y or N?	GC	Yes	Again, the curving of the braids provides plenty of opportunity for exposure and enclosure which is further assisted by the high volumes of urban forest on the site. Some areas can become quite enclosed only to open up again as you move further along. For example, when travelling along the road where two forest areas nearly meet, or when moving along a secondary pathway where it goes through an open neighbourhood and then enters an enclosed forested area. On a smaller scale, the pergolas and decking areas that extend across the walkways also provide changes in scale, enclosure and exposure.	Strongly improves

6.3	There is a rhythm of space, both vertical and horizontal	Y or N?	CNS	Yes	This is achieved in a number of ways in the design: - Different building heights - Dense areas of housing contrasting with dense areas of forest where there is no housing and then contrasting again with the openness of the picnic areas. There is also the variation between the wider roads compared to the narrower pedestrian pathways.	Improves
6.4	Ratios of spaces are human in scale	Ratio between 1:1 - 1:3	DK, WR	Yes	In the 1:100 scale all ratios are between 1:1 and 1:3.	Strongly improves
6.5	Spaces feel physically comfortable	Y or N?	AJ	Yes	Passive surveillance is good and there are multiple pathways through the urban forest that have been designed for safe passage at night. All areas have multiple exit points. The design is intended to increase community interaction so that people know their neighbours at least by sight which helps to increase the feeling of safety.	Strongly improves
6.6	There is access to opportunity, imagination and joy	Y or N?	AJ & DA	Yes	The amenity and unstructured nature of the urban forest provides opportunity for people of all ages to enjoy clambering through the trees and the undergrowth – there is no requirement to stick to the path. The forest and firewood plantings also provide plenty of opportunity to what these systems change over time and get a better understanding of how they work. The adventure playground equipment that is scattered through the urban forest provides more opportunity to explore and discover, build and create.	Strongly improves
6.7	Natural processes are legible.	Y or N?	MH	Yes	Natural processes that are visible on the site include: - The existence of the braided river that has defined the site and a greater understanding of the sites relationship to the wider landscape - Stormwater treatment - Rainfall through use of rainwater tanks - Functioning of a forest - Firewood growth and management - Water management through rainwater tanks and water races - Composting if it's necessary to use the composting toilets	Strongly improves

6.8	Social processes are legible.	Y or N?	MH	Yes	Social processes are reflected in the following: - Priority of pedestrians and cyclists over vehicles shows the importance of social processes over mechanical processes - The social structure of the neighbourhoods creates stronger connections between members of the community and greater collaboration - Recognition of the need for access to "natural" areas through the inclusion of the urban forest and amenity value of the vegetated water races - A mix and gradient of public and private spaces reflecting peoples need both for social interaction and solitude.	Strongly improves
6.9	The experience of moving through the area improves the understanding of the place.	Y or N?	MH	Yes		Strongly improves
6.10	The place provides users with a clear sense of location, weather and time.	Y or N?	CNU	Yes	The braided nature of the development along with the other aspects of the design model (such as community living, urban forest, pedestrian focus, native planting, water races…) provide a unique quality to this subdivision that give a clear sense of location. The weather is reflected in the design through the use of passive housing techniques, rainwater tanks, natural storm management and neighbourhood layouts. Time is represented through the gradually growing forest, the seasonal changes of the native trees through their cycles of flowering and fruiting as well as the changes in the firewood trees (particularly if they are deciduous). Changes in the levels of the water race are also likely to change through the seasons and the use of solar power and rain water will make people more aware of seasonal changes and its impact. Changes through the cycles of the vegetable gardens and orchards will provide further cues to time.	Strongly improves
6.11	The following temporalities are visible or catered for: - Cyclical – nature - Linear – schedules - Spontaneous – opportunistic	Y or N?	MC	Yes	See 5.10-5.12 Sense of Place	Strongly improves

