

Department of Urban and Regional Planning

**Rethinking Greyfields: Using Market-Based Evidence to
Assess the Planning of Neighbourhood Renewal Strategies.**

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This thesis is presented for the degree of Doctor of Philosophy of Curtin University 2020.

I declare that this thesis is my own account of my research and contains as its main content work which has not previously been submitted for a degree at any tertiary education institution.

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CONTENTS

Acknowledgements	iii
Contents	i
Definitions	v
Abstract	1
1. Introduction	3
Research Problem	6
Research Questions	7
Research Approach.....	8
The Significance of this Research.....	9
Structure of the Thesis	10
Limitations of the Research.....	12
2. Methodology	13
Introduction	13
Research Steps	14
Previous research	15
Literature Review	15
Theoretical Framework.....	16
Statistical Data Analysis	17
Case Study Analysis	18
The Use of Case Studies.....	18
Strengths and Weaknesses of Case Studies	20
Semi-Structured Interviews	22
Survey Analysis.....	24
3. Theories of Neighbourhood Change and the Emergence of Greyfields	26
Introduction.....	26
Ecological theories of neighbourhood change.....	27
Subcultural theories of neighbourhood change	33
Political theories of neighbourhood change.....	36
Housing Life Cycles and the Emergence of ‘Greyfields’	40

The Decline of Big Retail.....	41
A ‘New Frontier’, again.....	41
Suburban Greyfields and the Entrenchment of Socio-Spatial Disadvantage.....	45
Impact of Economic Policies.....	47
Impact of Housing Policies.....	51
Slum Clearance.....	51
The Push for Home Ownership.....	53
Housing Production: Quantity vs Quality.....	55
Conclusion.....	58
4. The Perth Context.....	61
Introduction.....	61
The Sprawling City.....	62
Shaping Perth Sprawl: Colonisation to Post-War Boom.....	63
Post-War Perth: Planning for Expansion.....	69
Planning and Population Growth.....	69
The Impact of Population Growth on Urban Form.....	71
The Changing Focus of Western Australia’s Strategic Plans.....	72
Planning for Expansion.....	73
A Move Towards Consolidation.....	76
Planning for Consolidation.....	79
Perth’s Planning System.....	82
5. Impact and Assessment of Perth infill.....	86
Neighbourhood-level impacts.....	87
Housing homogeneity.....	87
Design repetition.....	89
The ‘Development Potential’ Price Tag.....	92
Stigma, Occupant Satisfaction, and the Commodification of Housing.....	94
The Demographic Impact.....	95
A Design Assessment of Greyfield Infill.....	96
Fragmented Strata Ownership.....	96
Irregular House Angles on ‘Left-Over’ Land Parcels.....	98
Dependent House Designs.....	100
Irregular lot shapes.....	105

Cheap design and materials.....	107
Clearing of Trees	111
Narrow Access Legs with Blank Walls	115
Lack of Solar Design Principles	118
Lack of Discreet Spaces for Services.....	121
Lack of renewal of Retained Dwellings	123
Conclusion in Relation to Design Assessment.....	125
6. Case Studies.....	128
Introduction.....	128
Case Study Areas.....	129
History of The Case Study Suburbs.....	130
Morphology of case study suburbs – 1953-2001	134
Case Study Suburb profiles.....	143
Population characteristics.....	143
Dwelling stock characteristics.....	152
Conclusion	157
7. The Impact of Planning Controls.....	159
The Impact of Planning Controls on Built Form Outcomes	160
The Impact of Planning Controls on Population and Household Characteristics.....	166
Population characteristics.....	166
Dwelling stock characteristics.....	182
The Impact of Planning Controls on Housing and Land Values	192
Sales data analysis: lot size vs sales price.....	195
Sales data analysis: sales date vs sales price	202
Sales data analysis: lot size vs sales date.....	210
Summary of Sales Data Analysis.....	215
Conclusion	222
8. Discussion and Analysis	224
Introduction.....	224
The Theoretical Perspectives of Neighbourhood Change.....	224
Characteristics of Suburban Greyfields	232
The Influence of Policy Mechanisms on Greyfield Renewal.....	235
The Market Evidence of Neighbourhood Change.....	238

Gauging the Efficacy of Planning Policies.....	240
Understanding the Small-Scale Developer.....	244
Addressing the Criticisms of Suburban Infill Housing.....	246
Identifying the role of small-scale developers	249
9. Recommendations and Conclusion.....	253
Conclusion	253
Recommendations and Policy Implications.....	259
recommendations for Future Research	263
10. References	265
11. Appendix One: Semi-Structured Interview Questions	289
12. Appendix Two: Semi-Structured Interview Results and Discussion.....	291
13. Appendix Three: Survey Questions and Evaluation Criteria.....	302

DEFINITIONS

A number of key terms used throughout this research are defined below:

Greyfields	Ageing residential suburban areas which have experienced decline, and are physically, technologically or environmentally obsolete. The use of the term to describe failing retail malls is acknowledged and explored, but is not the focus of this research.
Brownfields	Land previously developed for industrial or commercial purposes which has or could undergo redevelopment for different uses such as residential housing or mixed-use.
Greenfields	Land which is previously undeveloped (typically native bushland on the fringes of urban regions) which undergoes development, usually for large-scale residential uses.
Infill Development	Infill, or infill development, refers to the redevelopment of established areas in a more intensive manner (typically used to describe older suburban sites demolished and redeveloped at a higher density).
Micro-developer	A term introduced in this research to describe the typical proponents of infill development on smaller suburban housing lots.
Knock-Down- Rebuild (KDR)	The demolition of a single house to be replaced only by another single house.

ABSTRACT

In response to contemporary planning pressures, many state and local governments are attempting to manage the process of urban renewal through the use of infill housing in older, well-established suburbs. Due to the often small and piecemeal nature of the process, this approach to urban consolidation has attracted little attention in planning literature, despite its cumulative impact being a significant catalyst of neighbourhood change. Further, when gauging the efficacy of policy controls used by governments to regulate the delivery of such contemporary infill housing, it becomes apparent that very little empirical evidence exists about the effectiveness of the policies that govern its delivery. This is despite the issue of increased housing densities generating intense public and professional debate.

The focus of this study relies on three research components. First, through interviews with planning staff, policy-makers, project builders and developers, and an analysis of local and state government documents and case studies, this research serves to consider a range of theoretical and policy perspectives impacting neighbourhood change. Second, it evaluates nearly 9,000 property sales spanning a 17-year study period, across two case study suburbs, to examine the market response to planning controls used to regulate the delivery of these housing options. Third, it compares this data with a range of indicators from the ABS Census data across that study period to explore the relationship between the policy controls implemented by the respective local governments and the subsequent change which has unfolded in those suburbs. In doing so, this study seeks to provide empirical evidence on the strategies employed to regulate infill housing and the resulting impact on the regeneration of established suburbs.

The empirical evidence from the two case study suburbs suggests that policy controls aimed at creating a broader diversity of housing options have proved effective at influencing the built environment of a neighbourhood, particularly in relation to the composition of housing stock and lot configurations. However, it was found that this failed to bring about broader changes to the socio-economic diversity of the residents as anticipated by key stakeholders. In fact, some of the indicators measured showed an outcome opposite to that anticipated.

Empirical evidence obtained through the analysis of market data from the two case study suburbs across the study period has demonstrated how a targeted approach to infill housing, as opposed to blanket density increases across a suburb, can have a positive impact on affordable housing opportunities while still maintaining resilient house prices in the surrounding community.

Findings from this study suggest that local authorities should approach future density increases in a targeted manner with the implementation of precinct-based redevelopment plans as part of the broader structure planning process. The findings also call for greater synchronicity between state and local planning policies.

1. INTRODUCTION

Concerns are increasingly being voiced about the future of Australia's older suburbs, described as a "vast 'midopolis' which exists between the urban core and the burgeoning communities on the metropolitan periphery" (Steins 2000), and the importance placed on these areas for meeting the sought-after notion of the 'sustainable' city. The twin pressures of population growth and the intensification of urban development have revealed weaknesses in the strategies of policy-makers in planning and delivering the new wave of housing required in these ageing suburbs.

In many cases, both in Australia and internationally, these are suburbs which emerged in the immediate post-War era, as the demand for housing reached levels previously unforeseen in many Western nations. Such demand forced a dramatic change in the provision of housing, not only in terms of the materials used for construction but the methods by which such large numbers of dwellings could be created in such a short timeframe. The reliance on Fordist production principles helped to manage the burden of delivery, yet arguably left these suburbs with an indelible and immediately identifiable physical character (Powell 1993; Howe 1995; Peel 1995).

In time, long-term disinvestment has eroded the social and economic landscape, resulting in suburbs becoming increasingly identified as places of 'devalorized urban form' (Mar 2003; Short et al 2007, in Randolph and Freestone 2012). These suburbs are often typecast as enclaves for migrant communities and have "increasingly become shaped by the same types of pressure which previously afflicted inner-city areas: a rising concentration of socially disadvantaged groups and a deterioration of the physical fabric and local environmental quality" (Randolph and Freestone 2008). Over time these suburbs became increasingly referred to as 'greyfields' by many in the planning industry, a term which will be examined in more detail as part of this research.

In many suburbs, this gradual decline has led to a marked increase in social polarisation, a conclusion supported by numerous authors (Gregory 1993; Hamnett 1994; Marcuse 1989; Saunders and Fritzell 1995; Winter and Bryson 1998). Marcuse (1996) further investigated the emergence of this 'new urban poverty' in Australia, and the extent to which the Australian experience followed similar trends identified in the United States. Although this research would show that the social provisions contained within various government policies prevented Australia from reaching the same level of decline as the US, it found that policies of economic restructuring at a federal level (such as a reduced focus on domestic manufacturing industries as a result of

increased globalisation) had indeed contributed to entrenched urban poverty across many suburban areas.

Winter and Bryson (1998) followed this research, arguing that while those social provisions identified by Marcuse (such as income support) had been instrumental in preventing a full-blown emergence of urban poverty, other social provisions had actually contributed to the problem of decline. Winter and Bryson identified two distinct characteristics shared by many of Australia's post-War suburbs which they believe played a central role in the eventual decline of those areas: the means by which the initial housing was designed and delivered, and the overarching economic impetus of the federal and state governments to encourage home ownership rather than ongoing subsidised rental accommodation. In doing so, Winter and Bryson (*ibid.*:61) argued that the emergence of urban poverty in many Australian post-War neighbourhoods was not the result of natural life cycles or poor choices by the resident population, but the result of “political choices in the 1950s and 1960s during [their construction]”.

Numerous authors (Baum et al., 2002; O'Connor et al., 2001; Stimson et al., 2001; Johnston 2002; Arthurson 2013) similarly attempted to unravel the issue of socio-spatial polarisation in Australian suburbs, and in doing so underlined the complexity of the problem which grew to include the internal and external migration of individuals and communities, the impacts of both human displacement and residualisation, the role played by housing and macro-economic policies, and the increasing influence of a “globalised world economy” (Baum and Gleeson 2010:137) on local employment and housing demands.

What emerged from this wave of research was an increased awareness of the role that the planning system might play in the management and coordination of attempts to maintain and revitalise these declining post-War suburbs. Two key objectives were identified. The first of these was the slowing of the socioeconomic polarisation which had emerged as a ubiquitous and unifying trend across affected neighbourhoods. The second was a need to identify the long-term development outcomes that might emerge as a result of the fragmented tenure of the housing and the related aspirations of their owners and occupiers, as these ageing suburbs were once again being seen as a ‘new frontier’ of housing. Achieving both of these objectives requires an understanding of both the players and the processes by which infill housing is delivered in the modern era.

Internationally, many cities are home to similar existing peri-urban areas displaying these same physical and socioeconomic conditions, typically represented as a band of older suburbs with emergent signs of physical, social or environmental obsolescence. The approach to the issue, and the results, varies widely. The New Zealand Government has sought to follow international policy trends that promote “‘good’ urban design practices through intensification, or concentration,

within urban areas” (Lilley 2006:i). Christchurch refers to them as ‘Living 3’ zones, which are typically located between central business districts and their peripheral low-density suburbs, and being an age at which policies of renewal or revitalisation are becoming increasingly important. The current approach by many local authorities to the governance of suburban infill and its quality, however, suggests a belief that market forces alone will provide the necessary catalyst for change: “In a competitive housing market the discerning buyer will choose a more attractive home” (Christchurch City Council 1999:16).

Mele (2006:313) demonstrated from his examination of New York’s Lower East Side area an era of successful “neighbourhood restructuring in the post-War decades”, finding that the place makers responsible for this regeneration “sought to eradicate both the physical and socio-cultural vestiges of the neighbourhood’s immigrant, working-class past”. Mele further found that due to these place makers and other stakeholders working in unison, and following a largely holistic approach, “the near-universal push toward middle-class, suburban sameness that dominated post-War neighbourhood reinvention of the urban landscape has been rendered obsolete” (ibid.).

Critically, despite Mele’s (1996) suggestion that the repetitious post-War suburban landscape has been “rendered obsolete”, the evidence from suburbs surrounding Australia’s capital cities shows that the ‘cookie cutter’ approach of repeating cheap, low-quality designs has actually increased dramatically. The result, Lilley (2006:5) argues, is “ongoing widespread structural homogeneity that has failed to cater to a range of household types”.

Numerous concerns have been raised, ranging from poor design principles, the undesirability of ‘battleaxe’ lot arrangements, lack of amenity, the inability of existing infrastructure to cope with increased densities, a process skewed in favour of developer profitability, and intergenerational inequity. Making the situation worse, some argue, is the impact of contemporary planning and development practices, being both piecemeal and incremental in nature, serving to mask the gravity of these concerns: “Unlike the large-scale clearance and redevelopment of high-density inner-city areas, this incremental change in originally low-density suburbs has attracted little attention among students of the urban scene” (Whitehand and Larkham 1991).

The rampant pressures on the broader Western Australian housing industry over the past 15 years highlight the importance of Perth as a leading case study in both providing a detailed examination of the trend in a greatly accelerated backdrop, and seeing the often-opposing pressures of rapid population growth and the need for smarter urban planning find a sustainable middle ground.

The Western Australian Planning Commission’s *Urban Growth Monitor* paints a clear picture of Perth’s housing infill in recent years. The report shows that in 2018, 77.3% of all land zoned for

urban development was in existing urbanised areas, nearly all of which was in established suburban areas. It further showed a net increase in infill dwellings between 2012 and 2017 of 36,310 homes. However, the report identifies infill developments as being either ‘major infill projects’ or ‘background infill’ – the latter being a label which significantly under-emphasises the role it plays in meeting housing targets and the Western Australian market’s distinct preference for lower density detached housing¹.

Such a high rate of background infill obviously makes up a critical component of the urban consolidation targets sought under Western Australia’s State Planning Strategy at that time, *Directions 2031 and Beyond*, and other planning documents. Yet, despite making up nearly two-thirds of all infill housing in Perth, the policy control settings which drive ‘quality control’ are left up to the individual local governments, rather than being implemented uniformly by the state (with the state increasingly demanding higher yields from established suburbs).

RESEARCH PROBLEM

The findings of Winter and Bryson (1998) in particular, that the economic and political decisions made during a suburb’s initial establishment are a fundamental catalyst in the emergence of urban poverty at the end of a suburb’s traditional life cycle, forms a central tenet of this research, and identifies a ‘gap’ in contemporary planning literature – that being the extent to which the planning industry’s governance of contemporary housing delivery demonstrates an awareness of the criticisms and shortcomings of earlier approaches to suburban development, and the ability of the industry to learn and adapt to those findings. Specific to the treatment of greyfield suburbs, which are now being seen as a ‘new frontier’ for a second time, this gap emerges in understanding the influence of contemporary policy controls in creating the same latent weaknesses for these suburbs’ second lives as the policies and practices implemented during the initial establishment of those areas. With such residential areas being considered amongst the most significant challenges for present-day planners (Newton 2010), an awareness of this influence is paramount.

There are several reasons why the answers to these issues are not immediately evident. Firstly, the role of housing and housing tenure in Australian society has changed significantly since the post-War era, as has the planning industry’s awareness of suburban sprawl, and its impact on the

¹ ‘Background infill’ is classified as infill developments yielding five dwellings or less, a category which comprised 65% of all infill dwellings between 2012 and 2017.

efficient use of land. Secondly, the piecemeal nature by which many greyfield suburbs are redeveloped belies the significance of the longer-term impact the practice has on suburban identity: “Although the direct impact of these developments individually is small scale, the cumulative effect is a significant aspect of contemporary urban change” (Whitehand and Larkham 1991:57).

And finally, with the finer-grained planning controls surrounding suburban infill being the responsibility of individual local governments, and those controls varying wildly between each local government, there is little, if any, attempt made to centralise the substantive outcomes of urban densification in order to better understand the efficacy of such governance. Therefore, how well those local governments and their policy controls reflect a genuine understanding of what drives the development process, or an awareness of an industry described as one of “sectoral and geographical disaggregation” (Adams et al. 2012:2581), is not known. As argued by Adams et al. (ibid.), an understanding the archetypal developer is one essential aspect in building effective planning controls.

The private development sector – and significantly in the context of this research, those operating solely in ‘background infill’ – needs to be better understood to appreciate the impact which contemporary urban infill practices have on the increasing socio-spatial polarisation of suburbs across Perth, and other cities.

In summary, the research challenges facing suburban greyfields are:

- To understand the process of neighbourhood change affecting these areas and identify the impact of this on the social and physical structure of the existing and future city;
- To explore the motivation, character and extent of government intervention in the ongoing change process and assess the successes and failures of intervention; and
- To identify the role and impact of the development industry in establishing the emerging urban form of these areas and determine to what extent this supports or undermines desired policy outcomes.

RESEARCH QUESTIONS

The following research questions have been developed to address these challenges:

1. What are theoretical perspectives and contexts that underpin neighbourhood change, and how do they cater for the contemporary push towards the redevelopment and consolidation of established suburbs?
2. What are the typical characteristics and features of suburban greyfields, and what factors account for their recent emergence as a key focus in contemporary planning circles?
3. To what extent have the various levels of suburban governance influenced the revitalisation and renewal of suburban greyfields?
4. What are the market responses to the current approach to suburban infill, and can this be used to assess the efficacy of policy controls?
5. Are policy controls aimed at increasing housing diversity and increasing the socio-economic mix among residents in greyfield areas having the desired effect when compared with market-led outcomes?
6. Do current policy controls demonstrate an understanding of the players and processes responsible for the provision of suburban infill?
7. How do the criticisms and assumptions of contemporary suburban infill contrast with the physical built-form outcomes and quality of life in those greyfield suburbs undergoing urban consolidation?
8. What does the research suggest about the participants most active in contemporary suburban infill development, and their role in the traditional mainstream development industry?

RESEARCH APPROACH

The individual objectives to guide the operationalisation of this research will be to:

- examine the historical pattern of urban development in Western Australia, and how the notion of urban consolidation became incrementally incorporated into the state's successive planning strategies (from *Stephenson Hepburn Plan*², 1955 to *Perth and Peel @ 3.5 million*, 2018);

² The *Stephenson Hepburn Plan* is the commonly used name for the state's first overarching planning policy, *Plan for the metropolitan region, Perth and Fremantle, Western Australia, 1955*, by G Stephenson and J Hepburn, and will be referred to as such throughout this research.

- use semi-formal interviews and survey responses to build an understanding of the actors most active in the delivery of small-scale suburban infill housing, and assess their role as an agent of change for Perth's suburban identity;
- examine Perth's suburban greyfield redevelopment through the lens of a range of theoretical perspectives of neighbourhood renewal to assess their efficacy in explaining the current era of Australian housing;
- examine the historical planning treatment of infill development at the local government level, and assess its capacity to produce positive planning outcomes from the social, economic and environmental contexts;
- examine a range of Census data and suburb sales data to identify any measurable trends which would indicate the influence of planning controls on the built environment; and
- provide recommendations for the future implementation of holistic greyfield redevelopment.

THE SIGNIFICANCE OF THIS RESEARCH

Despite the underlying intent of the three most recent state planning strategies being to enable and encourage urban consolidation and infill development, individual local governments have approached the issue independently, demonstrating a range of responses towards guiding suburban densification. This thesis will assess the substantive outcomes of medium density infill development in two case study local governments with differing approaches to spatial governance policies in order to compare and contrast the effectiveness of these policy approaches in promoting higher-quality outcomes in infill development. In doing so, this thesis will gauge the efficacy of such policies in addressing the criticisms of previous planning and home-building eras, and the extent to which the development industry has responded to these critiques.

This thesis will focus on suburban greyfield areas, which are described in literature as both our greatest challenge and our greatest opportunity through the re-inventing of failing or deteriorating urban environments to suit current and future generations. This will further determine whether the regeneration of greyfield suburbs can occur successfully in a market-driven environment alone, or whether additional layers of spatial governance are required to meet underlying planning goals. The results of this study will aid local governments, planners, and policy-makers in creating

more sustainable and wide-spread urban regeneration, and identify the criticisms of earlier approaches to housing delivery. This will provide further opportunities to break away from the current pattern of infill development characteristic of the past two decades in Australian cities, described as both unattractive and unsustainable, which has been criticised as having failed to deliver new housing, environmental and lifestyle opportunities in regenerating suburbs.

Marcuse (1989) identified in detail the changing socioeconomic structure of many societies, which was investigated further by a number of authors (Gregory 1993; Harding 1994; Hamnet 1994; Saunders & Fritzell 1995) who also identified the increasing social polarisation of Australian suburbs. Gregory and Hunter (1995:4) look into the way this polarisation is becoming evident in the human element of Australia's suburbs, noting that:

“income distribution has become more unequal and the change is extraordinary. There is a significant increase in the geographical polarisation of household income across Australia. The poor are increasingly living in one set of neighbourhoods and the rich in another set”.

Gotham (2001:i) argues that the renewal of urban areas cannot simply be viewed as a result of government policies alone: “...this view does not fully acknowledge the dislocating and segregating effects of urban renewal and public housing on central city neighbourhoods and the role these private-public initiatives played in shaping demographic and population patterns”. Hence, the impact of the private sector (and significantly in the Perth context, that of the home building industry), needs to be fully examined to understand the impact that the built outcome resulting from urban infill models has on the increasing polarisation of suburbs across Perth, and other cities.

This thesis will explore the proposition that the current models of medium density infill housing provision applied by some local governments contribute to the further increase in socio-spatial polarisation, and those areas which are seeing increased densities introduced as a catalyst of urban renewal are instead seeing long-held perceptions of the neighbourhood's character perpetuated, creating further barriers to the reinvention of suburban environments and identities.

STRUCTURE OF THE THESIS

This opening chapter introduces the broader context of the research problem, which is gradually refined to focus on the Australian experience. Along with the research problem, a series of

research questions are presented, and a summary of the approach by which these questions would be addressed.

Chapter 2 outlines the detailed methodology implemented in undertaking the research. Given their key role within this study, particular emphasis is placed on the introduction and use of case study research, and the justification behind its general approach and the selection of cases for use in research.

Chapter 3 introduces a range of predominant theories of neighbourhood change in order to understand the various perspectives behind the evolution of suburban spaces and identities. These theoretical perspectives are categorised into three main sub-categories, namely those from the ecological, sociological and political schools of thought. The chapter then provides the summary of an extensive review of the planning literature, with a particular focus on the emergence and use of the term 'greyfield' in the planning lexicon, as well as providing a contemporary understanding of the importance of greyfield regeneration and the opportunities it presents. As a core focus of the research, the literature review also outlines the increasing concerns regarding the entrenchment of socio-spatial polarisation and disadvantage within Australian suburbs, and the contribution made to this by housing and economic policies implemented by federal and state governments in previous eras.

Chapter 4 further refines the research by providing a detailed summary of the context of planning for housing in Perth, Western Australia. It examines the historical dominance of low-density dwellings dating from the city's earliest days as the Swan River Colony, and traces the impact of successive state planning strategies as they tried to meet the demands of the growing population. The chapter concludes with a brief explanation of the state's planning mechanisms as they apply to housing in Western Australia.

In Chapter 5 the broad research structure outlined in the previous chapters is applied to the current approach to infill planning and housing in Perth. In doing so, the various criticisms of infill housing put forward by interview respondents are categorised and compared with development examples from Perth's greyfield suburbs. This chapter summarises the broader neighbourhood-level impacts which can result from suburban densification, along with potential issues raised regarding individual development outcomes as a result of the Western Australian planning policy mechanisms summarised in Chapter 5. These development examples and criticisms are supported with commentary from the interview respondents throughout.

Chapter 6 introduces the two case study areas, beginning with a summary of their location and proximity to the Perth CBD, a brief history of the suburbs and their establishment in the post-

War era, and the justification for their use as cases for this research. It also provides a longitudinal analysis of historical aerial photos, in order to examine the historical suburban morphology and changes within the built environment of both suburbs over time. This will cover the years from the establishment of both suburbs until the beginning of the study period in 2001. Data from the 2001 Census will then be used to provide a comparative analysis on a range of population and dwelling characteristics for the two case study suburbs. This will help to provide an understanding of the key physical, social and economic suburban characteristics at the start of the study period.

Chapter 7 then undertakes a second longitudinal analysis of aerial photos to examine the change in built form in each suburb during the study period. Next, the profiles created using the 2001 Census data will be compared with a second comparative analysis using data from the 2016 Census, enabling this research to draw conclusions regarding correlations between the resulting built environment and the demographic characteristics of each suburb during that period. Lastly, a series of dwelling sales data are examined, representing a market-based assessment of the resulting morphology across the two suburbs during the study period.

Chapter 8 presents the overarching discussion and analysis of the results. In doing so, it addresses each of the research questions outlined above, and present responses based on the results of the study to determine whether the research approach was sufficient to address them conclusively.

Finally, Chapter 9 concludes the research, and provides a list of recommendations and policy implications stemming from the findings, and makes a number of suggestions on opportunities for future research which emerged during the course of this study

LIMITATIONS OF THE RESEARCH

Due to the varied use of the term ‘greyfield’ in planning literature, the scope and purpose of this research cannot be wholly understood without outlining the limitations of the research. Chapter 3 explores the varying application of the term, ranging from its original use in describing the physical appearance of failing shopping malls, to its adaptation in some circles to define entire suburbs which had fallen into various states of distress or decline. This research explores in more detail the latter, focusing on the renewal of aging suburban areas through the use of various policy controls. In particular, it focuses on the piecemeal nature of this renewal which results from the individual ownership of housing lots in those suburbs.

2. METHODOLOGY

INTRODUCTION

This section will outline the general approach to research and the specific research methods used during this study, and introduce the notion of the ‘micro-developer’.

As a key purpose of this research was to gain a better understanding of the characteristics and motivations of micro-developers, it became evident early on in the study that while a mix of qualitative and quantitative data would be required, a significant emphasis on the qualitative responses from interviews would yield the most enlightening results. As such, many of the research methods adopted in this thesis are considered qualitative in nature, primarily because of the nature of the topic being explored. Qualitative research is “designed to provide an impression; to tell what kinds of types of ‘something’ there are to tell what it is like to be, do or think something” (Bouma 2000:171). Qualitative research is suited to research topics that pose many ‘why’ and ‘how’ questions, as it is concerned with the process rather than the outcomes or products (Merriam 1988). Whilst this thesis provides analysis of the outcomes or products of micro-developers acting in greyfield areas, it is an understanding of the process in this case which will provide for a better understanding of the people responsible for such an important segment of Perth’s housing.

Kitchin and Tate (2000:23) explain that qualitative data is “generally unstructured and consists of words, pictures and sounds and is not easily converted into numerical data”. Given that a core focus of this research is to extract people’s experiences, values and opinions on infill development, and to uncover motives and motivations of the micro-developer, the objectives required this qualitative approach. Combining these interview responses with the results of a number of other research methods (literature review, surveys, data analysis and case studies), however, allows for stronger conclusions to be drawn from the research. Together, the use of these different research methods forms a triangulation of methods and information sources (Neuman 2000:25), whereby three or more research methods are used to gain a greater understanding of the issues relating to the question, allowing the identification of conflicting thoughts on the topic to be extracted (Frankfort-Nachmias and Nachmias 1992). Whilst the qualitative responses will help outline any recurring characteristics, motivations or practices of micro-developers, the quantitative results can add much greater depth of understanding, provide concrete examples of built outcomes, and provide an element of rigour to responses.

RESEARCH STEPS

The first stage in this research involved a comparative analysis of suburban and infill development, with particular attention paid to the role of greyfield suburbs. This was essential to not only set the overarching parameters of the research problem and the theme of the research, but to also firmly establish the Perth context which is so critical for this study. A brief look at the literature surrounding the positives and negatives of infill associated with infill and suburban development will attempt to summarise an ongoing debate that continues in planning circles worldwide. The literature review will also identify the various theoretical contexts from which the research is being considered.

Secondly, a review of the literature surrounding the increasing use of the term 'greyfield' in the modern planning lexicon, from its initial use to describe the vast reserves of paved parking lots surrounding failed retail stores to its more recent adaptation for use in Australian residential planning discourse, will be undertaken. This will not only help define a fundamental tenet of this research, and help distinguish between the Australian context of the term and its use internationally, but will further highlight the significant role these suburban areas play in the future provision of housing in Australia and the importance of better understanding their emergence.

Third, an examination of housing patterns and trends in Perth following the release of subsequent state planning strategies will enable us to better understand the role which planning and housing policies have played in creating these suburban greyfield areas, and what characteristics identify them as being prime locations for potential redevelopment. The impact of these strategies will be further illustrated through an analysis of historical aerial photographs.

Fourth, a comparison of the resulting infill development in each of the case study areas will enable a better understanding of how additional layers of local government policy further determine the final built form outcome.

Finally, and most importantly, the resulting built form outcomes of the case study areas will be assessed against the results of the interview responses and data collected from various sources to gauge whether the current practices of micro-developers is evident in the redevelopment of greyfield suburban areas, and the ability of these areas to generate positive and genuine urban renewal.

The following subsections outline in detail the various research methods which will be undertaken in testing the research hypothesis and addressing the individual research objectives.

PREVIOUS RESEARCH

Whilst a number of studies exist which examine the motives behind people investing in real estate as a long-term investment strategy (Yates 1996; Beer 1999; Berry 2000; Wulff, Yates and Burke 2001; Seelig et al 2006; Seelig et al 2009), the majority of these studies found overwhelmingly that a common unifying theme of these investors was the purchase of pre-existing houses as the basis of their investment strategy. Predominantly, these strategies revolved around long-term capital gains and negative gearing to reduce income tax losses, and investors were primarily small-scale operators, owning only one or two investment properties. Another study by Adams, Croudace and Tiedsell (2012) explored the experiences of the Scottish Executive in how the understanding of the development industry (or lack thereof) was reflected in the creation of policies meant to regulate it. Lastly, Coiacetto has undertaken research into urban social structure and the development industry for over a decade, resulting in a range of publications exploring various facets of the industry and its impact. Coiacetto (2000:354) concurs with the sentiments of Adams, Croudace and Tiedsell in finding that most governments and studies treat the development industry as “an undifferentiated homogenous group”, thereby ignoring the distinct strategies and behaviours found across the numerous types and tiers of the sector. It was largely the work of Coiacetto and Adams, Croudace and Tiedsell which validated the aims of this research in seeking to better understand an important sub-group within the development world, one which sits below the typically understood tiers of the traditional industry while simultaneously having a significant impact on an infill process deemed to be of the utmost importance in planning literature. Therefore, although this research will be influenced structurally by those other studies, the data collected will be unique, as will the collated results of this research. I found no other examples of a similar research project examining solely the motivations of people responsible for infill housing through the ‘demolish and build’ process, particularly those operating within Australia’s residential greyfields.

LITERATURE REVIEW

An extensive review of the literature relating to urban infill, urban renewal and greyfield redevelopment was undertaken as part of this study. The review began by examining literature regarding theories of neighbourhood change in order to provide the central theoretical background for the research. A number of principles are identified for each theoretical perspective and these are further explored using case studies. The literature review sought to identify the basis for exploring the practices currently in place for providing infill housing and

greyfield redevelopment, and enable the assessment of the various theories and their efficacy in rationalising the transformation of Australia's suburban areas.

The literature review further sought to examine international perspectives of the treatment of greyfield redevelopment to provide a comparison of the issue on a broader scale. This led to a broader analysis of sources surrounding sociological aspects of urban areas in order to provide context on the nature and treatment of urban poverty and socio-spatial disadvantage. This forms an important basis upon which the efficacy of planning and policy controls are discussed as part of this research.

Finally, the literature review also encompasses the relevant planning documents of state and local governments to build a wider understanding of the different approaches to infill housing applied by individual local governments, and the resulting built form that comes of it.

The results of this literature review are included throughout the extent of this thesis: in establishing the basis and context for the research, through the analysis of theoretical perspectives, in the course of the case study analysis, and in the discussion and conclusion.

THEORETICAL FRAMEWORK

The initial theoretical framework considered for this research was centred around Growth Machine theory, as it was anticipated that the application of the principles of the Growth Machine theory to contemporary urban infill development in Australia would be particularly relevant in rationalising the machinations behind the current regeneration of greyfield areas. The Growth Machine theory, based in understanding the urban political economy, forms a pertinent basis for the examination of greyfield redevelopment, as Molotch (1976:309) suggests the members of growth machines “profit through the increasing intensification of the land use of the area in which its members hold a common interest”. The central premise of Growth Machine theory is one of pure synergism – that intensified land use will bring about higher population, which will automatically lead to an increase in employment and an automatic increase in rent bringing a higher return on the investment of land owners and other stakeholders (Hogan 2006).

Although a fundamental focus of the Growth Machine theory is the intensification of land use, this research was expected to identify weaknesses in the model in explaining the current redevelopment of Australia's urban areas. In comparing the resulting urban form with a hypothetical scorecard of urban poverty which can be developed from the work of Winter and

Bryson (1998), it became evident that the current manifestation of infill housing will fail to produce the holistic benefits that the Growth Machine model purports to instigate. Further, the research found that the machinations of infill housing at the suburban scale did not accurately reflect the core premise which Molotch espoused, a finding which was supported by Kimelberg (2011:76) who found “the exercise of power at the local level to be less coordinated, consensus-driven, and growth-oriented than the growth machine thesis suggests”. As a result, it became apparent that a broad range of theoretical perspectives of neighbourhood renewal would need to be considered.

This research therefore examined a range of influential theories of neighbourhood change, including those from the ecological position (incorporating Neighbourhood Life Cycle and Invasion-Succession theories), the sub-cultural position (which place greater emphasis on internal ‘human’ influences), and the political position (which incorporates theories focused on urban power hierarchies, such as Urban Growth Machine Theory and Globalisation).

STATISTICAL DATA ANALYSIS

Data from the Australian Bureau of Statistics was assessed and compared across the case study areas to determine a broader view of change over a period of years. More specifically, data from the 2001 Census and 2016 Census pertaining to characteristics of population and housing stock will be compared, creating a 15-year study period which will illustrate the long-term change occurring in each suburb, and the extent to which this is a result of planning controls, market forces or a combination of the two.

As a central focus of Winter and Bryson’s study on urban change is the role played by government policies in creating areas of ‘new urban poverty’, Census data pertaining to socioeconomic indicators was also be examined and compared, with particular emphasis on the Socioeconomic Indexes for Area (SEIFA) data. The purpose of this analysis was to present a firmer understanding of the long-term transformation of Perth greyfield suburbs, and the impact of such state and local government housing policies on this change.

In addition to this, a comprehensive analysis of housing sales data for the two case study suburbs was undertaken, encompassing nearly 9,000 sales records occurring across both suburbs during the study period. The evaluation of this sales data provides a long-term market-based analysis of housing stock, which is then correlated with the relevant findings from the Census housing, population and SEIFA data.

This provides an illustration of the market transformation of suburban environments, notably the size, affordability and diversity of housing options which result from varying levels of planning density controls. This data is also used to test a range of anecdotal assumptions regarding infill housing models, such as whether density control policies can influence a suburb's capacity to regenerate itself through reinvestment, or whether residents of these suburbs suffer from relatively low suburban mobility. Further, the data is used to assess the rate of suburban redevelopment experienced by each of the case study suburbs and whether this is affected by varying levels of development standards required by the planning controls implemented by their respective local governments.

CASE STUDY ANALYSIS

A suburb-level analysis of these case study areas was conducted to determine how the resulting built form of infill developments have contributed to the amenity and vitality of these areas. A comparison between the original urban form and the resulting infill development was made, particularly against indicators of socio-spatial disadvantage, to determine the effectiveness of the current infill housing model at addressing areas of disadvantage and urban decline in Australia.

THE USE OF CASE STUDIES

The use of case studies has attracted numerous critics, who question their rigour as research tools due to a lack of defined methodology (Schell 1992), the inherent bias in interpreting or reporting results (Miles 1979), and the inherently qualitative nature of the results.

Although sometimes criticised for their inclusion in research, case studies are a well-documented device for providing context-specific insights into real-life problems or experiences (Baxter and Jack 2008; Njie and Asimiran 2014; Yin 2003; Ieedy and Ormrod 2005). As such, they are of great value to qualitative researchers. Yin (2003) outlines the benefit that the use of case studies brings by providing insight into both simple and complex relationships, and the accumulation of a variety of data sources when preparing a case study “ensures that the issue is not explored through one lens, but rather a variety of lenses which allows for multiple facets of the phenomenon to be revealed and understood” (Baxter and Jack 2008:544). The use of multiple data sources is branded a “hallmark” of case study research (ibid.:544), and adds important weight to the credibility of the data (Yin 2003; Patton 1990). Central to this thesis is the argument put forward by Ieedy and Ormrod (2005) that case studies can provide unique insights into an “unknown or poorly understood situation” (cited in Njie and Asimiran 2014), as this thesis contends that while we can

see the redevelopment of suburban greyfields occurring incrementally on a daily basis, the cumulative effects of this, and the characteristics and capabilities of developers in this space is largely unexplored.

Baxter and Jack (2008) highlight the importance of qualitative case studies for studying or explaining phenomena within their contexts. Schell (1992) elaborates further, suggesting that the use of multiple case studies can form the basis of research which requires to compare and contrast incidents or outcomes in different settings or contexts. The purpose of these case studies was not to answer a question completely (Shuttleworth 2008), but instead to identify and evaluate an outcome that could be investigated further using quantitative means. For the purpose of this research, the qualitative nature of case studies can be seen as a strength in many ways, as they can uncover the 'story' behind greyfield redevelopment, rather than simply explain the phenomenon in raw, calculable data.

Critical for this research, for example, would be not only understanding the quantitative aspect of infill housing (how many infill homes are built, for instance) but the identity and characteristics of the built form which can only be explained by human behaviours and reactions (perhaps most evident through cost-cutting measures of building design and construction, or best observed by examining the market response to the resulting built form).

Two main case study sites were chosen that present similarities in terms of age, history, size, topography, infill potential, distance from the CBD and other employment, and urban surroundings. The examination of ABS Census data was aimed to highlight further similarities between the two case study areas, in terms of levels of home ownership and rental population, income and other socio-economic indicators, ethnicity, career types and education levels. The intent behind this comparison was to exclude wherever possible variables unrelated to the research, or to better explain variables where they were unavoidable. The two case study areas were also identified as falling into the category of a residential 'greyfield', and as having similar concentrations of existing infill housing. Importantly, the two case studies were also chosen on the basis of differing levels of policy control enforced by the respective local government, aimed at supplementing the state government's broad and overarching controls over infill housing for the Perth metropolitan area.

The case studies areas were two suburbs located in the City of Stirling and the City of Belmont, respectively. These two areas were chosen as each respective local government enforces a different level of development control over infill housing. Stirling poses few additional requirements to State Planning Policy 3.1 (better known as the 'Residential Design Codes', or 'RCodes', colloquially). Since 2001, Belmont has implemented Local Planning Policy No. 1

(LPP1), which exercises a higher degree of quality control for infill. In assessing these different levels of local government influence and the resulting built form, correlations will be made between that built form and the experiences of micro-developers working within these local government areas.

STRENGTHS AND WEAKNESSES OF CASE STUDIES

As with all scientific inquiry, the credibility of the research needs to be established. Unlike quantitative research, which chiefly relies on measurable outcomes and data, qualitative research needs to demonstrate this credibility whilst basing itself on what can be argued is largely a series of subjective sources. With respect to the topic of this research, while quantitative data could be used to demonstrate numerous measurable metrics regarding the redevelopment of residential greyfields, only a qualitative research method can uncover the underlying ‘who’, ‘how’ and ‘why’ questions which are largely unexplored. The case study approach still stands up under this scrutiny, however, as the entire point of a case study approach is not to extract such measurable and comparable data, but to broadly understand an event as it takes place in a specific context.

Fidel (1984) argues that case studies are usually undertaken with the intention of generalising the findings of the study for understanding a phenomenon in the broader context. Sarantakos (2005) highlights from this a common criticism of case studies, that there are obvious limitations in generalising from a single case study, due to the limited sample size being used. This criticism is countered by authors who contend that single case study research is primarily for expanding or generating theory rather than comprehensively proving or disproving it (Yin 2003). The ability to generalise findings from case studies is greatly improved from the use of collective or multiple-case studies (Yin 2003; Stake 2003). This thesis employs a collective case study for the purpose of comparing and contrasting each case and to provide a hypothesis which can be tested in future research. Johansson (2003) is supportive of this research structure, noting that case studies can be used to for initiating research that may lead to a larger, more quantitative study.

Another potential weakness in the case study model is presented when researchers selecting a case with which they have an explicit familiarity take short cuts in describing the circumstances of the case, often due to that familiarity. Hallberg (2013) and Morse (2011) both contend that case studies presented with insufficient detail can be misinterpreted as research that was without methodological rationale, poorly guided, or lacking in credibility. An overarching methodological rationale for the purpose of the research and guided interview questions can help to keep the intention of the study focused. This also ensures that accusations of bias aren’t levelled at the research on the basis of relationships between the researcher and participants. Yin (2003:11)

suggests that the key challenge arising from these concerns is maintaining the validity or legitimacy of research by adhering to well-established practices and procedures.

These inherent limitations do not mean that such qualitative research is without purpose or merit, as the focus of case study research being so heavily aimed at a phenomenon occurring in a specific context is precisely why it lends itself so well to being used as a comparative and interpretive tool (Fidel 1984:276).

Perhaps the major inherent strength of case study research comes from its ability to examine multifaceted occurrences in context, rather than relying on hypothetical or theoretical assumptions. As many of the sources used in examining a case are qualitative, and therefore mostly subjective, it enables a deeper understanding of human elements that aren't covered by quantitative data, such as motivations, comprehension and understanding, and other such human traits. As this thesis is aimed at understanding suburban infill as a product of the characteristics, capabilities and understanding of the developers involved, the use of such subjective data becomes not only justified, but essential. The importance of examining a phenomenon in its context is echoed by Flyvbjerg (2006), who notes that such context-dependent knowledge is critical to developing a properly detailed understanding in a field of study. Yin (2003:37) validates this notion, arguing that "the case study method allows investigators to retain the holistic and meaningful characteristics of real-life events".

A number of authors (Patton 1990; Yin 2003; Baxter & Jack 2008) also highlight in case study research the ability to draw on multiple data sources, which serves to improve the credibility of the data being presented, and can be used to provide multiple views on a complex phenomenon, which is critical with data that is largely subjective in nature.

Merriam (2009) and Meyer (2001) also point out that flexibility is inherent in case study research. Becker (1970) acknowledges that the flexibility given to case study research by the lack of a rigorously predesigned research structure is an important and indeed functional attribute of case study research, a view further supported by Fidel (1984:274), who suggests that a researcher may choose that "the conduct of the study will be guided by what they see in the field". With this in mind, it is vital that the researcher is aware of the limitations that this flexibility may pose, with an overarching framework to guide a case study being implemented to ensure rigour and consistency in the research (Meyer 2001).

The cases selected for inclusion in this thesis operate as a complex functioning unit – an entire suburb involves a number of owners, influencers and stakeholder in often opposing roles – and are being examined using a number of sources and types of evidence. Both cases are arguably

contemporary examples of suburban greyfields, being viewed through the lens of a 15-year study period using data contained within the four most recent Federal Censuses of Population and Housing.

SEMI-STRUCTURED INTERVIEWS

The purpose of the interviews was to use open-ended questions to gather in-depth responses about the respondents' personal experiences, opinions and knowledge (Patton 2002; De Vaus 2002). The interview subjects were chosen for their involvement in infill housing or greyfield redevelopment, or for their extended experience in related fields, making them, for the purpose of this investigation, "information rich and illuminative" (Patton 2002, 40). These interviews form an ideal qualitative source from which the characteristics of the archetypal developer can be drawn.

One of the research questions this study poses asks whether current policy controls demonstrated an understanding of the players and processes responsible for the provision of suburban infill. Throughout the course of this research, it became evident that the literature's depiction of a 'developer' and the 'development industry' was not synchronous with the agents of change operating in smaller-scale residential property development. Instead, a functionally different operational structure emerged. Although these agents were often referred to as 'mum and dad' developers by a number of interview respondents, this research found that a vastly wider array of players operated in the sphere of small-scale infill development, most of whom were not accurately portrayed by the 'mum and dad' moniker.

As such, this thesis introduces the name 'micro-developers', which better accounts for the broad collection of players operating in the small-scale residential development space. As the term itself suggests, micro-developers are considered to be agents operating in symbiotic relationship with the broader development industry as understood by the literature, in either a full-time or part-time nature. This relationship parallels that between the shark and a remora, whereby both co-exist in the same broad industry, operating in broadly similar ways, yet with vastly different creatures with vastly different goals.

Semi-structured interviews were conducted with local government planners, planning consultants, representatives of the wider development industry, and, most importantly, with micro-developers. The purpose of these interviews was largely to gain information for the case study suburbs, as well as gaining an understanding on the extent to which current infill development is understood

by the different theoretical perspectives of neighbourhood change, and the motivations behind micro-developers in order to better gauge their role in the planning system, their significance as a component of the housing industry and their ongoing impact on the physical character of suburban life. As interviewing for qualitative research requires “the formation of a close collaborative working relationship between the person being studied and the researcher embodied in language, memories and emotions” (Beck 1970; Denzin 1989; Neuman and Bondy 2000, cited in Green 2002:110), the interviews were conducted face-to-face wherever possible.

The interview questions were designed to prompt discussion rather than straight answers. This type of interview is outlined by Bell (1999:138) where “one of the advantages of the interview as a research technique is its adaptability so during an interview the approach could change from structured to more informal as more rapport is achieved”. The questions acted to engage the respondent and form the basis for further discussion.

The interview questions with micro-developers were arranged into three broad categories:

- **Introduction and Background** – aimed at gaining an understanding of how micro-developers became involved in development of land, and the number and scale of projects undertaken;
- **Business Model** – exploring how respondents operate as a land developer, how they use and understand different financial strategies, and the ‘robustness’ of their business model to deal with challenges and changing circumstances; and
- **Industry Knowledge** – in order to understand the depth of interest and/or knowledge about planning policies and strategies which govern land development, and shaping developments to meet policy requirements and financial outcomes.

Although the interviews were intended to be conversational, and relatively unstructured, a number of guiding questions were established in order to maintain some consistency in the responses provided, which would better enable general recurring ideas, thoughts and comments to be identified. The guiding questions were organised into three broad categories covering their professional background and introduction to property development, their typical ‘business model’; and their practical understanding of the development industry. These questions are included in Appendix One.

As this study intended to identify unifying characteristics of micro-developers, and better understand their motivations and intentions, it was considered important to also conduct interviews with local and state government town planners, who interact with micro-developers

on a daily basis. This includes the assessment of development applications for land development proposals, but also the creation of policies to guide development towards a desired built form outcome, the knowledge and reaction to these policies by micro-developers, and the amending of planning policies as a result of issues arising from these interactions.

To add further insight, it was also considered important to conduct interviews with members of the development industry, such as town planners, real estate agents or builders, whom often facilitate the development of built form projects on behalf of micro-developers. Their involvement in these projects range from solely providing advice, to taking a more active role in development projects, almost acting as a 'developer-by-proxy' in certain circumstances.

It was envisaged that the semi-structured interviews would need to be tailored to suit each specific group, in order to build a more complete understanding of the micro-developer through such a combination of sources. The interviews with these respondents were conducted in a semi-structured manner, with guiding questions aimed at eliciting more qualitative responses based on their prior experiences with micro-developers.

Although the questions for each of these groups were tailored to suit their specific roles, they were generally aimed at a number of common themes in order to allow better cross-referencing of responses regarding specific topics, thereby building an image of the micro-developer that is both more complete, and garnered from the experiences of a range of disciplines.

Where used throughout this research, respondents of these in-depth interviews are identified using their initials only.

SURVEY ANALYSIS

In order to provide further primary empirical data a survey was taken among 40 resource persons from the planning or development industries. These respondents worked across a range of roles, including urban planners for state and local government or private industry, architects, and developers operating in land or built form development. The survey posed ten short-answer questions on topics relating to their experiences with small-scale suburban infill, such as what constitutes "typical infill housing", what they perceive to be motivating factors for developers, the influence of policy controls, the overarching process for design and delivery, and the role small-scale residential infill plays in the 'bigger picture' of Perth. The survey also asked the

resource persons to evaluate using a scale of 1 to 10 the importance placed on 25 'Development Priorities' by small-scale developers of urban infill.

Bell (1999:14) writes that the aim of surveys is fact finding, "to obtain information which can be analysed and patterns extracted and comparisons made". A survey was used in this instance to gather responses to the same questions from a range of resource persons, which enables a researcher to not only describe, but compare responses, and to demonstrate that certain trends become evident across the body of respondents (*ibid.*). Although brief, the survey served as a 'litmus test' for assessing how the members of the planning and development industries view the priorities, motivations and goals of small-scale developers, and with respect to the design and delivery of suburban infill. This helped provide an understanding of the notional image of small-scale developers, and where their priorities lie in undertaking housing projects.

The survey responses were completed online. Although the responses are anonymous, respondents can be grouped according to their professional background in order to gain an understanding of how differing views can be held by people working in different capacities. The survey was undertaken separate to the semi-formal interview process to ensure that certain themes present in the interview questions, or non-guided discussion that resulted during each interview, did not impact the survey responses. The survey questions and criteria are included in Appendix Three.

Where used throughout this research, respondents of these surveys are categorised by profession/background, and identified as either 'P' (planner), 'D' (developer), 'B' (builder), or 'O' (other). For example, 'D2' indicates one of the respondents from a background in property development.

3. THEORIES OF NEIGHBOURHOOD CHANGE AND THE EMERGENCE OF GREYFIELDS

INTRODUCTION

This chapter will explore the prevalent theories of neighbourhood change which have emerged in planning literature and discuss their validity with respect to understanding the changes taking place in Australian greyfield suburbs. As urban form has changed so drastically over the past century, from relatively small and generally concentric cities of the early 20th century to the explosion of outer-lying detached suburban landscapes of the post-War era, so too have the theories by which these changes are explained. The mechanisms and processes by which neighbourhood transformation is understood have struggled to present a complete picture of the complex nature of modern urban and suburban environments. This is especially noted in recent years, as more and more cities internationally seek to make better use of established urban and suburban environments, and as “urban revitalization and gentrification have become important phenomena” (Badcock and Cloher 1981, in Schwirian 1983:83). Whereas once cities generally expanded outwards with time, and in a reasonably logical order, the modern era of recycling established areas due to failing or deserted land uses, the push for increasingly efficient uses of land, the burden of distance and travel, and the ideal of more sustainable human settlements has challenged long-held theories of growth.

State and federal policies in Australia have long served to manipulate or counteract the impact of typical economic and social forces on urban areas, often in response to planners beginning to focus on solutions to social and economic inequalities emerging in areas of deterioration (Pitkin 2001:1). From the ‘slum clearances’ of the mid-1900s aimed at regenerating pockets of inner city blight³, to the mid-century push for individual home ownership through supportive macro-economic conditions, an understanding of urban lifecycles has formed a fundamental basis on which policies are fashioned and implemented.

The subtext to each of the main theories of neighbourhood change can best be explained by the dominant urban form of the time. Such theories tend to be categorised into those based in

³ The most well-known attempt arising from a 1937 report by Victoria’s Housing Investigation and Slum Abolition Board, resulting in the passing of legislation in 1938 initiating a ‘war on slums’.

ecological, sociological and political schools of thought.

Following this analysis of the prevalent theoretical perspectives, this chapter will chronicle the emergence and evolution of the term 'greyfield' in planning literature to help refine the focus of this study to specific geographical areas within an archetypal city, with a particular focus on the Australian experience. The identification of specific characteristics of these geographical areas, however, is intended to enhance the applicability of this study to any other similar suburban environment, in Australia or internationally, as previous authors have also identified within their own study areas suburban environments exhibiting similar features and characteristics, and undergoing their own evolution as a built environment. In doing so, this study aims to contribute to the growing awareness of distressed suburbs and the varied (and often unsuccessful) approaches to renewing these areas in accordance with contemporary planning ideals.

In order to achieve this, the chapter aims to explore the different applications of the term 'greyfield' internationally, and highlight an existing inconsistency in the use of the term which adds further ambiguity to the literature and the treatment of two very different, yet equally vital, suburban issues. Such inconsistency in the use and application of planning terminology is not unusual, as authors typically apply well-understood principles to better explain the evolution of their own urban areas⁴. In highlighting the etymology and evolution of the term 'greyfield' in this way, this thesis aims to avoid its core topic being appropriated as an Australian-specific, or even Perth-specific, problem.

ECOLOGICAL THEORIES OF NEIGHBOURHOOD CHANGE

Theorists examining urban morphology from an ecological perspective established some of the earliest, and best known, interpretations of change in relation to urban areas, based on complex systems most commonly found in plant and animal ecology (McPhearson, Pickett and Grimm 2016; Parris 2018). In doing so, neighbourhoods are explained as natural areas, almost as a living object with typical life stages, and the interactions between residents often resembling the natural relationship structures seen in the animal world. The most prominent model, Neighbourhood

⁴ For example, the seemingly-universal planning term 'sprawl' carries different meanings in different parts of the world. In the United States, sprawl commonly refers to the 'leapfrogging' of unused or under-utilised land, creating a number of disconnected towns and communities. In the Australian context, sprawl is used to explain the continual low-density urban growth of cities, albeit as a large, contiguous mass.

Life Cycle Theory, promoted the idea that suburbs experience the same constant and inevitable cycles of birth, life, and death, as seen in all other living things: “by viewing neighbourhood change in terms of a life cycle, the first theory posits that places grow and die in a way analogous to the human body” (Hollander and Nemeth 2011:352).

Metzger (2000) outlined a range of interpretations of neighbourhood life cycle theory, highlighting in all of them a natural progression of urban areas through similar stages towards an ultimate decline. Despite the majority of these models describing the final stage with terms such as ‘undesirable population’, ‘slum area’, ‘substandard housing’, and ‘high crime’, only the model put forward by Hoover and Vernon (1959) gives hope of an area beginning a new cycle, suggesting that suburbs are capable of a phase of “renewal through public intervention and replacement of obsolete housing” (Metzger 2000:9).

Table 1. The Stages of Neighborhood Change: The Evolution of the Life-Cycle Theory, 1935 to 1975

U.S. Home Owners' Loan Corp. residential security maps (1935)	U.S. Home Owners' Loan Corp. <i>Waverly: A Study in Neighborhood Conservation</i> (1940)	Edgar M. Hoover and Raymond Vernon <i>Anatomy of a Metropolis: The Changing Distribution of People and Jobs within the New York Metropolitan Region</i> (Regional Plan Association of New York, 1959)	Real Estate Research Corporation <i>The Dynamics of Neighborhood Change</i> (U.S. Department of Housing and Urban Development, 1975)
<i>First Grade "A" Area</i> (green) Well-planned, homogeneous population	<i>First Stage</i> New residential construction	<i>Stage 1</i> Single-family residential development	<i>Stage 1: Healthy</i> Homogeneous housing and moderate to upper income, insurance and conventional financing available
<i>Second Grade "B" Area</i> (blue) Completely developed, stable	<i>Second Stage</i> Normal use and maintenance	<i>Stage 2</i> Transition to higher density, apartment construction	<i>Stage 2: Incipient Decline</i> Aging housing, decline in income and education level, influx of middle-income minorities, fear of racial transition
<i>Third Grade "C" Area</i> (yellow) In transition and decline from age, obsolescence, lack of restric- tions, lower household incomes and housing values, lack of homogeneity	<i>Third Stage</i> Age, obsolescence, structural neglect	<i>Stage 3</i> Downgrading to accommodate higher density through conversion and over- crowding of existing structures, spread of ethnic and minority districts	<i>Stage 3: Clearly Declining</i> Higher density, visible deterioration, decrease in white in-movers, more minori- ty children in schools, mostly rental hous- ing, problems in securing insurance and financing
<i>Fourth Grade "D" Area</i> (red) Final stage of decline, mostly low-income rental housing, “undesirable population”	<i>Fourth Stage</i> Falling investment and rent values, neglect of maintenance, district-wide deterioration	<i>Stage 4</i> Thinning-out or “shrinkage” charac- terized by population loss and decline in housing units	<i>Stage 4: Accelerating Decline</i> Increasing vacancies, predominantly low- income and minority tenants or elderly ethnics, high unemployment, fear of crime, no insurance or institutional financing available, declining public services, absentee-owned properties
	<i>Fifth Stage</i> Slum area with depreciated values, substandard housing, social problems	<i>Stage 5</i> Renewal through public intervention, redevelopment and replacement of obso- lete housing with new multifamily apartments	<i>Stage 5: Abandoned</i> Severe dilapidation, poverty and squat- ters, high crime and arson, negative cash flow from buildings

Table 1: Various iterations of neighbourhood life cycle theory (source: Metzger 2000:9)

Such ecological perspectives undoubtedly had the most significant impact on understanding neighbourhood change. “From these writings emerged an ecological theory of urban development, which described neighbourhood change as a life cycle ending with inevitable decline. The life cycle theory of neighbourhood change influenced thinking on communities for

much of the 20th century” (Lang 2000:1). Importantly, the ecological models argue that overall neighbourhood change results only through a “natural, deterministic process based on rational, economic choice” (Pitkin 2001:3), leaving little room for any impact by neighbourhood residents. Metzger (2000) echoes the notion that life cycle theory has had immense influence on planning and urban policy, but also notes the critical assessment of its assumption that the ultimate stage is unavoidable.

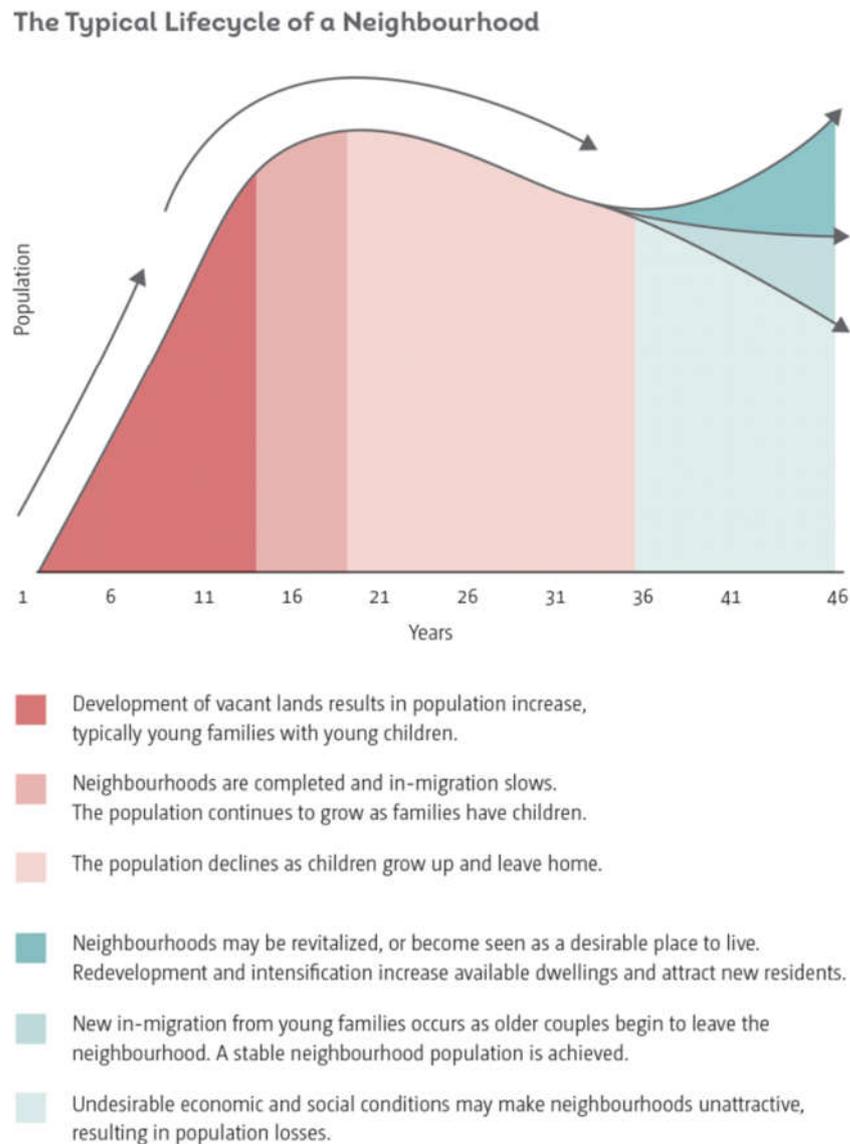


Figure 1: Typical lifecycle of a neighbourhood (source: City of Edmonton 2018)

The most popular model referenced in planning circles, that put forward by Hoover and Vernon (1959), attempts to address this criticism by offering a varying opinion on the inevitability of each life cycle unfolding in a such a prescribed fashion. Hoover and Vernon instead focus on a number of major changes which occur as a suburb transitions from one stage to another, such as the composition of the population, population density and land use intensity, and the quality and condition of housing. “Hoover & Vernon pointed out that their model did not describe a set pattern of stages through which all areas passed. Some neighbourhoods would not go through the whole process; some would continue to loop through the same two or three stages, and some would remain at one stage indefinitely” (Schwirian 1983:91).

Figure 1 shows this nexus as a typical neighbourhood reaching a point at which a range of possible outcomes emerge. This change in thinking, that suburbs can transition back and forth between a number of key stages without completing a full life cycle, has helped forge the longevity of life cycle theory, and given hope to planners that for those suburbs not making those transitions of their own accord, a similar outcome could be achieved with targeted planning policies and strategies. As a result, the model is no longer best interpreted as an ongoing ‘cyclical’ form, but as an ongoing continuum with multiple potential outcomes at the end.

A further criticism of Neighbourhood Life Cycle Theory, as put forward by Hollander et al (2009), is that it describes an almost binary system whereby a suburb can only be in one state or another, without room for any sort of complexity or ‘grey area’ in between. “Rather than look for ways to manage population loss so that blight does not occur, the theory only allows for the neighbourhood to be seen as growing or declining, alive or dead” (Hollander et al 2009:353). While the theory has, in effect, quantised suburbs into clearly defined stages, it could also be argued that this only serves as a tool to identify a suburb’s starting position or destination through the life cycle model, and as such is more valid and important than trying to compare suburbs at any given point along a true spectrum.

Through the lens of Neighbourhood Life Cycle Theory, the role of planners, or more specifically planning policies, can be best described as a means to interrupt or manipulate these natural and inevitable stages in an attempt to forge renewed investment, or to steer off the ultimate demise of an area. Although such interventions have been used to expedite the decline of an area (such as accelerating the demise of slum areas in order to facilitate a broad-scale redevelopment of an old industrial area), the predominant aim of such policies in typical suburban areas is to encourage new development, population growth, or gentrification before the area’s ultimate end. “Believing that such policies can arrest the slow death of neighbourhoods, Blakely (1994) and others in the economic development tradition draw on neighbourhood lifecycle theory in advocating public intervention through monetary investments in vacant land” (Hollander and Nemeth 2011:352). A number of authors have emphasised the importance of economic stimulus in revitalising areas

in decline, suggesting that the cycle is not a product of social or environmental factors only: “The dominant interpretation of neighbourhood life-cycle theory is that public investment is needed to stop an out-of-control process” (Hollander et al 2009:353). Metzger (2000:7) similarly suggests that an area’s future does not depend on its stage in the natural life cycle, but on “whether residents had access to financial resources within an environment of community control”.

From the same school as life cycle theory emerged the Invasion-Succession model, named using terms found in animal and plant ecology (Schwirian 1983:89), which portrayed neighbourhood change as simply competition for space between opposing land uses. Burgess (1925) established the earliest understanding of the invasion-succession model based on a somewhat simplistic model of a city as a series of concentric rings, with a central business district at the core and competing land uses radiating out in subsequent rings (Figure 2).

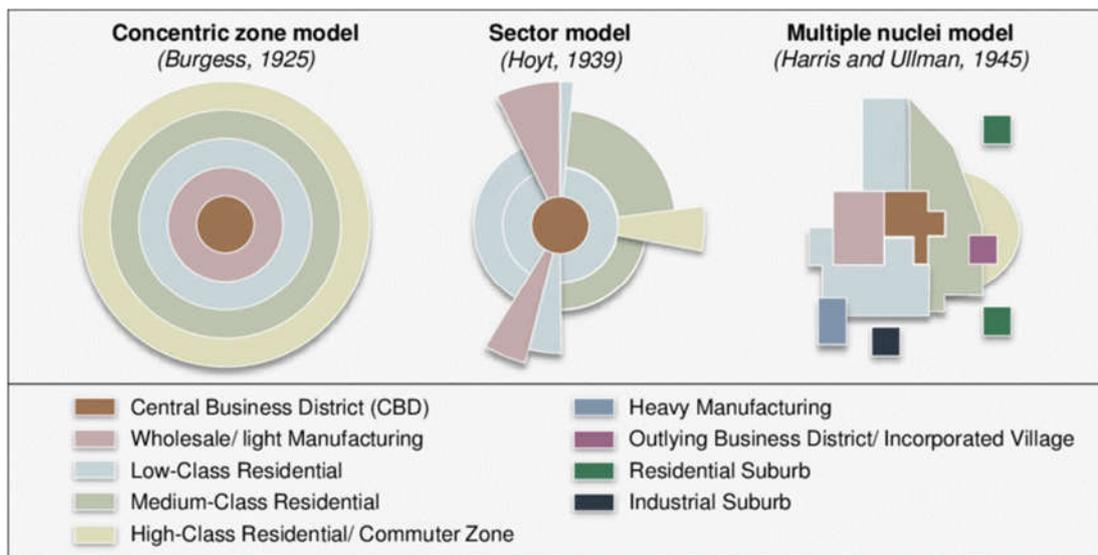


Figure 2: Models of urban change (source: Schlesinger 2013)

Burgess argued that the principal agent of change in this model is, in its simplest form, the basic competition for space as each land use grows and exerts outward pressure on each subsequent zone. By example, in the concentric model above, lower socioeconomic residents from the ‘slum housing’ sector are pushed outwards into the ‘working-class housing’ sector, the occupants of which are subsequently forced to accommodate the new population, or move further outwards themselves into the ‘higher-status dwelling’ zone.

Carter and Polevychok (2006) challenge the simplicity of the early iterations of the Invasion-Succession model, noting that the idea of a city existing as a series of concentric rings may have been suitable in earlier eras, but not so much in more recent times. They also note that the concentric model presents the population as being relatively immobile. “This theory was more applicable to the pre-World War II city which was mono-centric in nature... developed at higher densities, more reliant on public transportation, and less dominated by the automobile” (Carter and Polevychok 2006:2).

Partly in response to the notion that Burgess’ model was overly simplistic in portraying urban evolution as a series of rings, in 1933 Hoyt built on the concentric ring model, and attempted to present a more realistic interpretation of suburban expansion showing land uses ‘fanning’ out from a central point rather than expanding as a complete ring. The resulting sector model, Hoyt argued, was a more accurate reflection of how competing land uses interact and compete with each other.

In doing so, the sector model explained expansion as following patterns of previous land use, transportation networks, physical features, and “the desire by some land uses to avoid other land uses” (Carter and Polevychok 2006:3). For example, the sector model could more accurately account for the growth of a coastal city, which may still see some uses spread out in a semicircle, but is also likely to see high-income housing spread along the coastline, reflecting a market in which a premium is paid for beach access or ocean views.

Hoyt also challenged the idea of forces pushing outwards from a central point, instead suggesting a ‘filtering’ process by which outward expansion was a result of the draw of fringe areas due to their offering of newer homes and more appealing neighbourhoods (Temkin and Rohe 1996). In this process, housing once occupied by high income earners ‘filters down’ to the middle class, which then eventually filters down again to the working class as housing stock deteriorates over time (Carter and Polevychok 2006:7).

The multiple nuclei model refined the concept further, as it became more clear as cities developed that not all urban areas grew around a single core, and that other nodes usually existed which caused various land uses to group together.

Although the age of Neighbourhood Life Cycle and Invasion-Succession theories often sees them disregarded by some groups, they remain significant in contemporary planning when used together to examine the cause and effect of movement around urban and suburban areas. Importantly, these two models are not seen as competing concepts, but better used as complimentary mechanisms which better illustrate the bigger picture of societal change. In one

sense, the invasion-succession model acts as an 'x-axis' to life cycle theory's 'y-axis': the former explaining the circumstances by which various demographic groups move around a city, while the latter explains the impact of these migrations on the population composition of a location, and the subsequent resulting outcome on the social and economic conditions of that location. For example, with each migration described in Hoyt's filtering process outlined above, the financial capacity of the new occupants to maintain the increasingly aging housing stock diminishes, and this disinvestment starts to have a broader impact on the overall neighbourhood, and further contributes to a community's path through its life cycle.

Although positive outcomes can be identified in this model, such as each group being afforded access to more affluent housing (and often status) with each successive change, it is also evident that those unable or unwilling to follow the outward migration can be left isolated or frustrated at the inward migration, and can begin to establish a pattern of 'residualisation' in an area which is most likely to continue in a state of deterioration. As this influx is usually accommodated by the building of higher-density housing, these 'residualised' residents can often feel that their community is even further impacted not just by the growing number of lower socioeconomic migrants, but the increasing proportion of the surrounding area they comprise. Although Wiesel et al (2011) describe life cycle theory as a way of explaining the impact of generation shift in a community, which very much aligns with the human life cycle of birth, life and death, the theory also addresses the impact of economic and cultural components. Hoover and Vernon (1959) perceived that the inevitable decline of suburban areas was "often associated with the spread of districts occupied by more or less segregated ethnic and minority groups" (Hoover and Vernon 1959:196). Over subsequent decades, this concept was described with pejorative terms such as 'white flight', whereby race became an easy scapegoat to explain a much more complex issue.

SUBCULTURAL THEORIES OF NEIGHBOURHOOD CHANGE

Even in the early years of ecological theories, some authors noted inherent deficiencies in the models presented, focusing on three main elements. First, the subcultural school of thought contends that the economic determinism proposed by ecological models can't possibly account for a multitude of non-economic, or even 'human' reasons why people to choose to reside in certain locations, and in failing to do so ignore the most fundamental drivers of human nature. "In other words, where people live can evoke sentimental ties that bind them to their neighbourhoods, apart from simply economic factors" (Pitkin 2001:6).

A second criticism of the ecological schools was that they focused solely on exogenous forces acting on an area, and ignored the potential for internal forces to bring about change, be it positive or negative. Pitkin (2001) argues that ecological models focus almost exclusively on these external influences, which neglects the potential for suburbs with strong social structure to resist deterioration and decline. Ahlbrandt and Cunningham (1979, in Pitkin 2001:6) outline the subcultural school's ability to identify the "social fabric and social support networks of neighbourhoods", but also to describe a link between these internal social dynamics and a suburb's ability to resist or accelerate the forces acting upon them. In doing so, the subcultural school challenges the notion that neighbourhood residents have little, if any, impact on the life cycle stages of a neighbourhood, suggesting instead that individual maintenance, renovation or gentrification of a house, for example, is not always done solely based on the idea of best economic return. In explaining neighbourhood change, subculturalists attempt to quantify the impact on neighbourhood change from "concepts such as resident confidence, satisfaction, commitment and social networks" (Carter and Polevychok 2006:17). Useem et al (1960, in Schwirian 1983:88) also explores the inverse of this relationship at the community level, describing the neighbourhood as the agent of change rather than the product: "According to this orientation, an individual's behaviour is modified by living with one social group rather than another... A subculture develops among neighbourhood residents. They come to share values, beliefs, and local knowledge. The neighbourhood becomes a source of personal identity".

Lastly, Carter and Polevychok (2006) further contend that the subcultural approach highlighted the tendency of ecological models to treat all neighbourhoods as homogenous, and in doing so ignored many of the fundamental human traits and interactions which exist in communities. Schwirian (1983) argues that the greatest contributor to change in any community is a result of this human migration, particularly the introduction of different racial, socio-economic, or cultural groups. A central tenet of both Invasion-Succession and Neighbourhood Life Cycle theories is identifying this migration and the resulting impact on the built environment of a community, and detailing the influence on a suburb's stage of life cycle. Subculturalists argue, however, that both ecological models ignore the complexity of human social interaction, noting that the acceptance of culturally or socially different groups can manifest itself in tolerance or integration, or just as often by resistance, isolation or resentment within a community.

An example of a subcultural force at work is the tendency for migrant groups to concentrate

within certain suburbs or locations around the Perth area⁵. This tendency is sometimes described as an economic consequence, as migrant groups seek affordable housing in localised areas, although this explanation appears to be somewhat simplistic. The social drivers of this trend cannot be understated: there is an obvious draw to migrants to seek housing near others of the same ethnic background to aid in the transition and assimilation process, stemming from a fear of rejection, a fear of leaving behind certain cultural or language elements, and to increase the likelihood of finding work in the local community with those of a similar background. The tendency to treat neighbourhoods as homogenous ignores not only the complexity of humans as individuals, but also the broad cultural diversity between different ethnic groups.

In this way, the impact of this tendency as a driver of neighbourhood change cannot be understated. This concentration of migrant groups in localised areas can have a significant impact on the outside perception of a place, usually with flow-on economic and social consequences. Not surprisingly, this pressure is usually parallel to the experiences faced by those migrant groups: although Australian society has a history of resistance and resentment towards new migrants, those with similar skin colour, clothing, cultural habits, language, or religion often found the assimilation process easier than those without such commonalities. The flow-on impact on those suburbs was therefore one of perception: a concentration of one migrant population might make a suburb a desirable place to live, whereas another migrant group might render an adjacent suburb an undesirable location, with property prices and local investment hindered accordingly.

As well as identifying employment or familial ties, the subcultural approach can also help explain often localised idiosyncrasies which communities exhibit, which may not appear to have a rational economic reasoning. Firey (1945; in Schwirian 1983:88) suggests a number of “non-economic factors, such as resident sentiment and symbolism, that are just as important in determining why and how residents live in certain parts of the city”.

Due to the fact that subculturalists attempt to explain change based on often immeasurable concepts, such ‘human’ reasoning, it is often difficult to assign a particular theoretical label to various actions of people, either as individuals or a collective. One criticism of the subcultural school is that because it deals in somewhat vague or immeasurable concepts, it is difficult to define or label clear approaches within the overall genre, as is seen with other planning theories, and as such sometimes appears to be a collection of general themes under the broad banner of

⁵ A well-known example is the perception that the City of Fremantle is historically home to a large proportion of Italian migrants, many of whom came to Western Australia in the post-War era (or were born to parents who did).

‘subculture’. Regardless, the school offers a critical tool in helping to understand neighbourhood change, as human nature dictates that there will always be an element of ‘just because’ when describing why, how or where people live. Not all human decisions can be explained on the basis of predetermined life cycle stages, such as those suggested by the ecological school, or as a result of rational economic decisions, such as those proffered by the political school of thought.

Perhaps most importantly for the context of this research is that the subcultural school can offer a valuable understanding of the long-term impact of external perception of a suburb and its resident population – as greyfield suburbs often have to overcome long-standing stereotypes and negative perceptions of those from surrounding areas – which the ecological and political schools often overlook.

POLITICAL THEORIES OF NEIGHBOURHOOD CHANGE

Somewhat notably during the past four decades, a number of authors started to explore the role of the political economy in bringing about neighbourhood change. Older theories, especially those with a background in Marxism, began to be reworked to critique the emerging built form in urban and suburban areas, and the political and economic structures which both resulted in, and resulted from, those built environments.

Such theories appeared to be especially pertinent to infill housing in suburban areas, as unlike greenfield expansion, infill usually involved the displacement of one person through the actions, and for the economic benefit of, another. The impact of these actions and the significance of understanding the role of power is perhaps best described by Schwirian (1983:94), who noted that these players operate “in such a way that there is an uneven distribution across the city in the benefits of development and revitalization. The winners are always the monied; the poor and the minority groups are always the losers.” As such theories discussing political power and economic principles helped shape a base of theories explaining widespread suburban change through such mechanisms.

A key principle of the political school is that change is brought about by economic, political and social forces outside a neighbourhood (Downs 1981). Even though some proponents, such as LaGory and Pipkin (1981), developed more comprehensive models which suggest change is a result of the physical state of housing stock and other social and demographic transformations within the local population, these transformations still occur as a result of the external forces.

“The political perspective emphasizes the importance of the institutional forces and the role of powerful elites” (Temkin and Rohe, 1996, in Jeongseob 2012:47).

The best known of these political theories, and often credited with the resurgence of Marxist foundations in understanding societal change, is the Growth Machine theory, first put forward by Molotch (1976) and further developed by Logan and Molotch (1987). In stark contrast to the ecological models’ deterministic assertion that a neighbourhood is a natural space destined to follow typical lifestyle stages of growth and decay, the Growth Machine theory argued that all such change was the result of active entrepreneurs – members of a growth machine who stood to benefit from more intensive use of land and a larger population. The political process which unfolded allowed those ‘local elites’ to work together to reap the benefit of neighbourhood growth, with little or no regard for those local residents of the area (Pitkin 2001:9). To exacerbate the matter, those local residents can be affected by the growth machine operating on the international level (for example, groups of business and political elites competing to host an international sporting event), the national level (such as state-based coalitions competing to win federal development contracts and subsequent job creation), and the local level (such as local governments competing for a new train station or civic venue).

The increasingly common process of gentrification (particularly in inner-city areas) is best explained through the lens of the Growth Machine theory as a means by which land owners, local business owners, politicians and planners (the ‘local elite’) can work together to create the economic and statutory conditions required to make regeneration or urban viable, creating a significant uplift in land and rent prices, and encouraging wealthier occupants to an area to benefit business. Building by building, the original lower socioeconomic occupants are forced out by these increasing costs of living.

Another mechanism in the political theories of change is the impact of globalisation, or the increasing ability for corporations to operate on a global scale to maximise ‘corporate efficiency’. The restructuring of capital which resulted over a number of decades from this process was accompanied by the major restructuring of labour markets. This saw a number of significant shifts in labour and employment patterns, most notably in Western nations being the decline of manufacturing industry as the prominent source of employment, to be replaced by service and high-technology industries (Pitkin 2001:12). Further, Spiller (2011:82) noted that it marked the beginning of a process by which higher-order jobs began to be “sucked back into the inner urban regions, having previously been pulled to the suburbs with the suburbanisation of large-scale car, textile and other manufacturing set up on Fordist lines”.

Although not directly related to the construction of housing, the example of Newtown outlined in chapter 4 shows the significant impact that globalisation can have on suburban areas: a once prosperous post-War town, established to supply local manufacturing industries with a workforce who would earn above-average wages, only to be decimated by subsequent decades of manufacturing jobs moving offshore in a bid to reduce costs (Castells 2010). Pitkin (2001:13) outlines the key areas impacted by this type of economic restructuring:

- The impact on employment, often on large portions of the neighbourhood, leading to further polarisation, income inequality and spatial concentrations of low socioeconomic groups;
- The impact on the built environment, whereby affected residents can no longer meet finance obligations or maintain existing houses, and real estate developers refocus on new projects in higher socioeconomic areas;
- The impact on social services, as the public funds to support these services decreases, while the number of people relying on those services increases;
- The impact on neighbourhood demographics and relations, as this broader restructuring often has a more significant effect on certain racial groups, along with the tension caused among cheaper immigrant workers; and
- The impact on the social and political life in lower socioeconomic areas as residents become frustrated or disengaged with social institutions and the political process, leading to further polarisation.

Once criticism of the Growth Machine theory is that it implies a unified collective of ‘elites’ working together towards a similar goal: maximising the exchange value of land, and the return on rent and investment as a result. The literature describes in depth the operation of these growth machines, also referred to as growth coalitions, as an active exploitation rather than a benign organic process. Through many years of direct experience of the author in Perth’s planning and development industry, this notion of a unified ‘coalition’ does not seem to apply in the suburban scale infill housing development, particularly in poorer, greyfield areas. There have been numerous instances of conflicting priorities creating discord between Western Australia’s state government and a number of local governments, particularly surrounding the introduction of increased housing densities as local planning schemes were updated. Similarly, numerous instances of conflict between local governments and builders of infill housing are often heard which further refutes the notion of a unified coalition.

In a similar vein, the development model of suburban infill – largely being undertaken by individuals or through home-building companies as ‘developers by proxy’, rather than by formal

development companies – and the imperative of developers in poorer suburbs to avoid overcapitalising, means that greyfield infill is often built to the lowest possible standard. This opposes the notion of coalitions actively working together to maximise the land value over broader areas, particularly in terms of a unified approach to development, and the mutual financial gain which could be realised with a co-ordinated, holistic development plan. Van Onselen (2011) sums this up succinctly:

“So the way to make the greatest profit...is to produce the permitted dwellings at the lowest possible cost. Adding good design is an unnecessary expense because whatever is built will sell.”

A number of authors in the literature support this conclusion, and present their own rationalisation. Pitkin (2001) notes that the three schools of thought tend to each focus on a specific scale – the political theories function well at the macro level, for example, but fail when focusing at the finer grain of individual small-scale suburban development. Ferman (1996) supports this, suggesting that the Growth Machine literature focuses on larger players influencing CBD areas of cities, rather than the smaller scale suburban areas.

With regards to greyfield suburbs, it could be argued that the initial decision to implement a density increase is an example of the Growth Machine at work at the suburban scale: those in wealthy suburbs or with political influence are usually bypassed by blanket density increases, while those in less affluent suburbs or suburbs with higher rental populations are usually unable to resist the changes. While this might be the substantive outcome of density increases, they can also be understood as a tool local government planners have to encourage investment in ageing suburbs, and therefore targeting those less affluent suburbs usually represents a sound decision. Further, as discussed above, the often poor level of governance in the final development outcome in greyfield suburbs, either in terms of policy controls, quality of development, or a unified ‘coalition’ of developers, does not give an impression of a co-ordinated group of elites at work.

Pitkin (2001) further notes that there is little in the literature about the impact of globalisation on the neighbourhood level, although the findings of Winter and Bryson (1998) suggest that some suburbs established to support particular industries have experienced a significant impact through such economic restructuring. Although globalisation is more commonly considered at the macroeconomic level, its direct impact on localised communities cannot be understated, particularly those with a generally homogenous labour force.

HOUSING LIFE CYCLES AND THE EMERGENCE OF 'GREYFIELDS'

Although the terms 'greenfield' and 'brownfield' are ubiquitous in planning literature surrounding key forms of urban development, the term 'greyfield' is a more recent addition to the lexicon, and a term whose meaning has evolved with its increasing use in international settings. The term was originally used to describe the remnant sites left by failing 'super malls' (Bucher 2002; Gilder-Busatti 2007) which were located sporadically in inner city and first-ring suburbs, a phenomenon of increasing concern across much of North America. The term accurately reflected the increasing struggle of 'big box' stores facing closure as a result of rapidly increasing competition from online and boutique retailers, as such failed commercial spaces invariably left behind vast reserves of paved parking areas surrounding the commercial buildings, a symptom of the automobile dependency that the planning discipline has had to incorporate for decades. The Atlanta Regional Commission (2009:1) notes that the term 'greyfield' was first coined in a study in order to "refer to the sites of derelict shopping centres, or so-called 'dead malls', in reference to the vast empty asphalt parking lots that surround them".



Figure 3: A typical retail greyfield site (source: Together North Jersey n.d.)

THE DECLINE OF BIG RETAIL

These large format retail sites were often impacted by the same forces of neighbourhood change as the broader residential areas surrounding them. Bucher (2002:48) identifies in Neighbourhood Life Cycle Theory a central premise that “without ongoing capital expenditures and maintenance, or occasional modernisation or renovation”, retail and commercial properties will experience a steady decline in value. The impact of the decline of these once-burgeoning public spaces has a wider impact on the general community. Schindler (2012:493) applies the ‘broken window’ theory, traditionally applied in urban environments, to suburban retail greyfield sites, noting that even minor signs of decay such as “weeds in a parking lot or a single broken window” can amplify the sense of abandonment and lead to further neighbourhood decline.

Although this problem became typically associated with the growing failure of large-format retail land uses, planners gradually recognised that such distressed locations within peri-urban suburbs were not restricted to retail uses alone, with these areas increasingly being seen for the unique opportunities they present (Schindler 2012) for the ‘recycling’ of large, contiguous suburban areas. Rather than limit the use of the term ‘greyfield’ to identify only struggling retail or commercial sites, Merritt (2006) further defined these greyfield areas to include other underperforming suburban sites, such as business parks and garden apartment complexes, identified by some in the New Urbanist movement as sites ripe for ‘suburban retrofitting’.

Therefore, as planners began to consider the underutilised spaces held in reserve throughout older, inner city and first-ring suburbs, the broad classification of greyfields expanded to incorporate other, non-retail land uses. The central understanding of what constituted a greyfield was further narrowed down to two fundamental defining criteria, those being the surrounding swathe of paved parking spaces and the underperforming nature of the property.

A ‘NEW FRONTIER’, AGAIN

As contemporary planning theories continued to highlight the importance of curbing ongoing urban expansion, and to identify distressed neighbourhoods as being obsolete or under-utilised, the term ‘greyfield’ eventually grew to incorporate all forms of existing urban development which had begun to fall into a state of disrepair or neglect (Rowley and Phibbs 2012). Glackin and Trubka (2013) attribute the first use of the term ‘greyfield’ in an Australian context by Newton (2010), who undertook a study of precinct-scale redevelopment of middle ring suburbs of Australian cities. A number of contemporary planning theories had begun to talk of such areas as

showing potential for ‘suburban retrofitting’ (Merritt 2006), identifying them as being past the point of use or gentrification, and ascribing a far greater value to such areas through increased housing densities. Consequently, the use of the term ‘greyfield’ in international planning circles appeared to abandon the cornerstone of the term’s original inception – the archetypal sea of paved parking areas – with the ‘grey’ alluding to the age of the development area instead⁶.

Subsequently, in more recent years the use of the term further grew to include established areas that may simply have been developed in the inefficient manner of previous eras, which importantly included residential housing. A prime example in Australia is the predominant built form resulting from the nation’s post-War housing boom – large tracts of middle-ring suburbs with distinctly detached houses located centrally on large lots. Although forming the backbone of the ‘Great Australian Dream’ for so long, this housing model, and now-dated housing stock, grew to epitomise the inefficient land use that many chose to re-examine for future development opportunities which could benefit from the relatively-central location and existing infrastructure in place. Thus, the use of the term ‘greyfield’ in planning literature morphed again to include under-utilised land along with failed commercial areas and areas of urban decay. Newton et al (2011:1) consider this inclusion of established residential suburbs in defining greyfield precincts as:

“...the ageing, occupied residential tracts of suburbs that are physically, technologically and environmentally obsolescent and which represent economically outdated, failing or under-capitalized real estate assets. They typically reside in a 5 to 25 km radius of the centre of each capital city and are service, transport, amenity and employment rich in comparison to the outer and peri-urban suburbs”.

Perhaps reflecting the aging housing stock, these greyfield areas are known as being poor performers with regards to environmental design (Newton and Tucker 2010) as many of the established homes pre-date contemporary environmental design principles, such as solar passive design, or lack contemporary construction materials such as roof and cavity insulation or double glazing. This further adds to Newton’s sentiment of these areas as being ‘environmentally obsolescent’. Key, therefore, to this new understanding of greyfields is the state of decline or

⁶ Although growing in usage, the use of the term ‘grey’ as a reference to the age of greyfield areas may not be the most accurate metaphor, as many areas exist which predate greyfield sites by decades, yet have undergone extensive eras of regeneration or gentrification. It can be argued conclusively that age alone is not a determining factor in explaining the existence of greyfields.

distress in which broad suburban areas find themselves, and the relatively close location of these sites to major cities or urban centres. It appears increasingly common to explain these areas as the result of building practices and planning movements of specific eras rather than a relying on age alone. This can be attributed to the over-representation by post-War suburbs as greyfield areas, seen as a result of the specific economic and social conditions of the time.

Murray (2011:1) summarises this by surmising that “residential greyfields are usually occupied and privately owned sites typical of urban development undertaken from the 1950s to the 1970s”. Although the low-density suburban form served a vital role in the post-War redevelopment and rebuilding of Australian society, its importance was more one of economic or emotional stability rather than a carefully thought out approach to housing form. Lilley (2006:13) further concludes how out of step these suburban areas are with contemporary views on housing, noting that “current urban form and the spatial distribution of populations does not reconcile with the environmental, economic and social goals of sustainability”. Murray, Newton, Wakefield & Khor (2011:1) similarly identify the inefficiency or obsolescence found in much greyfield housing, and its inconsistency with the goals of contemporary house design and construction:

“Residential greyfields are defined... as under-utilised property assets located in the middle suburbs of large Australian cities, where housing stock is failing (physically, technologically and environmentally) and energy, water and communications infrastructure is in need of upgrading”

The importance of these suburban greyfields in providing future housing opportunities is not unique to any one part of Australia, with the same issues is being repeated in the peri-urban areas surrounding every capital city. Critically, Van Onselen (2011) also noted a key difference in that whereas greyfields exist in areas which have already historically demonstrated a preference for housing, the very nature of brownfield sites (being predominantly unused sites or disused industrial sites) means that they are not necessarily located in locations with a historical demand for housing. Newton and Glackin (2014) further argue that the typical scale of residential developments in brownfields and greyfields are usually at the opposite ends of the scale, and suggest that the failures of previous infill policies stem from the failure of governments to recognise these distinct differences.

With reference to their Melbourne-based study, Newton and Glackin (ibid.) validate this conclusion, recording that more than 75% of greyfield projects replace one existing dwelling with only 1-4 new dwellings, compared with just over 5% of brownfield projects being the same scale.

Conversely, redevelopments creating 100 or more additional dwellings comprise only 2% of greyfields projects, yet comprise 55.8% of brownfield projects.

Proportion of different yields in greyfield and brownfield								
Region	1:1	1:2–4	1:5–9	1:10–19	1:20–49	1:50–99	1:100+	Total
Greyfield	20,462	37,034	7,250	2,638	3,657	2,661	1,477	75,179
	27.2%	49.3%	9.6%	3.5%	4.9%	3.5%	2.0%	100.0%
Brownfield	1,485	580	779	3,195	4,652	6,713	22,010	39,414
	3.8%	1.5%	2.0%	8.1%	11.8%	17.0%	55.8%	100.0%

Table 2: Dwelling yields from infill housing development projects in greyfields and brownfields regions within Melbourne 2004-10 (source: Newton and Glackin 2014)

The outcome, summarised by Newton, Newman, Glackin and Trubka (2012), is that higher density apartment developments or large-scale housing estates are usually found in brownfield areas, and developed by companies with significant experience and financial input. Greyfields, on the other hand, are typically “dominated by the piecemeal, sub-optimal infill” (ibid:667).

The importance of Newton and Glackin’s finding to this research is a clear delineation between the scope and scale of housing infill projects in brownfields and greyfields, with the operational model of larger established players in the traditional development industry being too big to cater for smaller, piecemeal projects, thereby creating a void left to be filled by micro-developers. In short, the inclusion of broader suburban areas under the banner of ‘greyfields’ introduced a challenge vastly different to the re-use of a larger retail or commercial site: how to properly manage the incremental revitalisation of a large area comprised of fragmented, individually-owned housing lots.