C.3 Orientation

Legibility Criteria – SOP

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
	Boundaries					
7.1	There is a distinct boundary to the subdivision or area.	Y or N?	EH, CP, KL, GC, CNS, CNU, ET	Yes	The subdivision has a unique quality and character which creates distinct boundaries. It is bordered by water races in some places with bridges bringing people into the subdivision in a number of spots. The urban forest is also distinct as is the road surface.	Improves
7.2	The boundary is welcoming and inclusive.	Y or N?	AM	Yes	There are no grand signs or gateways to enter the subdivision and the area is designed to encourage people to be on the street so people hopefully won't feel conspicuous when they enter the area. There are a lot of reasons for people to come to the area including a retail area, adventure playground, urban forest, and picnic areas.	Improves
7.3	The size of the neighbourhood created by the boundary shouldn't be too big	10-30 house holds	RH	Yes	The size of the whole subdivision is quite large but this is broken down into quadrants differentiated by the forests and then into smaller neighbourhoods with boundaries created by path hierarchies and the unique configuration of each neighbourhood.	Strongly improved
7.4	The boundary fits in with the rest of the district.	Y or N?	KL	No	This is a unique subdivision that responds to the sense of place of the site and the town however, the rest of the district is designed to standard guidelines with grids and houses facing the street with little, if any reference to place.	Improves
7.5	The boundary is permeable.	Y or N?	CA	Yes	The boundaries are not created by walls or fences but path hierarchies and the qualities of each neighbourhood, therefore these are permeable and flexible if required.	Improves
7.6	The boundary provides a transition from one area to another.	Y or N?	ET	Yes	See 5.12 Sense of Place	Strongly improves

	Thresholds					
7.7	There are clear transitions between public and private zones.	Y or N?	EL, SV, HP & KM	Yes	See 2.3 Built Form	Improves
7.8	The transitions between public and private zones provide a range of levels of public interaction.	Y or N?	EL, SV, HP & KM	Yes	See 2.4	Improves
	Framework					
7.9	There is an overall framework to the area made up of a: 1. Path 2. Landmark 3. Edge (see boundary above) 4. Node 5. District	Y or N?	KL	Yes	Path – different widths and textures create a hierarchy of pathways Landmark – urban forest, distinct neighbourhoods and configurations, retail area Edge – water race, rain gardens, urban forest, path edgings Node – picnic areas, retail area, intersections, adventure playgrounds District – subdivision, quadrants, neighbourhoods	Improves
7.10	There are no "gaps of identity" where a person must move from one area to the next with nothing to guide them	Y or N?	KL	Yes		Improves
7.11	There are good connections between areas with few cul-de-sacs and any cul-de-sacs should have a walkway through them.	Y or N?	KL, ET	Yes	There are no cul-de-sacs or dead-end streets, all roads and pathways are connected with the best connections provided for pedestrians and cyclists.	Improves
7.12	There is some mystery and surprise, the framework of connections isn't too obvious and nor too complex.	Y or N?	KL, DA	Yes	See 6.1 Experience	Strongly improves

7.13	The area contains aspects of serial vision - using exposure and enclosure to create interest and drama; areas that emerge through movement.	Y or N?	GC	Yes	See 6.2 Experience	Strongly improves
7.14	The area makes use of juxtaposition to create interest.	Y or N?	GC	Yes	The water races are very straight except for one section that has been naturalised to emphasise the straightness of the rest of it. The vehicle roads are straight and follow the old paddock boundaries which contrast with the curving nature of the rest of the circulation pattern.	Improves
	<u>Sensory Cues</u>					
7.15	The area contains a number of sensory cues to assist way-finding such as: - Visual - Auditory - Smell - Touch - Kinaesthetic - Gravity	Y or N?	KL	Yes	Visual – landmarks such as the urban forests and the colours/materials of the paths Smell – riparian planting and water races, urban forest, firewood trees, orchards Touch – texture of different path surfaces underfoot Kinaesthetic – nothing Gravity - nothing	Improves
7.16	There is evidence of historic patterns or boundaries.	Y or N?	CNU	Yes	In the curving nature of the development created by the braids and the historic paddock boundaries that create the vehicle movement system. Also the historic water race system.	Improves
7.17	The area effectively manages and celebrates the local microclimate and conditions.	Y or N?	CNU	Yes	The urban forests help protect from the wind, solar panels utilise the sun and buildings and gardens are oriented to maximise solar gain.	Improves
	<u>Provide a Centre</u>					
7.18	The area or district contains a distinct centre.	Y or N?	CNU, CNS, PC, RH, EH, ET	Yes	There is a retail area to the north of the site, each quadrant has a picnic area and each neighbourhood has a central communal space.	Improves
7.19	There are direct routes from all parts of the district to the centre.	Y or N?	PC	Yes		Improves