SUBURBAN GREYFIELDS AND THE ENTRENCHMENT OF SOCIO-SPATIAL DISADVANTAGE

In summarising the emerging locational characteristics of greyfields, and correlations with other socio-spatial indicators, Newton et al. (2012:664) identified that “in pockets, greyfield housing has also become a major location of social disadvantage”. Bucher (2002:47) supports this notion identifying the impact of long-term disinvestment across entire neighbourhoods:

“These properties are more often located in inner cities or first-ring suburban neighbourhoods of moderate to low-income levels... As cities expanded, these close-in areas lost value as population, capital, and investment shifted to the more distant affluent suburbs”.

Randolph and Freestone (2008:2) also identify a common trend amongst greyfield suburbs in their emergence as prime locations for social disadvantage and being over-represented by lower socio-economic groups, suggesting that they often “fulfil roles as gateway suburbs for migrant communities and have increasingly become shaped by the same type of pressures which previously afflicted the inner core: a rising concentration of socially disadvantaged groups and a deterioration of the physical fabric and local environmental quality”. Others (Bucher 2002; Jeongseob 2012) support this finding, and affirm that these suburbs are more often identified as neighbourhoods of moderate to low-income levels.

In many suburbs, this is leading to a marked increase in social polarisation, particularly as a result of the current approach to redeveloping these areas. Healy and Birrell (2006:2) highlight the myriad reasons for this growing concentration of disadvantage in greyfield areas, including “migration, dwelling density, housing tenure, and residential form”. Although it cannot be held that densification leads to disadvantage per se (ibid), as affluent areas also experience forms of urban densification or gentrification, it is the unique development model most commonly employed in greyfield areas due to the existing social and economic conditions present in these areas which can further intensify the socio-economic polarisation.

This has led to increasing concerns regarding the future of Australia’s older suburbs, the “vast ‘midopolis’ that exists between the urban core and the burgeoning communities on the metropolitan periphery” (Steins 2000), and the importance placed on these areas for meeting the sought-after notion of the ‘sustainable’ city. “Regenerating, renewing, refurbishing, redeveloping, recycling, retrofitting greyfields – whatever the term used – is increasingly being advanced as one of the most significant sustainability challenges for cities in the 21st century” (Newton 2010).

Murray (2011) stresses this importance, noting that the majority of Australia's built form exists in the suburbs.

Although theoretical perspectives such as Neighbourhood Life-Cycle Theory identify an area's position on a sequence of stages to understand the evolution of urban areas, Winter and Bryson (1998) look back to the emergence of these suburbs and identify a number of characteristics from the establishment of these suburbs which they suggest actively contribute to their decline over a number of decades. Critically, it is argued that the current state of these areas is not due to a disconnected series of unplanned events over time, but by a specific combination of broader macroeconomic policies and housing policies which effectively guaranteed the future decline of these suburbs. Winter and Bryson outline a number of distinctive traits of these urban areas, which helps build a hypothetical 'checklist' which they argue "identifies the seeds of contemporary urban poverty in Australia" (ibid:61). The importance of their findings is not only that they identify inherent flaws in earlier housing eras of housing delivery, but that the lessons learnt from this era can be used to assess the current approach to greyfield renewal, and a more contemporary model of urban poverty can be established.

Borrowing from the Australian cultural lexicon, Winter and Bryson label these greyfield areas as 'Holdenist suburbs', a localised slant on the Fordist production model recognised internationally, and responsible for large tracts of post-War suburban housing in the United States in particular. The Fordist production model helped address the chronic shortage of housing experienced by many nations following the end of World War II, as it proved revolutionary at producing a more efficient, and cheaper, housing product. In order to do this, a largely standardised product was required, and one whose production could be broken down into a number of repeatable steps (van Beek, Buwalda and Stoop 2004). Although not without its critics, this method of housing production made huge inroads in addressing the housing needs of post-War communities, provided a sense of economic and emotional stability so desperately required after so many years of war, and left an indelible imprint on the housing stock of the United States (Slegers et al 2012) and other western countries.

Although post-War housing production in Australia borrowed heavily from these Fordist principles, the era of the post-War housing shortage, and subsequent boom, also closely mirrored the prevailing economic conditions surrounding the local Australian automobile industry, most notably the government assistance to the industry through funding and tariff barriers. "The Holden, like these suburbs, was a product of the particular conjecture of capital-state relations that prevailed during the 1950s and 1960s" (Winter & Bryson 1998:60). Likewise, the heavy government intervention in the provision of post-War housing helped produce a number of

unique characteristics which can be readily identified even today. These characteristics define Holdenist suburbs as being:

- Built by the government on a large scale and with a uniform appearance;
- Constructed from poor quality, cheap materials;
- On land adjacent to manufacturing employment;
- Home to, by national standards, high percentages of public renters;
- Predominantly working class; and
- Associated with a stigmatised image (Winter & Bryson 1998:61)

The following sections will identify a range of Economic and Housing strategies which contributed to the evolution of these post-War suburbs into areas of distress or urban poverty, and resulting in the characteristics outlined above.

IMPACT OF ECONOMIC POLICIES

It is inescapable that the urban distress emergent in some greyfield areas over the years was, in part, the result of broader state and federal macroeconomic policy changes. The initial post-War creation of many of these suburbs occurred at a time when a number of social and economic conditions aligned to create a boom-like building environment. Berry (1999:107) describes the combination of these conditions as a “neat, functional fit... between housing aspirations, employment opportunities, population growth, household formation, land availability, savings flows and government policies”. The boom was driven largely by the demand for housing, due to restricted housing production during the war resulting in a shortfall of some 300,000 dwellings (Greig 1997; Dingle & O’Hanlon 1997). This was compounded by the push by the government to see both public and private investment in such development (Hedgcock & Yiftachel 1994), noting the challenge ahead in meeting future housing demand on top of the existing shortfall. “The housing policy thrashed out between the six state governments and the Commonwealth was based on the premise that 700,000 houses had to be erected in the decade after the war” (Dingle 1999:345). At the same time broader economic policy changes saw a concerted move towards development and manufacturing industries (Hedgcock & Yiftachel 1994), and away from the pre-War mercantile capitalism which saw Australia’s strength dependent on the export of raw materials to foreign countries (Mullins 1981, in Winter and Bryson 1998).

Across Australia, the development of industrial and manufacturing areas was considered paramount to further developing the nation's economic base. To cater for this, numerous new suburban areas were opened up within close proximity to these manufacturing areas, aimed at encouraging a large residual workforce with easy access to the employment opportunities it created. The close proximity to these employment sources also greatly benefited the growing number of women remaining in, or entering, the workforce, as salaries were generally high and being located close to home allowed for women to better balance other home and family commitments (Winter & Bryson 1998). As these new suburbs were intended predominantly as providing a sizeable workforce for a rapidly growing manufacturing and development industry, little thought was put into suburban amenities other than housing. By 1974, the manufacturing industry was noted as the major employer of male workers, with over 1 million workers nationwide (Berry 1999).

As part of their study, Winter and Bryson (1998) refer to a case study town, given the name 'Newtown', the creation of which was announced within weeks of the announcement of a major car manufacturing plant being built nearby, in an area with an already established industrial base. By the time of the 1966 Census, 56% of males and 59% of females in Newtown worked in the nearby manufacturing industries (ibid).

Far from being unique to Newtown, the same growth of manufacturing industries, and supporting residential environments, was seen nationwide as respective state planning strategies looked towards incorporating these areas. Mar (2003:3) notes the significant role which residential environments played in supporting these industries, and particularly in earlier suburbs, arguing "public housing as a means of urban and industrial development and policies promoting higher levels of homeownership were closely interconnected in the post-War period". The largely government-funded housing developments, and the later sale of these homes to tenants through schemes such as the Commonwealth and States Housing Agreement (CSHA), brought about a marked change in the provision of housing in Australia.

With the benefit of hindsight, it is easy to see that the opening of these suburban areas solely to provide a localised workforce for nearby industry effectively ties the future success of the suburb to the ongoing success of that industrial use. Bryson, Lazzarini and Winter (1996) further identify this risk, noting the fundamental importance of the manufacturing industry to the suburb and its initial inception, and the subsequent industrial restructuring that resulted from the Australian economy being integrated into the global market. Broader macroeconomic policy changes in subsequent decades had telling impacts on the state of employment in these areas:

“By 1991 the picture had changed significantly. Employment in manufacturing throughout the country had declined in the wake of a raft of economic policy and business changes which effectively opened up Australian industries and the labour force to international competition. By 1991 the top two industries for male employment, manufacturing and construction, accounted for only 46% of male workers in Newtown, compared with just under 70% in 1966. The proportional drop for women in manufacturing was even greater, from 59% to 27%” (Winter & Bryson 1998:67).

As many of these suburbs were designed predominantly as a source of housing, they generally lacked the self-sufficiency or flexibility to weather serious economic fluctuations. Over the subsequent decades, changes in economic policies saw reduced protection of domestic goods through trade tariffs, increased competition from foreign labour and manufacturing industries, and the gradual move towards globalisation for minimising manufacturing costs. Beer and Faulkner (2011:18) summarised the flow-on effect of this on many Australian suburbs:

“Much large-scale manufacturing has moved, or is moving, to cheaper labour countries and these processes have affected places including industrial towns and suburbs, which have been transformed or abandoned, while in many nations large public sector housing estates have been sold, become places of concentration of disadvantaged households, or have been demolished”.

As such the once above-average wages and below-average unemployment rates reversed, resulting in a resident population that increasingly found it hard to make ends meet. Although changes in macroeconomic policy can impact people from any socioeconomic group, their impact is particularly felt amongst those in low-income or marginalised groups which “are, of course, more vulnerable to these changes because they have fewer resources to sustain them in the short term, more limited opportunities for further employment, fewer skills and often more susceptible household structures” (Beer & Faulkner 2011:138). The residents of these suburbs are amongst those least likely to have a university education (Randolph & Freestone 2012), and opportunities to move between types of employment were limited. This is increasingly at odds with contemporary employment patterns, in which “the idea of a ‘job for life’ with individuals having single ‘careers’ through their lifetime has, in many instances, been replaced by serial contracts, interspersed with periods of non-employment, and mobility between occupational groups and types” (Beer & Faulkner 2011:18). When assessed against the Henderson poverty line it was found that by 1991, 61% of the bottom income group in Newtown were considered ‘in poverty’, with

65% of the lowest income group claiming pensions or government benefits as their primary source of income (Bryson, Lazzarini & Winter 1996:29).

It is hard to overstate the impact that these wider economic policy changes, broadly described as the 'deindustrialisation' of the Australian economy (ibid), had on these Holdenist suburbs, as the impacts were as varied as they were cumulative. Particularly in the past decade, the symptoms of these policy changes have become more evident than ever (Randolph & Freestone 2012). Winter and Bryson (1998) outline some of these cumulative impacts:

- As Australia's integration into the international economy decimated the local manufacturing industries, a sizeable number of workers moved into unskilled work in the wholesale and retail industry, although a considerable proportion of these jobs were part-time only, creating a growing population of those considered 'under-employed';
- As workers began to look into other areas for employment, a rise in car dependency followed. These suburbs, initially conceived as local to a thriving and well-paying employment base, now found themselves isolated from such sources of economic stability. Acquiring and maintaining an additional car became an extra burden, particularly on the now low-income residents of the area;
- As unemployment rates rose, those who were employed saw wages suffer from international competition. Whereas residents were once seen as earning a healthy salary, wages did not continue to rise in comparison to the national average. As such, even fully employed families found it increasingly difficult to keep up with the rising costs of living;
- As the initial allocation of public rental housing in the areas were means tested through income restrictions, these suburbs initially started with an above average low-income public rental population. As employment opportunities moved further away, this public rental population became a residual component of the community. Healy and Birrell (2006:1) also note the increasing 'residualisation' of these post-War areas, "characterised by increasing concentrations of disadvantaged persons"; and
- The exodus of a local employment base, above average rental population, lacking amenity and relative isolation of these suburbs saw the capital growth of their housing stock mired. Over a period of time, many residents faced negative financial benefits as their long-term costs exceeded their capital gains in their homes. Those who had built their homes through the private industry, or bought government-built homes through the Commonwealth and States Housing Agreement, found it difficult to sell and relocate.

Although the same economic policies prevailed nationwide, their impact was especially felt in those areas labelled by Winter and Bryson as Holdenist suburbs. To blame the decline of these areas on the broader macroeconomic conditions alone, however, is arguably short sighted, and ignores how the situation was also greatly exacerbated by the prevailing housing policies of the era.

IMPACT OF HOUSING POLICIES

It has been found that that the prevailing housing policies of the time left inherent structural flaws in the creation of these suburbs which effectively guaranteed their future fate as locations of urban poverty and distress. It is argued that these housing policies and practices manifest themselves in a distinct urban form, recognisable even today, and a that number of these characteristics act as catalysts for these suburbs emerging as locations of urban poverty. This section explores the role played by three such overarching housing policies or strategies in serving as a catalyst for decline in Holdenist suburbs.

SLUM CLEARANCE

By the time of the emergence of Winter and Bryson's 'Holdenist suburbs', the practice of developing widespread housing estates to serve as housing for the workers of industrial areas was already long established. Far be it a uniquely Australian approach to housing, nor due solely to post-War housing pressures, an article by Dick in a 1935 edition of *The Australian Quarterly* highlighted parallels with English cities which themselves had successfully applied town planning principles to create 'garden city' style housing estates aimed solely at housing a workforce nearby to the industrial work spaces:

“Similarly some of the larger industries have themselves built garden cities to house their work people, as instanced by “Bournville” and “Port Sunlight” and the schemes have proved to be very successful in the substantial improvement which has been evidenced in the health and well being of the employees” (Dick 1935:84).

Bournville, established in the 1890s by Cadbury's (source), and Port Sunlight, established only a few years earlier by the Lever Brothers soap factory (The Guardian 2009), became only the latest examples of such housing production, following the earlier examples such as New Swindon in the 1840s, established by the Great Western Railway (Helen 2011a). So common was this trend

that in an era which pre-dated the term ‘town planning’, “much of the planned developments of the nineteenth century were largely the work of individuals or individual employers” (Brown 2019).

The provision of housing options for workers was seen to represent a combination of many benevolent motives, varying described as industrial paternalism, humanitarianism (Brown 2010), charity (Helen 2011a), philanthropic, and ‘Christian’ (Helen 2011b). Despite also being seemingly founded in a base of economic rationalism, the creation of open and spacious housing estates by industrial employers also carried with it a darker subtext: a reaction to the deteriorating states of inner city areas, where employment bases were traditionally located. Such increased labour demand in inner city areas, and a swell in the numbers of poor migrants, saw a decline in living standards and disease run rampant (Helen 2011a).

Similarly in Australia, tales of inner city blight and decline became commonplace, with few seeing an easy solution to the rapidly growing crisis:

“Overcrowding in Sydney’s slum areas has been brought about by the fact that the city’s history has been one of uncontrolled development. Human hovels and tenements have been erected sometimes in terraces, ugly and monotonous beyond expression... The main results of such uncontrolled development have been the destruction of any natural beauty which the locality might possess, and the utter failure of the local authorities to co-operate with each other in any attempt at town planning” (Dick 1935:81).

Similar stories emerged out of all Australian capital cities. Despite the assertion by some authors that the slum conditions being experienced by Melbourne were largely “myth”, “sensationalism”, or “exaggerated stereotypes”, the movement in favour of ‘slum clearance’ grew during the early 20th century until a report by the Housing Investigation and Slum Abolition Board resulted in the creation of the Housing Commission of Victoria (Mar 2003; Mayne 2008). Regardless of the reality of the situation in Australia’s inner city areas, the sensational tales of “surreal environments and immoral behaviour” (ibid) became the whipping boy of those pushing other social and political reforms, and the perceived deterioration of inner city areas provided the impetus for Australia’s move towards widespread housing decentralisation.

Despite the early awareness of the decline of many inner city areas, by the time World War II was drawing to a close, many believed the situation had not greatly improved. An article in a 1948 edition of *The Northern Standard* spoke of the inner Sydney suburb of Redfern, noting that “of

the 4000 houses in Redfern, 2000 have been declared unfit for habitation” (Northern Standard 1948).

Federal and state housing strategies reached a somewhat fortuitous nexus in the post-War years. The dogma of slum clearance left people looking for opportunities outside of developed inner-city areas across Australia. At the same time, state governments were looking at the establishment of satellite cities and housing estates, but also the relocation of industrial areas to outer-lying regions in order to not only benefit from the employment base provided by new residential estates built adjacent, but to help push the land uses deemed most offensive out of the inner-city areas.

Adding further impetus to this changing sentiment, Mar (2003:2) notes that public housing system, still in its relative infancy, was benefiting enormously from the establishment of satellite cities and relocated industrial areas, and spurred on even more by the growing belief of the federal government in individual home ownership as the means by which Australia should move forward: “the emergent public housing system went hand-in-hand with accelerated industrialisation on the one hand, and the hegemonic establishment of the ‘Australian dream’ of suburban home-ownership”.

THE PUSH FOR HOME OWNERSHIP

On the back of the considerable growth in both the economy and population in Australia’s post-War years, levels home ownership surged (Yates 2007), a marked change in a country which had traditionally seen a general balance between renters and home-owners. One of the main policy focuses which enabled this change was the growing preference of providing affordable public housing for sale at subsidised prices and with generous finance terms, rather than supporting low income earners with subsidised rental accommodation. Initially, as part of a joint program between the federal and state governments, the Commonwealth State Housing Agreements (CSHAs) began in 1945 with the intent of boosting housing supply in the post-War years, primarily for returned service personnel. Initially, all CSHA houses were made available on a rental basis, but this came at a cost: a central tenet of the 1945 agreement was that the individual state governments were effectively reimbursed for up to 60% of the losses incurred through the subsidising of rents below market rates (Howe 1995).

In 1949 the Liberal-Country Party won the federal election, bringing about Robert Menzies’

second stint as Prime Minister⁷. Menzies was renowned for his passion regarding the significance of home ownership. Murphy and Probert (2004:284) further highlight the public fervour that grew for home ownership, noting in Menzies a “great skill to connect these aspirations with liberal ideology”. In his ‘Forgotten People’ speech in 1942, Menzies identified in home ownership great moral, social and emotional value:

“The material home represents the concrete expression of saving ‘for a home of our own’... one of the best instincts in us is that which induces us to have one little piece of earth with a house and a garden which is ours, to which we can withdraw, in which we can be among our friends, into which no stranger may come against our will” (Menzies 1942).

Even the Communist Party of Australia, a political party which Menzies desperately tried to abolish throughout his second term, publicly supported Menzies’ ideas on the importance of home ownership (Hayward 1996).

Accordingly, in 1956 when a new CSHA was negotiated, the main policy focus had changed to one of encouraging home ownership over rental subsidies. “Among the housing policy initiatives which encouraged the rapid growth of home ownership during the 1950s and 1960s were the early Commonwealth State Housing Agreements (CSHAs), which both provided funding for the construction of public housing and encouraged its sale on highly concessional terms with zero deposits and long-term subsidised loans” (Yates 2007). Hayward (1996) summarises the four main changes in the new CSHA, which represented a significant shift from tenure-based policies to the promotion of individual home ownership, as:

- No further Commonwealth subsidies for losses on rental operations (which allowed the subsidised rents for low income tenants);
- No more mentions of any rental arrangements;
- 20% of CSHA funds directed elsewhere to facilitate other low income home purchase schemes; and
- States were now free to sell public housing on any terms, rather than being required to sell at market rates, which further promoted the ownership of housing amongst low income families.

⁷ After previously being nominated as Prime Minister from 1939-41 following the death of Joseph Lyons in office.

Although it was an immediate and flexible approach to housing people from a wide range of social, cultural and economic backgrounds, the reality was that a focus on provision of home ownership rather than rental subsidy meant that the government became responsible for building vast numbers of affordable housing, usually taking place in concentrated areas, hence creating the stigma of government-supplied housing across entire suburbs (Yates 2007). The decentralising of housing from the slum clearing policies of earlier decades helped set a precedent for this, with people looking towards affordable home ownership in newer outer-lying areas in numbers never before seen.

This practice would eventually lead to two significant drawbacks. Firstly, while the earlier system of housing low-income families on a rental basis was expensive, it meant that people were generally more mobile to move between geographic areas as their work situations and needs changed. The encouraging of these same low-income families to enter into ownership, even at a subsidised cost, meant families were effectively tied to their homes, and the employment opportunities which surrounded them.

Second, the housing authorities of each state were inundated with a demand for housing they were ill-prepared to deal with. Not only did they face demands of time, as post-War migration saw 1.6 million migrant arrivals reach Australia in the 15 years immediately following the War (Department of Immigration and Citizenship 2007), but also demands of cost and affordability: not only were there shortages in many materials in the post-War period, but as any subsidised costs were now borne by the individual states, homes had to be built in not only the most modest designs, but as cheaply and quickly as possible. This would have long-term impacts on these post-War suburbs, as large portions of them became known only as places of small, low-quality housing.

HOUSING PRODUCTION: QUANTITY VS QUALITY

With the enormous demand for new homes in Australia following the close of World War II, and the shortage of materials traditionally used to construct them, there was to be a fundamental change in the delivery of housing, particularly in terms of construction methods and materials employed. Whilst the benefits provided by the CSHA agreements are undeniable – a speedy and affordable means of delivering much-needed housing – the compromised standards by which this housing was produced became equally obvious, and even more so with time.

Partly to keep costs down, and partly due to the shortage of construction materials in post-War Australia, many states sought to use alternative building methods for public housing developments (Powell 1993; Mar 2003). The use of concrete to build homes was one such well-

known method, despite their abysmal performance in cold and hot weather, and their prevalence to develop excessive cracking (Hayward 1996). To make matters worse, the poorly-constructed concrete homes had an expected maintenance cycle of 10-12 years. Given that the government policies didn't include money to provide this maintenance, and as the occupants were intended to be low-income families, such upkeep was generally neglected, particularly as unemployment began to rise – symptomatic of a “policy which opted for housing quantity rather than quality” (Winter and Bryson 1998:70). In this regard, the huge success of the first CSHA agreement was also its undesirable legacy – in its ten-year span, it financed the construction of nearly 100,000 such homes:

“The number of dwellings [the CHSA] financed rose from 4000 in 1945-46 to 14,000 in 1954-55. In the ten years to 1956 the Scheme financed nearly 100,000 homes. Between 1945 and 1970, about 15 per cent of all new dwellings constructed in Australia were financed through the CSHA” (Howe 1995).

Mar (2003:2) would reiterate, however, the compromise which was required to meet this remarkable feat: “the increased scale of social housing construction did not necessarily imply generosity or commitment to high quality housing provision”. Hayward (1996:18) noted that while the housing authorities continued to develop new land estates in much the same way that they had done for decades, the delivery of homes would require a fundamental change in approach: “The emphasis was on the mass production of modest detached and semidetached dwellings, with the scale of building work enabling economies of scale in construction costs to be reaped”. The adoption of Fordist manufacturing principles were critical in addressing this demand.

The most fundamental principle of Fordist production is the reliance on a small number of simple, repeatable products. This application of this methodology to housing construction became lauded throughout the industrialised world as governments sought to deal with their post-War housing crises by learning lessons of mass production from the automobile industry (Greig 1997). In Australia, the Commonwealth Housing Commission noted that the housing industry was set “for a radical change which might be described as similar to that which took place in the English textile industry at the time of the Industrial revolution” (Commonwealth Housing Commission 1944, in Greig 1997). The most obvious characteristic of these suburbs quickly became the distinct uniform appearance of the dwellings, with many repeated designs residing side-by-side, or as entire streetscapes sporting only minor variations in form or colour.

Perhaps the town most famous in planning parlance for its Fordist production methods is Levittown in New York⁸, which earned the man behind the suburb, William Levitt, the dubious title of ‘the father of modern suburbia’. Aerial photos of the original developments (Figure 4) show the vast expanse of suburban areas showing the results of mass-produced, standardised housing products espoused by Fordist production models, reinforcing pejorative descriptors such as ‘cookie-cutter housing’.



Figure 4: Levittown’s repeated housing models (source: Hulton Archive)

Throughout the industrialised world, however, the impacts of this new style of housing supply were wider reaching than the realms of economics and production alone. “It was only through

⁸ Although Levittown became known as the first mass-produced suburb, and became the archetypal image of post-War suburbia, Levitt built four such communities, in New York, Pennsylvania, New Jersey and Puerto Rico.

the invention of the mass suburb that a unique American identity was forged, as Americanism stripped off the vestiges of European heritage, abandoning old-world culture along with its architecture” (Ivanova 2011:401). The creation of a mass suburbia and surge in owner-occupied dwellings, and with it the rapidly growing sense of consumerism, helped forge national identities that would remain unchanged for decades.

In Australia, Prime Minister Menzies continued to be one of the foremost advocates of home ownership, under the notion that the average Australian would be more patriotic with ‘a stake in the country’. Over the next two decades Australia rose to become the world leader in owner occupation. In what would later become known as the Great Australian Dream, home ownership, as an expression of success and security, became a national ethos.

In many Australian suburbs, the sheer number of government built or funded homes was often too great to enable them to blend in with a more individualised homes built by owner-occupiers through the private building industry. With their investigation of Newtown, Winter and Bryson (1998) note that since the suburb’s early days, the addition of 1000 privately built homes did little to dilute this strong visual identification when compared with the 2500 homes initially built by the Victorian Housing Commission.

On top of the housings’ distinct appearance, the use of low-quality materials highlighted a built form conceived around cheap and rapid production, with little thought for personalisation or individuality. It gave rise to a distinct segregation as housing designed purely as a ‘means to an end’, or as a commodity, and not with the attention of someone building as an owner-occupier. “The Victorian Housing Commission built many concrete houses in Newtown and other suburbs built around this time, leaving them with a very distinctive appearance as virtually no privately built homes were built in this manner” (Winter & Bryson 1998:70). Horvath et al (1989) echo these sentiments, noting the substandard housing so prevalent in these suburbs.

CONCLUSION

The first part of this chapter examined the prevalent theoretical perspectives of neighbourhood change, which were categorised generally into the ecological, sociological and political schools of thought. Although the ecological school’s Neighbourhood Life Cycle Theory is considered one of the earliest structural understandings in contemporary planning, its reinvention and adaptation over the past century has seen it retain its relevance in contemporary planning discourse. In examining the progression of stages evident across Australian greyfield suburbs, distinct parallels

can be drawn between the similar stages outlined in the various iterations of the theory, and therefore it remains a valid lens through which contemporary neighbourhood change can be viewed. The Invasion-Succession model, also from the earlier era of modern planning, is similarly still useful in understanding the broader population changes at the neighbourhood level today and, ultimately, the result of changing socio-spatial demographics in Australian suburbs and the built form which acts as either a catalyst for, or a response to this.

However, the emergence of the political theories in more recent decades was instrumental in the growing awareness of the political economy's ability to bring about neighbourhood change. In doing so, the impetus of policies from both state and federal governments could be better scrutinised, and the long-term implications of such governance better understood. In the same way, the planning system could be understood as a key agent of neighbourhood change used by overarching political structures through the implementation of policies and strategies over successive years.

Lastly, the subcultural school adds a necessary complexity to the equation, in promoting the understanding that human movement and migration cannot always be determined as a result of logical, quantifiable, or even justifiable decisions. Although these form a basis for every person's choices, the subcultural approach presents a better awareness of the individual rather than the collective. In other words, in a study focusing on the patterns across a city or suburb as a whole, the subcultural theories are better at justifying the outliers to a trend, rather than rationalising the trend itself.

As a result, the understanding of change within the built environment of a suburb, and the socio-spatial patterns of its residents, can be seen as an merging of the ecological and political schools, where one portrays an understanding of the movements of people and where a suburb sits in terms of the general lifecycle of suburban areas, and the other seeks to intervene in this lifecycle through the policy tools of the planning system. Such policies of intervention can be implemented by the federal, state and local levels of government.

The second part of this chapter focused on the emergence of greyfields as a result of neighbourhood life cycles and the resulting suburban morphology over time. It considers the impact of overarching economic and housing policies, and the subsequent impact on the socio-spatial polarisation of Australian suburbs, and Australian housing identity. The quick and cheap production of housing became synonymous with these post-War suburban areas, and helped entrench the idea of owning a detached house on a large block of land within the Australian identity. Despite the personal freedoms which this method of housing supply afforded the general population, the low-quality and largely standardised housing product that the era produced left

an indelible identity on these Holdenist suburbs, which became a visual manifestation of an instantly recognisable suburban character. Despite the dream portrayed through a combination of federal and state economic and housing policies, “what was apparent in this period... was a specific configuration or set of housing outcomes which characterized the manner in which housing was produced, financed, exchanged, allocated and consumed” (Berry 1999:107).

Although the issue of repeated housing design as a ‘good’ or ‘bad’ planning philosophy is a hotly debated topic even today, the central issue of this distinct urban form in some suburbs is that it gave rise to an instant visual recognition of the wider socio-economic state of these areas, and became synonymous with those suburbs’ government-subsidised inception and high public rental population. In this way, entire suburbs were readily identified by their “social homogeneity and... rough uniformity in the style of houses” (Gleeson 2006:17). The legacy of these initial policies is “most visible in poor quality housing construction of distinctive appearance, which is immediately recognisable as government housing... This is another factor predisposing these Holdenist suburbs to urban poverty” (Winter & Bryson 1998:69). The widespread use of poor quality, cheap materials only added further to this problem in the long-term.

The finding by Winter and Bryson is that the emergence of these suburbs as areas of urban poverty and distress did not happen at random, but as a result of broader housing and economic policies. This supports the later finding of Adams et al. (2012) that an understanding of the development industry and its responsiveness to policy mechanisms is essential for the planning industry when implementing such controls. The ongoing evaluation of the processes unfolding in greyfield areas is therefore critical for determining whether the policies in place will lead to genuine urban renewal and revitalisation – a valuable ‘second chance’ at re-establishing suburban areas – or whether the lessons learnt from earlier eras of housing delivery have been ignored or misunderstood.

Bucher (2002:53) questions Jane Jacobs’ insistence that “‘de-slumming’ ultimately depends on slum residents themselves”, suggesting that without intervention by local governments (through planning controls, for example), “the cycle of under achievement and lack of productivity is doomed to repeat itself – the potential creation of a welfare state”.

While housing is no longer directly subsidised by governments in the same manner, the metaphor of an assembly line arguably remains as central to the provision of much of Australia’s contemporary infill housing. Many proponents of infill rely on Fordist principles and repetition of cheap and identical designs, which means the stigma of earlier eras, and the use of such pejorative terms as ‘cookie cutter’ suburbs, still remain firmly entrenched.

4. THE PERTH CONTEXT

INTRODUCTION

Hayden (2003:175; in Duckworth-Smith 2012) asserts that “understanding the history of built space is crucial to contesting sprawl”. This chapter will establish the geographical and historical context for the city in which this study was undertaken. Although nearly all Australian capital cities are experiencing the same emergence of underutilised and increasingly-obsolete ‘middle ring’ suburbs, few can claim the unique and historical contributing factors that have seen the seeds of continual low-density suburban growth sown almost from the point of settlement as Perth.

Although considered the world’s most urbanised nation, the term ‘suburbanised’ is probably more appropriate when describing the nature of Australia’s capital cities, and Perth in particular. Outside of a geographically tiny CBD area, Perth largely exists as an endless expanse of low-density suburban housing, interspersed only sporadically by small town centres, or conflicting land uses, such as light industrial or commercial services. In more recent years, the provision of new industrial or commercial areas has waned, unlike the seemingly-endless push of the housing front further and further into fringe areas. There are few cities in the world for which such an urgent rethink of its delivery of housing, both in greenfield subdivisions and established suburban areas, is as necessary as it is for Perth.

This chapter explores the unique historical traits of Perth which saw the desire for low-density detached housing inseparably tied into its DNA as a city. It examines the emergence and evolution of a town planning system which, in borrowing from other international examples or reacting too late to societal changes, often failed to respond to Perth’s exceptional geographical isolation. Even more so than other Australian cities, Perth was founded as a picturesque ideal rather than a functional or responsive city, and in many ways the low-density nature of the Perth’s built form was mandated almost from inception during its colonial beginnings.

Lastly, this chapter identifies some of the earliest occurrences of planning restrictions and legislation, and the central tenets of each successive overarching planning strategy, starting with the *Stephenson-Hepburn Plan* of 1955.

THE SPRAWLING CITY

The true sprawling nature of Perth, the capital city of Western Australia, is sometimes hard to conceive amongst the contemporary global movement towards urbanisation and suburbanisation. Although being somewhat of a late starter in terms of Australia's capital cities, and a slow grower for its first half-Century, it currently outranks all other Australian cities in terms of its rate of suburban growth (Grose 2009). Perth's population reached just 1.55 million in 2005 (DPI 2005), making it a comparative minnow on the world stage. Yet being constrained by the Indian Ocean along the west coast, and the Darling Scarp to the east, Grose (2009:53) likens Perth's natural north-south spread along the flat coastal plain to the '200 mile city' forewarned by Doxiades (1978).

Even the state's statutory planning authority, the Western Australian Planning Commission, acknowledges the lack of similar such low density cities in both Australia and internationally. In a study by Newman and Kenworthy (1999:94), Perth rated as the fourth lowest density city among 46 examples from America, Australia, Canada, Europe and Asia. Despite such a low population density, Australia's ranking as the world's most urbanised country (Elliott 2001) is even more accentuated in the enormous geographical size of Western Australia, with 73% of the state's population residing in the Perth metropolitan region (WAPC 2003a).

As with most car-dependent cities, the residential-employment mix of suburban landscapes has not been maintained with the continual outward growth, with housing increasingly becoming the predominant land use, thereby increasingly leading to the creation of "dormitory commuter suburbs" (WAPC 2003b), particularly in outer-lying fringe areas:

"Most of Perth's urban development has occurred in the mature stages of the industrial age, which encouraged car use over all other forms of transport. The separation of home, work and many other daily activities drives the demand for an ever-expanding transport infrastructure system" (ibid).

Despite current trends towards smaller lots in greenfield areas, and infill subdivisions in middle ring suburbs, nearly 50% of all lots in the Perth metropolitan region retain a relatively low density code of R20 (ie. 20 lots per hectare), with an average lot size of nearly double this, at around 1000m².

SHAPING PERTH SPRAWL: COLONISATION TO POST-WAR BOOM

The overwhelming preference for low-density detached housing in Western Australia didn't just start with European settlement, in many ways it acted as a catalyst for it. As many other Australian settlements emerged as penal colonies, with a steady supply of convict labour shipped over from Britain over a period of many decades, Perth began as an experimental colony of sorts, one opened to free settlers in a bid to create a picturesque and bucolic lifestyle that only the wealthiest classes could afford.

By the earliest stages of the 19th century, British cities were witnessing an increasing move by the elite from the inner city areas to the outer-lying regions in a bid to escape the detracting elements of urban lifestyle in post-Industrial Revolution cities, along with finding separation from “uncouth and possibly dangerous” neighbours (Davidson 1993). Indeed, the deteriorating conditions of Britain's urban areas would remain embedded in the memory of those seeking a new beginning elsewhere, either as free settlers or deported prisoners: “Although Australia's 19th-century free settlers brought with them dreams of property, wealth and freedom, a good many harboured nightmares borne of their experience of severe social and environmental problems in Britain's industrialising cities” (Davidson 2006:204). Therefore, for many migrating to Australia's shores, a deeply ingrained preference for single detached housing and large suburban lots was already embedded as part of a new and developing culture (WAPC 2003a), as people sought to distance themselves from the cramped urban environments of Britain. Although a number of early planners advocated a relatively compact or contained settlement for Perth, by 1830, less than 12 months after the official settlement of the colony in 1829, much of Perth's land had already been subdivided, granted or sold, or was retained by the administration of the colony (Alexander and Greive 2010). The importance of establishing agricultural uses was also paramount for supporting the new colony, so isolated from other established cities, with much of the larger land parcels distributed on the basis of the amount of livestock and seedstock brought over by prospective owners (Hedgcock and Hibbs 1992), with many of these located along the banks of the Swan River for the purpose of access to water and transport.

Only exacerbating the problem of curtailing unfettered expansion was the initial subdivision of Perth into lots of “abnormal size” (The West Australian, Dec 9 1886; in Duckworth-Smith 2012), and the prevalence of land being held by absentee owners (Alexander and Greive 2010), arguably becoming the state's earliest emergence of land speculating, a practice later described by Sandercock (1979) as “Australia's national hobby”. These factors combined to all but foil any notions of a compact settlement, and effectively rendering the sprawling nature of Perth a foregone conclusion. Further contributing to the problem, future land grants were bestowed to

wealthy settlers based on capital (James 2014), rather than any genuine need for land, space or resource. Even with this generous distribution of such large parcels of land, the isolated colony languished, and despite being settled in 1829, Perth remained “a village of 1,300 people in 1851” (McCarty 1980:12).

On the housing front, perhaps the most notable missing cultural remnant (the lack of which is still clearly evident today when comparing Perth with cities such as Sydney and Melbourne) is the distinct scarcity of terrace or row housing so commonly used in urban settings of the time, and yet another cultural vestige borrowed from Australia’s British heritage. Duckworth-Smith (2012) argues that the size and shape of the earliest subdivisions in Perth effectively ruled out such consolidated urban development. Ogle (1839, in Duckworth-Smith 2012) also attributes this to the idea that such dwellings would too closely align the new colony with the urban environments of Britain, which the colony was so desperately trying to eschew.

Despite the dreams of a prosperous and picturesque settlement of landed gentry and well-to-dos, this early economic inertia brought about the realisation that the injection of convict labour would, indeed, be necessary: “On the other side of the continent, Perth also stagnated, a tiny, isolated centre in a vast territory containing a mere 5,000 whites, awaiting the artificial insemination of some 10,000 convicts over the next two decades to induce self-reinforcing growth” (Berry 1984:23). Despite this, Perth remained only a “‘market town’ of 6,000 people in the early 1880s” (McCarty 1980:12), which had suffered “virtually complete economic and demographic stagnation over half a century” (ibid). The initial land grants, ridiculed as being excessive, largely sat undeveloped or underutilised, while the sluggish population growth effectively rendered any large-scale development of a CBD unnecessary. The discovery of gold towards the end of the century, however, would change this.

As had been witnessed in other Australian colonies, the discovery of gold in Western Australia brought about rapid national and international migration, and Perth became a staging point of tens of thousands of gold seekers looking to head to the remote goldfield regions and strike it rich.

“Life in Perth quickened during the 1880s and then accelerated with the gold rushes of the 1890s. Population increased from 9,000 in the late 1880s to 96,000 by 1914, and Stannage [1979] says that Perth changed from a ‘market town’ to a ‘modern commercial city’” (McCarty 1980:12).

The massive population growth also brought with it a massive demand for building sites, and the subdivision of colonial land grants helped accommodate this (Hedgcock and Hibbs 1992). Due to the lack of any sort of overarching town planning scheme, these subdivisions became disjointed and disorganised, and road layouts varying from estate to estate, the results of which are still visible today (Pitt-Morrison 1979).

Although this increase in population potentially bore an enormous strain on the once-tiny city of Perth, the city absorbed the growth, yet a telling settlement pattern was already starting to emerge:

“Perth was still too small... with only 36,000 people living in the city and 60,000 in the ‘suburbs’, to have generated genuine metropolitan suburbanisation... and to have developed a distinctive urban culture” (McCarty 1980:13).

Although a distinct pattern of suburbanisation had already begun to emerge in Perth, with the population in the suburbs outnumbering those in the city by nearly two to one, the inability of such a tiny colony to keep up with such a rapid increase in population is only part of the reason why the suburban areas were surging. The turn of the 19th Century also saw a typhoid epidemic erupt throughout the colony, such that the government actively dispersed the population on large residential lots to avoid potentially fatal water contamination (Goostrey 2013). The first outbreak appeared in 1895, with 566 cases reported, and a telegram sent to the state’s Premier in 1895 did not bode well for solving the outbreak in the immediate future:

“Health of town most unsatisfactory. Fever spreading, deaths daily and business threatened. No sanitary measures enforced or enforceable...” (Western Australian Museum 2017)

By 1896, a further 663 cases were reported. By 1897, this more than doubled to 1408, and 800 cases were reported in 1898 (James 2014).

As such, issues of sanitation became the prime concern for the government of Perth, and the impact of this became evident in the development of housing. “Drainage, cess pits, urinals, night-soil, earth-closets, privies and wells would command the greatest attention from local authorities in a developing town” (Duckworth-Smith 2012:26). Despite this, typhoid took a heavy toll on Perth:

“In the early years of the epidemic, up to twenty percent of – mostly – healthy young men, died. Nearly 2000 people in Western Australia were officially recorded as dying of the disease, though the actual number was far greater. Most deaths occurred on the goldfields. An estimated ten times more people suffered from the disease. It was the largest episode of epidemic typhoid in Australia’s history” (Western Australian Museum 2017).

By 1910, the number of cases reported had dropped to more conventional levels, although cases were still being reported in numbers substantial enough to warrant reporting in eastern states news sources, such as the Sydney Morning Herald:



Figure 5: Outbreak of typhoid article (Source: Sydney Morning Herald 1910)

The typhoid epidemic experienced by Perth, and a number of other outbreaks of diseases often attributed to cramped or unsanitary living environments (not least of which was a recurring spate of bubonic plague cases), saw the focus shift to providing adequate conditions for the protection of health, alternative solutions for the sanitation of housing lots, and the establishment of acceptable minimum lot sizes (Hedgcock and Hibbs 1992).

One such solution was the relocation of working classes to the suburbs surrounding the city, and the establishment of a tram system to transport people between work and home (WAPC 2003a; WAPC 2003b). A study published in 1911 by the Metropolitan Council of the Australian Labour Federation recommended a minimum lots size of 150 feet by 50 feet (697m²), with a single dwelling located centrally on each lot (Hedgcock and Hibbs 1992).

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Land & Estate Valuation	44
AND ALL AGENTS FEES	45
Crown Lands	46
Intercolonial Property Agency	47
London Blanketshare	48
Fire Insurance	49
Levy	49

CLARENCE ST.

56	57	58	59	60
55	54	53	52	51
50				

YORK ST.

124	125	126	127	128
127	126	125	124	123
122	121	120	119	118
117	116	115	114	113
112	111	110	109	108
107	106	105	104	103
102	101	100	99	98
97	96	95	94	93
92	91	90	89	88
87	86	85	84	83
82	81	80	79	78
77	76	75	74	73
72	71	70	69	68
67	66	65	64	63
62	61	60	59	58
57	56	55	54	53
52	51	50	49	48
47	46	45	44	43
42	41	40	39	38
37	36	35	34	33
32	31	30	29	28
27	26	25	24	23
22	21	20	19	18
17	16	15	14	13
12	11	10	9	8
7	6	5	4	3
2	1			

Proposed ANGELO, ITALY ST.

Kuring-Gai Estate

NOTE Shaded Lots are sold
 Subject to Deposited Plan

Figure 6: Advertising for original housing sites in South Perth, developed in accordance with the Metropolitan Council of the Australian Labour Federation recommendations (Source: Peet n.d.)

Perth would continue to be hampered, however, by its lack of reticulated water and adequate sewerage disposal, and as such the implementation of treatment systems such as septic tanks

became commonplace⁹, effectively establishing the ‘quarter-acre lot’ (1012m²) as a minimum requirement in Perth’s spreading suburbs (WAPC 2003a; WAPC 2003b).

Adding to a gold rush-fuelled population explosion and recurring typhoid epidemics, Australia’s federation in 1901, and the outbreak of World War I contributed to a tumultuous start to the 20th century for Western Australia. As conditions in Perth began to stabilise, and the city once again began to develop, it became evident that the lack of any form of overarching planning strategy would only further ensure that growth would occur in an unsystematic and disjointed way. The need for some form of planning control was felt in the capital cities across Australia:

“Accelerated metropolitan growth through the 1920s saw the priorities of the planning movement shift towards comprehensive strategic planning for future needs... Influenced by American-style urban management, state governments carried out major citywide surveys of existing conditions in Melbourne and Perth” (Freestone 2010:18).

Not long after, the first major piece of planning legislation was enabled, as summarised by Freestone (ibid.):

“The work of the Perth Town Planning Commission (1928-30), chaired by architect Harold Boas, was more modest but with momentum enough to inspire the *Town Planning and Development Act* of 1928, the first planning legislation in Australia to enable councils to produce planning schemes in the British mould”.

The underlying British influence in the mechanics of Australia’s developing planning system would only grow stronger, culminating perhaps in the shared British and Australian experience of World War II, following which the broader public support of “British thinking” (Freestone 2010:20) was at its most palpable. Accordingly, Australia’s first four strategic documents, for Sydney (1948), Melbourne (1954), Perth (1955) and Adelaide (1962) were “much in the mould of the British master plans for large cities of the time” (Bunker 2002:63). Davidson (1995:52) recognised the significance of the British influence during the development of Australia’s planning

⁹ Even today, the subdivision of a quarter-acre lot in an established suburb in Perth usually includes the requirement to decommission or remove the original septic tanks, and the connection of any retained or new dwellings to the reticulated sewerage system.

system and suggested that “Australia may itself be regarded as the farthest suburb of urban Britain”.

POST-WAR PERTH: PLANNING FOR EXPANSION

Although the population explosion on the back of the discovery of gold in Western Australia was significant for such a small and struggling colony, it would pale in comparison with what the nation was to experience following the end of the Second World War, when the net migration of each subsequent decade would often exceed one million new arrivals.

In the years preceding the Second World War, Perth was showing signs of a maturing colony, and had already sowed the early seeds of a planning framework. Despite taking nearly 13 years to pass through parliament, the *Town Planning and Development Act* was enabled in 1928, which would form the backbone of the state’s planning system for nearly eight decades until finally being replaced by the *Planning and Development Act* in 2005 (Hedgcock and Yiftachel 1994). On top of enabling local councils to prepare and administer local planning schemes (Freestone 2010), the *Town Planning and Development Act* also established more general controls over the subdivision of land – crucial for a colony which had set aside such large agricultural land parcels so close to the developing centres of Perth and Fremantle.