Transport Criteria – SOP

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
	Public Transport					
8.1	Maximum walk to transit stop	600m	PC	Yes	Maximum walk to a bus stop is 250m	Strongly improves
8.2	Good quality bus shelter provided	Y or N?	PC	Yes		Srongly improves
8.3	Park and ride transit stops	Y or N?	PC	Yes	In the wider scale there is a park and ride at the train station	Improves
8.4	Good waiting experience	Y or N?	PC	Yes	The design of the bus shelters provides a unique waiting environment.	Improves
8.5	Wide range of destination options	Y or N?	IS	Yes	Access to the Lincoln bus service as well as the city bus service and train provides good access to the wider city system. The bus comes right through the development providing easy access to this service which will go both to Riccarton/the city and to Lincoln. The city route will go via the train terminal providing other transport and destination options.	Strongly improves
8.6	Development along transit corridors	Y or N?	PC	Yes	The bus service comes right through the development	Strongly improves
	Cycle Facilities					
8.9	Bicycle lanes are provided on several primary routes	Y or N?	PC	Yes	Shared bike and pedestrian lanes are provided on all roads within the development with a large number of off-road shared bike and pedestrian lanes. These are proposed to be extended outside of the development.	Strongly improves
8.10	Quality bike stands are provided next to amenities	Y or N?	PC	Yes	Bike stands are provided at key amenities around the development.	Improves
8.11	Quality bike stands are provided next to key transit stops	Y or N?	PC	Yes	These could be provided at the main retail/community area but probably not needed given how close everyone lives to the bus stops.	Neutral
8.12	Intersections give cyclists priority	Y or N?	CCC Cycle Guidelines	Yes	Cycle ways that cross a road are given priority over the cars through the use of road surface (the bike trail surface will continue across the road) and with signage telling cars to give way.	Strongly improves
8.13	Bicycle lanes are safe	Y or N?	CCC Cycle Guidelines	Yes	Off-road paths are well lit and there are removable blocks at entry and exit points to stop vehicles coming into the path (but to allow ambulances and fire engines. On road bike lanes are still separate from cars.	Strongly improves

8.14	Cyclist given priority over cars	Y or N?	CCC Cycle Guidelines	Yes	See 8.10 above	Strongly improves
8.15	Connected streets for pedestrians & cyclists	Y or N?	PC, DR & NF	Yes	There are no cul-de-sacs so cars can move along all streets, however streets for cars are limited. Walking and cycling movements are much more extensive and well connected.	Strongly improves
8.16	Bike paths well identified by signs & symbols	Y or N?	PC	Yes	Signs give cyclists priority.	Strongly improves
8.17	Bike paths provided along greenways	Y or N?	PC	Yes	Bike paths go through and along the edge of the urban forest	Strongly improves
	<u>Walkability</u>					
8.19	Footpaths are provided on both sides of the road (CCC pedestrian guidelines).	Y or N?	CCC	Yes		Improves
8.20	Footpaths on residential or secondary streets are a minimum width	1.8m	DR & NF	Yes		Improves
8.22	Blocks are a maximum width & length	40-50m wide 90-120m long	DR & NF	Yes		Improves
8.23	Pedestrian given priority	Y or N?	AJ	Yes	As for cyclists in 8.10 above.	Strongly improves
8.24	Pedestrian street networks directly connect local destinations	Y or N?	PC	Yes	93% of residents are within a 5 minute walk of picnic areas, urban forest and firewood plantings and 90% of residents are within a 10 minute walk of the local retail and community facilities.	Improves
8.25	There are no “gaps of identity” where a person must move from one area to the next with nothing to guide them	Y or N?	PC, KL	Yes		Improves
8.26	Main routes to transit stops should be lined with activities	Y or N?	PC	N/A	Residential area can’t be lined with activities but dead areas are minimised per 8.22.	Improves

8.27	Maximum walk to shops & community services	600m	PC	No	90% of residents are within a 10 minute walk (800m) to the local shops.	Improves
8.28	Connected streets for pedestrians & cyclists	Y or N?	PC, DR & NF	Yes	See 8.13 above	Strongly improves
8.29	Commercial, housing, jobs, parks & civic uses in walking distance of transit stops	600m	PC	Yes	Bus stops are at key locations	Improves
	Vehicle Access					
8.30	Maximum parking spaces per 100 sq/m of office space	2-4	PC	Yes		Neutral
8.31	Maximum parking spaces per 100 sq/m of retail space	3-5	PC	Yes		Neutral
8.33	Residential roads are a maximum width	6m	DR & NF	Yes	All roads are 6m maximum	Improves
8.36	Speed limit on residential streets	30km/hr	DR & NF	No	50km/hr speed limit	Degrades
	General					
8.39	Multiple transport methods available	Y or N?	EH, AJ & DA	Yes	Walking, cycling, public transport and car travel.	Strongly improves

C.4 Resources

Public Space Criteria – SOP

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
	General					
9.1	Minimum public open space per 1,000 residents	1.5 hectares	PC	Yes	There are 5.25 hectares of good quality open space per 1000 residents	Strongly improves
9.2	Minimum public open space per development	5-10%	PC	Yes	Minimum 25% public open space	Strongly improves

9.3	Maximum distance of residents from pocket park (less than 1ha in size per CCC policy)	200m	PC	Yes	Each neighbourhood is made up of private and communal space including some green space (depending on how each neighbourhood chooses to configure their area).	Improves
9.4	Maximum distance of residents from neighbourhood park (size should be 1ha per 1000 people per CCC policy)	600m	PC	Yes	93% of dwellings are within 400m of a picnic area that would meet the definition of a neighbourhood park.	Strongly improves
9.5	The development provides a variety of open space	Y or N?	PA & BM	Yes	The development contains quality streets, picnic areas, urban forest, adventure playground, public square and local neighbourhood spaces.	Strongly improves
9.6	Public space is accessible to all	Y or N?	AM, AJ & DA,	Yes	Public space is accessible to everyone. The only exception to this would be the communal spaces within neighbourhoods which while technically open to all may not feel that way and residents would probably prefer that they weren't open to everyone.	Improves
9.7	Public space has active borders	Y or N?	JJ, AJ & DA, LF, PE, & TS	Yes	All open public space has activity along its borders whether it be roads, shared pathways, housing or retail.	Strongly improves
9.8	Public space feels safe	Y or N?	CNU, JJ, AJ	Yes	I think it would feel safe due to the volume of passive surveillance in the area and the familiarity of neighbours and other residents due to the nature of the development.	Strongly improves
9.9	Public space contains more than one exit/entrance point	Y or N?	ET	Yes	All public space has multiple exit and entry points, in fact none of them are fenced.	Improves
9.10	Public space provides for multiple activities and shared uses	Y or N?	JJ, AJ & DA, LF, PE, & TS, AM, MC	Yes	The activities and amenities catered for within and close to the development include: - Nature walks - Adventure playground - Local playgrounds and public spaces - Community buildings and retail areas - Seating areas at the water races and other areas - Walking and cycling - Community gardening - Picnic areas - Ball games and other activities can occur Many activities could occur at the same time by different groups	Strongly improves