Despite this power to create local planning schemes granted by the *Town Planning and Development Act*, few local authorities did so immediately. Not only was the Act the first of its kind in Australia, it had few international examples to follow (being based on a similar 1926 New Zealand Act, which was itself based on a British Act from 1909), and as such there were few people with experience in creating planning schemes, let alone administering them (Barker n.d.). “It was not really until after the Second World War, and the advent of the *Metropolitan Region Town Planning Scheme Act 1959* (WA) (MRTPS Act), that local planning schemes became common, indeed required for the effective operation of the new Metropolitan Region Scheme (MRS) made under the MRTPS Act” (Barker n.d.).

PLANNING AND POPULATION GROWTH

The rapid pace of population growth has always been the most significant driving force behind planning for Western Australia. Although often discussed in the media as a modern-day problem

only, fuelled by a flourishing state economy and an aging population, it was prior to the state's first overarching strategic plan in 1955 that Gordon Stephenson and John Hepburn recognised that such a plan was the only way the rapid growth the state was experiencing at the time could be managed effectively (Yiftachel and Hedgcock 1993). So great was the need for expansion in Perth (and other Australian capital cities) immediately following World War II, that the physical expansion was deemed of more pressing importance than the actual needs of the future inhabitants of the city:

“Like the Melbourne Planning Scheme, the Perth Plan [the *Stephenson-Hepburn Plan*] was preoccupied with addressing the urgent requirement for some framework to be set for large-scale expansion rather than speculating on long-term population characteristics” (Bunker 2002:70).

Despite the *Stephenson-Hepburn Plan* identifying the ongoing importance of rural and agricultural lands surrounding Perth in order to provide for basic food needs, it was recognised quickly by the government of the time that speculative buying of these rural lands around Perth had already begun in earnest:

“Government interest in the implementation of the Plan in this regard became concerned with the same problem as that which existed around all large growing cities; speculative and floating increases in land values. This was identified in a contemporary report on land taxation and land prices in Western Australia noting that ‘a great deal of rural land has been bought by individuals and syndicates at inflated prices on the assumption that it must one day be zoned urban’ (Bunker 2002:72).

At that time, Western Australia was still feeling the impact of the post-World War II migration program, which followed the easing of the restrictions of the *Immigration Restriction Act 1901* (Hugo and Harris 2011). Nationally, a combination of new legislation, such as the *Nationality and Citizenship Act 1948*, and the large-scale infrastructure projects which were being undertaken, including the Snowy Mountains Hydro-Electric Scheme, saw immigration in 1950 reach the third highest level of the century, with over 153,000 arrivals (ibid). Western Australia had two burgeoning sea ports, in Fremantle and Albany, which was the main point of arrival for many migrants up until the late 1970s, when air travel became the more popular form of travel (Museums Victoria 2019). As table 1 shows, the surge in population growth to Australia has rarely eased from its post-War influx in more than six decades.

Migrant arrivals to Australia
▪ 1.6 million between 1945 and 1960
▪ Approximately 1.3 million in the 1960s
▪ Approximately 960,000 in the 1970s
▪ Approximately 1.1 million in the 1980s
▪ Over 900,000 in the 1990s
▪ Over 1.2 million between 2000 and 2010

Table 3: Australia’s immigration statistics post-World War II (Source: Hugo and Harris 2011)

Inasmuch as this sustained population growth has been a major driving force for planning, it has also provided the biggest hurdles, particularly with regards to the more recent push for urban consolidation, and the proposed curtailment of Perth’s urban growth. An examination of the current demographics shows that the steady growth of population seen in the second half of the last century will continue for at least the next two decades (WAPC 2004).

THE IMPACT OF POPULATION GROWTH ON URBAN FORM

Although the low-density suburban form served a vital role in the post-War redevelopment and rebuilding of Australian society, its importance was more one of economic or emotional stability rather than a carefully thought out approach to housing form. After more than six decades of continued growth, the low density distribution of urban areas has remained largely unabated, despite the emergence of complex public debate surrounding its efficacy in meeting the more contemporary goals of planning: “Current urban form and the spatial distribution of populations does not reconcile with the environmental, economic and social goals of sustainability” (Lilley 2006:13).

Numerous authors (Kotkin 2011; Weller 2009; O'Toole 2007; Troy 1996) note that, just as was the case following the post-War migration boom, low density urban form provides the best opportunity for creating fast, cheap and affordable housing, and Kotkin (2011) argues that the current issues with such urban form will be rectified in time as suburbs become self-sufficient with their own developed town centres. In this light, planning in Western Australia appears to be a reactive, rather than a proactive discipline, and it could be argued that planning's greatest challenge in Western Australia has been in accommodating continual population growth in a context where local authorities, infrastructure and housing stock is perpetually in a position of struggling to keep up with demand. It can be further argued that the response has been inadequate, and has only served to distract the wider planning fraternity from preparing more consolidated, connected and sustainable urban models.

Although the 'business as usual' approach of low-density urban growth appears to be best suited to cater for such population growth due to its market acceptance and short delivery times, "studies have highlighted that population sprawl over a large area may potentially have a much greater ecological impact than that of a city with a high population density" (Loh 2007).

Such is Perth's prevailing low-density urban form that the city has gained notoriety on the international scene for its perpetual development of inefficient land use and car dependent design where residents depend on private vehicles for much of their travel (Falconer 2010; Newman and Kenworthy 1999; Weller 2009). It has expanded well beyond the metropolitan boundaries delineated by successive strategic plans and its "voracious appetite for growth caused it to consume two and a half times the land that Perth's first comprehensive metropolitan region plan (Stephenson and Hepburn 1955) allocated to accommodate its present population of 1.5 million" (Alexander and Greive 2010).

THE CHANGING FOCUS OF WESTERN AUSTRALIA'S STRATEGIC PLANS

The introduction of the *Stephenson-Hepburn Plan* in 1955 marked the first in a series of strategic planning documents which have shaped Western Australia for the past six decades, with each subsequent plan being refined by the dominant planning ideologies of the time. The *Stephenson-Hepburn Plan* was superseded by 1970's *Corridor Plan*, which strongly advocated the decentralisation of the Perth metropolitan area along carefully designated belts radiating out from the CBD, and is often criticised as being a main catalyst for Perth's highly car-dependent, low-density physical form. This was the dominant planning strategy for 20 years until the release of

1990's *Metroplan*, which was followed in 2004 by the draft *Network City* strategic plan. The most recent planning strategy, *Directions 2031 and Beyond*, recognises the role of the previous planning strategies and their influence on Perth's current sprawl, and is aimed at balancing manageable outward growth and the more intensive use of existing land.

An examination of the main focus of each successive planning strategy shows a clear change in direction over many years, with each plan leaving its indelible mark on Perth's resulting urban form, leaving an enduring reminder of the social, political, economic and environmental standards of each successive era. More important for understanding the existence of greyfields and middle ring suburbs, however, is identifying in these successive planning strategies two of the main, and conflicting, forces in the planning and development disciplines: expansion and consolidation.

PLANNING FOR EXPANSION

As outlined above sections, the pre-War era in Perth was a time of languishing growth and lackadaisical regulations on housing and development, which were often dictated by matters of sanitation and health than any form of societal progress. Even the state's two largest surges in population, the injection of convict labour and the flood of gold prospectors, failed to bring about the genuine need for a centralised CBD, nor a burgeoning suburban landscape. The influx of post-War migrants, however, brought about a new type of dweller – those arriving en masse of their own free will, and desperately searching for stability, rather than following a more transient (or captive) lifestyle. As such, the lack of any formal planning strategy became of pressing importance for Perth. The city's first comprehensive planning guide, '*Plan for the Metropolitan Region: Perth and Fremantle, Western Australia*', was released in 1955, and became known colloquially as the *Stephenson-Hepburn Plan* after its two authors. More than a simple plan of managing land uses, it also called for the creation of a formal statutory planning authority, and led to the creation of the *Metropolitan Region Town Planning Scheme Act* (WAPC 2003b).

The *Stephenson-Hepburn Plan* and its vision of land used was heavily influenced by the predominant housing model of its day, with a majority of Perth housing lot sizes being 750-1008m² (Grose 2007:20), forming the first incarnations of the 'quarter-acre' which so epitomised the Great Australian Dream (Halkett 1976; in Grose 2007). Stephenson and Hepburn recognised the rapid growth the state was experiencing, and argued that such a strategic plan was the only way by which this growth could be managed effectively (Yiftachel and Hedgcock 1993). The overarching planning goal was seen to be a strong, centralised city centre with development radiating from this (ibid.).

Although the *Stephenson-Hepburn Plan* promoted “self-contained communities”, its efficacy was greatly challenged by the rapid decentralisation of land uses and the unprecedented growth in car ownership (Kennewell and Shaw 2008:249), largely burgeoned by the birth and development of Australia’s local automotive industry in the 1950s following the widespread assistance of state and local governments (Winter and Bryson 1998). The *Stephenson-Hepburn Plan* was swiftly tested by the dominance of the post-War rise of the car as the importance of centralisation was rapidly lost on large sections of the population.

By the 1950s, the rise of private car ownership opened up vast areas of Perth’s surrounding land for residential development which were previously beyond the easy reach of public transport (WAPC 2003a). These areas became typified by cheap land, which further enabled the spread of low-density suburban development (Frost & Dingle 1995), the outcome of which is readily apparent today. “The sprawling, decentralised, automobile dependent, ethnically diverse cities most of us live in today are mainly a legacy of the 1950s and 1960s” (Forster, 1999:18).

Positive economic conditions in the decades following the war, known as ‘the long boom’, further drove this period of expansion as families benefited from rising real income and employment levels. Australian cities also experienced high birth rates, and families began to further appreciate the lifestyle which was afforded by low-density housing for the raising of children (WAPC 2003a; Davidson 1995). Indeed, this lifestyle helped establish one of the biggest challenges of contemporary planning: that people are often willing to spend more on daily transport to access cheaper land¹⁰.

Far be it a characteristic unique to Perth, the post-War migration boom saw a striking similarity emerge in other Australian capital cities. Although generally more developed, due to their initial use of convict labour and larger populations, Australia’s other capital cities also embraced the ready access to cheap land, with housing providing the sense of stability, sense of pride, sense of ownership and sense of peace that became part of the quintessential Australian lifestyle. The country’s move towards a manufacturing industry also saw many residential areas opening up adjacent to industrial pockets, which proved mutually beneficial as rising incomes and high levels of job security supported the ambition of home ownership. It was observed that:

“for two decades after World War II there was a sameness about the functioning of Australian cities, characterised by a uniform but varied mix of manufacturing,

10 Although many would argue that in modern times it’s less a case of ‘willing to’ and more a matter of ‘needing to’.

government services and trade employment as well as similar spatial patterns with low density sprawl around central business districts” (Freestone 2010:24).

It is unmistakable the change in development and settlement patterns which emerged in the 20th Century as a result of private car ownership and transport. The era of dense urban living as a necessity for travel by foot (Duckworth-Smith 2012) was only fleeting in the relatively young cities of Australia, particularly when compared with the larger city environments of Britain which had several hundred years of growth during which close proximity to employment, services and housing was essential.

It soon became apparent that a new approach to planning control would be required in order to include suitable planning for this widespread increase in car ownership. So great was the uptake in private automobile ownership that by 1960, Australia had risen to rank fourth in the world for per-capita car ownership (Freestone 2010). Conversely, the rate of public transport usage was in decline, and American development patterns began to emerge in the Australian landscape, such as the country’s first privately-planned shopping centre in 1957, which further drew people away from compact urban centres (Freestone 2010). Thus, major transport routes formed a key part of the subsequent *Corridor Plan*, in identifying suitable ‘corridors’ along which development should be encouraged (Houghton 1990). In acting to fully embrace the automobile, and encourage land uses which further enabled its impact, the *Corridor Plan* grew quickly to represent “the apogee of low density, car-oriented Perth” (Kennewell and Shaw 2008:249). As was increasingly enabled by private car ownership, decentralisation became the central tenet of the *Corridor Plan* (Yiftachel and Hedgcock 1993).

As noted earlier, trends seen in Perth’s urban morphology closely resembled those emerging in other Australian capital cities, and “Corridor Cities” became the conventional outcome of managing rapid population growth with the establishment of satellite towns and cities, with suburban development unfolding along the interconnecting transport links (Freestone 2010). Despite the increased dependence on car dominance that would result from these urban forms, corridor planning became responsible for widespread investment in the infrastructure networks required for these satellite towns to function as a broader city (WAPC 2003b).

Although one of the later corridor-type plans introduced, Perth’s *Corridor Plan* of 1971 was introduced into what was then Australia’s smallest capital city, yet the one experiencing the fastest growing metropolitan area (Freestone 2010, 2012). Perhaps the most significant change in direction from the previous plan of Stephenson and Hepburn was the move away from a compact central metropolis towards by embracing what was essentially unlimited outward growth. As with the other capital cities implementing corridor-based planning strategies, the *Corridor Plan* saw the

identification of Perth's sub-regional centres, most notably Joondalup, which would become one of Perth's most significant attempts at a genuine satellite city in the following decades (although arguably too close geographically to Perth's existing CBD¹¹).

Despite their initial appearance, the 'corridors' proposed by the *Corridor Plan* were seen by many as the "self-contained communities" promoted by the *Stephenson-Hepburn* plan (Houghton 1990), rather than as fostering unlimited outwards expansion, as each corridor was slated to contain urban expansion and provide "interstitial areas of recreational, rural and extensive land uses" (Kennewell and Shaw 2008:249). Despite this, the lasting legacy of the *Corridor Plan* is the very basis of unfettered urban growth and the backbone of car-dependence that is seen in Perth today.

Ironically, just as the *Stephenson-Hepburn* plan underestimated the rise and importance of booming private car ownership, the *Corridor Plan* was released immediately prior to the 1973 oil crisis (Kennewell and Shaw 2008), which brought oil use and energy to the centre of world attention (McDavitt 1986). Over the next two years, cities around the world experienced their own reactions to the oil crisis, from enforcing car-free days, temporary closure of freeways, and even physical assaults at petrol stations for a share in the limited fuel supplies (ibid). Although this timing potentially threatened to sideline the *Corridor Plan* as another misguided planning strategy, not even the chronic fuel shortages, the skyrocketing of oil prices from \$3 a barrel to \$12 a barrel, and the doubling of domestic inflation to nearly 13% (Treasury Report 2001) could dampen the thirst for the freedom and opportunity that the automobile could offer. Hence, Perth continued to grow. So significant was the growth in private car ownership during this time that in 1979 the Liberal government of the time closed the Perth-Fremantle rail line, purportedly as part of a plan to build a new freeway through Perth's western suburbs (Newman n.d.).

A MOVE TOWARDS CONSOLIDATION

The late 1970s saw growing talk about the consolidation of urban environments (Duckworth-Smith 2012), which began to gain firm traction in planning circles in the early 1980s, particularly when its economic benefits became more widely accepted (Searle 2004). In 1985 a review of the *Corridor Plan* was undertaken, identifying a number of issues with the slow growth of the proposed

11 Due to Perth's unique colonial establishment, true satellite cities like those found along the eastern coast of Australia were never developed to the same degree. Although Joondalup was heralded as a genuine satellite city during its largest period of development and expansion in the 1990s, a number of commentators view it as just another dislocated Perth suburb, as its proximity to Perth is such that people still regularly make the daily commute to the CBD for work purposes.

subregional centres, and with traffic and congestion concerns following so many years of car-dependent growth patterns (Kennewell and Shaw 2008).

Historically, the *Metroplan* strategy marked a paradigm shift away from unfettered outward growth towards a more intensive use of existing land, although in a bid to please both pro- and anti-expansion groups, the resulting document seemed somewhat confused as to what its actual aim was, and particularly with regards to its actual implementation.

“Unlike the *Stephenson-Hepburn* report and the *Corridor Plan*, which presented bold visions of the future, the new plan concurrently promotes decentralization *and* central growth, consolidation *and* peripheral development, continued large scale road building *and* support of public transport. In total, *Metroplan* truly reflects the indecision and confusion in which the planning profession is currently trapped and for which it is widely challenged” (Yiftachel and Hedgcock 2007:314).

Even Premier Carmen Lawrence’s speech at the *Metroplan* launch showed signs of a divided strategic document, aimed at pleasing two opposing masters, with little detail on how it should be implemented: “*Metroplan* will contain urban sprawl by encouraging the development of more varied forms of housing in the built-up area, together with a wider range of housing densities in new growth areas... And very importantly, we need to promote a more sustainable pattern of development which will conserve our environment and natural resources... But the future population growth in Perth cannot all be accommodated in the existing built-up area. New urban areas will be needed. The North-West, South-West and South-East Corridors will be enlarged, and a new corridor created North-East of the city” (Lawrence 1990).

Although *Metroplan* called for a move towards infill housing, with an emphasis on medium-density housing outcomes (Davies and Atkinson 2012), a large part of this perceived “paralysis” in the planning industry came from widespread opposition to urban consolidation promoted by a planning strategy previously proposed in 1987 (Yiftachel and Hedgcock 2007:313).

The grid-style road network and generous lot sizes of Perth’s older suburbs lent themselves perfectly to this push towards grouped dwellings – attached or detached dwellings on the same parent lot, usually with shared driveway access or services. The gradual connection of broader suburban areas to reticulated sewerage systems (WAPC 2003a) also saw an end to the need for large back yards and separation between dwellings which were a necessity with septic tanks. As such, many homeowners in older suburbs began to take advantage of the development potential their lot afforded them, and a second generation of urban development rapidly spread throughout

these suburbs in an ad hoc and informal manner, yet usually resulting in the same homogenous housing outcome of the post-War era it was replacing. The extent of this suburban redevelopment found itself contained in a natural boundary, as the ‘spaghetti suburbs’ created by post-70s subdivisions (winding cul-de-sacs and smaller lots, usually slightly ‘wedge’ shaped) made economically-viable and easily-repeatable infill housing designs virtually impossible.



Figure 7: A 70s-era housing estate layout, with winding roads and cul-de-sacs, resulting in ‘wedge’ shaped housing lots (Source: Nearthmaps 2020)

The direct result of the *Metroplan* strategy was the encouragement of this housing consolidation only in older suburban areas close to the CBD, whilst the vast majority of housing construction remained in the form of single dwellings in the outer-lying corridors and fringe suburbs (WAPC 2003a).

Regardless of its execution, the most significant contribution of *Metroplan*, from residential point of view, is that it finally “challenged both the notion of an ever-expanding metropolitan area and

the Perth vision of the detached home on a single block” (Kennewell and Shaw 2008:249). The seed for infill was sown, even if the final details were sketchy. Somewhat ambitiously, the *Metroplan* document was touted as the solution for Perth’s growth until 2021, a span of more than three decades (Stokes and Hill 1992).

PLANNING FOR CONSOLIDATION

Only 14 years later, however, *Metroplan* was replaced with the *Network City* strategic plan as the state’s overarching planning document. *Network City* took the notions of infill that were instilled in *Metroplan* and coupled them with an effective implementation strategy to give the move towards consolidation the impetus and direction it was arguably lacking.

Most apparent in the *Network City* plan was the influence of the burgeoning research that was so prevalent in planning theory circles of the time, with its particular emphasis on the detrimental impact of low-density urban form (Davies and Atkinson 2012), despite the views by some that this push was simply the latest popular fad, and that these impacts were largely overstated (Troy 1996). Kennewell and Shaw (2008:251) highlight this “rhetoric of sustainability” which was exemplified in an open letter from the Minister of Planning and Infrastructure to the 1000-odd participants in the *Network City* public discussion group:

“*Network City* expresses strong support for retaining the strengths of Perth’s existing character – but guides us to a world-class sustainable city... It is also a response to the challenges of growth, climate change, loss of biodiversity and the necessity of no longer squandering energy and water”.

Regardless of the differing opinion, *Network City* was clearly aimed at drawing an end to the problems associated with continued low-density outward growth. “These include high rates of car dependency, high costs of service provision, high levels of population obesity, high incidence of social isolation and loss of productive agricultural land and water resources” (Davies and Atkinson 2012:3483).

An overarching theme of the *Network City* document was the desire to consolidate Perth’s urban spaces and promotes this objective through such ideals as intensification of activities around existing activity centres. In its most ambitious goal, *Network City* called for 60% of the proposed 370,000 dwellings required by 2031 to be within established areas (WAPC 2004). In following a planning strategy that was arguably confused about its core objective, *Metroplan*, *Network City* seemed adept at focusing contemporary planning on the need for efficient land use, and the strategy saw an immediate impact on residential densities throughout a number of local

government areas (Luscombe 2008). Other authors note a similar push towards a more efficient land use in Perth's resulting urban form, claiming as a result of its implementation that:

“there has been an increase in the number of multistorey developments and clustered housing... There has also been a considerable increase in the number of lots created of less than 500 square metres in size compared with the overall number of lots created” (Davies and Atkinson 2012:3484).

Despite a positive move towards a more consolidated urban form, *Network City's* lofty target of 60% of future homes being within existing areas may have set itself an insurmountable task in reality. Kennewell and Shaw (2008:254) highlighted this inherent challenge facing an industry so finely tuned to catering for low-density sprawling suburbia, particularly in the face of continual population growth:

“Planning is still being driven by the notion of continued growth, despite concerns over water supply and general environmental degradation along the Swan coastal plain. The majority of projected population additions will still be found in seemingly ever-expanding suburbs, north and south of the city, and the *Network City* strategy projects a Perth and Peel population of 2.22 million by 2030. This represents a 52% increase on the 2001 figure”.

In addition, the predominant housing typology resulting the implementation of *Network City* was a cause for concern to some. Davies and Atkinson (2012:3484) identified the lack of higher-density living options which emerged as a result of the *Network City* strategy, noting that “significantly, few new high-density developments have achieved the ‘New Urbanist’ urban village model that inspired many of the core tenets of the plan”. A discernible schism was occurring in the Western Australian housing system, as the predominant form of infill housing – the ubiquitous cluster of three-bed, two bath, single-storey villas – solidified as a wealth-creation tool for micro-developers and rent-seekers rather than as a viable housing option for home occupiers. A combination of state and local planning policies, a surging population, the implications of a flourishing economy and a financial system with its most lax lending practices in decades were set to make an irrevocable impact on the structure of Western Australia's housing system.

Despite having an exceptional impact on the public perception of continual suburban sprawl, *Network City* never made it past the draft stage. Following the election of a new Liberal state government, 2010 saw the release of the *Directions 2031 and Beyond* strategic plan, proposing a refined view of the initial goals of *Network City*, and including a number of further implementation

strategies. *Directions 2031* eased back the ambitious infill targets set by *Network City*, dropping from 60% to a more manageable 47%, or 154,000 of the forecast 328,000 dwellings required (WAPC 2010). *Directions 2031* also sought a 50% increase in the gross residential density of Perth's urban land (ibid).

One of the most contentious additions of the new legislation was the granting of power to the state to direct local governments to make certain changes necessary for the implementation of the goals outlined in the strategy. The movement towards a more consolidated urban environment was now the firm responsibility of every local government, and not just those who saw an opportunity to bring about urban renewal through the increased land values that increased development potential can bring. It also meant that state government planning objectives were not effectively stymied by obstructive local governments, particularly those bowing to the will of the vocal community action groups with ingrained NIMBYist attitudes. This was given further weight by the introduction of development assessment panels for larger-scale developments, in order to remove the balance of power from local governments when determining planning applications¹².

Perhaps most important was the direct acknowledgement by the Minister for Planning, John Day, of the role of the development industry in achieving the objectives of the new planning strategy, broadly hinting at the frustration that the industry had experienced before at the hands of obstructive local governments. "I think for the private sector to have confidence to invest in higher-density housing in appropriate locations, they need to know that... good projects when they're put forward are not going to be rejected on the basis of some capricious or some flimsy reason... I think to give the private sector a much greater level of confidence in investing in these projects knowing they are much more likely to be approved where they have good design and good architecture, where they do not fit in with local planning schemes" (Day 2010, cited in Styles 2010).

Minister Day's comments regarding the embracing of the private sector for the implementation of *Directions 2031* appear to be in stark contrast to those made by then-Minister for Planning and Infrastructure, Alannah MacTiernan, following the release of the *Network City* plan, who instead stated that "local government will play a vital role in the roll-out of this vision. It is crucial that

¹² A development assessment panel consists of two representatives from the respective local government and three external 'specialist members' (people with a background in a relevant field, such as Architecture).

individual councils understand that this is a plan that requires all tiers of government to come together in equal partnership to achieve *Network City's* objectives” (MacTiernan 2004).

In March 2018 the Western Australian government released a new suite of strategic planning frameworks under the banner of *Perth and Peel @ 3.5 Million*. Although considered the next successive overarching planning strategy by most, some planners viewed the *Perth and Peel @ 3.5 Million* documents as a series of sub-regional frameworks designed to work within the parameters established by the *Directions 2031 and Beyond* strategy, allowing for a more targeted approach to be applied to several sub-regions identified in the greater Perth and Peel areas.

Although the sub-regional frameworks were intended to further increase the effective implementation of strategies promoting denser suburban environments and housing diversity, and were supported by the assurance of regular evaluation, they were criticised by many in the planning and development industries. Comments submitted to the Urban Development Institute of Australia’s review of the draft *Perth and Peel @ 3.5 Million* strategic plan criticised some of the assumptions on which the framework was based (some of which were considered contrary to the data), the lack of understanding of the commercial realities of development, and the document’s limits on urban expansion through mechanisms reflecting the often-criticised Urban Growth Boundaries policies (Goostrey 2015). Others suggested that the strategy only added to the many layers of state and local statutory and strategic policy documents, which in some areas exceeded 20 policies spanning more than 700 pages in total (Young 2018).

PERTH’S PLANNING SYSTEM

Sansom et al. (2012) identify the unique nature of Australia’s metropolitan governance, highlighting the constitutional and legislative powers granted to individual states for planning and implementing major infrastructure projects in their central urban areas. This authority granted to the state governments forms one half of Western Australia’s two-tiered planning system, with the Western Australian Planning Commission (WAPC) aiming to guide proper and orderly planning by administering the requirements of the Planning and Development Act 2005. The WAPC is also responsible for preparing overarching state planning strategies, such as the current *Directions 2031 and Beyond* strategy, to guide the overall direction of state planning and development. The Department of Planning, Lands and Heritage further acts as the overarching planning body, guiding the use of land through strategic and statutory documents such as regional schemes (Shepherd 2006).

The second half of the state's planning system lies at the level of local governments, described by Sansom et al. (2012:12) as "somewhat anomalous" given the role they play in administering planning controls and development approval, while being a form of legislature not recognised in the federal constitution. At this more intensive level, local governments are required to prepare a Local Planning Scheme meeting the purpose and intent of the state's overarching regional scheme (Shepherd 2006). This is further supported by the implementation of individual local planning policies enabling certain planning controls to be tailored to specific requirements of each local government area.

Perhaps the most fundamental state planning control governing the delivery of housing in Western Australia is the Residential Design Codes, or 'R-Codes', first gazetted in 2002, which provide for specific and uniform requirements for residential development. The WAPC (2002) describes the R-Codes as a tool by which consistency can be had from one local government to the next, as they are intended "to minimise the need for councils to introduce separate planning policies or variations to these matters".

A central function of the R-Codes is the control of building densities within Western Australia, with all individual residential lots assigned a 'density code', representing the number of dwellings per net hectare permissible on a site (WAPC 2004). For example, a lot with a designated density code of R20 would be permitted 20 dwellings per hectare, or one dwelling per 500m² of lot area. Therefore a typical quarter-acre lot with an R20 density code would permit the development of two dwellings, whereas a density code of R30 would enable three dwellings to be built on the same lot¹³. The R-Codes typically consider building densities of R25 as being 'low density', with lots designated as between R30 and R60 being considered as 'medium density'.

The most important element of the R-Codes, however, are the mechanisms by which individual planning controls are assessed and applied: the document moved away from the prescriptive controls of the previous Residential Planning Codes, granting a method of development approval based more on design and performance criteria:

13 For consistency with historical development standards, the calculation of 'dwellings per hectare' isn't used with absolute precision: for example, a density code of R30 would mathematically require 333m² of land per dwellings, whereas the R-Codes require only 300m² of land.

“Although relatively flexible, the 1991 Codes were essentially prescriptive in their approach to standards for development. The Residential Design Codes have a performance orientation” (RCodes 2002:6).

In practice, this required each design element to provide a ‘Performance Criteria’, outlining the general intent of the clause, but also an ‘Acceptable Development’ provision, outlining a quantifiable ‘bare minimum’ required for approval. Importantly, the R-Codes considered the Acceptable Development provisions a ‘deemed to comply’ outcome, noting that a local government must approve a development application which met those provisions, and any other provisions of the Local Planning Scheme.

In their study of the Scottish Executive’s understanding of the development industry, Adams et al. (2012) categorise all planning policy controls under four following broad categories, suggesting all planning controls are:

- Market-regulating: controls which restrict or prohibit, which are important for developer confidence, but lead to ‘sameness’ in built outcomes;
- Market-shaping: controls which provide incentives, which can increase developer confidence and encourage developers to think innovatively;
- Market-stimulus: controls which support developers by reducing costs or risks; or
- Capacity-building: controls which provide the ability for developers to negotiate outcomes, but uncertainty of approval can reduce developer confidence (Adams et al. (2012).

The R-Codes’ use of flexible Performance Criteria corresponds to those controls identified by Adams et al. (ibid.) as Capacity-Building, noting that while such controls give designers and developers an ability to negotiate development outcomes, they can impact confidence as approval is based on subjective interpretation, which often differs from person to person, or local government to local government. The more rigid use of Acceptable Development provisions in the R-Codes more closely aligned with the planning controls Adams et al. (ibid.) identified as Market-Regulating, the use of which provides the confidence that the industry seek when applying for development approval, but are criticised as being restrictive or prohibitive, and leading to a distinct ‘sameness’ in development outcomes.

Despite being intended to be used as a performance-based document first and foremost, the home building industry quickly learnt that the preparation of additional information which was required to support each criterion seeking approval via the Performance Criteria approach could be onerous, namely in the form of a 'letter of justification' outlining the means by which the general intent of the clause was being met. Further, each local government applied a different policy with regards to seeking comments on proposed variations from neighbouring owners, with some Councils effectively giving the neighbour the power to reject a proposal outright. The path of approval through the use of Performance Criteria, as the R-Codes originally intended, were soon seen as time-consuming and uncertain, and builders and designers opting to rely solely on the list of 'bare minimums' outlined in the Acceptable Development provisions.

5. IMPACT AND ASSESSMENT OF PERTH INFILL

In Australia, and Perth in particular, the typical response to state planning policies calling for more consolidated use of suburban land has overwhelmingly been the piecemeal redevelopment of single housing lots into five or less grouped dwellings, criticised by many people as both unattractive and unsustainable (Newton et al 2012). Numerous concerns have been raised about the resulting built form, ranging from issues of poor design outcomes, the undesirability of 'battleaxe' arrangements, lack of amenity, inability of infrastructure to cope, and intergenerational inequity (Rowley and Phibbs 2012). This thesis suggests that the pressures of population growth and the desire of planners for intensification of urban development have revealed weaknesses in the strategies of policy-makers in relation to the volume of redevelopment and creation of new dwellings required from greyfield suburbs.

This section seeks to quantify the pejorative sentiments expressed by many regarding the practice and resulting built form outcome of suburban infill development in Perth suburbs. Through the interviews and short-answer surveys undertaken as part of this research, it was found that many respondents shared an overwhelmingly negative view of infill housing, particularly the small-scale offerings generally found in suburban areas. In most instances respondents were resolute in their opinion, although surprisingly vague or unsure when pressed to explain why they held such views. Further, aerial and streetscape audits undertaken as part of this research from many middle-ring suburbs of a similar age to those considered greyfields found numerous examples of high-quality developments which were at odds with some of the generalised opinions expressed.

Planning strategists have highlighted a range of approaches such as the need to manage the redevelopment of greyfield areas through an approach focused on growing Activity Centres (Bolleter 2013), developing Transit Oriented Developments (Calthorpe and Fulton 2001), and increased residential densities along major road corridors (Duckworth-Smith 2012; Woodcock et al 2010). Yet an overwhelming result of this pressure has been the blanket increases in residential densities across widespread suburban areas with seemingly little thought given by those engaged in policy-making or housing delivery to the urban design or future sustainability of the redeveloped areas, or the means by which this built form can provide for environmental, economic or social renewal. Bunker et al (in Lilley 2006) also point towards the growing criticism of the unguided push towards increasing density, noting that the blanket approach towards increased densities often appears to be used to address particular urban issues with no regard for the spin-off social, economic or environmental costs that are incurred as a result. Further, this

blanket approach to increasing residential densities has occurred largely in piecemeal fashion, and has failed to be implemented in a cohesive or holistic manner, with the quality control of the resulting built form being largely left to each respective local government.

An even greater concern is how the incremental nature of this piecemeal approach can escape scrutiny as “although the direct impact of these developments individually is small scale, the cumulative effect is a significant aspect of contemporary urban change” (Whitehand and Larkham 1991:1). The redevelopment of entire suburbs on an individual lot by lot basis, as has occurred in greyfield areas all across Australia, has helped obscure this impact as unlike “large-scale clearance and redevelopment of high-density inner-city areas, this incremental change in originally low-density suburbs has attracted little attention among students of the urban scene” (ibid).

The critical views expressed by respondents could be categorised under two broad themes: neighbourhood-level impacts which affect the suburb as a whole, and the perceived poor quality of the built form product. The section below collates these criticisms and provides examples from the aerial and streetscape audit to illustrate how such negative sentiments have emerged.

NEIGHBOURHOOD-LEVEL IMPACTS

HOUSING HOMOGENEITY

One common criticism which emerged was the use of repeated house designs in infill suburbs, often described as ‘cookie-cutter housing’, and the poor reflection this had on the concern of the developer in undertaking the project, and the perceived desirability of the suburb as a place to live. Some respondents noted that even when adjacent developments weren’t based on matching floor plans, the housing types being created were becoming more homogenous, observing that the ‘three bed, two bath single storey villa’ had become somewhat ubiquitous in many Perth suburbs. These responses echoed the views of authors such as Dixon and Dupuis (2003), who similarly argue that basing planning controls and an understanding of market demand for medium density housing on a series of assumptions only has led to a structural homogeneity, serving only a narrow range of household types. This demonstrates that while the current approach to greyfield redevelopment might have been successful in terms of an increase in raw dwelling density, the actual underlying goals of the compact city movement have been largely missed. Such criticism is increasing as the retrospective view of the traditional treatment of these greyfield areas aligns with one of haste or frugality rather than one of considered research, planning, or achieving long-term goals. Hooper and Nicol (1999:805) also identify the homogenous end-product, noting that:

“...households’ requirements and the retention of a flexible housing stock is an issue which seems to have been largely overlooked in the debate over sustainable development... in its place, debates over ‘compact’ cities appear to view housing development as a mere space-packing exercise, in which the requirements of producers and consumers alike are largely absent”.

An aerial photograph of a typical Nollamara streetscape, a prime example of a greyfield suburb in Perth which has experienced wide-spread infill development in the past decade, demonstrates the high level of infill development which has occurred already, and the distinct lack of housing options available as lots which once held single detached dwellings have been cleared to make way for tightly packed, single-storey grouped dwellings.



Figure 8: Typical Nollamara streetscape showing the scarcity of original single dwellings, and limited housing options (source: Nearmaps 2020)

This evolution towards a largely homogenous housing typology has long been considered by many authors as detriment to the appeal and essence of a suburb. Jane Jacobs (1961), who supported higher urban densities in *The Life and Death of Great American Cities*, argued that the repetition of one type of housing “resulted in a deficit of variety and undermining a neighbourhood’s vitality” (Cubitt 2008:34).

Often, as seen in the Nollamara example in Figure 8, the few remaining single dwellings are all remnants from the original post-War housing stock of the area, and are generally in a degraded physical state, as shown in Figure 9.



Figure 9: A typical example of an existing dwelling in Nollamara (source: Nearmaps 2020)

DESIGN REPETITION

Although at a superficial glance it can be determined that the resulting infill housing presents a distinct lack of housing *types*, a closer examination demonstrates a number of instances where identical floor plans have been used repeatedly in close proximity, while clearly not being part of a larger holistic development. The following example, also from the streetscape defined in Figure 10, shows two sets of neighbouring grouped dwellings with identical floor plans, made more obvious by the identical roof layouts.



Figure 10: Identical infill dwelling house plans being repeated within close proximity of each other, distinguished only by varying colour schemes (source: Nearmaps 2020)

In other cases, even this variation of colour scheme and finishes is not offered. The following example, also from the Nollamara area, shows three identical developments within very close proximity to each other, with matching materials, finishes and colour schemes.



Figure 11: Three identical triplex developments with matching colour schemes (source: Nearmaps 2020)

And examination of an aerial photo only one suburban block away reveals the same design and colour scheme used again another five times in close proximity.



Figure 12: The same design as shown in the above example has been repeated five times in this nearby street, and twenty times in the immediate vicinity (source: Nearmaps 2020)

A further brief examination found the same design repeated 20 times in the immediate vicinity. Such repetition of housing evokes the spirit of the Fordist production method, focusing on the mass production of a standardised product as its most important tenet (van Beek, Buwalda and Stoop 2004). Although most Western nations have generally evolved over the past three decades from a Fordist to post-Fordist society (Slegers et al 2012), and this evolution has left its mark on the socio-spatial structure of cities (ibid), an examination of the current predominant approach to greyfield redevelopment in Australia shows that the methods of providing these infill dwellings has progressed little since the height of the Fordist production model, and is reminiscent of the standards of production which were employed when developing these urban areas during the post-War boom. This poses the question of whether there is a substantive difference in the social,

economic or environmental outcomes between greyfield redevelopment undertaken in line with dated Fordist principles, and those created in other areas under a post-Fordist model.

Some respondents noted that their sentiments were not necessarily based on the quality of the resulting dwellings, but at a broader aversion for the delivery of houses through a process considered to be lazy, impersonal or detached.

P7: “This piecemeal approach to infill... has widely produced a resulting built form that lacks any form of individuality or variety.”

A distinction which also emerged through the discussions was whether repetition was a positive or negative aspect in and of itself. The informal discussions revealed that there is a significant perceptual difference between uniformity in a group of dwellings constructed as part of one development project, and the creeping uniformity through repetition of standardised products focused largely on cost-saving and haste to maximise profit. One on hand, repeated designs, architectural features or colour schemes of a contiguous housing development can give a sense of inclusion, or belonging, or even pride in the sense of scale of where a person resides.

The use of repeated designs in a piecemeal fashion, however, with no connectivity between each repeated development, can give the sense of a lazy, lacklustre process. It can the appearance that the developers cut corners using “cookie cutter” housing, or lacked the interest to spend additional time or money creating one-off, bespoke designs. Some respondents suggested that this model of housing provision can foster a feeling or stigma of disregard – as a suburb not worthy of creativity or individuality in housing – and creates a sense of indifference towards future occupants. The general sentiment of respondents suggested a concern that the treatment of these suburbs as ‘developer playgrounds’, where the actual housing design or individuality appears to be regarded as largely irrelevant, had not done enough to challenge existing social stigmas associated with an area, nor would it likely generate future urban renewal by attracting a larger mix of socio-economic groups.

THE ‘DEVELOPMENT POTENTIAL’ PRICE TAG

In considering the impact of infill density mechanisms, one economic factor raised by respondents was the excessive increase in the land value for parent lots which carried a ‘development potential’ which follows an increase in a site’s density code. The windfall received by land owners is only realised upon sale or development of the site, and there were many

examples of the demand for such developable lots by a very competitive micro-developer market generating creating an increase in sale prices far above standard price growth models.

An example illustrating this is presented in Figure 13, recording the sales history of a 728m² lot in Nollamara purchased in April 1995 for \$94,000. Using standard price growth models, and including an average annual inflation rate of 2.6% over that time period, the subsequent sale of the lot in July 2006 would have been projected to fetch between \$248,500-277,000. Due to the increase in density code, and therefore the added development potential of the site, the lot sold for \$500,000.

25 MARDA WY, NOLLAMARA 6061



Sales Record	
Sale Price:	500,000
Sale Date:	26/07/06
Area:	728 m ²
HOUSE / STANDARD	
Property Details	
Issue:	0608
LA:	STIRLING
VGO Map:	24.63
Transfer No.:	J875170
Prop Class:	HOUSE
Prop Use:	R
RPD:	LOT 6612 P007008
Purchaser:	
Vendor:	

Photo Date: January, 2011

www.rpdata.com

Full Details

Sales History			
Sale Date	Sale Type	Sale Price	Vendor Name
26/07/06		500,000	
25/04/95		94,000	

Figure 13: Typical sales history of a lot which has received a density code increase, showing the subsequent spike in value (source: RPData 2020)

Some respondents considered the ‘development potential’ price tag to be a necessary tool in regenerating older suburban areas, as without such an increase in land value, owner-occupiers may have no imperative to sell as they may not feel confident in finding similarly-priced housing in competitive areas. The modest house and land values prior to the increase in density also meant that ‘knock-down-and-rebuild’ development, where a single home is demolished for another single home of higher quality, is usually not considered viable. The use of blanket density code

increases across entire suburbs means that buyers genuinely seeking a family home on a larger lot are now entirely priced out of the suburb, as only buyers with intent to demolish and develop at a higher density can justify the purchase prices without being seen to overcapitalise, as the initial outlay will be amortised in the sale of the three or four new dwellings¹⁴. Therefore the genuine homebuyer market, a staple of every suburban area, and so critical to the function of the Great Australian Dream, disappears immediately, and the neighbourhood becomes the domain of developers only.

STIGMA, OCCUPANT SATISFACTION, AND THE COMMODIFICATION OF HOUSING

The impact of the ‘development potential’ price tag described above has further implications on existing owner-occupiers in a suburb. One respondent who lived in such a suburb described the change in sentiment among neighbouring residents, who often lose a sense of pride or worth from their homes, as it becomes evident that despite the extra financial reward they will receive through its sale, the only person willing to buy it has the sole intention of demolishing as soon as possible. Another respondent, a local government town planner, described the scenario as a wasted opportunity, suggesting that many such suburbs had struggled for decades to overcome the stigma attached to living in a post-War suburb established with high concentrations of government housing (and often with many remnant examples).

P6: “What you’re effectively doing is telling these people ‘sorry, but your house value is too low for people to care about’. Imagine that sentiment across an entire suburb?”

Further, previous efforts to improve, renovate or maintain the home are drawn into question, and few are likely to maintain or upgrade their homes beyond the bare minimum required in the future, as any money spent seems inevitably wasted. Even the planting or maintaining of vegetation, or watering of lawns can seem frivolous. Therefore, even though their intention may not be to sell or develop for years, the home’s inevitable fall into disrepair can be accelerated.

¹⁴ People seeking to redevelop with a new single dwelling in such suburbs are unlikely to achieve the necessary valuation by their financial institution, as the new dwelling is unlikely to justify such a high land component, and the bank will deem it to be too high a risk. Therefore, it is most likely impossible to borrow funds for a project other than one which results in more dwellings.

A number of respondents recalled advertisements for homes for sale with ‘a free house’, indicating the prevalent view of the worth of the existing dwelling. An example of such a listing is shown in Figure 14.

216 Harborne Street Wembley

Free House
 At this price the house comes free, land bank for the future and receive an income while making a decision on the potential of the property. Renovate and extend or knock down or build your dream home. This huge property on a block size of 670sqm, close to Lake Monger Primary, Bold Park Community Schools, Telethon Speech and Hearing Centre, Osborne Park Commercial Centre and walking distance to the peaceful tranquillity of Lake Monger Reserve. Picnic with family and friends or just take time out or cycle around the lake.

Open for Inspection Times

No inspections are currently scheduled.
Contact the agent to arrange an appointment.

Figure 14: An example of a real estate listing for a ‘free house’ (source: REIWA 2016)

THE DEMOGRAPHIC IMPACT

As original single dwellings are priced out of the range of first homebuyers, or family households genuinely seeking a detached dwelling on a larger block, it was generally acknowledged that the remaining original single dwellings are on borrowed time only, and will eventually succumb to the redevelopment cycle, exploiting the maximum possible yield of the site rather than being replaced by a newer detached single dwelling. Respondents shared a range of comments regarding the potential for significant demographic changes to a suburb, many of which are interrelated in describing a long-term decline of a neighbourhood. These comments suggested a general consensus about the projected trajectory of an area, and are summarised below as:

- Families requiring larger family homes or larger lots are no longer entrants to the local population, either being priced out by the ‘development potential’ price tag, or by being unable to find suitable housing options among the newly redeveloped infill houses;
- The flooding of the local area by new dwellings predominantly the same size and type narrows the appeal of the suburb to potential buyers by not providing a genuine mix of housing options;

- The flooding of the area by dwellings predominantly the same size and type suppresses the future growth of housing prices as nearly everything on the market is of similar size, age, design and amenity, and therefore price point is the only key driver of sales;
- The higher proportion of dwellings now occupied on a rental basis increases significantly as in many cases the newly created dwellings are retained by the developer as rental properties, or sold to investors looking for rental properties; and
- The addition of poorly built, poorly designed, or ‘cheap’ infill dwellings, and the accelerated disrepair of original homes, means that the potential market is further reduced, sometimes only to those who seek housing in the suburb out of economic necessity rather than genuine desire.

Some authors (Powell 1993; Peel 1995; Winter and Bryson 1998) refer to the ‘residualisation’ of lower socio-economic groups which occurred in these post-War suburbs in the decades following their original development. These authors share sentiments similar to the respondents above in suggesting that this residualisation occurs not as a result of one factor in isolation, but the compounded effect of an ongoing progression of events which appear common in many suburbs experiencing periods of decline, including both internal and external forces.

A DESIGN ASSESSMENT OF GREYFIELD INFILL

FRAGMENTED STRATA OWNERSHIP

An issue which has become increasingly raised in planning literature over the past few years is the fragmentation of ‘parent lots’ into smaller, and often irregularly shaped strata lots to enable individual ownership of new infill dwellings while sharing certain amenities such as vehicle access legs and services. Although it has been common practice for decades in increasing suburban densities, and recent changes to Western Australia’s Strata Titles Act has removed a lot of the stigma originally associated with strata lot ownership, any future redevelopment of a suburb is further complicated by an increased number of owners, irregular lot boundaries, and shared access arrangements.