9.11	Users have the ability to interact with and change the public space	Y or N?	AJ, MC	Yes	Different levels of this are possible in different types of space. The picnic areas are probably the least changeable, however other areas including the firewood areas will potentially be looked after by local groups enabling people to get involved if they would like to. Within neighbourhoods, it is likely that these would be looked after by local body corporates and therefore people within that group will have the ability to make changes as they like.	Strongly improves
9.12	Public space allows for spontaneous activity	Y or N?	LF, PE, & TS, MC	Yes	A lot of activities can occur in these spaces. There is opportunity for planned and spontaneous events or activities to occur.	Strongly improves
9.13	Public space prioritises the pedestrian	Y or N?	CNU, AJ & DA, TB	Yes	Streets are set up for the pedestrian and cyclists with a large number of dedicated shared pathways. Cars are kept out of housing areas enabling safe movement between houses and local public space and other places further afield.	Strongly improves
	<u>Public Green Space</u>					
9.14	There is access to public green space	Y or N?	SV, HP & KM, RW, RH, CNU, TB	Yes	Urban forest, picnic areas, local neighbourhood spaces	Strongly improves
9.15	Trees are of high quality and volume	Y or N?	TB, RH	Yes	Native trees in urban forest and riparian planting.	Strongly improves
9.16	There is a network of open space rather than the green space being fragmented	Y or N?	TB, RH	Yes	Three patches of urban forest create significant volumes of connected space	Strongly improves
9.17	Open space provides biodiversity	Y or N?	DR & NF	Yes	Native trees in good sized patches selected to provide food to local fauna throughout the year.	Strongly improves
	<u>Public Streets</u>					
9.18	There are street trees on all streets	Y or N?	AS,SK & MD, PC	Yes		Strongly improves
9.19	Street trees are of high quality and volume	Y or N?	TB, RH	Yes		Strongly improves

Resilience Criteria – SOP

#	Normative/Quantitative	Measure	Source	Result	Qualitative	Evaluation
	Diversity of open space		PA & BM			
10.1	Open space contains an independent water supply that can support the local population	Minimum of 3 days (3L per person per day)	PA & BM, NZ Civil defence	Yes	There are shelters over bbq and picnic tables. These can collect between them enough water to provide 125 litres per person for 3 days if no water was used at any other time of the year. Each camping area is also next to the water race so water could be used from here for washing and other uses if necessary.	Strongly improves
10.2	There is a variety of open space and resources	Y or N?	PA & BM, EH, RH	Yes	There are 4 separate picnic/camping areas with their own resources which will provide enough space for residents to camp there in emergency situations. Having 4 different camping areas means that if one of them ends up out of action there will still be other places people can go assuming not everyone will need to camp out. There are also public squares for gathering spaces and communal areas within each neighbourhood.	Strongly improves
10.3	Open space has public toilets	Y or N?	PA & BM	Yes	Each picnic area has a toilet block with toilets to support 100 people being at the area at any one time. This is based on the Ministry of Business, Innovation and Employment calculator for a camping area with 100 people in it. For times when it is required for emergency camping the bench seats in the park are able to be converted into composting toilets to provide additional capacity, particularly if there has been any damage to the official toilet facilities.	Strongly improves
10.4	Open space has cooking facilities	Y or N?		Yes	Each picnic area has 6 large wood fired bbq's with access to firewood from the local firewood supply. These will likely be supplemented with peoples own camping stoves to provide enough cooking facilities for everyone over staggered cooking times.	Strongly improves
10.5	Open space provides an elevated view point	Y or N?	PA & BM	Yes	Some of the adventure playground equipment may be high enough to provide an elevated view point or failing that, some of the 3 storey houses may provide a view out of the area.	Improves

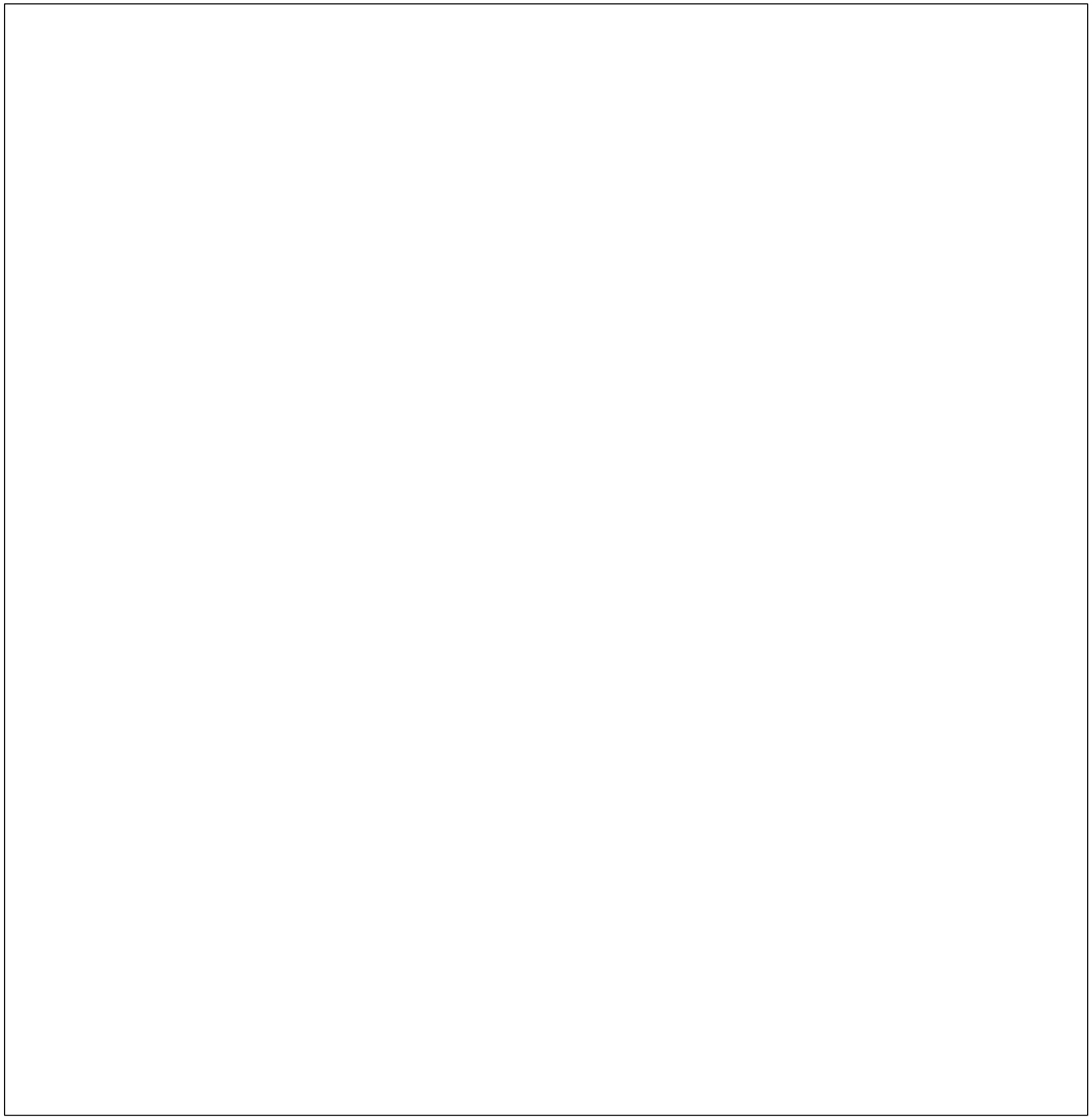
10.6	Open space has a flat area that can be used for camping or other emergency activities	Y or N?	PA & BM	Yes	An area has been provided that can support 50% of the Faringdon population camping at any one time assuming a 14m2 tent (4 person tent size).	Strongly improves
10.7	All residents are within close proximity to good quality open space	Y or N?	PA & BM, EH, CP, CNU, AJ & DA, AM, RH	Yes	93% of residents are within a 5 minute walk of a picnic/camping area.	Improves
	Modularity & Autonomy		PA & BM			
10.8	The development provides local employment	Y or N?	EH, AJ & DA, CNU,	Yes	There is only a limited number. There is 2450m2 of retail/community space which could support up to 18 retail/service outlets. It is intended that some of this space will be for community shared office space for those who have home-based businesses. There is also a direct transport network via the bus system and walking/cycling tracks to the Rolleston centre and iZone.	Strongly improves
10.9	The development has multiple transport options	Y or N?	EH, AJ & DA	Yes	There are excellent facilities for walking and cycling both within and outside of the development and easy access to public transport. There is also the ability for car sharing and some car ownership.	Strongly improves
10.10	The development provides access to local agriculture/access to food	Y or N?	EH	Yes	There is ample space and facility provided to be able to grow local food including vegetables, berries and fruit.	Strongly improves
10.11	The development has independent infrastructure	Y or N?	PA & BM	Yes	The stormwater supply is primarily self-sustained with back-up to a larger system in the event of a large storm event. There are also rainwater tanks and solar panels to provide some local services however this will need to be supported by the main system. But in an emergency situation the local community should have the infrastructure to support themselves for at least 3 days at a lower level of service.	Strongly improves
10.12	The development contains a variety of local businesses and services	Y or N?	EH, AJ & DA	Yes	This is really dependent on how the area develops however there is the facility for a variety of local businesses and services as well as flexibility to include temporary businesses such as those run from vans or temporary stalls. Shops and services could include things such as convenience stores, cafes, takeaways, video shop, hardware shop, gift shop, butcher, deli, 2nd shops, a pharmacy….	Improves