A number of respondents commented on the fragmentation of lots, comparing it with the current piecemeal approach which is so often criticised in contemporary planning circles:

P3: “If one of the biggest issues with current infill is that it’s ad hoc – how is the next round of suburban renewal or regeneration going to work? Imagine trying to do anything with these suburbs in 20 or 30 years’ time when there are so many more owners and strata schemes to negotiate?”

Figure 15 shows a typical post-War suburb which had initially been developed as 30 single homes on lots generally measuring 728m². The impact of gradual suburban infill is evident at the time of the photo, with the area now comprised of 70 dwellings of various sizes, and with potential for another 21 dwellings (or considerably more if multiple dwellings are built under the Multi Unit Housing Codes). The dividing up of such lots into fragmented strata titled results in the blurring of typical property separation, with many sharing water, sewer and power services, and each subdivision creating a shared common property area with no body corporate responsible for ongoing maintenance, landscaping or repairs. Therefore an infill process already described as “piecemeal and sporadic” (Alves 2006:41) is only made more challenging, and creates greater complexity for future waves of suburban renewal.

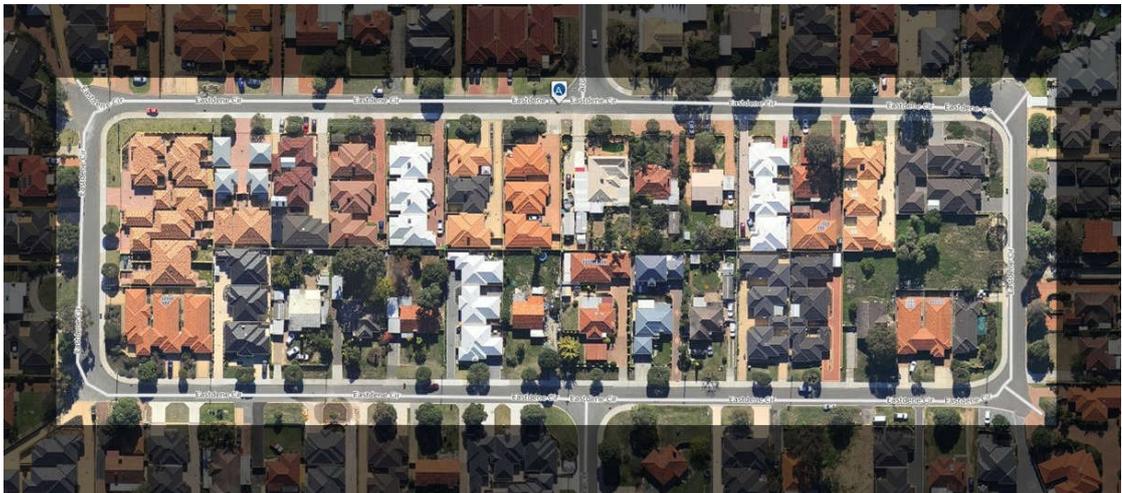


Figure 15: Fragmented strata ownership of a post-War suburb (source: Nearmaps 2020)

Sharpin (2006) further discusses complications of fragmented ownership which often results in poorly designed and executed infill housing. The common infill housing arrangement, by means of strata titling a parent lot into smaller strata lots, and often introducing areas of common property, can lead to untenable issues with regards to maintenance and access, and poses a serious

impediment to future redevelopment of the now-fragmented site. “Infill housing is often built on cross-leased properties, the legal implications of which are poorly understood” (Sharpin 2006:6).

The situation for greyfield suburbs is likely to be further exacerbated by higher concentrations of lower socio-economic groups, as there is likely to be faster suburban decay, less opportunity for regeneration and renovation of dwellings (particularly with attached or semi-detached strata dwellings), and even less likelihood in the future that all respective owners will have the capacity to join together in redevelopment projects.

IRREGULAR HOUSE ANGLES ON ‘LEFT-OVER’ LAND PARCELS

Figure 16 demonstrates that achieving the maximum yield of a site is usually the most important metric for a small scale developer. Due to the highly irregular angles of the parent lot, the very narrow frontage, and the even narrower verge width due to being located in a cul-de-sac, achieving the maximum yield for the development required compromising the layout of some of the dwellings, most notably the irregular angles of the rearmost houses, and by the inclusion of excessive lengths of boundary wall.

A number of respondents commented that they wished the relevant local government had the capacity to demand the inclusion of two-storey dwellings in circumstances such as this, to reduce the overall footprint of the new dwellings and increase the usable outdoor living space around the buildings.

P3: “When you get to R40 you really start to see a need for a second storey to make the homes liveable. Well, either that or build smaller homes, or try to cram less into them. But I’ve never seen a developer not try and squeeze out every square metre possible.”

Figure 17 allows for an examination of the floor plan for a similarly compromised dwelling layout, which required irregular internal angles to achieve the maximum yield for the site. This provides a much clearer example of the impact the irregular angles can have on the individual rooms within a dwelling.

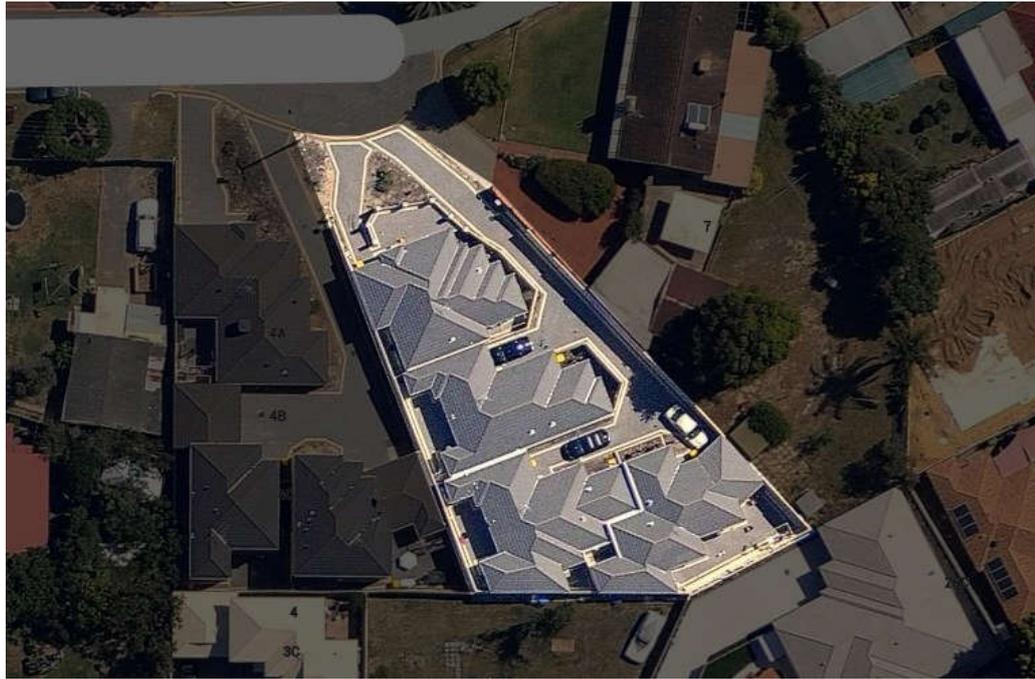


Figure 16: Irregular lot layouts resulting in compromised housing designs in order to reach the maximum yield of the site (source: Nearmaps 2020)

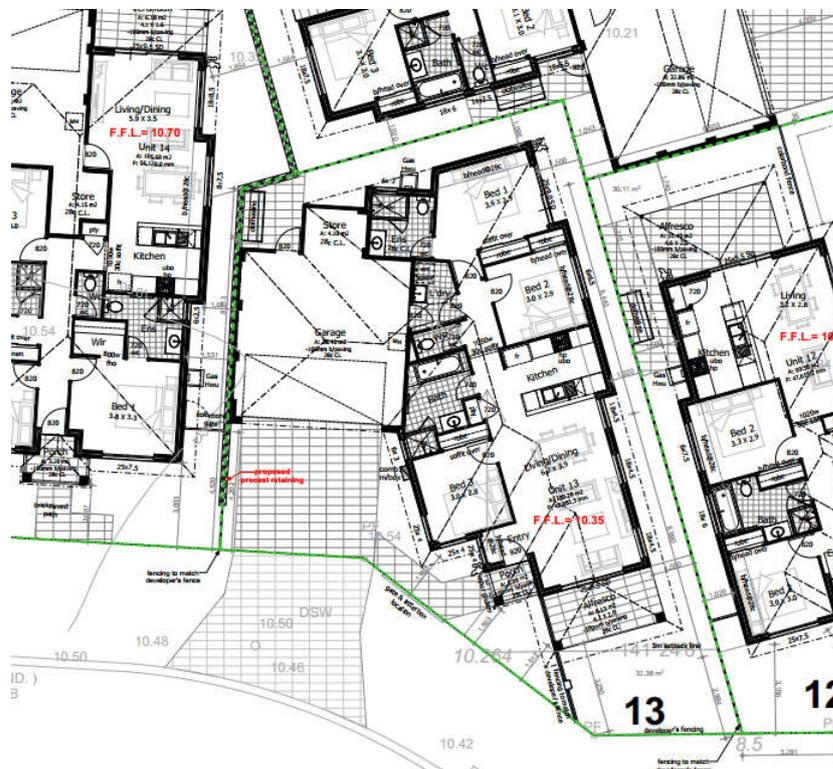


Figure 17: Floor plans of a proposed grouped dwelling development including a compromised layout to account for irregular strata lot angles and dimensions (source: author)

DEPENDENT HOUSE DESIGNS

The example in Figure 18 shows what arguably started as a remnant piece of land, usually as a result of road alignments created in new subdivision areas. In previous eras, parcels such as these would be absorbed into neighbouring lots to offer larger developable sites, or simply landscaped as part of the communal open space.



Figure 18: ‘Dependent’ housing designs which impact on ongoing maintenance and future redevelopment of the site (source: Nearmaps 2020)

A common theme emerged from responses from land developers which suggested that such remnant parcels can now be given a higher density code than neighbouring lots and marketed as a ‘grouped housing site’. This has the benefits of helping the overall estate meeting overall housing and/or density targets, allowing land which would formally hold little value to be sold with a ‘development potential’ price tag, and shifting the onus of creating workable designs to the buyer who may be less concerned about the overall ‘liveability’ or market potential for the new dwellings.

D1: “Lots like these mean we can develop a lot more of the overall land area in a subdivision. Some of these lots are just impossible to sell as house and land

packages, and they'll need a one-off design so the builders aren't interested. As grouped housing sites, that's someone else's problem. Small scale investors usually only care about the yield, so this opens up another competitive market.”

As these lots are usually irregular in shape or size, and might have access restrictions from some boundaries, or other design impediments, the final built form outcomes are often dependent on each other. The example in Figure 18, with the dwelling outlined in red effectively wrapping around the adjacent grouped dwelling, is an example of such a dependent design. Redevelopment of this house when it reaches the inevitable end of its lifespan will prove exceedingly difficult, as will creating alternative or flexible layouts. The above design also includes inherent ongoing maintenance issues, such as roof drainage in gutters areas which are inaccessible.

Another developer referred to a much larger site in a nearby estate which was also triangular in nature, and had a gas pipeline reserve running adjacent to the site. He described how giving the site an R60 coding meant that he could mathematically add 24 dwellings to the estate's overall yield, which kept the local government happy, although in his estimation the site would never realistically fit more than 10 dwellings. This also meant that the estate's regular lots could be made marginally bigger, which can be a crucial advantage in a competitive market where even 5m² of extra land could persuade a buyer.

This issue is often made worse in infill suburbs, as the new dependent dwelling is often compromised to accommodate the retention of an aging dwelling which may already be close to the end of its useful lifespan. Figure 19 shows an example where a post-War duplex building was retained on the site, leaving only enough room to accommodate one additional grouped dwelling. Due to the irregular lot shape and orientation of the original building, the new development was built with a kink in the main ridgeline, which further complicated construction and internal layout.

The site underwent further development in subsequent years, as the owner of one half of the original post-War duplex demolished their side of the building, and replaced it with three densely sited grouped dwellings. This epitomises the piecemeal nature of small scale infill, which often results in poorly designed built form outcomes, with little thought about integrating to the existing streetscape or surrounding suburb in a harmonious manner. Figure 20 shows the current state of the lot. It is easy to assume that the remaining half of the original duplex will be demolished in the near future, leaving the 'kinked' dwelling compromised for no reason, and the site unable to be developed to its full potential.



Figure 19: A house with a ‘kinked’ main ridge in order to accommodate the retention of a post-War duplex on the site (source: Nearmaps 2020)

A similar example in Figure 21 shows an original flat-roofed salmon brick and asbestos duplex owned by one landlord, which received a density code increase in subsequent years. Despite the age and poor condition of the original duplex, the owner did not want to demolish the original dwellings to allow for four or five regular houses with individual street frontage (as other nearby developers had done on similar lots – see Figure 22), despite him owning an extensive property portfolio and such a development being well within his financial capacity. As a result, two new lots and dwellings were created which wrapped around the back of the original duplex building, with the western-most dwelling also having to incorporate a significant easement along the secondary street frontage due the location of overhead power lines (which also restricted the potential for any eaves along the west-facing windows).



Figure 20: Subsequent infill development on the same site, resulting in half of the original duplex being removed (source: Nearmaps 2020)



Figure 21: A low-pitched brick and asbestos duplex with two new infill dwellings ‘wrapping around’ in order to fit on the site (source: Nearmaps 2020)

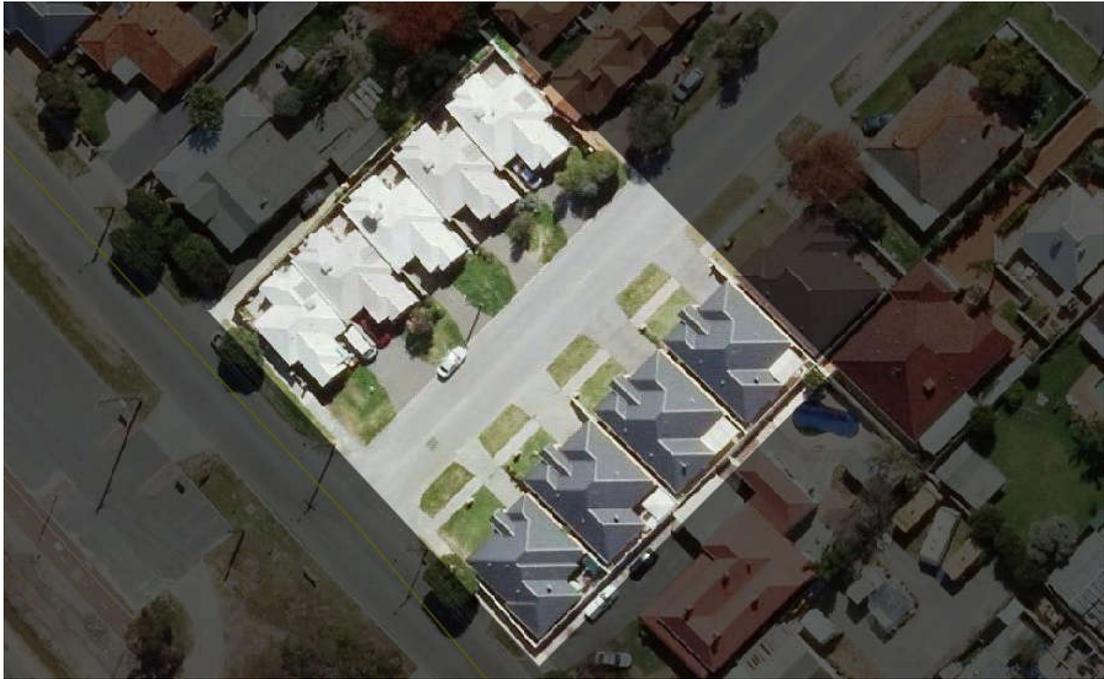


Figure 22: Two similar sized lots located 60m away from the previous example, with post-War duplexes demolished to make way for 4 or 5 new dwellings with individual street frontages (source: Nearmaps 2020)

The planner working for the building company remembered the development very well:

B7: “This job has haunted me for years. When you look at the internal layouts, and the way the buildings all work together... it’s appalling. I only submitted it to Council because I knew they would knock it back and we could convince the owner to start from scratch. Imagine my surprise when a couple of months later an approval arrived in the mail. I actually called the manager at the Council, who I knew reasonably well, and asked ‘what were you guys thinking?’ Not a word of a lie.”

The development also had other issues with regards to amenity arise on site during construction. Due to the low roof pitch of the original duplex building, the asbestos eaves reached nearly 1000mm past the external wall of the building, rather than the usual 600mm which results from regular roof pitches. This meant that the location of the side and rear fencing, being located at the minimum 1000mm required, effectively ‘boxed in’ all outdoor areas around the side and rear of the dwellings, as the end of the eaves sat virtually directly above the fence line, leaving only a relatively small opening for light and ventilation.



Figure 23: The resulting development impacted on light and ventilation for the original dwellings, which received no further upgrades as part of the project (source: Nearmaps 2020)

IRREGULAR LOT SHAPES

The example above also raises another issue common amongst the responses about the current method of infill housing, being the resulting irregular shape of newly created lots. Although a number of the examples above have demonstrated that irregular lots occur historically, even with larger parent lots, the piecemeal approach to infill has exacerbated the situation, with lots already irregularly shaped being divided up internally in a haphazard manner. The example in Figure 24, owned by the same landlord as the previous example, demonstrates a similar approach of creating three additional grouped dwellings to a site which also held an aging duplex building dating from the 1960s.

The site now contains five dependent dwelling designs, three of which are recently constructed, and two of which are nearly 60 years old. Any future designs to replace the two ageing dwellings will need to be designed to fit within the irregular strata lot boundaries.

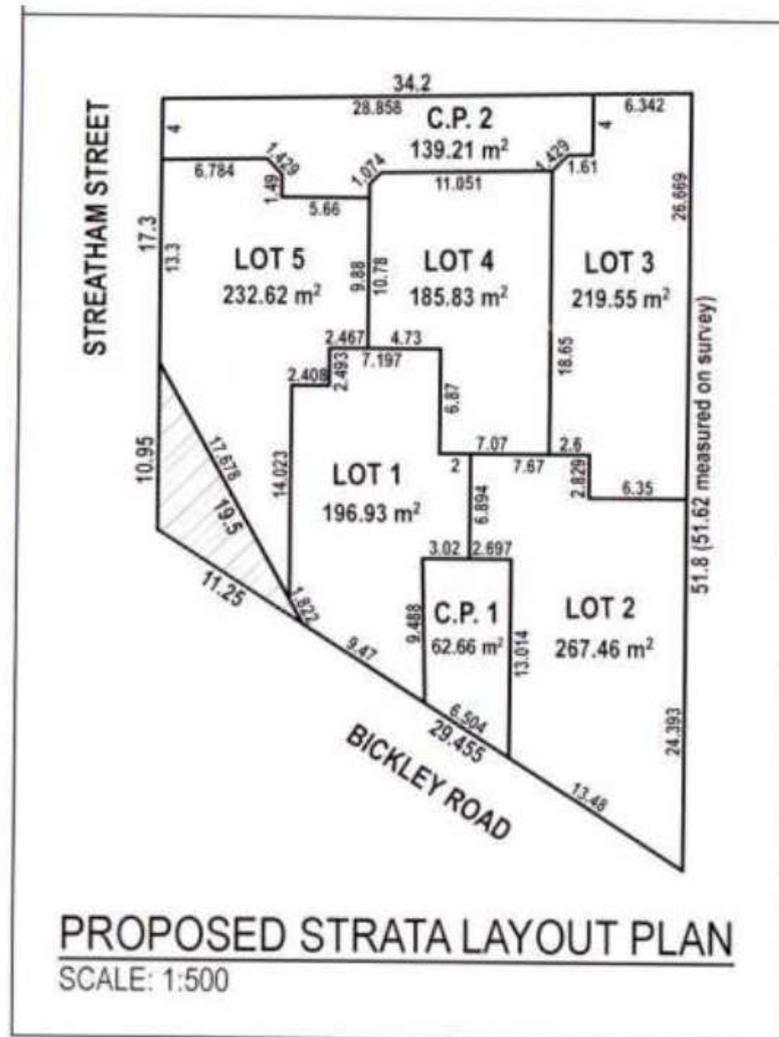


Figure 24: Irregular strata lot shapes as a result of trying to retain an existing post-War duplex building on Lots 1 and 2 (source: author)

Figure 25 demonstrates that even battle-axe subdivisions resulting in only one additional dwelling can sometimes require the use of a complicated lot layouts to accommodate an original dwelling, with the new lot in this instance wrapping around the existing dwelling in order to meet the minimum land area required. In most cases, the private outdoor living area or courtyard of the original dwelling needs to be relocated to the front setback area in order to meet the minimum dimensions required. Although permitted under the RCodes, this was arguably frowned upon by all local governments as access is usually only achieved through the dwelling's front door rather than immediately off a kitchen or living area, and privacy for outdoor living areas was harder to achieve without the use of solid fencing to the front boundary, which is also considered a poor design outcome and not permitted by the RCodes except in certain circumstances.

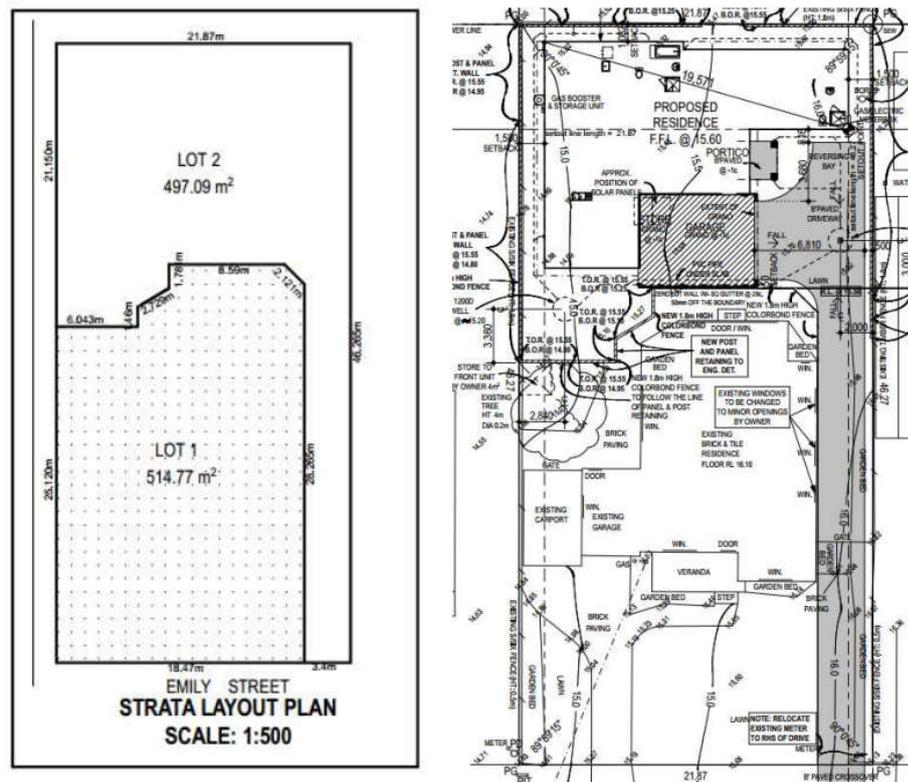


Figure 25: An irregular battleaxe subdivision layout as a result of wrapping the new lot around the retained dwelling while trying to meet the bare minimum land area required (source: author)

The historic legacy of these original dwellings, often located centrally on such large lots (Hedgcock and Hibbs 1992), and often set back 9-12 metres from the front lot boundary (WAPC 2003a; WAPC 2003b), is considered an inefficient use of land by today's planning standards. The front yard, an iconic element of traditional Australian housing, has become an underutilised space, with greatly reduced front setbacks required for today's homes, with as little as 2.0 metres required in medium density developments. This incompatibility in siting with regards to front setback and streetscape siting is one of the main drivers in anti-density sentiment, or NIMBYism, in established suburbs.

CHEAP DESIGN AND MATERIALS

Responses concerning the 'cheapness' of the design and build of 'typical' infill projects were some of the most pessimistic regarding the efforts of small scale developers, and also suggested a 'new era' of a problem covered in great depth in the literature on post-War housing. It also highlights

one of the issues of understanding the broader social impact of such development, and its ability to mask elements of urban poverty.

As discussed earlier, many authors refer to the use of cheap materials in post-War construction efforts, such as the use of concrete for housing, which tended to perform poorly with regards to heating and cooling, and had a poor structural lifespan (Howe 1995; Winter and Bryson 1998). Improvements in the national building code in subsequent decades has meant that contemporary houses meet certain minimum standards with regards to structural and environmental performance. As such it can be hard to align many new developments with the urban poverty described in previous eras. Respondents from the design and building backgrounds provided the most insight into how the issue unfolds in modern design and construction.

The example in Figure 26, below, uses cheap design and materials to achieve a cost-effective result. In respect to design, money has been saved by removing eaves to the front of the house (despite this being a west-facing elevation). The design also features no roof features such as a gable or gablet (a half-gable or Dutch gable). In raw numbers, each such roof feature adds an extra \$2000-2500 to the contract price, a sum which will not be recovered through higher rent prices. The design also includes no feature elements such as contrasting brick or render, window sill or dado relief (often simply a course of bricks protruding forward of the main wall to create a 'band' around the dwelling).

With regards to the use of cheap materials, the selection of two-course bricks instead of single-course bricks, often saved \$1,000-1,500 per dwelling depending on the size of the house, although many project builders charged no extra. Two-course bricks gained popularity in Perth in the previous decade, where their introduction in a limestone colour and finished with parget mortar gave new homes a 'beachside' feel. Due to their popularity, this range of colours has been broadened to traditional reds, greys and browns, although a number of respondents commented on the resulting 'cheap' feel of the home due to the brick selection.



Figure 26: Infill dwelling using ‘cheap’ design and construction methods and materials (source: Nearmaps 2020)

One respondent from a construction background and site experience noted:

B1: “They look like we’ve used internals [a cheap clay brick designed to be used for internal walls which are plastered over] and forgot to render it. They look unfinished and rubbish.”

Another respondent with a background in building design gave a different insight, noting:

B2: “I think the eye is very good at picking up finer details, and things that are the ‘right’ proportion, you know? This unit uses half the bricks, but looks like it’s lacking a finer detail. Put it this way: it’s like comparing a toy house made out of Lego with one made out of Duplo. They might be the same size, but the Lego house will seem more detailed and refined. The Duplo one will always look like a baby’s toy.”

Although there were few specifics mentioned from respondents from a planning background, similar thoughts were expressed that typical infill was often lacking design merit, lacking eaves, lacking features, lacking articulation, presented poorly to the street, used low quality architecture, or emphasised profit over design.

Another common design change used to reduce costs is in the type of boundary walls on the site, which are becoming commonplace due to developers wanting to maximise the size of each dwelling and smaller strata lots. Two boundary wall details are shown below – a ‘parapet wall’ detail (named so because the outside leaf of brickwork creates a ‘parapet’ which rises 5 courses above the ceiling height, with a ‘v’ shaped gutter inside), and a ‘zero-lot wall’ detail, with a square gutter profile running along the top of the outside leaf of bricks, and generally only 1 course above the ceiling height. Although the zero-lot detail poses less issues in terms of maintenance, and poses less impact on the neighbouring lot due to its lower height, the inclusion of a caramelised fire blanket makes the design more expensive than the additional few courses of brickwork in the parapet wall detail (with the parapet wall, the additional brickwork meets the fire separation requirements). Although the difference is usually only a few hundred dollars, the parapet wall is generally always preferred unless height issues create issues with the neighbour or respective local government.

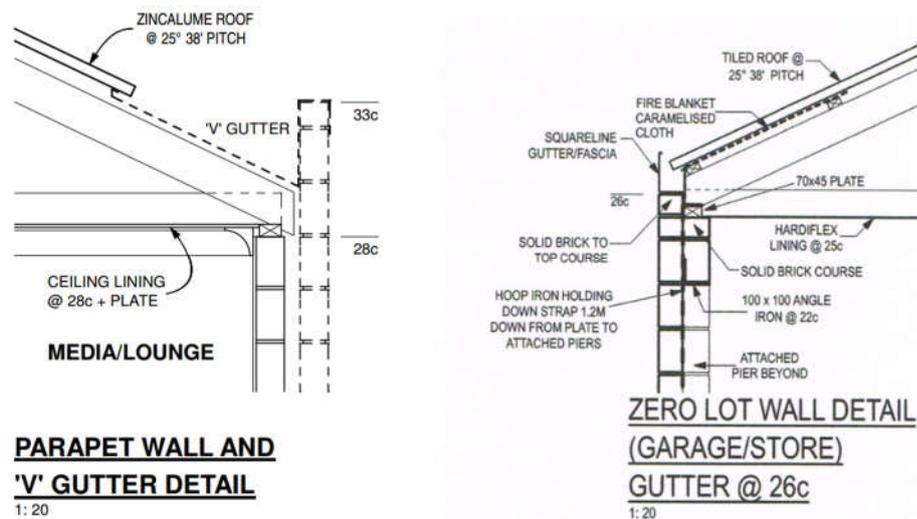


Figure 27: Two typical boundary wall details for double brick construction (source: author)

A number of authors (Turner 2001; Vallance 2002; Ancell 2004) express similar concerns about the flow-on effect that poor quality or ‘cheap’ construction dwellings have, noting that even the general perception that such housing is lacking in quality can have broader implications on the revitalisation of suburbs. “They also generate a negative perception amongst the public which may lead to communities resisting infill developments in the future, regardless of how high quality they may be” (Sharpin 2006:20). Cullen (2005) similarly noted that such perceptions could lead to political resistance to further infill, based on increasingly unhappy surrounding residents.

By way of comparison, the example in Figure 28 is a similarly sized grouped dwelling from a lower socio-economic area than the above example (although forming part of a retirement village, and therefore aimed at a different demographic market) which has used a number of design elements lacking in the above example to create a much more refined dwelling. It incorporates a rendered plinth along the bottom of the dwelling, single course brickwork, fenestration and moulding around the windows, fake mullion strips on the windows (to give the appearance of French windows), moulding and fascia below the gutters, and a raised roof section over the portico. Although the mock-Georgian architectural style may not be to everyone's taste, the overall image is of a higher quality development with better presentation to the street. The additional fascia features and higher portico roof also help to disguise that the internal ceilings are only built to 28 courses, or 2.4m, which is the minimum allowed by the Building Codes of Australia, and often another sign of cost savings in design.



Figure 28: An infill dwelling with a high level of feature and design elements used to create a high quality presentation to the street (source: Nearmaps 2020)

CLEARING OF TREES

Perhaps one of the most contentious issues with regards to the infill vs sprawl debate is the argument of greenfield subdivisions resulting in the mass clearing of dense native vegetation and trees. Not surprisingly, this issue was seen as a particularly important issue for small scale infill developments occurring en-masse in established suburbs. Numerous local governments have increased efforts at creating workable policies which attempt to preserve the existing tree canopy in established suburbs. In many cases, however, the requirements for retained and level sites (due

to Western Australia's propensity for slab-on-ground construction), the need to remove root systems and overhanging branches, and the amount of space taken up by underground services such as soakwells means that even where trees could theoretically remain on a site, the realities do not always afford this.



Figure 29: A three-dwelling infill project completely stripped of vegetation (source: Nearmaps 2020)

Figure 29 shows a typical quarter-acre infill lot which has had virtually all vegetation removed, including the grass usually found on the verge. The only vegetation visible in the aerial photo is that overhanging the fence from the neighbouring property along the southern boundary. Although this is a particularly extreme case, the increasing use of paving to provide additional car bays or reduce the maintenance and water required as a rental property is having a stark impact on established suburbs.

Figure 30 shows one remaining original dwelling with dense vegetation in the front and rear yards, between three redeveloped sites which provide little vegetation other than the retention of an existing verge tree. As discussed, images such as this further confuse the debate between the amount of tree clearing as a result of greenfield vs infill development. Further examination of Figure 30 shows all three redeveloped sites also use the same design, albeit with different colour schemes and with the development second from the right being mirrored.

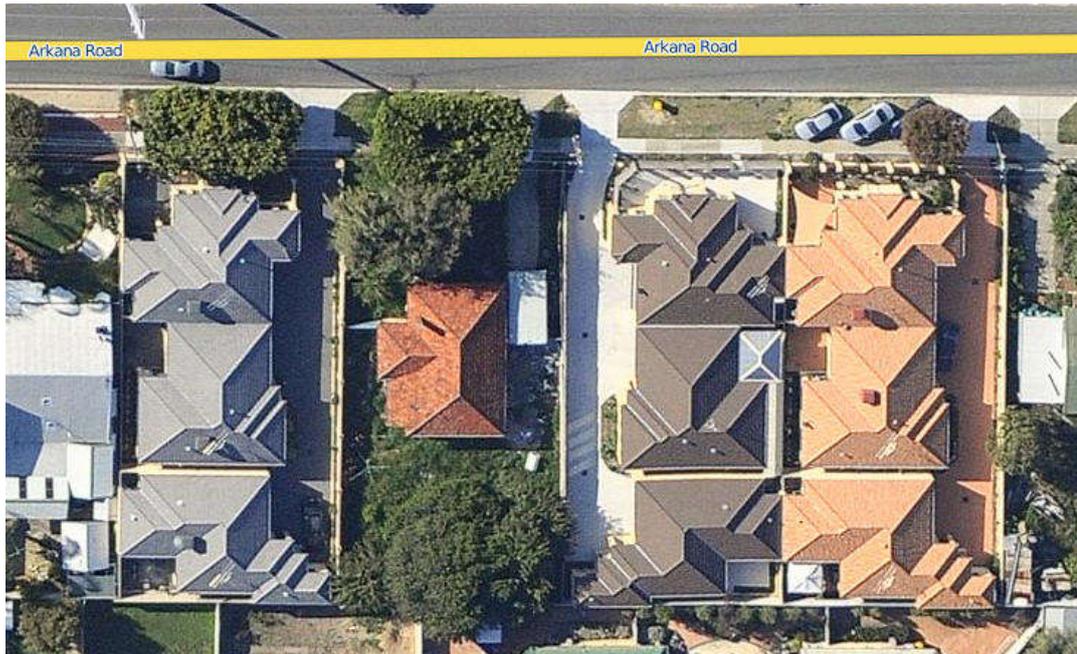


Figure 30: An original dwelling with dense established tree canopy, flanked by three infill developments cleared of vegetation (source: Nearmaps 2020)

Figure 31 shows the three typical stages of infill development in greyfield suburbs, with an established parent lot being entirely cleared and levelled prior to the construction of the new dwellings. Although the new dwellings in this case provide small areas of landscaping, only very immature plants have been planted, which will take considerable time to develop, and even then not to the extent as provided by the original tree canopy.

One respondent from a local government highlighted the ongoing issue of tree clearing due to piecemeal quarter-acre lot infill within their LGA, noting that the Council will spend \$80 million in planting and maintaining 7,000 trees per year for the next 15 years, or 105,000 trees in total, and still only achieve a smaller suburban tree canopy than currently exists, and generally localised around public open spaces rather than interspersed amongst houses and streetscapes. Costs such as these are not usually included in the ongoing debate between the costs of infill housing vs greenfield development, but make a significant impact on a suburb's sense of place. The respondent noted that by the current rate of development, 290 hectares of established tree canopy will be lost in their LGA by 2030.

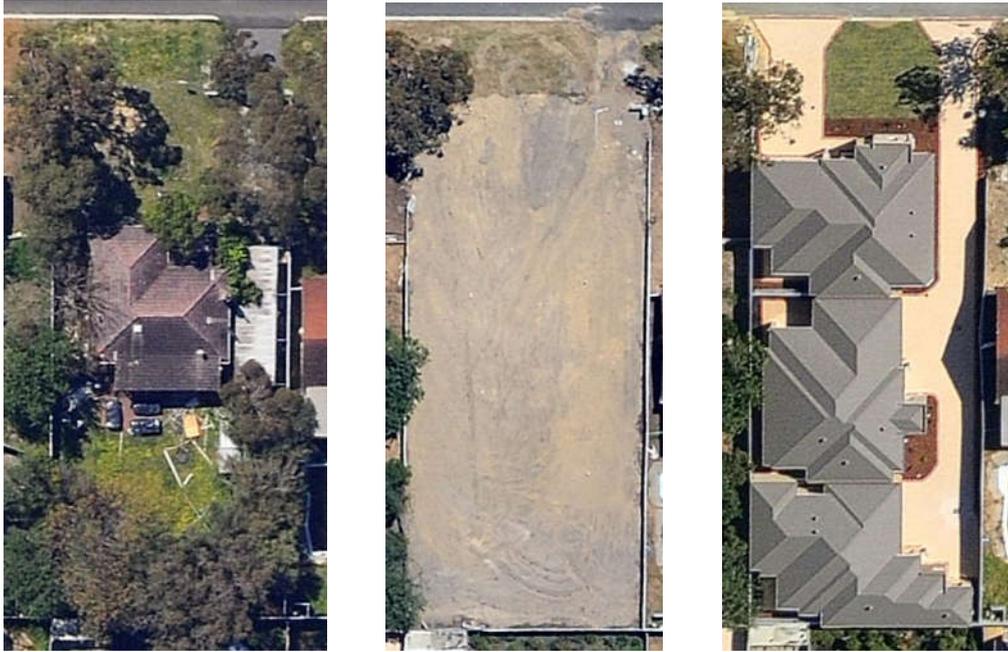


Figure 31: Three stages of infill development showing the loss of established vegetation (source: Nearmaps 2020)

Chart 1 shows the tree canopy loss by density code. As expected, the medium density development codes are the worst offenders, with the R40 density code having the most significant impact. This particular local government issued blanket R40 density codes to most of their greyfield suburbs in previous years in order to help regenerate and renew the aging suburbs. Nearly all infill development in these suburbs are individual quarter-acre lot type projects, and is the local government area comprising all three of the examples above.

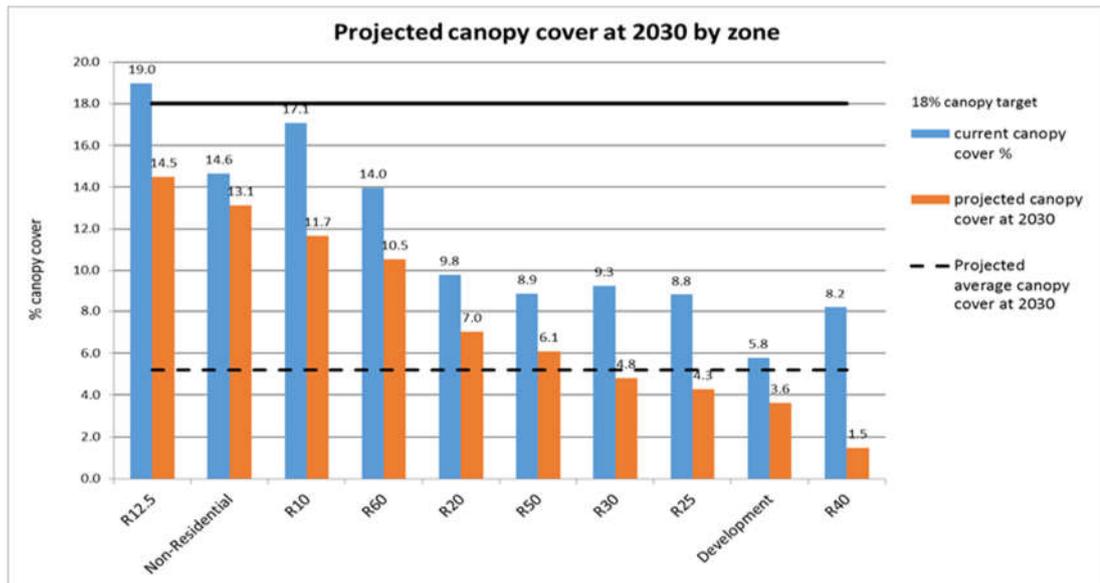


Chart 1: Local government data showing tree canopy reduction by density code, with medium density sites most affected (source: City of Stirling 2018).

NARROW ACCESS LEGS WITH BLANK WALLS

A number of respondents commented on the use of excessively long or narrow access legs to service rear dwellings, which were generally always necessary due to traditional lots being significantly deeper than they are wide. In some cases the result was made worse by the installation of fencing along both sides of the access leg, whereas in other instances it was the result of the building designs creating the problem.

Figure 32 shows a parent lot with a retained dwelling subdivided in a typical battleaxe style with a new lot created at the rear. The driveway is 4.0m wide, the minimum permitted under the RCodes, and fenced on either side by 1.8m high steel fencing for its full length of nearly 30 metres. The result is a narrow ‘chute’ to enable vehicle access, but also limits the view of the house and entry from the street, and minimises the passive surveillance which can be created by additional dwellings. Without any upgrade to the existing dwelling, little or no regeneration of the streetscape and surrounding area can be achieved.



Figure 32: A rear access leg for a battleaxe subdivision, enclosed on both sides by 1.8m fencing (source: author)

The example in Figure 33 resulted from the demolition of a single original house to allow for five new grouped dwellings to be built. Figure 34, showing the elevation of the development from the street, clearly shows the use of long, featureless brick walls on either side of the driveway, which evoked terms such as ‘bowling alley’, ‘dead end’ and ‘lifeless’ from a number of respondents.

Although the usual arrangement for a subdivision such as this would result in a driveway down one side, with a front dwelling facing the street and the rear dwellings all facing the common driveway, the end product was the result in a clause in the local government’s planning controls which allowed for a higher density (and therefore one extra dwelling) where two or more dwellings are given their own street frontage. Although the final built form achieves this, the narrow nature of the parent lot results in two poorly-designed street-facing dwellings, with a narrow and ‘lifeless’ access leg servicing the rear three dwellings (and all five garages). Further, the location of the garages for the front two units at the rear of those dwellings, followed immediately by the two garages for the following two units (outlined in red in Figure 33), means that the initial lengths of

featureless brick walls are immediately followed by approximately 12 metres of garage doors¹⁵ on each side of the drive, before the main facades of the rear units are reached.

Despite the local government's policy promoting infill dwellings facing the primary street, and therefore contributing to the streetscape and producing a better planning outcome, no policy or requirements were in place requiring a satisfactory level of design, feature or amenity to be added to those elevations. Both front-facing dwellings have two bedrooms with windows facing west, with no eaves or shade structure over them. Despite the poor resulting outcome of this development, the same developer bought a number of similar lots in the surrounding area and repeated the design on each, to make use of the additional yield resulting from the planning policy.



Figure 33: A five-dwelling infill project requiring a long, narrow central access drive to service the garages for all five dwellings. The initial lengths of featureless brick wall are followed by four double garages (outlined) (source: Nearmaps 2020)

¹⁵ The minimum internal width of a garage required by the RCodes is 5.6m, resulting in a total external width for a garage of approximately 6 metres. A standard double garage door is usually 5.0-5.4m wide, with supporting brickwork on either side.



Figure 34: The same infill project, showing the solid, featureless walls adorning both sides of the narrow common driveway, and poor quality elevations facing the street (source: author)

LACK OF SOLAR DESIGN PRINCIPLES

The above example also demonstrates the poor solar access and solar orientation which can often result from tightly spaced infill dwellings. As outlined, the front four bedrooms in the development project are west facing, with no eaves or shade structure over them providing shelter from the westerly afternoon sun. Further, only two of the five dwellings have courtyards with a north-facing aspect, and throughout the entire development there are only blank brick walls or minor openings (such as highlight windows) facing north. One respondent noted about the design:

D4: “With most standard building designs there is usually one lot orientation which works pretty well for solar access, or the design can be flipped to get better solar access when the lot faces another way. But this design would perform incredibly poorly regardless of which way it faced. This is just terrible. And there really is no need for it.”

Another respondent, also with a background in design, was similarly critical of the outcome:

D5: “This is the worst. It uses nearly every trick in design to pull costs down. Cheap, cheap, cheap. It points to a bigger issue, though. The design is as lazy as it gets. But either the Council didn’t challenge it, or didn’t have any policies in place which ask for anything better.”

A brief examination of the surrounding area further supported the comments of D5. Only one block away from the previous example was another group of developed lots, all showing various alternative outcomes. Box A in Figure 35 shows two adjacent parent lots developed in the same manner as the previous example. Box B shows a developer choosing not to pursue the additional density to allow the fifth dwelling, instead creating four larger infill dwellings. Box C shows two parent lots amalgamated into one, which allowed for a more traditional subdivision arrangement and still achieve the additional density as more than one dwelling had street frontage. Lastly, Box D achieved the same yield as the previous example, although maintains a driveway down the side of the lot. This allows for the rear three units to face the common property drive, which brings about numerous benefits, removes the need for tall brick walls enclosing each side of the common drive, and enables the two front dwellings to also have vehicle access and parking independent of the shared driveway.

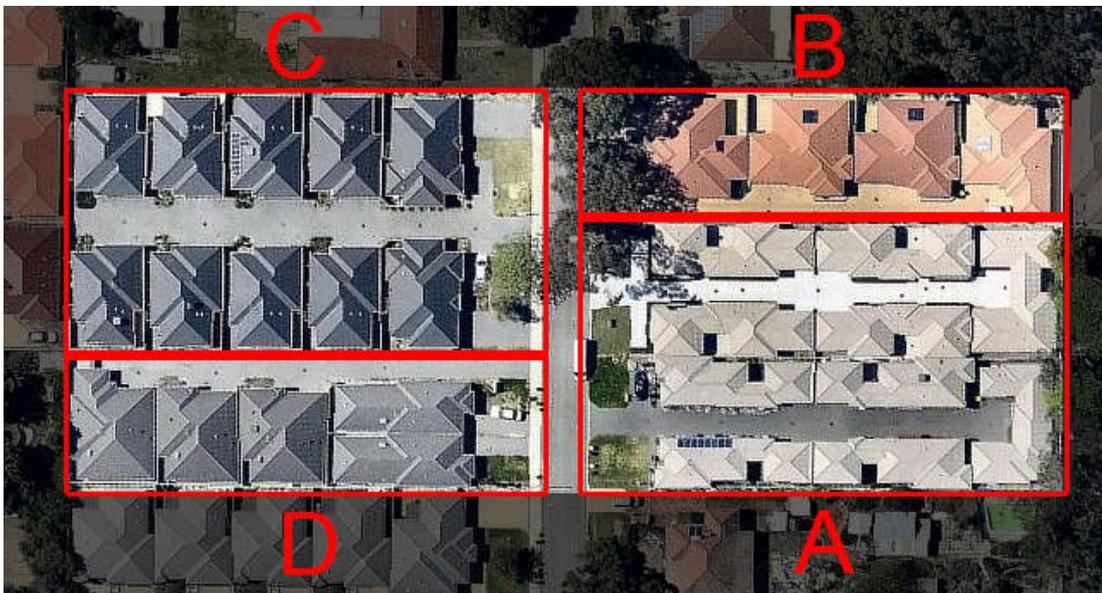


Figure 35: A number of alternative approaches to infill design, located only one block away from the previous example in images 36 and 37 (source: Nearmaps 2020)

The designs in Boxes B, C and D all allow for more traditional floor plans, better thermal performance and flexibility, far less wasted space due to lengthy internal corridors, better passive surveillance and activation of the common driveway, and the potential for a far more appealing presentation to both the street and internal common areas. The reduced perimeter brickwork for each dwelling also presents significant savings in cost for construction.

Respondent D5 added further comment to the various alternative arrangements:

D5: “Every one of those alternatives is a huge step up. Far better outcomes in almost every way. It makes you wonder – when the original developer or his designer thought they’d worked out a way to get the extra density, did anyone from the Council even bother to point out that there are far better ways to do it? Or did they just keep rubber stamping everything he sent in?”

A planner working for the relevant local government shared some insight via an informal discussion which shed further light on the role planning officers often play in seeking better design outcomes:

P6: “I’ve been told so many times, and often rudely, by builders and developers that I’m not an architect. They seem to take pleasure in pointing out that I can only approve what is covered in the RCodes or our Scheme, or policies. I remember one particular builder who got furious when I suggested moving one window on the design to give better access to light. He demanded to know why I was holding up his approval and wanted to speak with my manager. The sad thing is, one of our planners used to be a qualified architect. She used to think she was helping by giving out free advice which would improve the end result. Now she doesn’t bother. It’s not worth the headache. Maybe for owner occupiers building a single home. But not for this stuff.”

Discussions with the particular builder referred to by P6 above showed that indeed such conversations were commonplace, and made no attempt to downplay their frustration:

B5: “Seriously, it can be so frustrating. Sometimes they want to act above themselves and get in the way of things. The owners are happy with the designs that are being submitted. All this stuff does is add cost and delays. If it complies, just approve it.”

Several authors (Phillips 2009; Newton et al. 2011) note that the use of standardised housing products, once the production method primarily only used in single dwelling construction where nearly all vacant sites were of similar (and often market-regulated) shapes and dimensions, was increasingly common for the delivery of infill housing, and as a result the issues associated with the one-size-fits-all, or ‘cookie cutter’, approach were also becoming far more common. “To maximise profit margins, dwellings...are constructed to minimum performance standards (e.g. energy ratings) at the expense of the end-user, who wears the price of the subsequently high operational costs” (Murray et al 2013:35).

This highlighted one of the main issues of contention between the local government planners, and the builders and developers. Numerous respondents from a planning background emphasised the importance of the final built form outcome, for reasons such as neighbourhood renewal, ongoing operational costs and performance of the houses, resident satisfaction, uplifting community appeal or removing long-held suburban stigmas, and simply for aiming for development that was “right”, or simply “better”.

The views expressed on the side of builders or developers emphasised the financial impost, and the impact it has on small scale developers:

B3: “These owners might be borrowing a million and a half dollars to do a project, and most of the time it’s leveraged against their own family home. That means every month delay is another six or seven thousand in interest they need to come up with. And they don’t get any income from the project until the very end then they sell or settle. So being held up because a future owner has to pay another 50 bucks to run his air conditioning... that just doesn’t enter the equation.”

A number of respondents refuted this stance, expressing frustration that building designers employed by most building companies are usually “glorified drafties” [draftsmen], also with no formal background in architecture or design, who treat infill housing as a Tetris-like exercise in maximising building areas over any other concern, or thought of how it might function as an actual built form outcome.

LACK OF DISCREET SPACES FOR SERVICES

Although less of an issue in general, a number of respondents commented on some infill designs

treating the location of services as an afterthought, with no concealed area set aside. As a result, services such as gas and electricity meter boxes, hot water systems and air conditioning condensers, are often in inconvenient places, or clearly in view from the street. Figure 36 shows an already narrow portico opening of 820mm made worse by the obvious location of the gas and electric meter boxes protruding out from the adjacent wall, which would normally be located around the other side of the front elevation.



Figure 36: The location of gas and electric meterboxes and a downpipe adjacent to an already narrow front portico entry, and clearly visible from the street (source: author)

One respondent also commented on access issues as a result of service locations, particularly noting how often house designs were built with a minimum 1000mm side setback to the boundary fence, which were then blocked by required services:

B1: “You’ve got these narrow setbacks around the house of a thousand [millimetres], and then the hot water system takes up 750 [millimetres]. You’re left with a 250 [millimetre] gap between the water heater and the fence, which blocks your access down the side of the house. We try to push the designers to go for instant water heaters, which only take up a fraction of the space, but their response is always that it’s another one or two hundred bucks that the owner doesn’t want to pay.”

LACK OF RENEWAL OF RETAINED DWELLINGS

Another issue raised which demonstrated a general consensus between all respondents was the lack of renewal or upgrade to a retained dwelling when the parent lot was subdivided to create a battleaxe lot at the rear. Although this had the effect of increasing the net density of a suburb, it was considered one of the worst outcomes in many cases, as there was virtually no discernible improvement to the streetscape or wider community.

Figure 37, below, shows such an example where an ageing fibro or asbestos home had been subdivided into a battleaxe style subdivision, with the vacant rear lot cleared and marketed for sale. Although a new home will be added to this lot, it will remain hidden behind a dilapidated dwelling with a sagging roof and missing weatherboards. All of the benefits associated with infill development, such as suburb revitalisation through the replacement of ageing, dilapidated homes, are therefore lost. This example also demonstrates the use of an irregular lot shape in order to meet the bare minimum land area required, while maintaining the minimum outdoor living area required by the RCodes for the front dwelling.



Figure 37: Marketing image for a rear battleaxe lot, showing the poor state of the retained dwelling in front (source: REIWA 2012)

P1: “This is the problem I have with a lot of current infill. Look at that s box on the front block – asbestos home, bottom weatherboards broken and falling off, sagging roof... no quality control at all. Yet there will be a brand new home stuck behind it... This is not revitalising suburbs...”

Figure 38 demonstrates a similar battleaxe subdivision during which considerable effort went into upgrading the retained original dwelling. The addition of a new fence, replacement of the original tiled roof and original timber windows with modern awning windows (while maintaining traditional window dimensions), and new exterior paint has resulted in a subdivision which significantly adds to the existing streetscape by way of a renewed appearance, a far better environmental performance of the retained dwelling, and by maintaining some of the original character that the original dwellings often gave their surrounding suburbs.



Figure 38: Despite lacking landscaping, a retained original dwelling helps preserve the original character of the area (source: Nearmaps 2020)

Numerous authors also note the lost opportunities of suburban consolidation when newer dwellings are concealed behind retained dwellings, particularly when no efforts are put into

upgrading the presentation to the street. Luscombe (2008) noted from a study in the City of Armadale that the “common battleaxe configuration” repeatedly resulted in lower quality development outcomes, often as a result of a poorly maintained original dwelling being retained.

“A second lesson which can be derived from this study concerns the overall quality of design within the redevelopment process, or what the local authority refers to as ‘improvement to streetscapes’... The most poorly executed examples of redevelopment observed were found where an ageing dwelling had been retained... with only a marginally improved streetscape or no discernible improvement” to the result (Luscombe 2015:263).

CONCLUSION IN RELATION TO DESIGN ASSESSMENT

Through the interviews, survey results and informal discussions it emerged that while the notion of a more efficient use of land in established suburbs was generally supported, there were few respondents who expressed positive sentiments about the current state of built form which had resulted. In short, most responses were supportive of the intent, but unhappy with the outcome.

It also became apparent that suburbs which had used a blanket approach to increasing density codes had become synonymous with poor quality infill, and even the name of the suburb evoked images of low-quality housing and a low socio-economic population. In particular, those suburbs which had dealt with long-term stigmas for historical reasons had largely failed to reinvent themselves as renewed, vibrant areas. This is despite numerous examples of poor quality infill also being identified in suburbs with more targeted or performance-based approaches to densification.

Interestingly, those suburbs with a largely homogenous housing stock were also more readily associated with poor quality built form outcomes even though there were many examples built to a very high physical standard, albeit largely identical in typology to every other offering in the immediate vicinity. It suggests that the negative sentiment expressed by many about the quality of the built form stock was often heavily influenced by a feeling of disdain for the development model itself, considered by many as lazy, opportunistic, and detached from the suburbs which it was impacting. It further suggests that concern about macro level issues, such as a suburb’s increasing lack of housing options, also add to the negative sentiments expressed about the quality of individual development outcomes. This finding highlights an inherent risk to local governments attempting to revitalise greyfield suburbs as it implies that even high quality

developments can fail to make a positive contribution to an area when the suburb as a whole becomes synonymous with only poor quality outcomes, or “sameness” in housing options.

This divide was particularly noticeable between greyfield and non-greyfield suburbs, as many viewed developers in non-greyfield suburbs as willing to invest more in development projects to create dwellings of a much higher standard, despite the development approach being almost identical. The second half of this equation – that those developers can justify that additional expense through the higher future sale prices – is generally ignored, or at best poorly understood. This adds further weight to the finding above as it illustrates the challenge of encouraging developers to invest in higher quality developments when the public perception of a suburb plays such a significant role in the potential return for a project, and places all of the responsibility, risk and cost of creating higher-quality or diverse housing options squarely on the developer.

It was a common frustration from local government planners that it was developers of small-scale infill projects who were failing to create dwellings of a sufficient standard to see broader gentrification of older established suburbs, particularly those determined in earlier chapters to be considered greyfields. When pressed as to why Councils continued to approve such development applications, or had not implemented policies which required higher standards, most continued to point the finger at developers, almost suggesting that developers should be operating with more altruistic motivations. Some also criticised the RCodes, a state planning document, suggesting it was lacking in certain controls with regards to quality of development, or needed to be scrapped in favour of form-based planning controls. Only a small number of local government planners expressed frustration at their own Council for failing to implement policies which would improve the quality of infill projects, despite those same local governments acknowledging the poor quality outcomes which had resulted over the past two decades.

The responses to the statements regarding the planning controls which govern infill housing demonstrated that planners generally strongly disagree with the suggestion that the Residential Design Codes provide adequate controls for infill housing. This is also reflected in a number of the longer survey responses, where respondents suggested additional layers of planning controls are required:

O1: “The ad hoc proliferation of infill housing is wrong, the entire process is too unguided. Local design strategies provided by Councils would be an improvement.”

P8: “There should be more planning controls to achieve better quality design.”

The responses also suggested a broad consensus on the reliance on variations to the Acceptable Development provisions of the RCodes in order to attain a development approval for infill housing projects. This largely corresponds with similar sentiments in the development industry in the past few years which suggest that trying to regulate all forms of housing types (ie. single dwellings, grouped or strata dwellings, and multi-level apartments) with a single common planning control leads to issues in creating compliant designs and streamlining the approvals process.

Further, the responses suggest that planners generally disagree that local government has any tangible input into the final built form and design of infill housing projects. When asked what further planning controls could be implemented, a majority of respondents recommended the implementation of some level of design control, a mandatory requirement for input from an architect, and some even suggesting a complete shift to form-based planning codes.

Lastly, the responses regarding the potential for infill housing to provide the impetus for broader socio-economic change across a neighbourhood seem to suggest reasonably diverse views. Perhaps the strongest consensus was on the ability for suburban densification to impact on a surrounding area, although the Likert scale did not allow people to directly specify whether they view such impacts as being positive or negative. The statement which provided the least unanimity is the potential for densification to counter the stigma associated with poorer suburbs. This highlights one of the ongoing issues with suburban densification – some view it as a means to rejuvenate or renew aging urban suburbs through encouraging a broader socio-economic population, whereas others view this as only occurring as a result of macro-scale changes to a suburb's fabric. There appears to be no such consensus in planning literature either, and may be based largely on the individual's experiences of densification in their own local areas. There seemed to be a general agreement that the current form of suburban infill encouraged a wider range of housing options, which some argue opens a suburb up to a much wider demographic, yet the responses generally disagreed that current infill created more tight-knit communities.

6. CASE STUDIES

INTRODUCTION

The previous chapter examined the dynamics and characteristics of suburban greyfield areas in Perth, identifying examples of common criticisms of the emerging built form in those areas, and the broader impact of this infill development process at the neighbourhood level. This chapter will present two case study greyfield suburbs from the Perth metropolitan area which will be used in the following chapters to compare the outcome of two different approaches to density control as implemented by respective local governments. The chapter will begin with an introduction to the two case study suburbs, outlining a key summary including location and proximity to the Perth CBD, a brief history behind the establishment of each suburb, and the justification for the consideration of each suburb as a 'greyfield' as part of this study.

Next, a longitudinal analysis of the suburban morphology of both suburbs will be presented, examining key changes to the built environment of both suburbs over time. This will be undertaken using a series of historical aerial photographs starting from 1953, roughly coinciding with the establishment of each suburb during the post-War era. The analysis will cover the following five decades, up until 2001, providing a snapshot of each suburban area at the commencement of the study period outlined in more detail in the following chapter.

Finally, a detailed profile of each case study suburb is presented using data from the 2001 Australian Census of Population and Housing, with particular reference to key characteristics of the local population and the local housing stock in each suburb. This similarly presents a snapshot of each suburb at the beginning of the study period. The 2001 Census was chosen as a starting year as it coincides with the City of Belmont's 2001 implementation of their Local Planning Policy No. 1 which introduced a range of performance criteria (additional to the standard requirements of the Residential Design Codes) governing the development of infill housing on lots coded R20-R40. This data will help compare and contrast Cloverdale and Nollamara with particular regards to the socioeconomic status of each suburb independently, and as a broader part of their respective local government areas.

The analysis of these case studies is intended to provide a greater understanding of how renewed built environments emerge from established suburbs, and to compare this to the perceived characteristics and motivations of developers as understood by those in the broader planning

industry. As found by Adams et al (2012), a poor understanding of the characteristics of developers and the broader development industry can lead to the undermining of strategies used to control housing delivery in older suburbs, the efficacy of planning policies being diminished, and contribute to poor quality suburban redevelopment outcomes.

CASE STUDY AREAS

The location of the case studies is shown in Figure 39, with both suburbs located within close proximity to the Perth CBD. Nollamara is located approximately 7.2km north of the CBD, with primary access to the city via the major arterial road, Wanneroo Road, running north-south adjacent to the suburb, and Morley Drive running east-west along the southern boundary of the suburb connecting it to the neighbouring suburbs of Stirling and Dianella. The nearest train station, Stirling station, is located approximately 3.3km away.

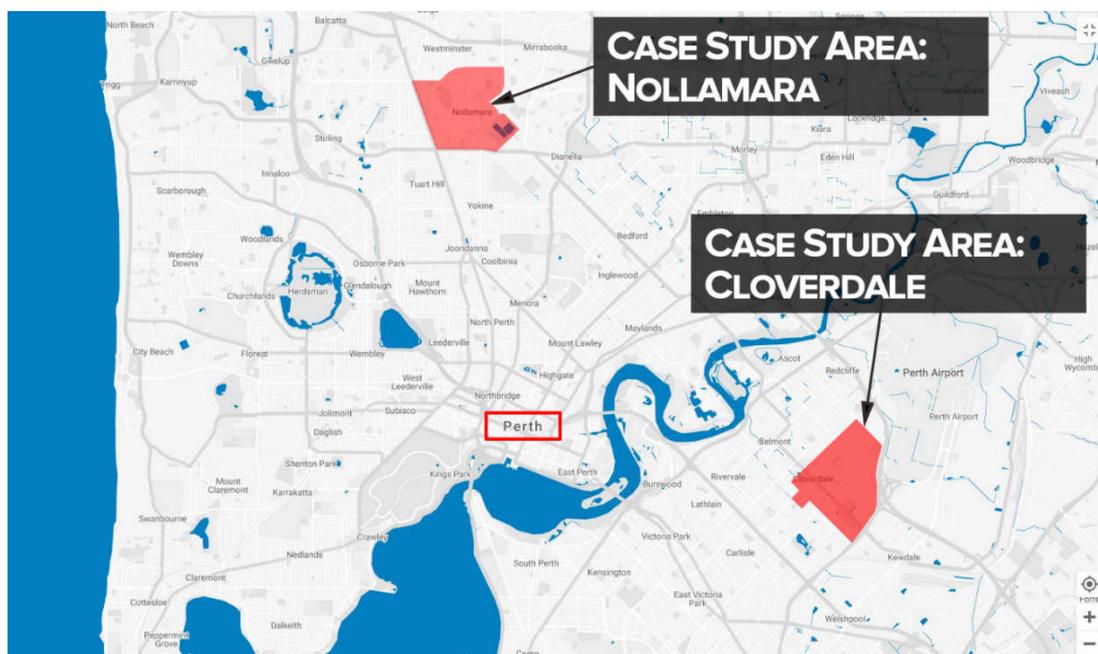


Figure 39: Location of case study suburbs in relation to the Perth CBD

Cloverdale is located approximately 6.8km to the east of the CBD, on the opposite side of the Swan River. Although not situated directly adjacent to a major transport route to the city, it is a

short distance away from Orrong Road and Great Eastern Highway, both of which provide access to the city centre. The closest train station, Carlisle station, is situated approximately 2.5km away.

HISTORY OF THE CASE STUDY SUBURBS

As with Winter and Bryson's case study area of Newtown, Nollamara and Cloverdale were established in the post-War boom era, with Cloverdale becoming a suburb in 1950, and Nollamara developed by the State Housing Commission in the early 1950s, with the suburb name finally being approved in 1954. The suburb of Nollamara falls with the local government area governed by the City of Stirling, with Cloverdale located within the City of Belmont. Both suburbs were considered outer-lying areas on the suburban fringe at the time, with residential lots in Nollamara replacing a handful of larger land parcels most commonly used for market gardens, and the Cloverdale area formerly being used for a range of small-scale agricultural uses. Both suburbs also saw enormous growth in a short space of time, synonymous with other new post-War housing areas struggling to keep up with the massive demand for new housing. The broader Belmont area, which included the area which would become Cloverdale, hosted a population of just 5,700 in 1947, which would increase nearly threefold to 16,700 in just six years, many of whom were living in housing constructed by the State Housing Commission. Nollamara was similarly envisaged to comprise over 16,000 new dwellings within only a few years.

Also mirroring the Newtown case study, both Nollamara and Cloverdale were established adjacent to growing mercantile and manufacturing industries, which provided convenient employment for the rapidly growing population. Early planning models predicted that Nollamara would draw workers from Perth's northern industrial areas. The Belmont area had housed a number of brickmaking plants since just prior to 1900, and in the post-War years 200 acres of land were put aside for future industrial uses. The City of Belmont's current crest includes a kiln and stack, and a cog, representing the historical ties with brick making and industry, respectively (Figure 40).



Figure 40: City of Belmont crest (source: City of Belmont 2018)

Menck (2014:86) also discusses the close ties between housing provision and nearby employment, noting that “Belmont was also being developed as accommodation for workers associated with the planned international airport”. Menck (ibid:105) further highlights the focus of the State Housing Commission in delivering housing to service industrial areas as a result of it being a condition for unlocking Commonwealth funds for the building projects. This strategy, while sensible for a federal government desperate to rekindle post-War industrial production and create a substantial employment base, played a critical role in fuelling the conditions that these suburbs would face in coming decades.

Following an initial surge in construction during their establishment, much of the activity disappeared, with both suburbs effectively lying dormant for several decades. Successive aerial photos show the upgrading of major transport routes leading around and through the suburbs, pointing to the ever-increasing demand for transport and access for the growing population on the outskirts of the Perth metropolitan region, as the urban fringe continued to grow beyond Nollamara and Cloverdale. As predicted by the various iterations of Neighbourhood Life Cycle Theory, the suburbs entered a lengthy period of stability, operating by the same norms as other suburban environments. Over time, however, a transition to a period of decline was inevitable, as the age, obsolescence and periodic neglect of the housing stock increased. Homes built from lightweight materials such as timber and asbestos were most at risk due to their shorter lifespan and higher levels of maintenance required, and the typically lower-income residents occupying them. This period of physical decline would eventually lead to reduced housing values, often paired with the lower household incomes across the suburbs as those employed in nearby manufacturing industries bore the impact of an emerging global economy. Despite a number of

attempts to intervene in this decline over the years the two suburbs continued to stagnate, with falling investment and rental values, and a poor public perception of both suburbs emerged, combining the history associated with state housing and the working class background of its residents.

In 2008, the Australian Bureau of Statistics ranked Perth's most disadvantaged Statistical Local Areas using data from the 2006 Census (Table 4), which ranked the Belmont Statistical Local Area (encompassing the case study suburb of Cloverdale) as the state's second most disadvantaged SLA, and Stirling Central (including the case study suburb of Nollamara) only marginally better as the fifth most disadvantaged SLA. Although the Stirling Central sub-region contained some of the more wealthy and advantaged suburbs of Perth (such as Tuart Hill and Yokine), it is mostly comprised of some of the poorest and most disadvantaged, most notably the post-War suburbs of Nollamara, Westminster and Balga. The Belmont SLA is almost entirely comprised of similarly disadvantaged post-War residential suburbs such as Cloverdale and Rivervale, or post-War suburbs with high concentrations of light industrial uses such as Kewdale and Belmont. Only in recent decades has the suburb of Ascot and the riverside section of Rivervale, both in the Belmont SLA, been developed in a manner enabling those areas to reinvent themselves as improving and aspirational waterfront residential areas.

GREATER PERTH Statistical Local Areas

Most disadvantaged

Rank in Perth	Statistical Local Area (SLA)	Usual Resident Population
1	Kwinana	23,195
2	Belmont	30,331
3	Armadale	50,537
4	Wanneroo - South	41,486
5	Stirling - Central	98,737
6	Bassendean	13,463
7	Gosnells	91,579
8	Swan	93,279
9	Rockingham	84,309
10	Bayswater	55,800

Table 4: ABS ranking of most disadvantaged SLAs (source: ABS 2013)

A key strategy of the planning interventions attempted by the respective local governments of Nollamara and Cloverdale was a change to the prevailing residential density codes in recent decades, in an effort to generate renewed reinvestment and revitalised suburban environments. Those changes in density codes, in itself a classic form of planning intervention, were implemented by each local government differently: the City of Stirling has employed a blanket approach by assigning a medium-density code of R40 across the entire suburb of Nollamara, while the City of Belmont employed a split-density mechanism of R20/R40 to only selected areas within the suburb of Cloverdale, with much of the suburb retaining its original R20 density code.

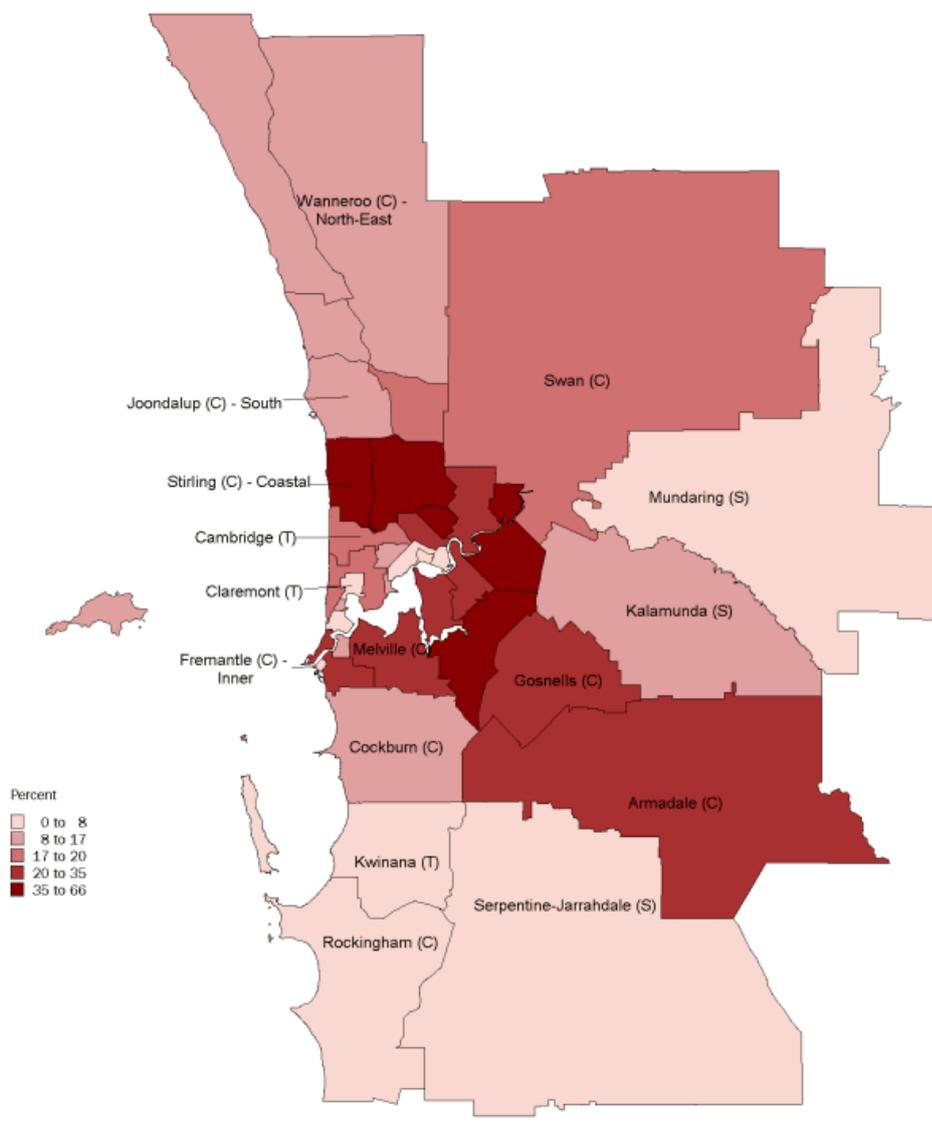


Figure 41: the concentration of approvals for grouped dwellings across Perth's Local Government Areas, as a proportion of all dwelling approvals 2005-2009 (source: ABS 2010)

In implementing a higher residential density across their suburbs, the Stirling and Belmont authorities were not acting in isolation. Seven of the ten statistical local areas identified above by the Australian Bureau of Statistics as having the greatest socioeconomic disadvantage implemented higher density codes over large areas, often entire suburbs, in an attempt to encourage a similar revitalisation. The resulting built form which emerged in many Perth suburbs following such density increases has been the subject of frequent criticism, discussed in mostly pejorative terms even by those working in the field of designing and delivering the built outcomes. The broader suburban environment which resulted has also attracted some of the most frequent and vociferous criticism of the densification in established suburban areas, with some observing that the resulting dwellings have scant regard for liveability and occupation, rely on designs lacking quality, contribute little to the public streetscape, and treat housing with a sole emphasis upon investment and wealth creation at the expense of genuine neighbourhood renewal.

Housing construction numbers collated by the ABS show that the four inner established SLAs identified in their list of most disadvantaged areas (namely Belmont, Stirling Central, Bassendean and Bayswater) all have high concentrations of grouped or 'clustered' dwellings, particularly in the Stirling Central SLA which recorded 66% of all development approvals being for sets of grouped dwellings (Figure 41).

The ranking of these two case study suburbs by the Australian Bureau of Statistics portrays the similar trajectory of two post-War Perth suburbs, opened with a high concentration of Commonwealth and state government-subsidised housing for lower socio-economic families seeking housing through rental or subsidised purchase options, which have failed over the course of many decades to shed the stigma of a historical association with government housing and high concentrations of rental occupancies. The implementation of increased density codes in these suburbs by the respective local governments can be interpreted as an attempt to encourage neighbourhood renewal through an increase in financial reinvestment into those areas. The varying governance and planning controls utilised by those two local governments, however, and the varying resulting change seen in each suburb arguably as a result, makes these two case study examples appropriate to assess the efficacy of these planning controls, and the responsiveness of the development industry operating at this scale.

MORPHOLOGY OF CASE STUDY SUBURBS – 1953-2001

As part of this research, a longitudinal analysis of historical aerial photos of the two case study suburbs was undertaken. It was considered that the trajectory of these two suburbs would be

better understood by examining their suburban morphology from the time of their establishment until today. This analysis is intended to help gauge the emergent conditions as the sites were developed, and assess any visible impact borne from subsequent planning strategies. This photo analysis will examine the changes to morphology, built form and suburban densities from 1953 (just prior to the two suburbs being established) until 2001. In the following chapter, a similar analysis will examine the same case study areas during the study period, covering the years from 2001 to 2017.

The historical aerial photos from 1953 show that the areas which would later become Cloverdale and Nollamara were beyond the existing urban fringe of the Perth metropolitan area. The selected Cloverdale area in Photo 1 shows a rough grid network of mostly unsealed roads, with a number of smaller non-vehicular tracks visible which would later become gazetted roads. Evidence of larger-scale non-residential land uses are visible in the south-western corner of the photo area.

In comparison, Nollamara remained mostly undeveloped in the immediate post-War years, with most of the area in 1953 (Photo 2) being covered with the native scrub and trees. A road is visible running north along the western edge of the photo study area which would later become Wanneroo Road. A number of small farming lots or market gardens are visible in the south-west corner of the photo study area, adjoining Wanneroo Road.

By 1965 the situation had changed significantly (Photos 3 and 4), with the Cloverdale and Nollamara areas now forming part of the developed urban fringe. Many portions of Cloverdale were still undeveloped, although rough road networks were across the entire suburb, showing that the growth of residential uses was being anticipated and catered for. Suburban residential development and road networks had already started to go beyond Nollamara, forming the future suburbs of Westminster and Balga.

The 1965 photos, taken only ten years after the release of the state government's Stephenson Hepburn strategic plan in 1955, show how the situation had changed considerably with both suburbs now primarily developed for detached single dwellings. The Cloverdale photo study (Photo 3) area still exhibits some large land cells, particularly at the western end, which were yet to be intensively developed, whereas the Nollamara photo study area (Photo 4) has been entirely divided up into individual lots. Only a handful of vacant lots remain, with a few small open space reserves and a small local shopping centre in operation along the northern edge. Although smaller than the genuine quarter-acre lots of earlier subdivisions, with the majority of lots being 728m² in size, the central tenet of the Great Australian Dream – being a detached house on its own lot – was clearly evident in both suburbs. The small number of market gardens visible in the south-

west corner of the Nollamara area in the 1953 photo had been completely repurposed for housing by 1965.

By 1977, any remaining remnants of previous agricultural or market garden uses had made way for more housing (Photos 5 and 6), with both suburbs now completely developed and only isolated single lots remaining vacant or under construction. Photo 6 shows that west of Wanneroo Road, in the neighbouring suburb of Balcatta, were a number of simple duplex developments – two dwellings built on a shared lot separated by a common internal wall, yet usually under the same roof structure – whereas Nollamara itself appears to be almost entirely detached single dwellings despite the number of Commonwealth-supported housing built when the area was established.

Also noticeable, and indicative of the state government's *Corridor Plan* released in 1970, and its predilection for catering for the growth of privately-owned motor vehicles, is the widening of Wanneroo Road and Morley Drive to two lanes in each direction, separated by significant median strips. Cloverdale had seen a significant number of gazetted local and regional roads built, with an increase in Hardey Road to dual lanes, and the early stages of Leach Highway and Tonkin Highway visible along the eastern edge of the photo study area.

With both suburbs now fully developed and well-established they entered into a period of development inertia, and by 1985 very little can be seen in the way of additional development of roads or housing in the photo study area (Photos 7 and 8).

Ten years later in 1995 (Photos 9 and 10), and five years after the introduction of the state's *Metroplan* strategy in 1990 marking the first serious move towards the densification of established suburbs, Cloverdale is exhibiting only two small-scale infill projects resulting in new sets of grouped dwellings. Similarly, Nollamara is also exhibiting only the first few examples of small-scale infill housing, with the majority of such infill housing appearing west of Wanneroo Road in the neighbouring suburb of Balcatta, which was already showing a significant number of such projects.

Only six years later, in 2001 (Photos 11 and 12), this trend had continued, most notably in Nollamara where the development of medium-density grouped dwellings was not restricted to certain defined areas only, as was the case in Cloverdale. By this stage, a clear preference had emerged for detached dwellings with individual roofs rather than the older duplex-style construction. This highlights a changing attitude towards strata titled housing during those years, which were previously considered an option for lower socioeconomic housing only.

Photo 1: Cloverdale 1953



(source: Landgate 2020)

Photo 2: Nollamara 1953



(source: Landgate 2020)

Photo 3: Cloverdale 1965



(source: Landgate 2020)

Photo 4: Nollamara 1965



(source: Landgate 2020)

Photo 5: Cloverdale 1977



(source: Landgate 2020)

Photo 6: Nollamara 1977



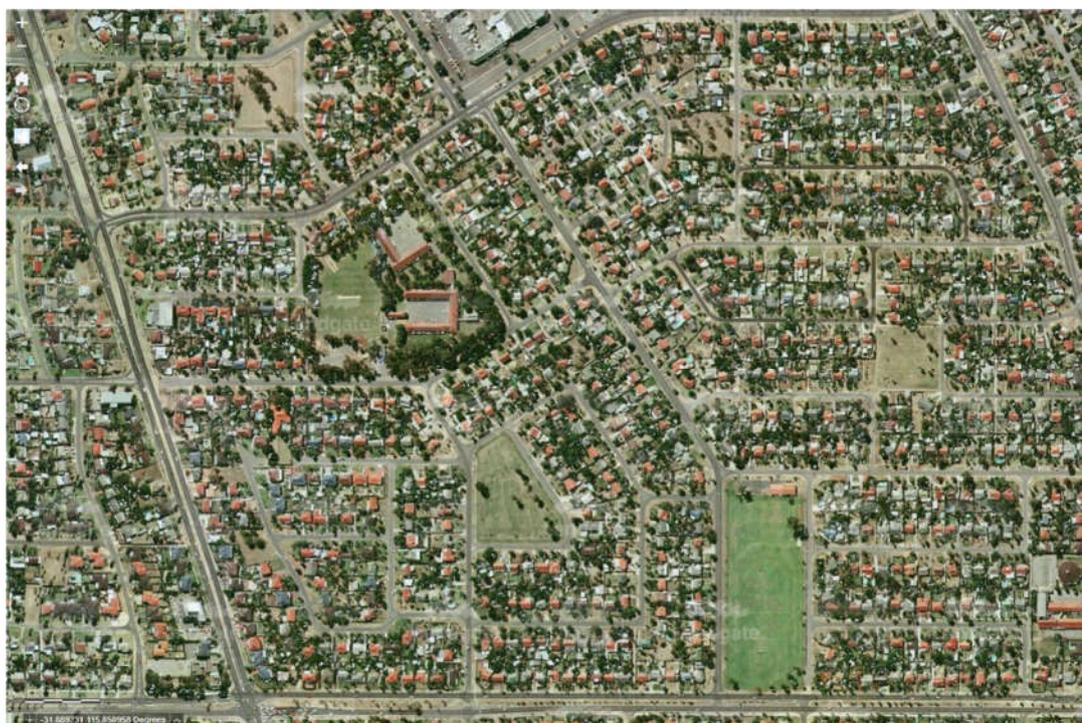
(source: Landgate 2020)

Photo 7: Cloverdale 1985



(source: Landgate 2020)

Photo 8: Nollamara 1985



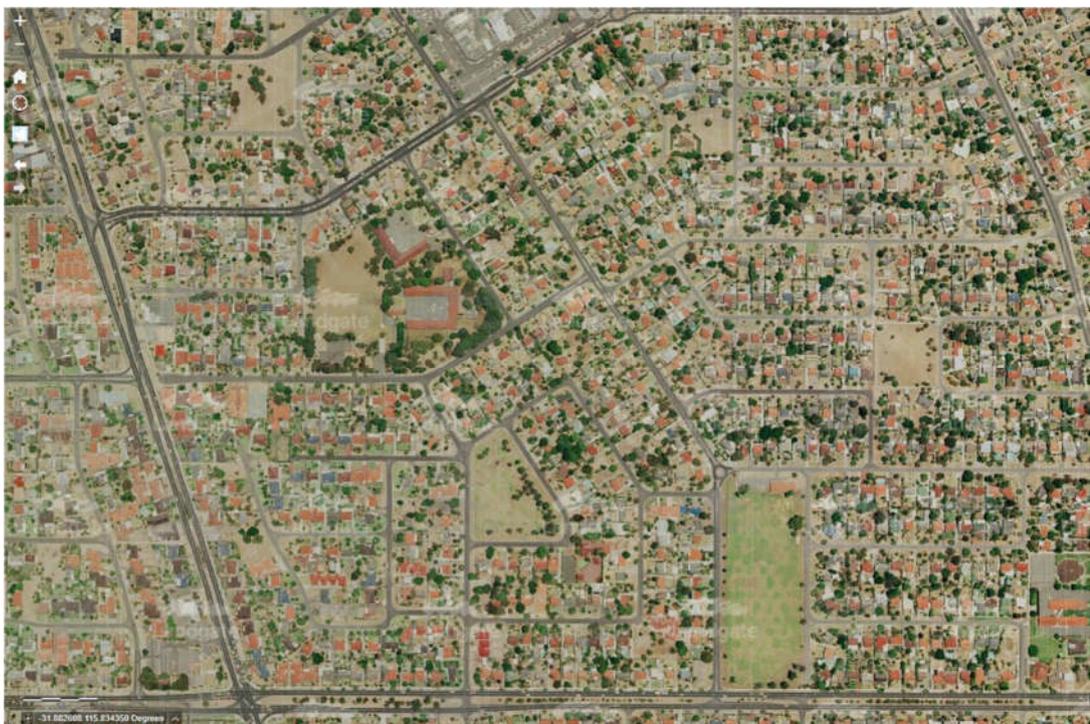
(source: Landgate 2020)

Photo 9: Cloverdale 1995



(source: Landgate 2020)

Photo 10: Nollamara 1995



(source: Landgate 2020)

Photo 11: Cloverdale 2001



(source: Landgate 2020)

Photo 12: Nollamara 2001



(source: Landgate 2020)

CASE STUDY SUBURB PROFILES

This section presents a profile of the two case study suburbs using data from the 2001 Australian Census of Population and Housing. In assessing the impact of various infill housing policies in those suburbs, this study compared a range of key indicators measuring characteristics of the local population and the local housing stock. In relation to population characteristics, key concepts measured were those typically used to understand socioeconomic status and poverty. Whilst socioeconomic status and poverty use similar underlying measures, the ABS (2011) outlines an important, but often blurry, distinction between the two, with socioeconomic status incorporating social elements, and poverty having a greater focus on the lack of access to economic resources.

Although understanding poverty typically relies more on absolute financial indicators, the term is often described in conjunction with the concept of 'inequality' (Commonwealth of Australia 2004), which introduces a broader range of measures, and therefore contributes to socioeconomic status, poverty and inequality being discussed as loosely interchangeable terms. Indicators typically used to measure both socioeconomic status and poverty include income, education and employment.

POPULATION CHARACTERISTICS

Table 5 outlines a series of foundational comparison criteria for the two case study suburbs based on the responses from the 2001 Census. The table shows that many of these criteria such as population, level of education, number of dwellings and household income were markedly similar, particularly where they deviated from the state average for each criterion. Both case study suburbs had populations which were similar in size, with Nollamara moderately larger with 831 more people and 532 more dwellings. Both suburbs had the same mean household size of 2.3 people per dwelling, which was slightly less than the state average of 2.6 people per dwelling. Table 5 also suggests that Cloverdale and Nollamara have a younger demographic than the Perth Statistical Division: the top three age groups for both case study suburbs cover the ages from 20 to 34, while the top three age groups for the broader Perth area cover the ages from 30 to 44.

In terms of income and housing costs, the two case study suburbs also share similar characteristics, with both recording median weekly household incomes of \$500-599, below the state average of \$700-799. Similarly, both recorded median monthly mortgage repayments of \$600-799, also below the state average of \$800-999, while the median weekly rent costs of \$100-149 were on par with the state average.

2001	Cloverdale	Nollamara	Perth SD
Local Government	City of Belmont	City of Stirling	N/A
Population	6,097	6,928	1,851,252
Private dwellings	2,754	3,286	772,778
Median weekly household income	\$500-599	\$500-599	\$700-799
Median monthly housing loan repayments	\$600-799	\$600-799	\$800-999
Median weekly rent	\$100-149	\$100-149	\$100-149
Top 3 population bands	25-29 (7.9%) 30-34 (7.1%) 20-24 (6.9%)	25-29 (9.29%) 30-34 (8.43%) 20-24 (8.0%)	40-44 (7.7%) 35-39 (7.6%) 30-34 (7.4%)
Australian born	66.6%	60.1%	67.1%
Level of Tertiary Qualification	Certificate (17.7%) Bachelor Degree (4.6%) Postgrad Degree (0.6%) No qualification (60.5%)	Certificate (16.2%) Bachelor Degree (6.7%) Postgrad Degree (0.5%) No qualification (59.5%)	Certificate (16.8%) Bachelor Degree (9.4%) Postgrad Degree (1.4%) No qualification (53.7%)
Top 3 employment types	Intermediate Clerical, Sales and Service Workers (10.5%) Tradespersons and Related (7.6%) Intermediate Production and Transport (6.9%)	Intermediate Clerical, Sales and Service Workers (18.5%) Technicians/Trades (15.5%) Professionals (13.3%)	Professionals (17.1%) Intermediate Clerical, Sales and Service Workers (16.1%) Tradespersons and related (13.3%)
Top 3 housing tenure	Owned outright (41.1%) Owned with mortgage (26.6%) Rented (26.5%)	Rented (35.0%) Owned outright (33.3%) Owned with mortgage (26.3%)	Owned outright (35.9%) Owned with mortgage (31.7%) Rented (24.9%)

Table 5: Case study social profiles (source: ABS 2001)

Education

The Commonwealth of Australia's 2004 report into poverty and financial hardship highlights evidence outlining the correlation between poor educational attainment and risk of poverty, encompassing factors such as earning potential, unemployment rates, social participation, and the

time spent finding work while unemployed. Foster and Hawthorne (1998; in CoA 2004:143) describe the relationship between education of poverty as “one of double jeopardy: not only are the poor unlikely to participate in all levels of the education system to the same extent as the advantaged, but their experience in education is less likely to result in favourable outcomes”, thereby suggesting an ongoing cycle.

Chart 2 shows that the level of secondary schooling achieved by occupants in each case study suburb are generally similar, although Cloverdale shows a higher proportion of the population leaving school after Year 10, presumably to enter into non-professional employment, trade-based apprenticeships, or TAFE courses. Nollamara demonstrates a corresponding increase in the proportion of the population completing Year 12.

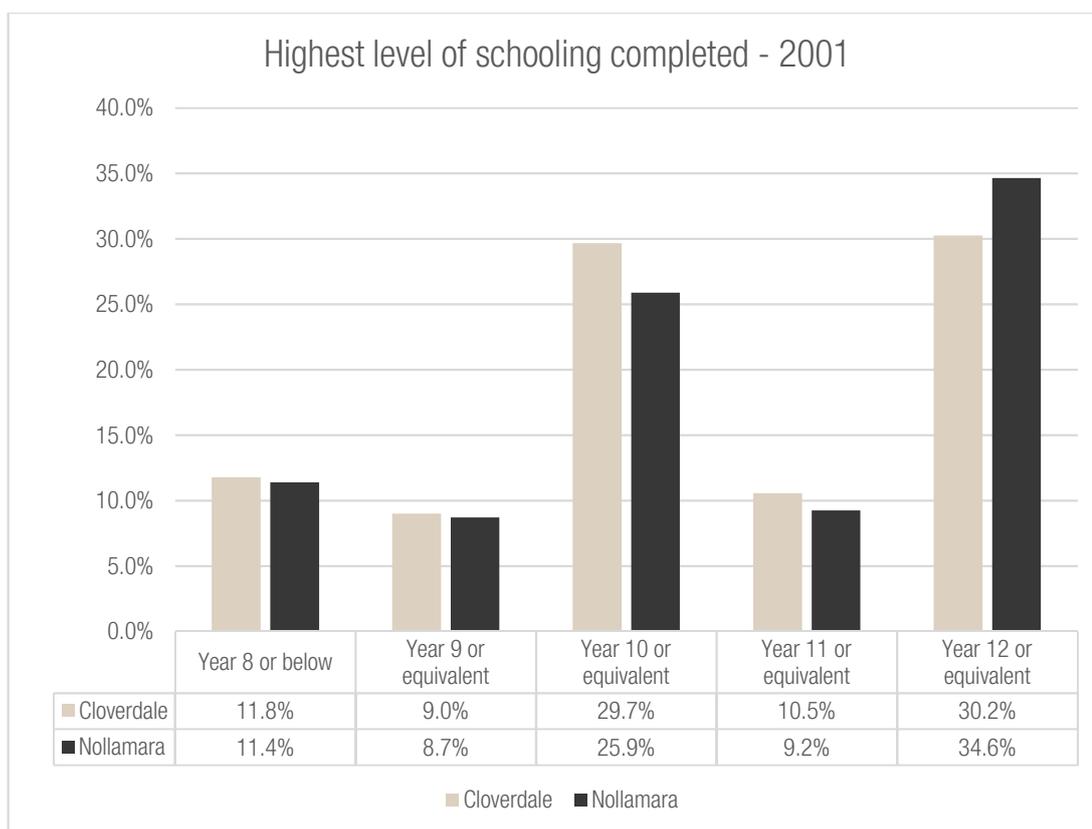


Chart 2: Highest level of schooling completed (source: ABS 2001)

In comparing non-school qualifications, outlined in Chart 3, Nollamara’s higher rate of people completing Year 12 is reflected with higher rates of Bachelor Degrees, Diplomas and Advanced Diplomas. Conversely, Cloverdale’s higher rate of people leaving school after Year 10 is reflected in its higher rates of Certificate-based qualifications. Both suburbs demonstrated similar

proportions of people with Postgraduate Degrees, with Cloverdale (0.6%) slightly higher than Nollamara (0.5%), both of which were below that of the Perth Statistical Division, at 1.7%.