10.13	The development has access to a local water supply	Y or N?	PA & BM	Yes	Use of rain water tanks and water races	Strongly improves
10.14	The development provides local community services	Y or N?	EH	Yes	Community hall/meeting room, shared office space, and public squares/meeting areas.	Improves
10.15	The urban form is adaptable to future change	Y or N?	KL, CW	Yes	The form of the area enables flexibility to change in response to future events due to the organic nature of the area and the ability for people to be responsible for a larger area than a typical section. Locals have the ability to adapt and change as they need to.	Strongly improves
	Tight Feedbacks & Social Capital		PA & BM			
10.16	Activities are integrated to enhance a healthy public life	Y or N?	AJ & DA, RW, IS, CNU, JJ, CA	Yes	People can carry out a variety of activities in the same space – within their own neighbourhood and within the wider area. For example, someone might go for a walk through the forest while someone else is out for a run, some are playing on the adventure playground equipment, some kids are exploring off the track in the bush, maybe making a hut while a family is having a picnic next to the water race at the camping area.	Strongly improves
10.17	There are distinct neighbourhoods with clear boundaries	Y or N?	PA & BM, Kl, CP, GC, CNS, CNU, RH, ET	Yes	The neighbourhoods are defined by the forest, walkway system and braids. The ground surfaces change in subtle ways to reflect the soils underneath and different neighbourhoods will evolve in different ways to reflect their local needs and preferences. The street layout also assists with creating clear boundaries.	Strongly improves
	Ecosystem services & Natural systems		PA & BM			
10.18	The design fits the site and is driven by natural landscape processes	Y or N?	AJ & DA, IM, CW, KL	Yes	See 5.2, 5.3 and 5.8 Sense of Place	Strongly improves
10.19	The development form reveals landscape processes	Y or N?	IM, GC, MH, CW, DK	Yes	See 5.1 - 5.3 Sense of Place	Improves
10.20	Rain water collection systems are in place	Y or N?	TB, PN, TB & HB, RW, WR	Yes	It will be a requirement that each house has a rainwater tank and tanks also exist in the camping areas.	Strongly improves
10.21	Grey water recycling processes are in place	Y or N?	TB, PN, TB & HB, RW, WR	Yes	Yes, all houses will have a grey water system in place.	Strongly improves