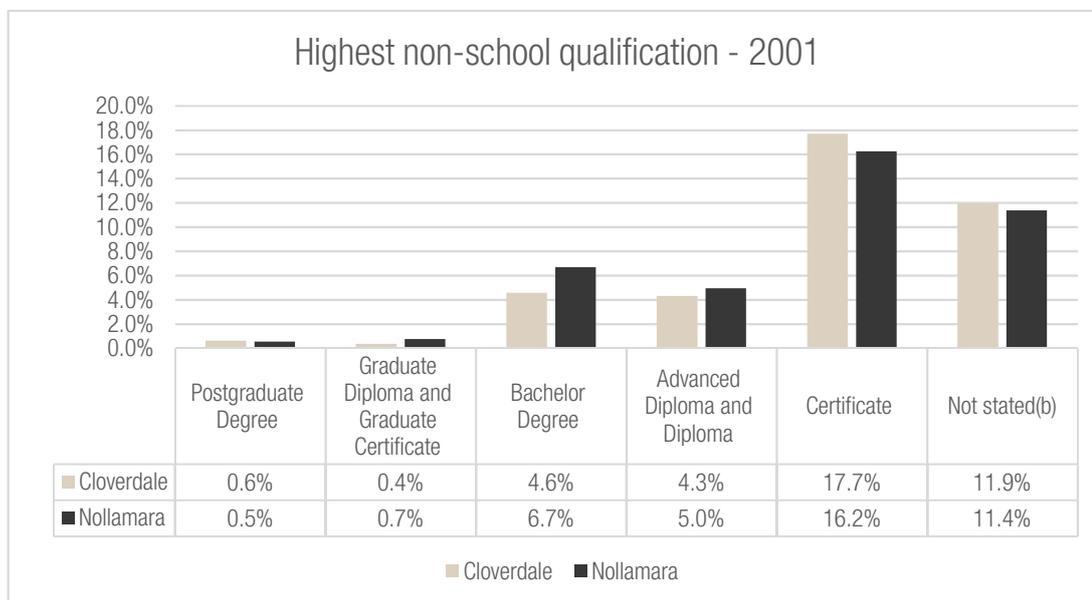


Chart 3: Highest level of non-school qualification attained (source: ABS 2001)

For the purpose of clarity in Chart 3, the recorded responses for ‘not applicable’ with regards to non-school qualifications, which includes people with no further qualifications, were not included. Again, Cloverdale and Nollamara showed very similar results for responses of ‘not applicable’, recording 60.5% and 59.5% of their populations respectively. Both suburbs were above the Perth Statistical Division in that regard, which recorded 52.3% of the population having no non-school qualifications.

Income

Due to its obvious link to socioeconomic status, poverty and inequality, the ABS (2011) highlights income as one of the most commonly used measures. So deep-rooted in our understanding and rationalisation of poverty it is that it is used not only as a standalone measure, but often to

interpret deeper trends in other measures, such as its role in housing stress, educational attainment and school retention rates, or access to health services.

Relying solely on income as a measure of poverty, however, is sometimes flawed. Firstly, it may not accurately portray a true understanding of households of different sizes, particularly with larger family units which may have some higher costs, but also some shared cost savings through simple economies of scale and sharing (McDonald 1997). Secondly, it also does not account for differences in living costs in different locations, which might reflect higher housing costs, transport or insurance costs, or competition for rental accommodation. For the purpose of this study, the use of income data is meant as a comparison between the two case study suburbs only, and not intended as an in-depth analysis of individuals or households per se.

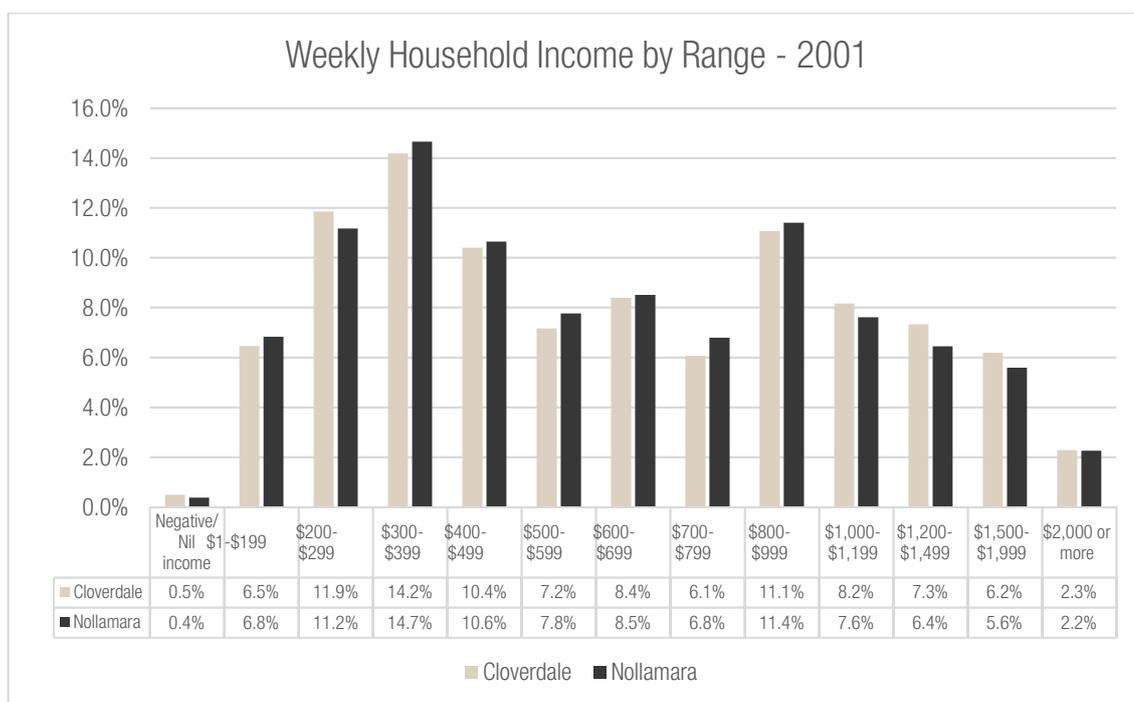


Chart 4: Weekly Household Income by Range (source: ABS 2001)

Table 5 shows that the median weekly household income for both case study suburbs fall in the \$500-599 bracket, somewhat below the median income bracket for the Greater Perth area of \$700-799. In comparing the suburbs by income brackets in Chart 4, the similarity between the two is clear, with all variances across all income brackets being less than 1% between the two

suburbs. Hence, the 2001 census shows that Cloverdale and Nollamara had almost identical income profiles, with over a third of each suburbs' households earning between \$200 and \$499 weekly.

Family Composition

The composition of the family units of a suburb can serve as an indicator as to an area's socioeconomic status and change in housing stock. For example, a suburb might find it draws a higher share of single-parent families (generally with only one income stream) due to having more affordable house prices, whereas another might be preferable for families with children due to having larger dwellings or housing lots.

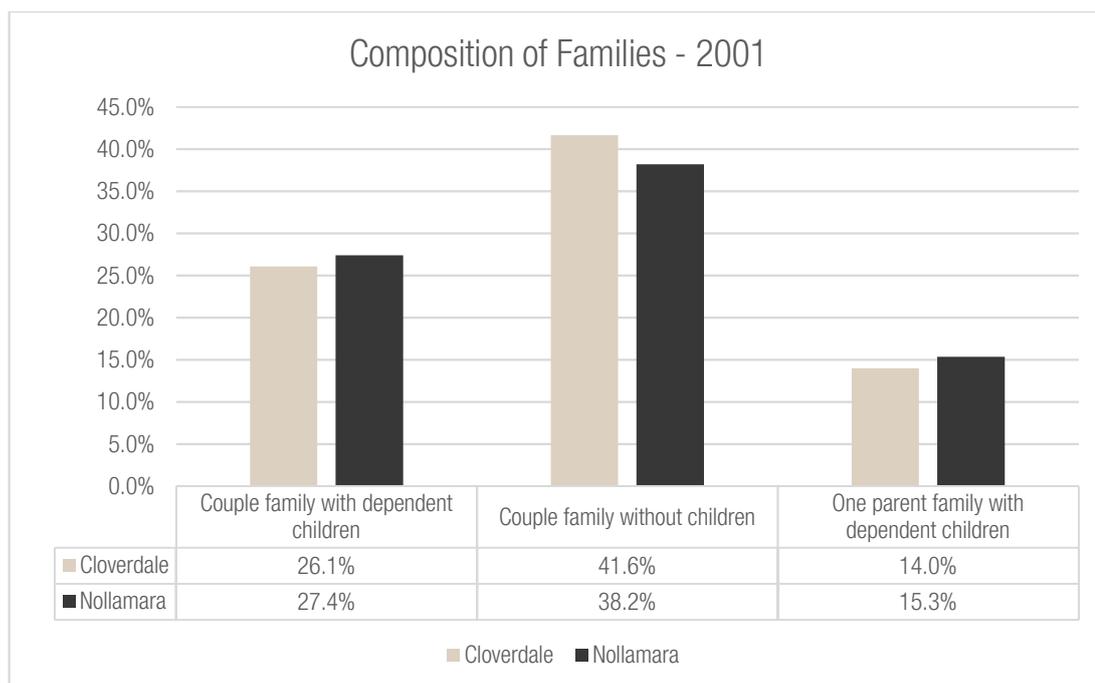


Chart 5: Composition of Families (source: ABS 2001)

Chart 5 shows the three main family compositions, being couples without children, couples with dependent children, and one-parent families with children. As the intent of this Census data comparison is to gauge the change in the two case study suburbs over a period of time, particularly

with regards to the draw of new people to an area and the resulting demographic transformation over that period, the data showing families with only non-dependent children has been removed.

As with the other Census data results, Chart 5 suggests there is very little difference between the two case study suburbs at the time of the 2001 Census. Nollamara shows a very slightly higher proportion of couples with dependent children and single-parent families with dependent children, while Cloverdale shows a slightly higher proportion of couples with no children (this includes both young couples who have not yet had any children, and ‘empty nesters’ with older children who no longer live at home).

Socioeconomic Indexes for Areas (SEIFA)

Since the 1986 Census, the Australian Bureau of Statistics has created a group of measures aimed at interpreting advantage and disadvantage in localised areas, known as the Socioeconomic Indexes for Areas, or SEIFA indexes. Adhikari (2006:2) notes that these indexes can be used to rank geographical areas according to levels of advantage or disadvantage relative to other areas using a range of social and economic measures taken from the Census data.

Being an area-based measure, SEIFA indexes are not used for interpreting the relative position of an individual or household (ABS 2011), but are more commonly used for understanding the combined impact of those measures at the neighbourhood level. The four indexes measured by the SEIFA data are:

- **Index of Relative Socioeconomic Disadvantage (IRSD)**

The Index of Relative Socioeconomic Disadvantage is a combined measure of typical indicators commonly used to reflect disadvantage, including low income or low educational attainment. A lower score on the IRSD ranking indicates a higher risk of disadvantage. As the IRSD measures only disadvantage, a high score reflects a lower risk of disadvantage rather than higher advantage.

- **Index of Relative Socioeconomic Advantage/Disadvantage (IRSAD)**

The Index of Relative Socioeconomic Advantage/Disadvantage is similar to IRSD, although includes indicators which are commonly used to measure advantage as well as disadvantage. A low IRSAD score represents an area with a higher risk of disadvantage, whereas a higher IRSAD score represents an area with higher levels of advantage,

suggesting higher concentrations of occupants with higher incomes or educational achievements.

- **Index of Economic Resources (IER)**

The Index of Economic Resources is a broader range of indicators used to reflect an area's general access to economic resources and includes measures of general wealth such as disposable income and house size.

- **Index of Education and Occupation (IEO)**

The Index of Education and Occupation reflects the levels of educational attainment and occupational characteristics such as whether a workforce is largely skilled or unskilled.

For overall comparison, the SEIFA scores collated from the 2001 Census were arranged into quantiles of 10%, 25%, 50% (or median), 75% and 90%. The scores for each suburb and the quantiles specific to each index are summarised below.

IRSAD		Quantile				
Cloverdale	Nollamara	10%	25%	50%	75%	90%
917.0518083	927.9257978	904.0114574	953.0122725	1013.237816	1081.25737	1126.248803

Table 6: Index of Relative Socioeconomic Advantage/Disadvantage (source: ABS 2001)

With regards to the indicators of Advantage and Disadvantage, both suburbs' scores were between the 10% and 25% quantiles, indicating that the typical measures of advantage, such as high incomes or proportion of skilled people in the workforce were not sufficient counter the typical measures of disadvantage, such as lower incomes and an unskilled workforce. Cloverdale was the worst performing suburb within the City of Belmont (which is comprised of 6 suburbs), with Nollamara was the fourth worst performing suburb within the City of Stirling (made up of 31 suburbs), with only the adjoining suburbs of Balga, Westminster and Mirrabooka receiving a lower score.

IRSD		Quantile				
Cloverdale	Nollamara	10%	25%	50%	75%	90%
933.7486908	912.449628	912.9160634	963.7678233	1020.333983	1074.402939	1097.686131

Table 7: Index of Relative Socioeconomic Disadvantage (IRSD) (source: ABS 2001)

When considering indicators of Disadvantage alone, Cloverdale's score was again between the 10% and 25% quantiles, while Nollamara was marginally below the 10% quantile. In the 2001 Census, the IRSD variables included 20 indicators, each weighted according to their perceived relationship to household disadvantage. Although the majority of those variables were pertaining to employment, income and education, other variables included topics surrounding the proportion of one-parent families, the number of households renting government-owned housing, the number of cars per household, and English competency. Indicators measuring the proportion of private rental accommodation and proportion of recent migrants from non-English speaking countries were removed from the 2001 IRSD variables, indicating that fluency in English was considered a more valid measure than simply the country from which a migrant originated.

IER		Quantile				
Cloverdale	Nollamara	10%	25%	50%	75%	90%
928.6662785	918.1083782	922.0019534	960.9304756	1008.949773	1065.107931	1106.967263

Table 8: Index of Economic Resources (source: ABS 2001)

The Index of Economic Resources demonstrated similar results, with Cloverdale's score falling between the 10% and 25% quantiles, albeit towards the lower end of the range, and Nollamara's score falling below the 10% quantile. Among others, the 2001 Census removed the variables measuring the percentage of rental dwellings, the percentage of households owning dwellings, and the percentage of households purchasing dwellings from the IER scores, with the index instead focusing on measures such as rent and mortgage costs, the number of homes with four or more bedrooms, the proportions of single-parent families and couple families, with and without dependent children. As such, it is likely that the two case study suburbs performed poorly in the IER ranking due to historical oversupply of smaller two- and three-bedroom post-War dwellings, and the general low-income nature of households within the suburbs.

IEO		Quantile				
Cloverdale	Nollamara	10%	25%	50%	75%	90%
915.0013338	944.8972287	888.9977266	938.4617154	1003.3145	1085.545556	1142.226543

Table 9: Index of Education and Occupation (source: ABS 2001)

Lastly, the Index of Education and Occupation shows a score for Cloverdale between the 10% and 25% quantiles, while Nollamara's score fell just above the 25% quantile – the only score for either case study suburb which was above the 25% quantile across all four SEIFA indexes. This reflects the summary in Table 9, which shows that Nollamara is the only case study suburb with 'Professionals' ranking in the top three employment types, ranked third in the suburb at 13.3% (below the Perth Statistical Division average, where 'Professionals' ranked highest at 17.1%).

The data above suggests that in 2001 both case study suburbs were considered 'below average' according to the four SEIFA indexes, with neither suburb recording a score above the overall median score, or 50% quantile. All four scores for Cloverdale fell between the 10% and 25% quantiles, indicating a broadly homogenous socio-economic situation across the suburb when considering a wide range of indicators. Nollamara demonstrated more variability in its scores, with only the score for Index of Relative Advantage/Disadvantage being between the 10% and 25% quantiles. Of the remaining three scores, the Indexes of Relative Socioeconomic Disadvantage and Economic Resources fell below the 10% quantile, while the Index of Education and Occupation fell marginally above the 25% quantile. This suggests a suburb which is considered amongst the worst performing with regards to indicators demonstrating disadvantage or poor access to economic resources (such as low income, high unemployment, smaller dwelling sizes or housing costs), but considered marginally better when considering employment indicators alone. Further, Cloverdale performed better in IRSAD and IER rankings, while Nollamara performed better in the IRSAD and IEO ranking, although there were no significant differences between the scores for the two suburbs.

DWELLING STOCK CHARACTERISTICS

A further range of criteria outlining characteristics of the housing stock in each case study area was compared, with the results discussed below.

As had been anticipated prior to the study, both case study suburbs of Cloverdale and Nollamara demonstrated a very high proportion of detached single dwellings in the 2001 Census data, which generally reflected the composition found in the Greater Perth area. While Nollamara was on par with the Greater Perth average, with 77.5% of housing stock made up of separate dwellings, Cloverdale exceeded this with nearly 90% of its housing stock. Nollamara exhibited a much higher proportion of single-storey semi-detached homes, likely remnants of the post-War government-built strata title duplexes which were reasonably common during the suburb's establishment. Two storey grouped dwellings comprised only 0.4% and 0.9% of housing stock in Cloverdale and Nollamara, respectively, although the state average sat only marginally higher at 2.8%. As would be expected, the proportion of apartment dwellings in each suburb was well below that of the Greater Perth area, which would also encompass inner-city dwellings and many of the post-War examples of higher-density apartments built in inner-fringe suburbs at the time.

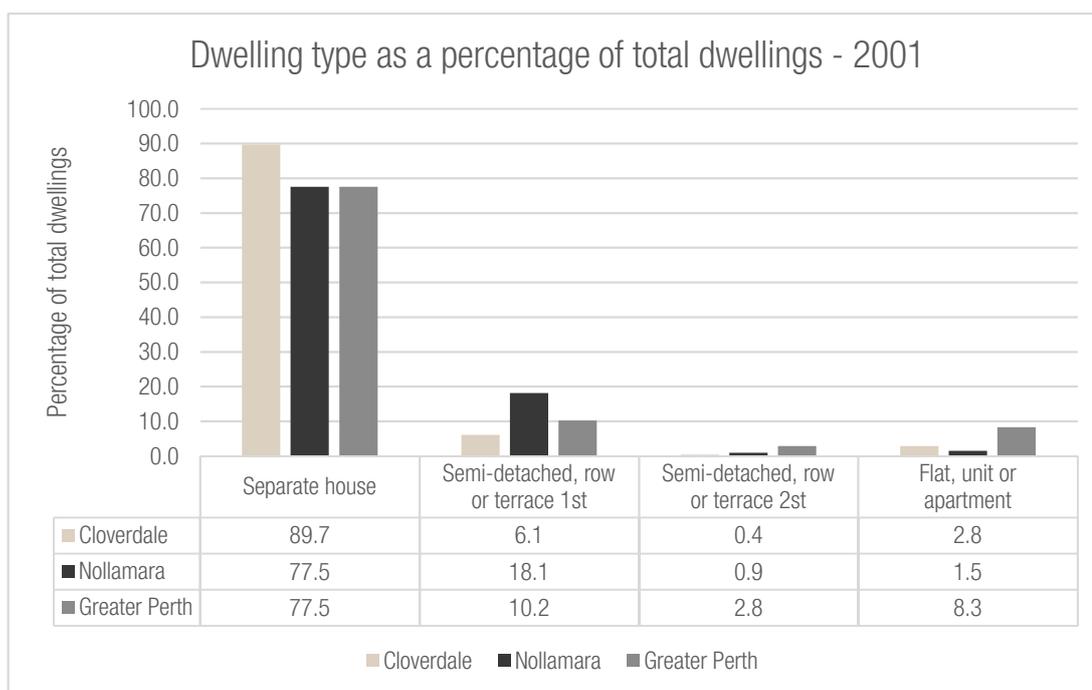


Chart 6: Dwelling Types (source: ABS 2001)

As 2001 Census data regarding bedroom composition was unavailable for both case study suburbs, data from 2006 was used instead. In the five years between the 2001 and 2006 Censuses, Cloverdale had recorded an increase in total dwellings from 2754 to 2876, a net increase of 122

dwellings, or 4.4%. In the same period, Nollamara recorded an increase from 3286 to 3766, representing a net increase of 480 dwellings, or 14.6%.

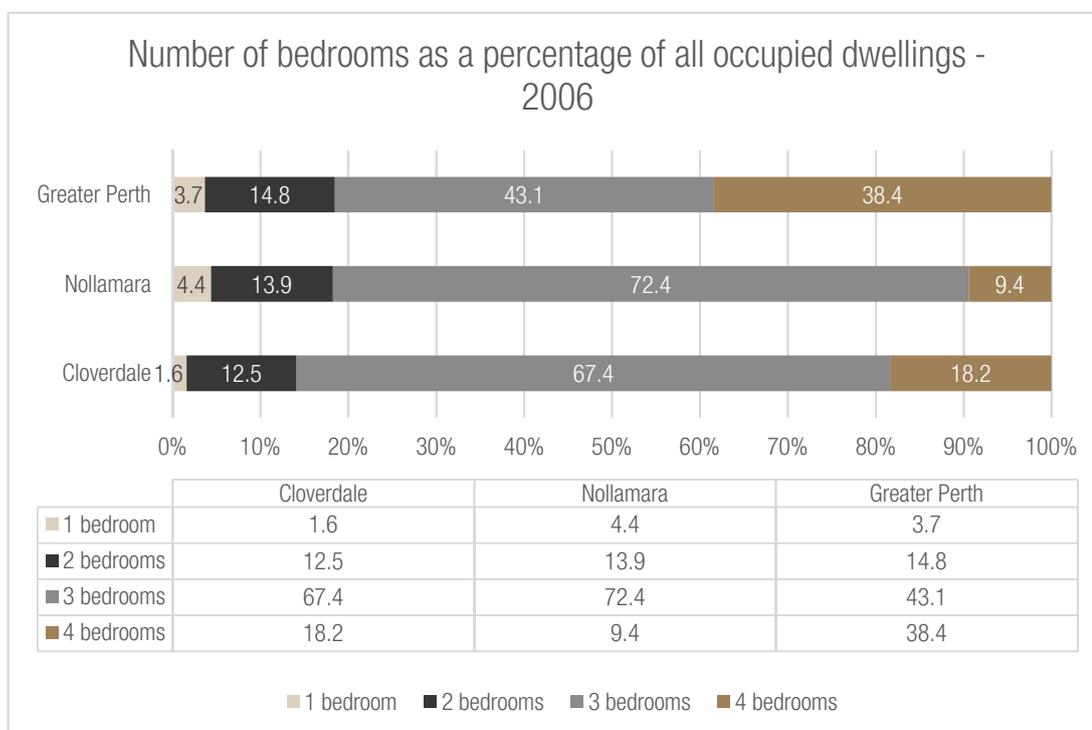


Chart 7: Number of bedrooms per dwelling (source: ABS 2001)

By 2006, the predominant dwelling housing type in the Greater Perth area was three-bedroom dwellings (43.1%), which were only marginally more prevalent than larger four-bedroom options (38.4%). Although the predominant dwelling type in Cloverdale and Nollamara was also three-bedroom homes, they were at a significantly higher proportion, comprising 67.4% and 72.4% respectively.

Due to the lack of apartment product in both case study suburbs it was anticipated that the proportion of smaller dwellings, and two-bedroom options in particular, would be significantly lower than that recorded in the Greater Perth area, which would include suburbs of Perth traditionally associated with apartment living (such as Fremantle, Victoria Park and Subiaco). Both suburbs, however, recorded a similar proportion of two-bedroom dwellings to the Greater Perth area, with Cloverdale recording 12.5% (359 dwellings) and Nollamara recording 13.9% (523 dwellings). Aerial photos and a streetscape survey reinforced that these dwellings were primarily

made up of smaller post-War homes built on the same sized lots as other detached homes adjacent to them, representing a housing choice aimed at lower socio-economic occupants rather than the genuine provision of different housing densities or typologies. These often contributed to contemporary criticisms of post-War housing as being inefficient and wasteful, as land parcels typically 700-900m² in size were occupied by dwellings with internal areas measuring just 90m² or less (as seen in Figure 42).



**Figure 42: a typical two-bed detached post-War dwelling, located centrally on a 769m² lot
(source: Nearmaps 2020)**

Housing tenure

Table 5 also shows that the broader population's passion for owning one's home (or working towards that goal) was strong in both case study suburbs, particularly in Cloverdale where 41.1% of homes were owned outright and a further 26.6% under purchase with a mortgage. The main discrepancy in housing tenure is in Nollamara, where the dominant form of housing tenure was rental accommodation, which was in contrast with Cloverdale and the broader Perth Statistical Division average where 'owned outright' and 'owned with mortgage' were the two most common categories.

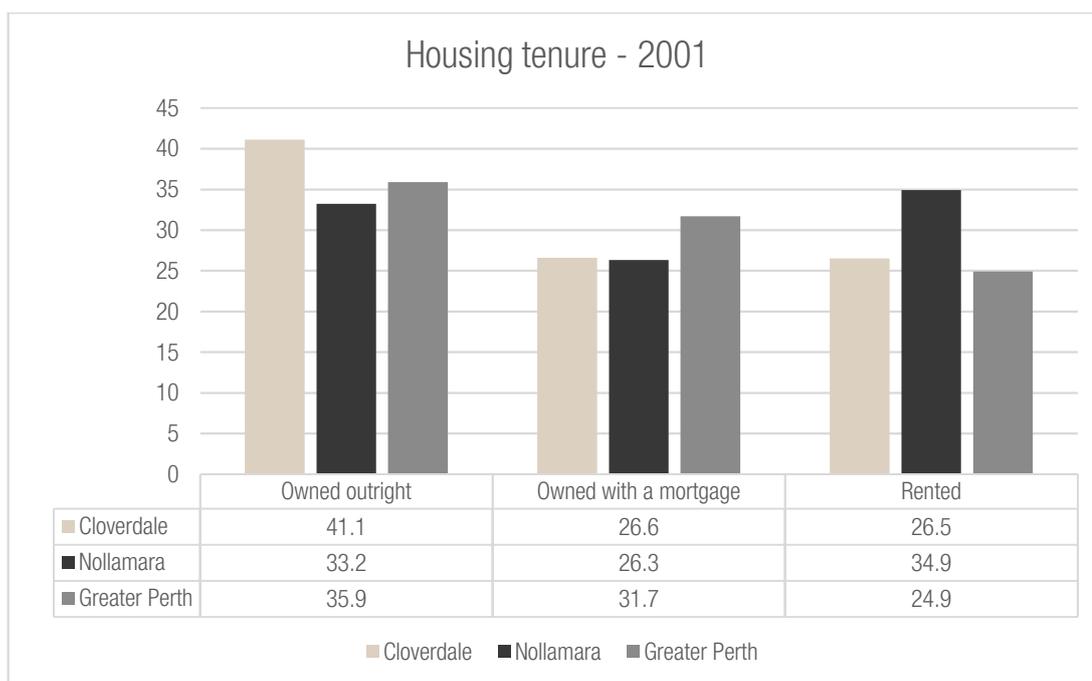


Chart 8: Housing tenure (source: ABS 2001)

Although anecdotal arguments suggest that the dominance of rental tenure in Nollamara is a remnant of post-War government housing, examining the housing tenure data in more detail instead suggests the primary reason for the higher rates of rentals stems from the private rental market rather than through government or other public authorities. Table 10 demonstrates that the number of government-owned detached rental dwellings are almost identical between Cloverdale (170 dwellings) and Nollamara (168 dwellings), while the privately-owned detached rental dwellings in Nollamara (562 dwellings) is considerably higher than in Cloverdale (404 dwellings).

	Cloverdale				Nollamara			
	State or Territory Housing Authority	Other (including private rental)	Not stated	Total	State or Territory Housing Authority	Other (including private rental)	Not stated	Total
Separate house	170	404	5	579	168	562	12	742
Semi-detached, row or terrace house, townhouse	37	62	0	99	127	146	6	279
Flat, unit or apartment	6	0	0	6	19	13	0	32
Total	213	469	5	687	314	721	18	1,053
Total (percentage)	31.0%	68.3%	0.7%		29.8%	68.5%	1.7%	

Table 10: Rental dwelling structure by Landlord Type (source: ABS 2001)

Importantly, when considering the landlord type of all rental dwellings, Cloverdale and Nollamara share a virtually identical composition of government-owned housing, with 31.0% and 29.8% respectively, and privately-owned housing, with 68.3% and 68.5% respectively. Therefore, despite the case study suburbs historically being associated with high rates of government-owned rental housing, by 2001 the rental market in both suburbs had developed to a point where nearly 7 in every 10 rental homes were privately owned. This suggests that the discrepancy between overall tenure type in each suburb in Table 10 is less likely to reflect historical rental trends of state housing and more likely to reflect more recent development trends of original owners selling or developing their homes to benefit from the windfall which usually results from increased density.

The results also indicate that even in suburbs established with high rates of state-owned housing, a large portion of the local population ended up owning their home outright, pointing to the success of earlier Commonwealth housing programs focusing on lost-cost home ownership among lower socioeconomic families rather than fostering a long-term rental population. This differs from one of the key traits of ‘Holdenist’ suburbs put forward by Winter and Bryson (1998:64), who suggested that while “the Holdenist suburbs soon came to have a majority of housing in private ownership because of policies promoting home ownership, they remain to this day atypical of Australian suburbia because they retain relatively high percentages of public renters”.

CONCLUSION

This chapter introduced the two Perth suburbs to be used as case studies in this research, justifying their use by highlighting a number of parallels which exist in the historical development and morphology of each suburb over subsequent decades. It summarised the emergence of both suburbs in the post-War years as being heavily driven by government-built or government-subsidised housing, with the intention of accommodating a workforce for nearby mercantile and manufacturing industries. The common trajectory of these two case study suburbs was further highlighted by their eventual decline, with the 2006 Census data recording that Cloverdale and Nollamara were contained within Statistical Local Areas deemed the second and fifth most disadvantaged in the Greater Perth region, respectively.

This chapter further presented a longitudinal analysis of a series of historical aerial photographs. This series covered the years between 1953-2001, and demonstrated visually the similarities in age, development patterns and development densities between the two suburbs. Finally, this chapter presented a detailed demographic and housing profile of each suburb at the

commencement of the study period, using data from the 2001 Census. This showed even further similarities between the two, and further justified their use as case studies.

The following chapter will use this data as a baseline, and examine the impact of planning controls in each of the suburbs across the study period outlined in the following chapter. The chapter will begin with an analysis of the suburban morphology during the years 2001 and 2017, using a second series of historical aerial photos. It will then compare the 2001 suburb profiles presented in this chapter with another demographic and housing profile using data from the 2016 Census, allowing the long-term impact of two differing approaches to suburban renewal to be established.

Finally, the following chapter will examine the long-term impact of planning policy controls on neighbourhood change, the built environment and socioeconomic characteristics, drawing on evidence from sales performance and market composition across the 17-year window.

7. THE IMPACT OF PLANNING CONTROLS

The previous chapter presented a longitudinal analysis of the suburban morphology of the two case study suburbs from 1953 up to 2001. This was used to help illustrate the changes to the built form and suburban densities in those areas up to the beginning of the study period examined in this chapter. The commencement of the study period in 2001 coincides with the City of Belmont's implementation of Local Planning Policy No. 1 which introduced a range of additional development requirements for lots with a split density code of R20/R40, and therefore represents a significant change in the manner in which each local government governed small-scale, medium-density infill housing. This chapter will present a second longitudinal analysis of those areas using a series of historical aerial photos between 2001 and 2017.

This section will then present a second detailed profile of the case study suburbs with respect to housing stock and demographic characteristics using a range of data from the 2016 Australian Census of Population and Housing. This comparison will allow changes in demographic and housing characteristics across the study period which will be used to assess the substantive impact of the City of Belmont's additional planning controls against the City of Stirling's reliance on the Residential Design Codes alone.

A central thesis to Winter and Bryson's study on urban poverty in Australia is that state policies relating to the provision of housing have resulted in localised suburban spaces emerging as sites of 'new urban poverty', particularly resulting from the way these policies "have shaped different forms of residential development" (1998:61). This chapter intends to examine the changes in built form outcomes and suburban densities across the two case study suburbs as a result of the planning controls implemented by their respective local government. The second demographic and housing profile will allow an examination of changes in typical indicators of socioeconomic status and poverty, and the extent to which any correlation between these changes and the impact of planning controls can be identified.

Finally, an examination of the long-term effects of planning controls on neighbourhood change will be presented, using sales market data from the two case study suburbs over the study period.

THE IMPACT OF PLANNING CONTROLS ON BUILT FORM OUTCOMES

By 2001, the move towards small-scale infill had become increasingly prevalent and had begun to make a significant impact on the Cloverdale and Nollamara streetscapes (Photos 11 and 12). Although the original single dwellings were still the most common form of dwelling for both suburbs, there were few remaining suburban blocks which did not exhibit at least one example of a small-scale infill project, particularly in the Nollamara photo study area. For both suburbs, this represented a significant change to suburban areas which had evolved very little in the 30 years between 1965 and 1995, and a sign that renewed economic investment in the suburbs was taking place in the form of the replacement of the original post-War houses with more contemporary designs at a higher density.

Notably, from these contemporary designs emerged a clear trend towards detached grouped dwellings on the same parent lot, rather than the older form of strata housing which was built under a shared common roof. This is representative of a market trying to separate itself from the stigma of low socio-economic housing which had been associated with strata titled properties over previous decades, and a duplex-style built form which had previously been associated with government housing. Changes in the strata titling legislation which allowed for free-standing dwellings with individual land parcels became more commonplace, and the older attached-style housing under a common roof generally fell out of favour. These designs enabled the central tenet of the Great Australian Dream, the detached home, to remain a somewhat achievable goal, even if it meant being on a strata-titled grouped dwelling lot rather than its own spacious green title lot with an expansive front and rear yard. Even at the expense of the private and halcyon lifestyle it once afforded, the detached dwelling was still seen as the vastly preferred option for home buyers and renters alike.

The first noticeable differences emerging in the trajectory of the two case study suburbs are visible less than a decade later in the 2008, shown in Photos 13 and 14. In Cloverdale, approximately 20% of the original lots had been redeveloped to include sets of grouped dwellings. In Nollamara, in contrast, only approximately 30% of the original post-War dwellings remained, with the grouped dwelling development becoming the dominant form of housing for the suburb. No additional change to the existing road network is evident in either suburb.

By 2014 (Photos 15 and 16), this discrepancy in the amount of infill housing in each of the case study suburbs had only increased. In Cloverdale, approximately 40% of the original lots had been redeveloped to include sets of grouped dwellings. By this time, very few of Nollamara's original post-War dwellings remained, with the suburb almost entirely redeveloped into medium density

grouped dwellings. It can also be observed that the now-mature tree canopy, which appeared to be at its peak in the 1985 aerial photo, had begun to dwindle as lots were cleared to make way for the new grouped dwelling developments. The established tree canopy in both suburbs is further depleted, although considerably more so in Nollamara where nearly all remaining mature trees were located in the public reserve, on street verges, and in the back yards of the few remnant original dwellings.

By 2017 (Photos 17 and 18), the rate of growth in medium density housing had appeared to slow, although particularly in Nollamara's case this is likely due to the greatly reduced number of lots remaining with the potential for redevelopment. While neither suburb could be described as having a dense visible tree canopy, the mature vegetation in Nollamara remains primarily on street verges and public open space reserves, with a few notable examples in the remaining undeveloped lots. By nature of Cloverdale retaining some areas with the original R20 density code, more mature tree canopy can be seen occupying the front and rear yards of undeveloped lots, or lots redeveloped to the same low density. Despite one intended outcome of Belmont's requirement for two-storey dwellings in R30 and R40 lots being to encourage sufficient space for vegetation within private lot boundaries, very few examples of vegetation within such developments can be seen, particularly examples which would indicate the retention of an existing mature tree during the redevelopment process.

This longitudinal aerial photo analysis also identifies a significant change in the suburban identity of Nollamara as a result of the City of Stirling's blanket approach to density increases. At the commencement of the study period in 2001, it was identified that low-density original dwellings still constituted the majority of dwellings in both suburbs, although the process of redevelopment had begun in earnest across both localities. The spatial characteristics of the original post-War dwellings only further emphasised the low-density nature of the suburbs: despite the 2003 RCodes requiring a 6m average front setback to buildings for lower density codes, the reality was that original dwellings were generally located centrally on the lot which meant that most buildings were set back 9-12 metres from the front lot boundary. This, combined with the single-storey nature, emphasised the sense of space and separation for residents living there.

By 2017, however, the predominant nature of medium-density housing (which required only a 4m average setback and a minimum setback of only 2 metres), meant that Nollamara's entire streetscape had significantly changed. Cloverdale, in comparison, retained broad areas with the original R20 density code, which meant that even when fully developed with new housing, the suburb would retain a strong identity as a lower density suburban environment in large pockets around the neighbourhood.

Photo 11: Cloverdale 2001



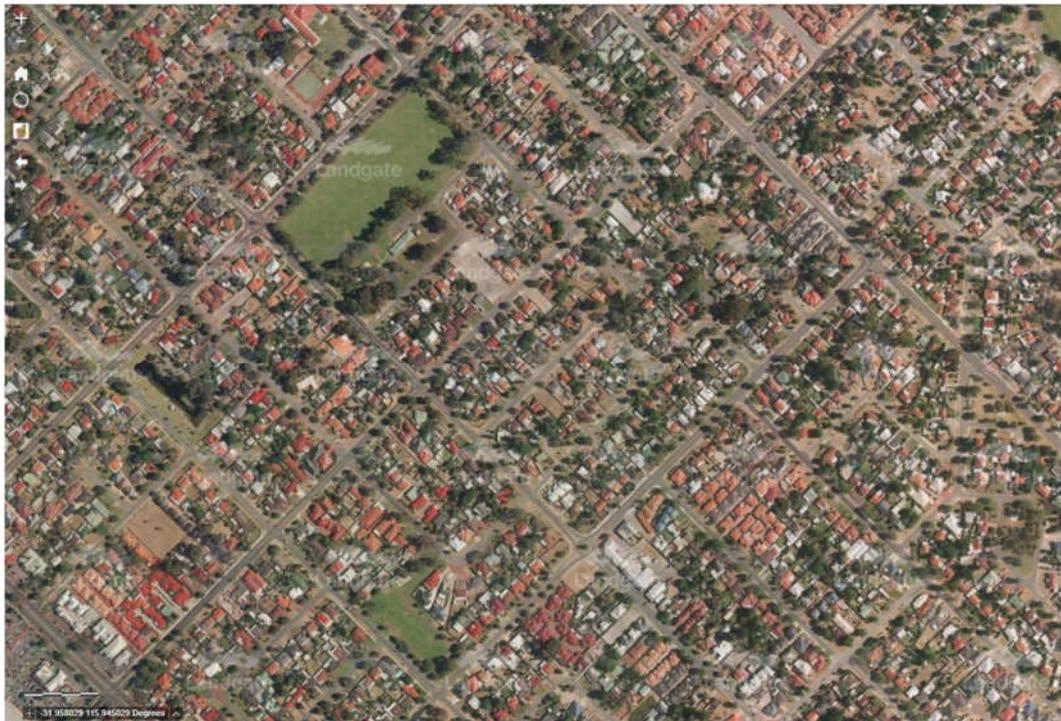
(source: Landgate 2020)

Photo 12: Nollamara 2001



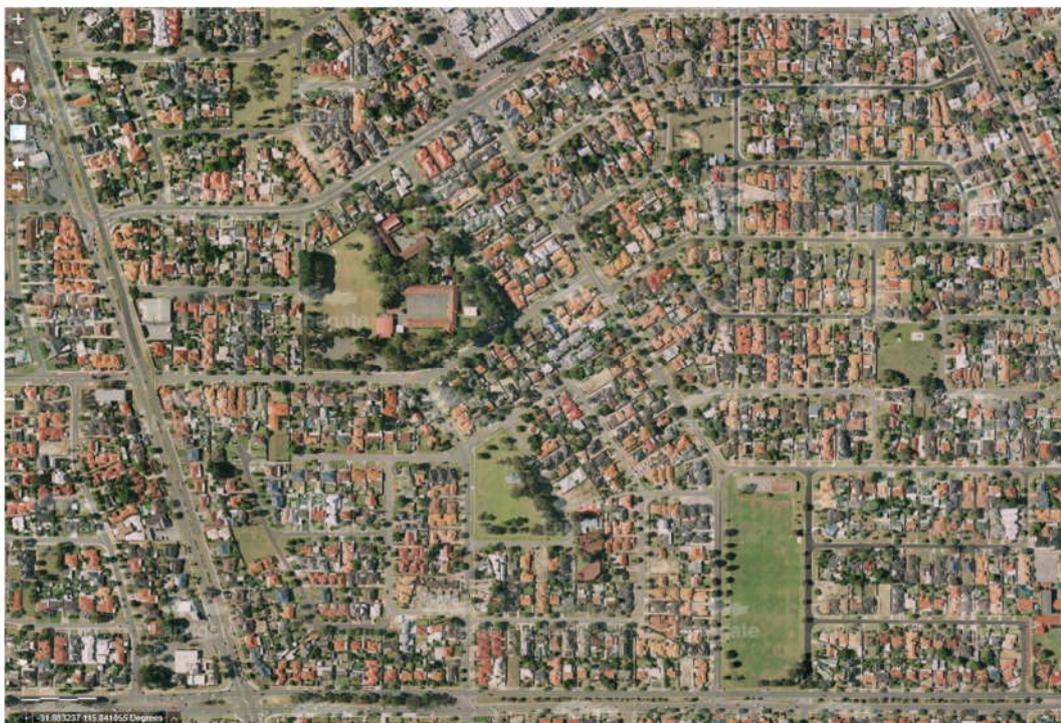
(source: Landgate 2020)

Photo 13: Cloverdale 2008



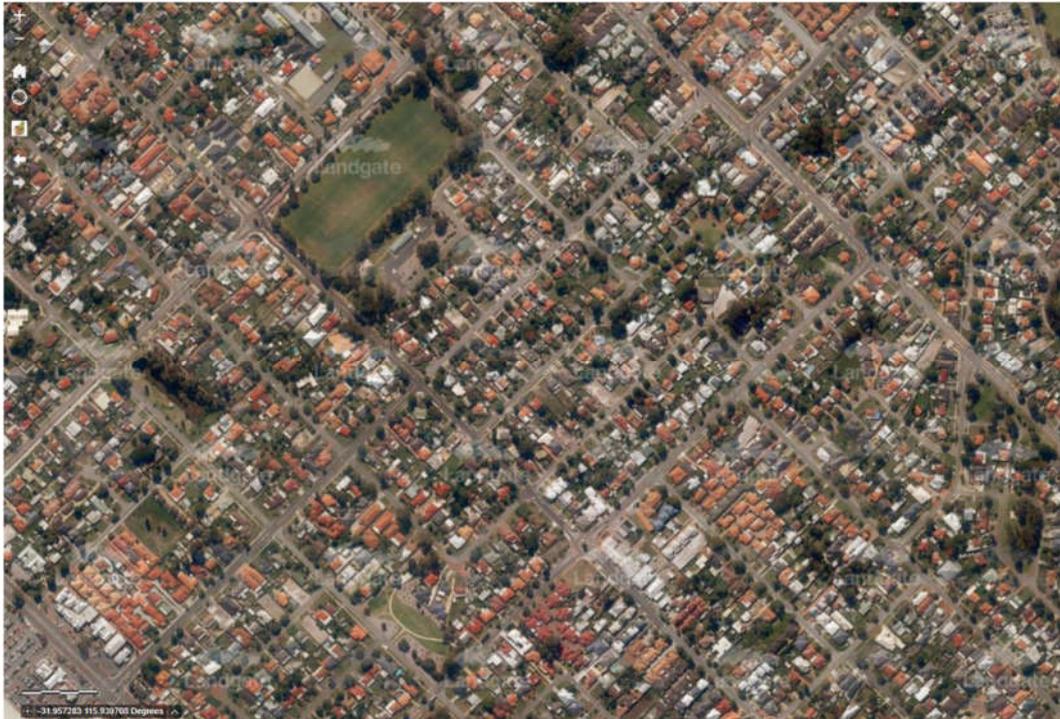
(source: Landgate 2020)

Photo 14: Nollamara 2008



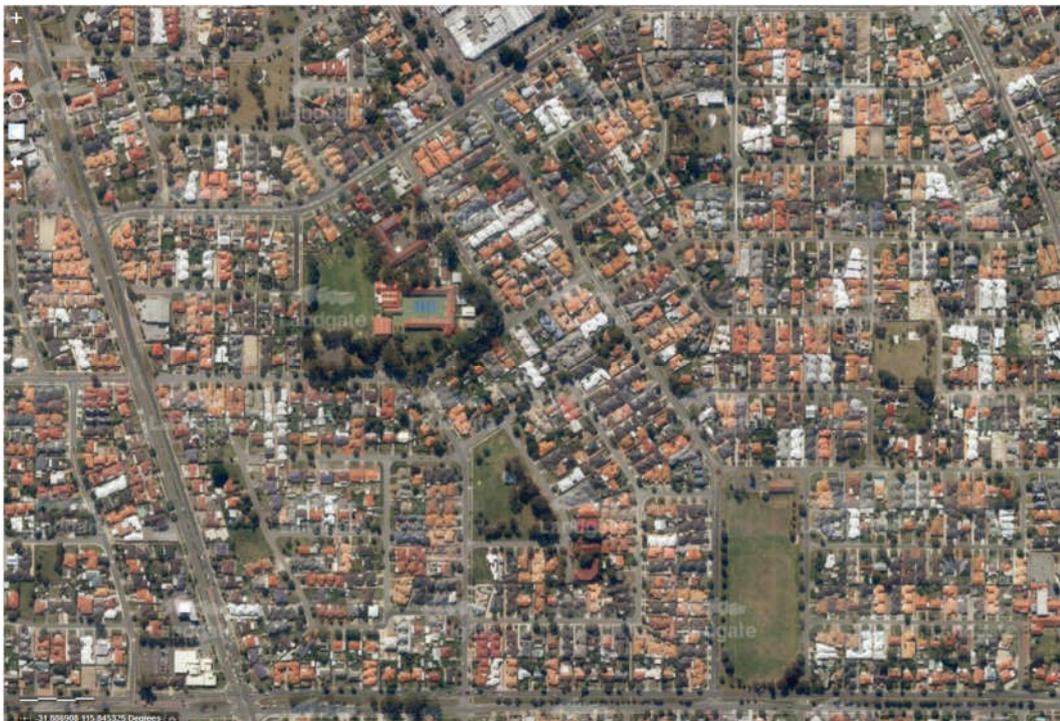
(source: Landgate 2020)

Photo 15: Cloverdale 2014



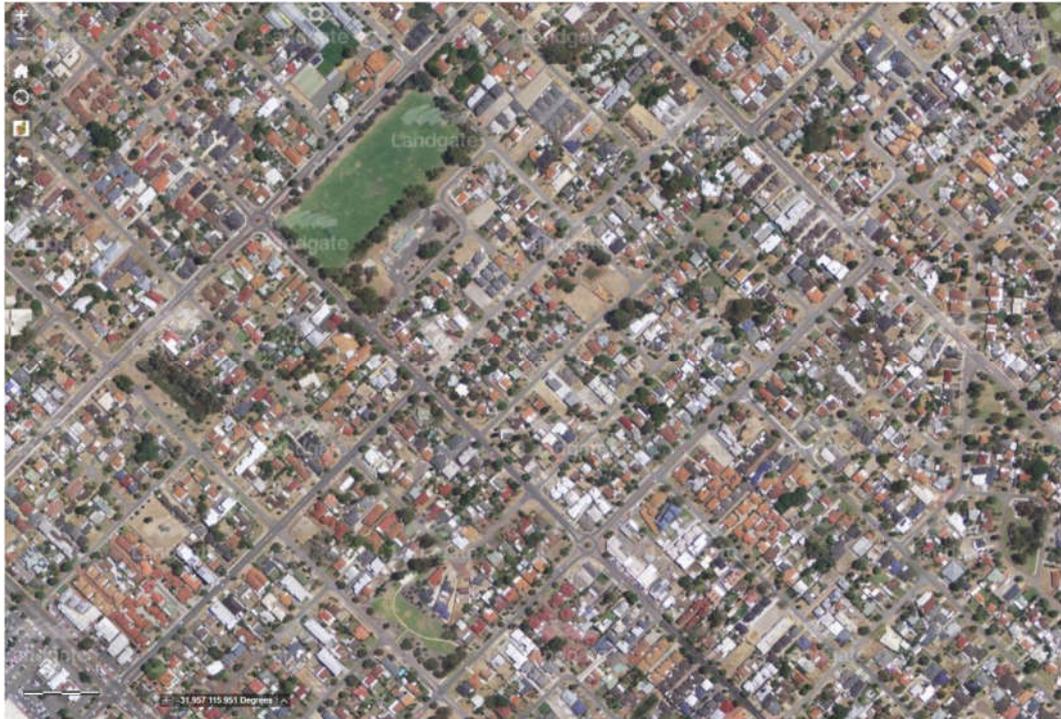
(source: Landgate 2020)

Photo 16: Nollamara 2014



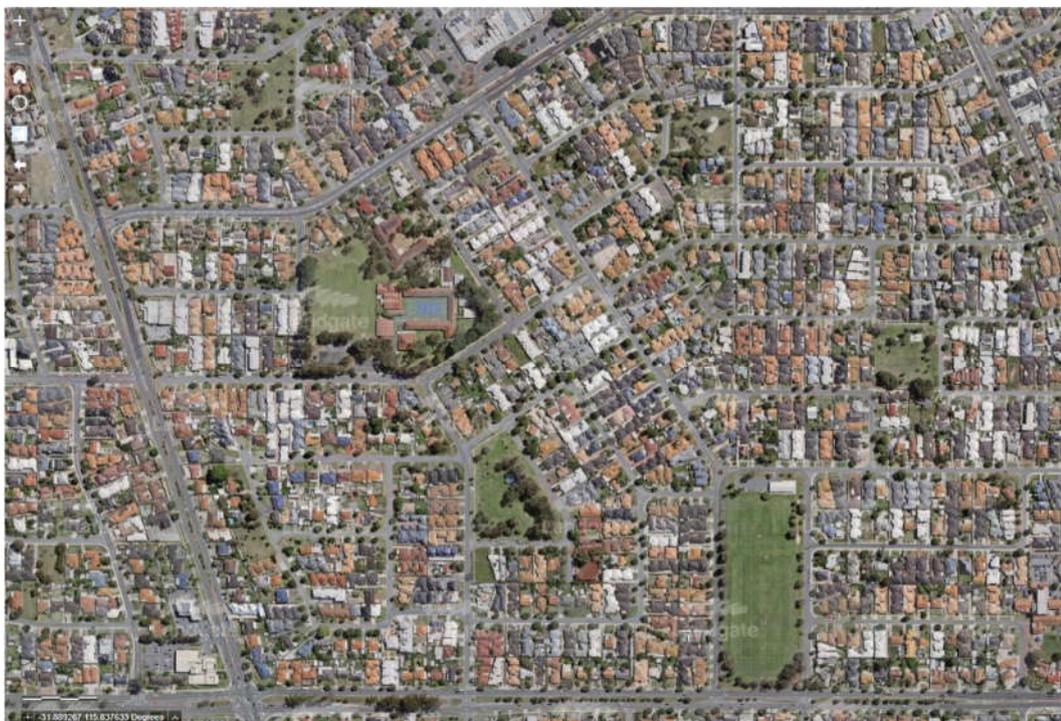
(source: Landgate 2020)

Photo 17: Cloverdale 2017



(source: Landgate 2020)

Photo 18: Nollamara 2017



(source: Landgate 2020)

THE IMPACT OF PLANNING CONTROLS ON POPULATION AND HOUSEHOLD CHARACTERISTICS

This section will revisit the Census data comparison using data from the 2016 Census to compare the two case study suburbs against the same characteristics of population and housing stock. By the time of the 2016 Census, the provisions within the City of Belmont's Local Planning Policy No. 1 remained unchanged, although they had been incorporated into their Town Planning Scheme, thereby giving the provisions further statutory weight. The City of Stirling had still not implemented any further planning controls above those outlined in the Residential Design Codes. Therefore, this comparison over a 15-year period will help assess the substantive impact of the City of Belmont's additional planning controls against the City of Stirling's ongoing reliance on the Residential Design Codes to control infill housing in medium-density suburban areas. This comparison will also draw further parallels to the findings of Winter and Bryson with respect to the differing application of planning policies and whether they can be seen to contribute to areas emerging as sites of 'new urban poverty', or whether they have assisted post-War greyfields shed the stigma resulting as a by-product of earlier development practises.