10.22	The area manages storm water with natural systems	Y or N?	TB, PN, TB & HB, RW, WR	Yes		Strongly improves
	<u>Redundancy & Access</u>		PA & BM			
10.24	Streets are connected		PA & BM, JJ	Yes	There are no cul-de-sacs so cars can move along all streets, however streets for cars are limited. Walking and cycling movements are much more extensive and well connected.	Strongly improves
10.25	Public space is multi-functional	Y or N?	PA & BM, IM, CW, RK, IS, AJ & DA, RW, MC	Yes		Strongly improves
10.26	The development contains multiple entry and exit points to the wider region		PA & BM, ET	Yes	There are multiple points of entry at all scales of the model	Improves

Appendix D

Faringdon Master Plan

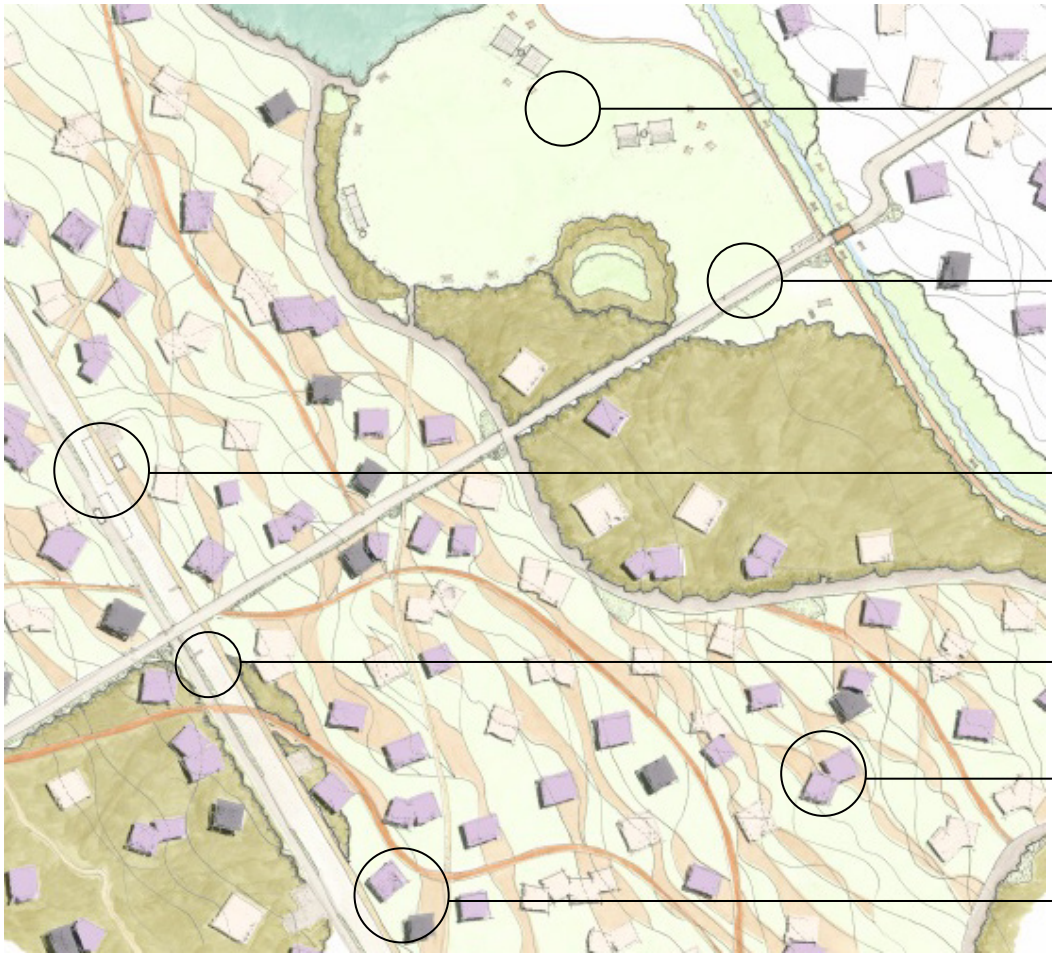


Hughes Development

Not to scale

Appendix E

Sense of Place Intermediate Plan



Nicki Williams

Not to scale

Appendix F

Sense of Place Detail Plan

1, 2, 3 = the number of stories of each dwelling

Nicki Williams

Not to scale

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