POPULATION CHARACTERISTICS

A summary of criteria outlining characteristics of the population in each case study area was compared, with those criteria outlined in Table 11.

When comparing the same series of foundational comparison criteria for the two case study suburbs based on the responses from the 2016 Census, the impact of Nollamara's rapid rate of housing densification can be seen, with the suburb now comprising 3,501 more occupants than Cloverdale (up from a difference of 831 in 2001), and an additional 2,052 dwellings (up from a difference of 532 in 2001). A considerable shift in the proportion of Australian-born residents had also occurred during the study period. While the proportion of Australian-born residents in the broader Perth area had marginally declined from 67.1% to 60.3%, that proportion had dropped in Cloverdale from 66.6% to 47.9%, with Nollamara experiencing a similar decline from 60.1% to 41.7%, or approximately four in every ten people.

Table 11 also suggests that Cloverdale maintained the same age demographic as it did in 2001, with the top three age groups covering the ages from 20 to 34. Meanwhile, Nollamara showed a marginally older demographic and the Greater Perth Area a marginally younger one: both now showed the most common three age groups covering the years from 25 to 39.

2016	Cloverdale	Nollamara	Greater Perth Area
Local Government	City of Belmont	City of Stirling	N/A
Population	8,069	11,570	2,474,413
Private dwellings	3,568	5,620	
Median weekly household income	\$1,332	\$1,389	\$1,595
Median weekly rent	\$360	\$365	\$347
Top 3 population bands	25-29 (10.7%) 30-34 (10.1%) 20-24 (7.9%)	30-34 (15.3%) 25-29 (13.9%) 35-39 (9.0%)	30-34 (7.9%) 25-29 (7.5%) 35-39 (7.0%)
Australian born	47.9%	41.7%	60.3%
Top 3 employment types	Technicians/Trades (18.5%) Professionals (15.8%) Clerical/Admin (13.2%)	Professionals (20.7%) Technicians/Trades (16.5%) Community and Personal Service Workers (13.2%)	Professionals (20.5%) Technicians/Trades (16.2%) Clerical/Admin (13.0%)
Top 3 housing tenure	Rented (37.4%) Owned with mortgage (30.9%) Owned outright (20.6%)	Rented (44.3%) Owned with mortgage (33.3%) Owned outright (19.2%)	Owned with mortgage (39.7%) Owned outright (28.5%) Rented (28.3%)

Table 11: Case study social profiles (source: ABS 2016)

Table 11 also suggests that Cloverdale maintained the same age demographic as it did in 2001, with the top three age groups covering the ages from 20 to 34. Meanwhile, Nollamara showed a marginally older demographic and the Greater Perth Area a marginally younger one: both now showed the most common three age groups covering the years from 25 to 39.

Several results from the Census data comparison were unexpected, particularly based on the views and comments expressed by respondents in the semi-formal interviews. Many anecdotal comments suggested that the seemingly-lax planning controls implemented by the City of Stirling, and the largely-uniform infill housing constructed in Nollamara, would have further negative impacts on a range of socioeconomic indicators. Conversely, some respondents expressed comments suggesting that the higher level of control implemented by the City of Belmont would

result in a broader mix of dwelling and family types, a more pleasing aesthetic element to the neighbourhood, and a raised level of esteem amongst the occupants. It was suggested that this would result in flow-on effects in a range of measurable indicators.

Firstly, comments from both sales agents regarding the lack of dwelling diversity in Nollamara suggested that the resulting glut of similar housing stock would result in increased competition and reduced sales or rent prices, typical with an oversupply of any commodity. However, the median weekly rent in Nollamara (\$365) was found to be very slightly higher than that in Cloverdale (\$360), whilst the median weekly rent in both case study suburbs exceeded the Greater Perth Area median of \$347.

By 2016 outright home ownership across the state had declined, with people buying a house with a mortgage emerging as the dominant form of tenure. The proportion of rental accommodation in Cloverdale had risen to 37.4% and was now the most common form of tenure. Rental accommodation remained Nollamara's predominant tenure, rising from 35.0% in 2001 to 44.3% in 2016, which represented an increase in rental housing of nearly 1,000 dwellings, up from 1,053 in 2001 to 2,045 in 2016. The 2001 Census data showed that rental accommodation in Nollamara was already the dominant form of housing tenure, albeit marginally, but by 2016 this had grown to 44.3% of the housing stock.

Outright home ownership in each case study suburb had suffered the most throughout the study period, with Cloverdale recording a drop from 41.1% to 20.6%, and Nollamara declining from 33.3% to only 19.2%. The proportion of people entering the housing market improved mildly across both suburbs, increasing from 26.6% to 30.9% in Cloverdale, and 26.3% to 33.3% in Nollamara.

Education

Harding, Lloyd and Greenwell (2001) highlighted the decreasing risk of poverty which occurs as the level of educational attainment increases, charting a series of estimated poverty rates in the decade from 1990-2000, which is summarised in Table 12.

The table outlines that as the labour market evolved between 1990 and 2000 to a more professionalised economy (CoA 2004), the increasing qualifications and skills levels sought by employers resulted in an increasing risk of poverty for those with no post-secondary qualifications (increasing from 12.1% to 14.7%), or certificate or trade-based qualifications (increasing from

8.7% to 10.5%). Although the risk of poverty for holders of Bachelor degrees or higher fluctuated throughout the decade, it finished the decade at the same rate of 6.0% as it had started with, suggesting that not only did those with higher qualifications have the lowest risk of poverty, they also had the most stable risk over time.

Highest education qualification	1990	1995	1996	1998	2000
No post-secondary qualifications	12.1	12.2	13.0	13.6	14.7
Diploma, certificate, trade qualifications	8.7	9.8	10.2	10.6	10.5
Bachelor degree or higher	6.0	7.4	6.8	8.1	6.0

Table 12: Estimated poverty rates (%) by highest education qualification (source: Harding, Lloyd and Greenwell 2001:14)

Chart 9 shows that the level of secondary schooling achieved by occupants in each case study suburb have improved, particularly with regards to a higher proportion of occupants reaching their Year 12 graduation or equivalent. In the 2001 Census data, approximately 1 in 3 respondents from Cloverdale and approximately 1 in 4 respondents from Nollamara completed only the mandatory Year 10 graduation, presumably to enter into non-professional employment, trade-based apprenticeships, or TAFE courses. By 2016 this trend had declined to 17.8% and 13.3% of respondents from Cloverdale and Nollamara, respectively. This highlights a general change in attitude towards higher-level education and qualifications, which further reflects a workforce becoming increasingly specialised and skilled over time. Both suburbs also experienced a decline in the number of respondents only achieving a Year 11 graduation level.

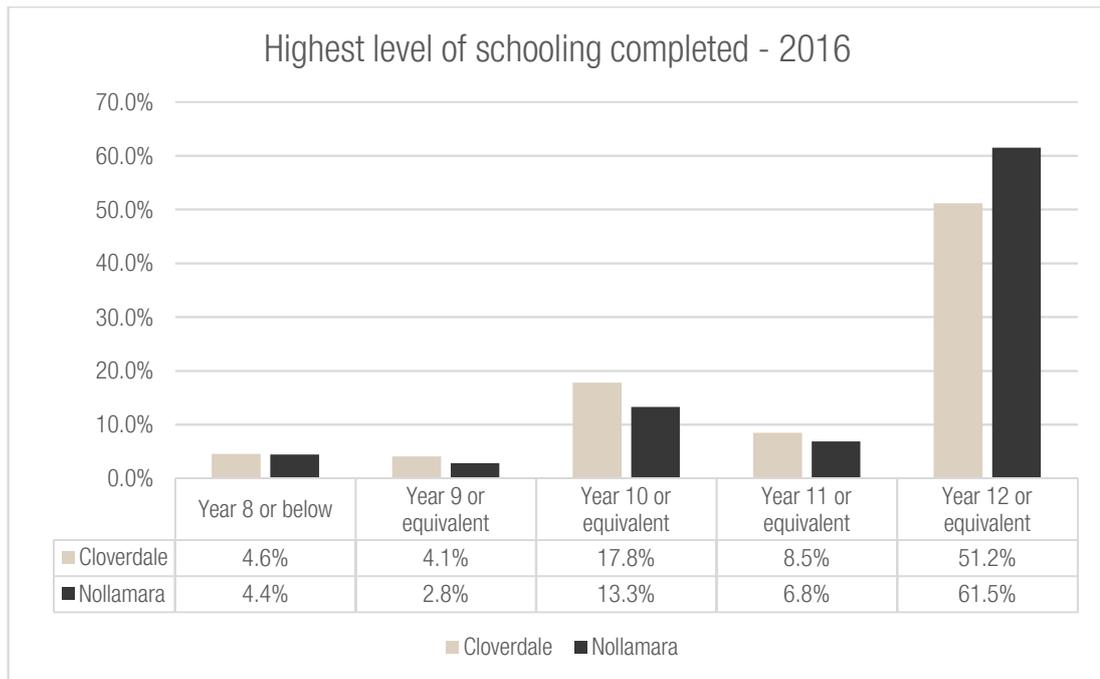


Chart 9: Highest level of schooling completed (source: ABS 2016)

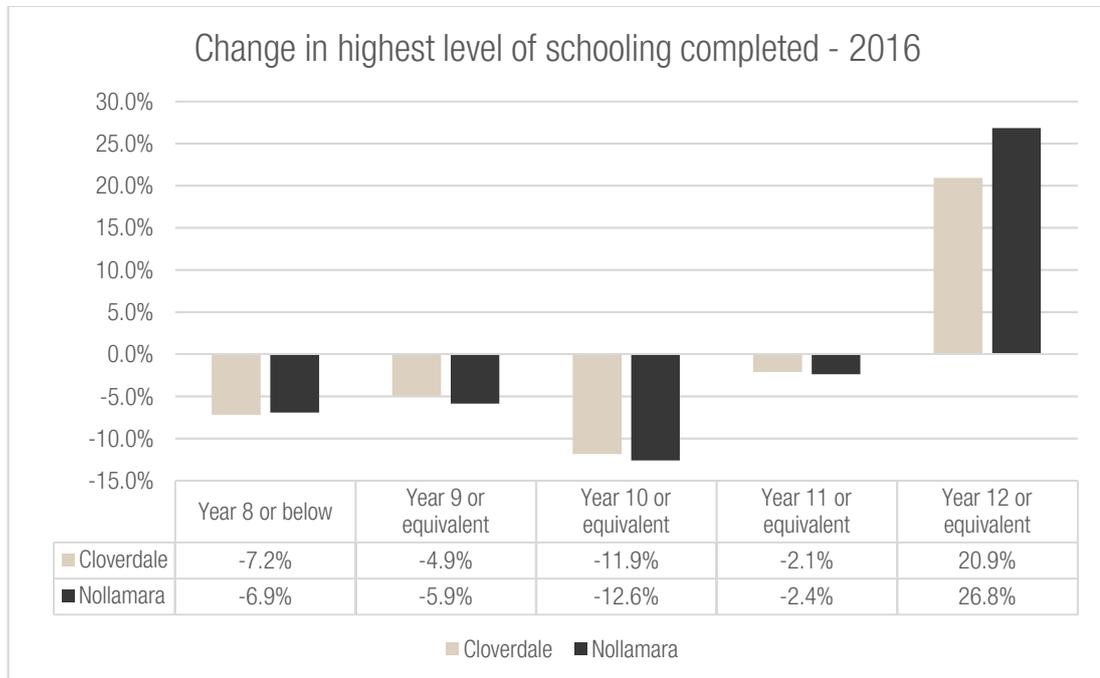


Chart 10: Change in highest level of schooling completed from 2001-2016 (source: ABS 2016)

Both suburbs, however, demonstrated a significant increase in those reaching achieving their Year 12 graduation or equivalent, with Cloverdale increasing from 29.6% to 51.2%, and Nollamara increasing from 33.9% to 61.5% - by far the most significant increase in the educational achievement groups. Chart 10 shows the change in the level of schooling achieved in each of the case study suburbs between 2001 and 2016.

In comparing non-school qualifications, outlined in Chart 11, Nollamara’s higher rate of people completing Year 12 is again reflected in the higher rates of Bachelor Degrees, Diplomas and Advanced Diplomas.

Although both suburbs saw a decrease in people leaving school with a Year 10 qualification, the proportion of people achieving Certificate-based qualifications rose marginally by 1.3% in Cloverdale, but fell by 0.3% in Nollamara. Given the increase in population in each case study suburb throughout the 15-year study period, it can be argued that both of these changes are negligible. By 2016, Certificate-based qualifications still made up 19% of the general Cloverdale population, and 16% of Nollamara.

Of note, the proportion of people achieving Postgraduate qualifications rose in both Cloverdale and Nollamara, up to 3.0% and 5.0% respectively, although both remained below the Greater Perth Area average of 7.2%.

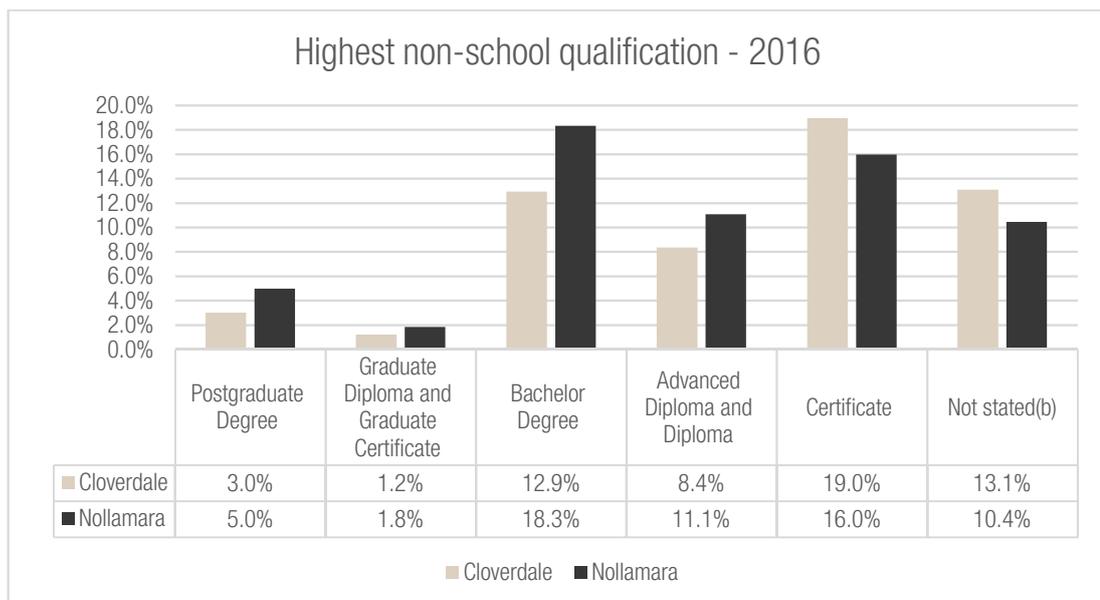


Chart 11: Highest level of non-school qualification attained (source: ABS 2016)

Again, for the purpose of clarity in Chart 11, the recorded responses for ‘not applicable’ with regards to non-school qualifications, which includes people with no further qualifications, were not included. This data is included in Chart 12, however, and shows a significant drop for both Cloverdale (-19.3%) and Nollamara (-23.1%). As a result, in 2016 people with no non-school qualifications comprised 41.3% of Cloverdale’s population, and 36.3% of Nollamara’s, a drop from 60.5% and 59.5% in 2001, respectively.

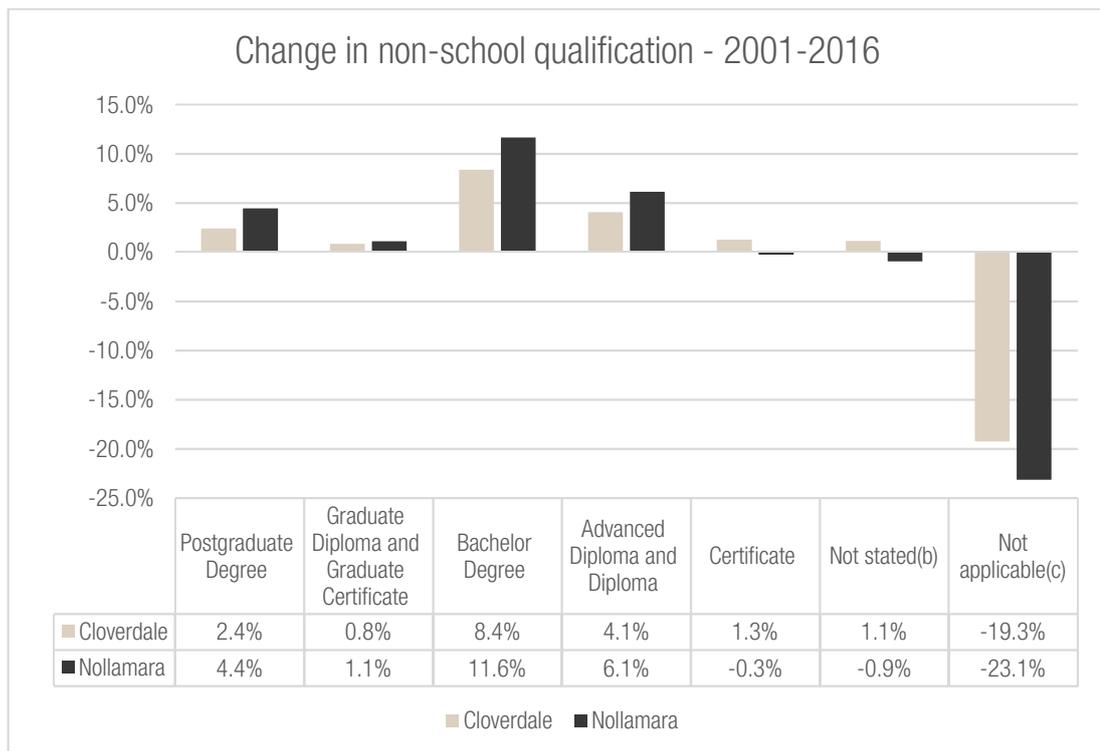


Chart 12: Change in highest level of non-school qualification attained from 2001-2016 (source: ABS 2016)

Income

As with the 2001 Census data, the 2016 Census results show a parallel between the two case study suburbs. Table 11 shows that the median weekly household incomes for Cloverdale and Nollamara are \$1,332 and \$1,389, respectively, both of which are below the Perth Statistical District median of \$1,595. Again, in comparing the two suburbs by income brackets in Chart 13,

a striking similarity remains with the variances across most income brackets being less than 1%, and the greatest variance in any of the brackets being 1.9%.

The 2001 census showed that Cloverdale and Nollamara had almost identical income profiles, and this has remained largely unchanged over the 15 year study period, both in regards to each suburb and how they compare with the Greater Perth Area.

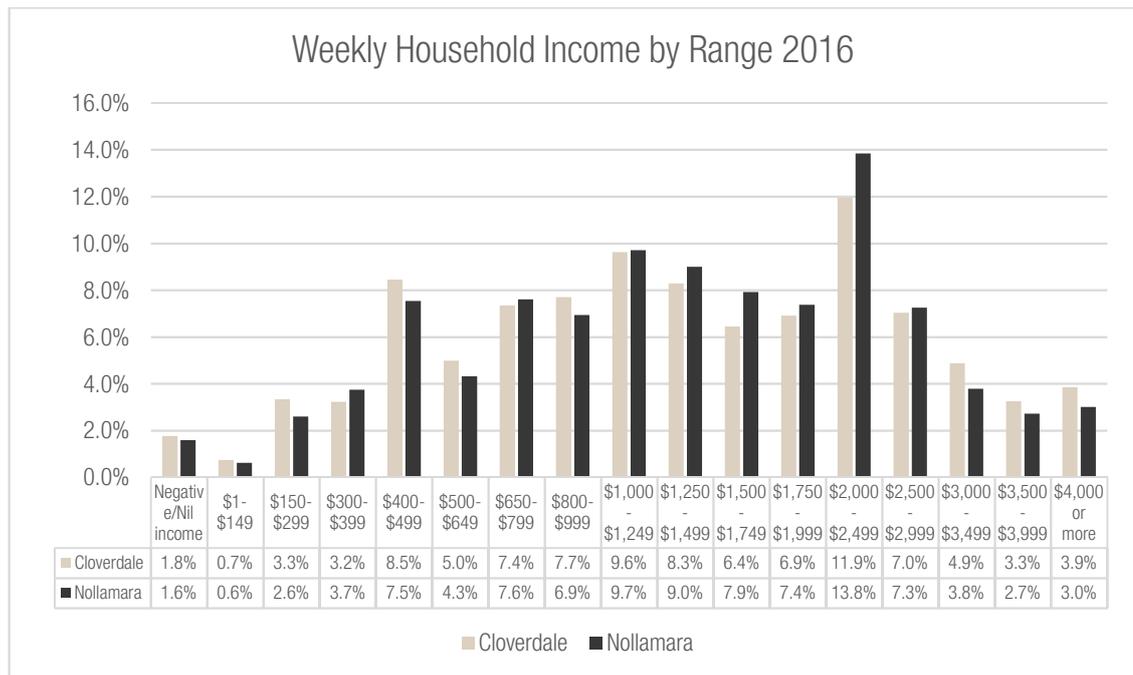


Chart 13: Weekly Household Income by Range (source: ABS 2016)

Family Composition

It was anticipated that over the course of the 15-year study period, a notable change in family compositions would be seen, based on the underlying intention of the City of Belmont’s additional planning controls being to generate a broader mix of housing types and sizes, both in terms of the number of bedrooms and/or living areas, and the size of each land parcel. It was considered that a primary focus in introducing those planning controls was to create a broader range of house types and house prices, therefore increasing the appeal of the suburb to a wider mix of socio-economic groups and demographic blends. This, therefore, would have a flow-on effect on other Census data results pertaining to social and economic criteria. Given the faster

rate at which infill development was occurring in Nollamara, it was not surprising to see a corresponding faster rate of growth in the number of families: while Cloverdale saw a net increase of 241 families over the 15-year window, Nollamara saw a net increase of 1,082 families.

Chart 14 and Chart 15 suggest that only a moderate change has occurred with both case study suburbs. Both suburbs have experienced growth in the proportion of couple families with children. Although Chart 15 shows a marginally higher rate of growth in Cloverdale, Chart 14 shows the resulting suburb mix is virtually identical, separated by only 0.1%.

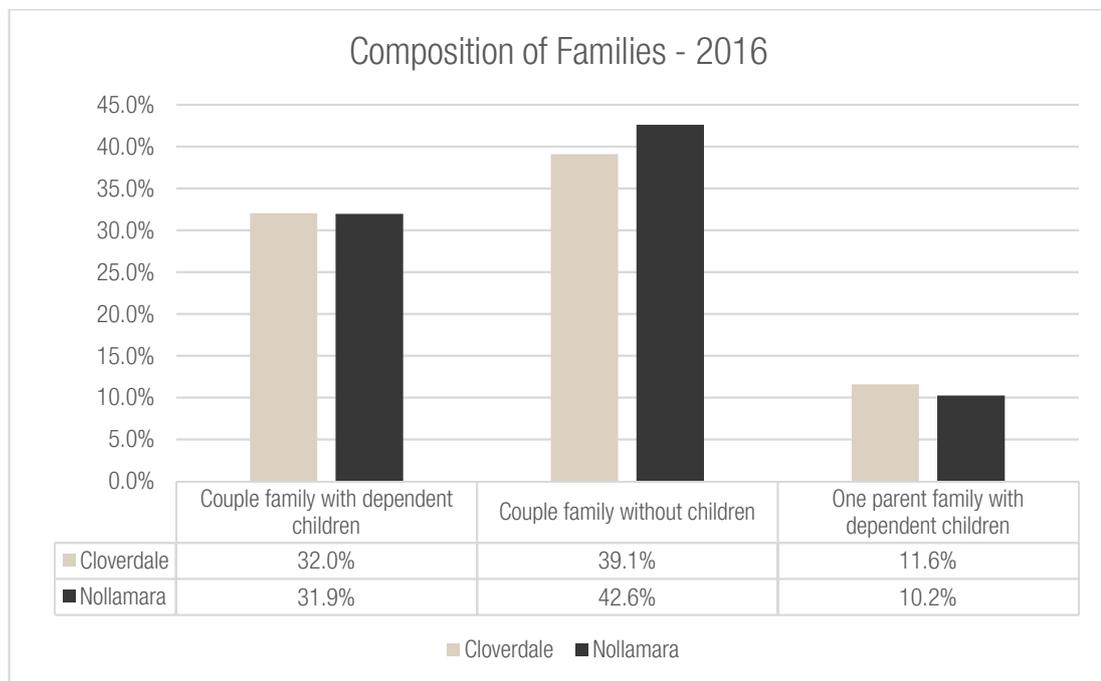


Chart 14: Composition of Families (source: ABS 2016)

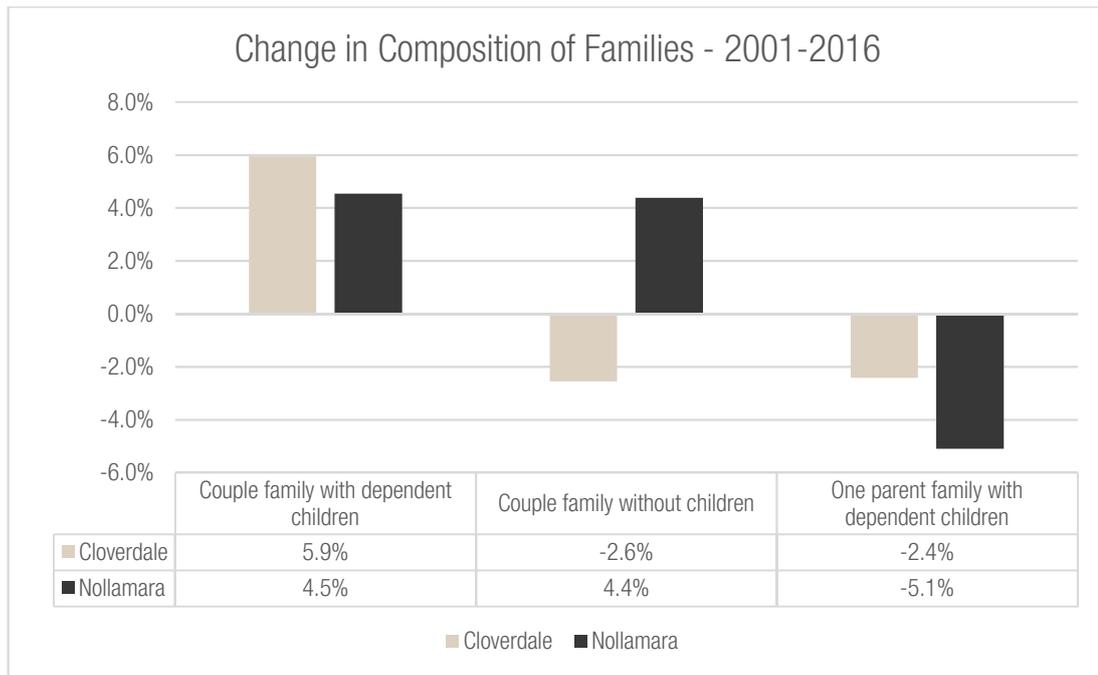


Chart 15: Change in Composition of Families 2001-2016 (source: ABS 2016)

The most notable point of difference with the two suburbs was that Cloverdale saw a reduction in the proportionate share of couple families with no children, while that share increased for Nollamara. In terms of raw data, these proportional changes were the result of a net increase of only 50 couple families without children for Cloverdale throughout the 15 year study period, compared with an increase on 543 couple families without children for Nollamara during that same time. The proportionate share of one-parent families with dependent children decreased for both suburbs, although that reduction for Nollamara was more than twice the rate than for Cloverdale

For the purpose of interpreting the data relating to the change in composition of families, the raw data must also be considered, rather than just the proportionate change expressed as a percentage. For example, while the proportionate share of one-parent families decreased for both suburbs, it was the result of a net decrease of 14 one-parent families for Cloverdale, but an increase in 15 one-parent families for Nollamara. Therefore, the data suggests that Nollamara constituted a higher draw of single-parent families. Conversely, while both suburbs saw a growth in the proportion of couples with children, Cloverdale's was a result of a net increase of 180 families with dependent children, while Nollamara saw a net increase of 431 such families, more than double that of Cloverdale. This suggests Nollamara has a higher draw of couples with children,

but does not explain whether this is a result of factors such as the volume of available homes on the market, housing type, or the price range of housing in the area.

Socioeconomic Indexes for Areas (SEIFA)

The 2016 Census incorporated the same four SEIFA indexes as the 2001 Census (IRSAD, IRSD, IER and IEO), but throughout the study period the variables used to create the individual SEIFA scores for each index have been continually revised, with some variables removed and others included. This means that it is not appropriate to compare the respective rankings for each suburb over the study period. For example, if one suburb received an IRSD score of 920 in 2001 and 930 in 2016, it cannot be interpreted as meaning the suburb is now at a lesser risk of disadvantage, as the variables used to calculate each score are different.

However, it does allow areas to be compared relative to other areas over time, allowing the impact of various policies to be assessed. For example, if suburbs A and B received IRSD scores of 930 and 920 respectively in 2001, and scores of 940 and 960 respectively in 2016, it can be argued that suburb B was originally at a higher risk of disadvantage compared to suburb A, but has undergone a greater degree of positive change throughout the study period and is now at a lower risk of disadvantage compared with suburb A.

For the 2016 Census, the SEIFA scores collated were arranged into percentiles and deciles rather than quantiles. The scores for each suburb and the percentiles and deciles specific to each index are summarised below. The 2016 SEIFA data records rankings against a list of suburbs nationwide and state-wide. The rankings against suburbs within Western Australia only have been used below. The 2016 data also records the maximum and minimum scores for all SA1 areas (the smallest Census collection areas), within each suburb.

IRSAD		Ranking within State				
2016 State Suburb Name	Score	Rank	Decile	Percentile	Minimum score for SA1s in area	Maximum score for SA1s in area
Cloverdale	954	267	2	19	866	1001
Nollamara	978	411	3	29	943	1026

Table 13: Index of Relative Socioeconomic Advantage/Disadvantage (source: ABS 2016)

As with the 2001 Census data, Nollamara performed better than Cloverdale with respect to the indicators of Advantage and Disadvantage, although both received low rankings compared with all suburbs in Western Australia. Cloverdale received a rank of 267, placing it in the 19th percentile, while Nollamara was ranked 411, being placed in the 29th percentile. This reflects a notable positive change for Nollamara, whose 2011 IRSAD score was approximately halfway between the 10% and 25% quantiles. As with the 2001 data, Cloverdale remained the worst performing suburb within the City of Belmont.

IRSD		Ranking within State				
2016 State Suburb Name	Score	Rank	Decile	Percentile	Minimum score for SA1s in area	Maximum score for SA1s in area
Cloverdale	955	238	2	17	844	1015
Nollamara	974	317	3	22	926	1029

Table 14: Index of Relative Socioeconomic Disadvantage (IRSD) (source: ABS 2016)

When considering indicators of Disadvantage alone, Cloverdale again reflected only marginal change between 2001 and 2016, with a rank of 238, placing it in the 17th percentile. In contrast, Nollamara performed better in 2016 with a rank of 317 and being in the 22nd percentile, compared with 2001 when it fell below the 10% quantile. The minimum score for an SA1 area within Cloverdale (844) was significantly lower than the minimum score within Nollamara (926), while the maximum score for an SA1 area within Nollamara (1029) outperformed the maximum within Cloverdale (1015). Notably, both suburbs included some SA1 collection scores above the nominal weighted median score of 1000, representing pockets of less disadvantage existing within both case study suburbs when compared to the overall median scores.

IER		Ranking within State				
2016 State Suburb Name	Score	Rank	Decile	Percentile	Minimum score for SA1s in area	Maximum score for SA1s in area
Cloverdale	947	161	2	12	875	1002
Nollamara	934	138	1	10	876	1035

Table 15: Index of Economic Resources (source: ABS 2016)

Little change occurred in either case study suburb when considering the Index of Economic Resources. Both suburbs performed poorly in the 2001 data, with Nollamara being placed below the 10% quantile. The 2016 data showed that the respective scores for Cloverdale and Nollamara saw them ranked 161 and 138 in the state, respectively, putting them in the 12th and 10th percentiles accordingly.

As the index focused on measures such as rent and mortgage costs, the number of homes with four or more bedrooms, the proportions of single-parent families and couple families, with and without dependent children, it is not surprising that their respective scores and ranks have changed only marginally. The poor performance of both suburbs in the 2001 SEIFA data was attributed to a historical oversupply of smaller two- and three-bedroom post-War dwellings and the general low-income nature of households within the two suburbs. It is likely that the continued poor performance in the IER data shows that the current form of infill housing occurring in both suburbs during the 15-year study period has done little to increase the supply of larger homes of four or more bedrooms, and little to attract higher earning households to the area. It is not hard to see how more affluent post-War suburbs, such as Floreat, would maintain or improve their IER ranking, as high house prices and planning controls which often don't allow lots to be subdivided at a higher density lead to higher rates of KDR (knock-down-rebuild) development, which results in higher income households, more couple households, and a higher proportion of larger homes of four or more bedrooms.

A significant finding from this data is that given the measures used in the IER ranking, the case study suburbs (and others like them) may never be able to improve their score with regards to the Index of Economic Resources as the blanket increase in density code across the suburbs means that larger homes are not being built (or at least not in a number significant enough to influence the score of the overall neighbourhood). Further, housing typology has an impact on the likelihood of being suitable for raising a family, and housing prices have an impact on occupant demographics such as being in reach of single-parent families. By these measures, the case study suburbs will struggle to make meaningful improvements to their ranking. This is further supported by the data recording the number of bedrooms per dwelling, notably with the homogenising impact of infill development in Nollamara.

Conversely, a gentrifying suburb with a high rate of KDR development will likely only improve in the IER rankings as much larger homes are typically built in place of smaller post-War ones. This further pushes up the median score for IER rankings, which is a further disadvantage to greyfields attempting to overcome years of stigma. Figure 43 shows a typical streetscape in the now-affluent post-War suburb of Floreat.



Figure 43: A Floreat street showing significant KDR developments (source: Nearmaps 2020)

Despite a number of examples of subdivided parent lots being shown, there are also a number of KDR developments where the original post-War dwelling has been demolished and replaced with a significantly larger single dwelling, which further highlights the inherent land value of lots in Floreat not being solely dependent on an increased yield being achieved, and the scale of development which can be undertaken without the risk of overcapitalising. Given that the IER ranking uses measures such as the number of dwellings with four bedrooms or more, and the proportion of couple families versus single-parent families, suburbs such as Floreat will continue to improve its score and rank compared with other suburbs.

IEO		Ranking within State			Minimum score for SAIs in area	Maximum score for SAIs in area
2016 State Suburb Name	Score	Rank	Decile	Percentile		
Cloverdale	948	353	3	25	890	984
Nollamara	1007	781	6	54	910	1068

Table 16: Index of Education and Occupation (source: ABS 2016)

The Index of Education and Occupation showed the greatest change relative to the case study suburbs. The 2001 SEIFA data gave a score for Cloverdale which was located mid-way between the 10% and 25% quantile scores, while Nollamara’s score was only just above the 25% quantile

cut-off. By 2016, Cloverdale's IEO score had marginally improved, with a score of 948 and being in the 25th percentile. Conversely, Nollamara's IEO score had improved significantly, with a score of 1007 and being in the 54th percentile, or above the median value for IEO scores. As the index focused primarily on the level of educational achievement and occupational skill level (ABS 2018), this portrays the Nollamara population as one which values higher levels of education and has followed the general trend towards a highly skilled workforce seeking increasingly specialised employment opportunities. More importantly, it suggests that Nollamara has made a significant improvement in this area over the 15-year study window and is now considered to be above the median score and percentile for educational and occupational opportunities. This is further supported in the top three employment types recorded in Table 16 above, which shows that in 2001, 'professionals' was only the third most common employment type in Nollamara (13.3%), but by 2016 this had become the most common employment type in Nollamara (20.7%), and had even surpassed that of the Perth Statistical Division (20.5%).

This outcome was largely unexpected based on the results of the IER scores, which showed Nollamara as ranking in the 10th percentile in terms of the Index of Economic Resources, and representing the lowest rank across the four SEIFA indexes for the suburb.

This outcome was also unexpected following the comments from a range of respondents during the interview and survey processes, which generated a range of anecdotal comments characterising the suburb of Nollamara as being primarily comprised of low-cost, low-quality housing, home to a high rental population (and more specifically, public housing occupants), a high proportion of low-skilled and low socioeconomic residents, and a significantly higher migrant population with poor proficiency in English and lower employment prospects. This gave rise to a negative perception that the suburb was becoming an enclave of various ethnicities, with residents being unwilling to assimilate.

While some of these comments were supported by the Census data (such as only 4 in 10 residents in Nollamara being Australian-born), others were not. For example, of all Nollamara residents, 52.9% spoke only English, and 47.1% spoke another language and English 'very well or well', with only 8.9%, or 946 people, recorded as speaking English 'not well or not at all'.

The data above suggests that in 2001 both case study suburbs were considered 'below average' according to the four SEIFA indexes, with neither suburb recording a score above the overall median score, or 50% quantile. All four scores for Cloverdale fell between the 10% and 25% quantiles, indicating a broadly homogenous socio-economic situation across the suburb when considering a wide range of indicators. Nollamara demonstrated more variability in its scores, with only the score for Index of Relative Advantage/Disadvantage being between the 10% and

25% quantiles. Of the remaining three scores, only Nollamara’s score for the Index of Education and Occupation fell marginally above the 25% quantile, while the Indexes of Relative Socioeconomic Disadvantage and Economic Resources fell below the 10% quantile, placing it amongst the worst performing 10% of all Australian suburbs. This suggests a suburb which is considered amongst the worst performing with regards to indicators demonstrating disadvantage or poor access to economic resources (such as low income, high unemployment, smaller dwelling sizes or housing costs), but considered marginally better when considering employment indicators alone.

In reflecting on disadvantage alone, the IRSD relies on a range of broad indicators, such as the prevalence of low income and educational achievement, high unemployment and unskilled occupations. In 2001, Cloverdale’s IRSD score of 933.7 saw it placed as the second most disadvantaged suburb within the City of Belmont, only outperforming the suburb of Rivervale with a score of 929.4¹⁶.



Figure 44: Location plan for ‘The Springs’ in Rivervale (source: City of Belmont n.d.)

¹⁶ Although when considering advantage as well as disadvantage, Rivervale’s IRSAD score of 952.4 placed it in a much higher percentile than Cloverdale’s score of 917.1.

By 2016, Cloverdale's Index of Relative Socio-Economic Disadvantage score of 955 placed it in the 17th percentile, a result which reaffirmed its status as the worst performing (and therefore, most disadvantaged) suburb within the City of Belmont. In contrast, Rivervale's 2016 score of 994 saw it improve its ranking to become the second best performing suburb within the City of Belmont (although the high-density 'The Springs' project on Rivervale's riverside land, shown in Figure 44, had commenced prior to the 2016 Census, which brought in a considerable number of residents with higher incomes, educational qualifications, and occupational skill levels). This result suggests that despite Belmont's additional levels of planning controls aimed at more diverse housing options and, ostensibly, a broader socioeconomic demographic, Cloverdale remains the most disadvantaged area of Belmont using a scale which considers income, educational attainment, unemployment and an unskilled labour force, among other measures. Therefore, the aspiration of a population with higher educational attainment and incomes, and a more highly skilled workforce, through the delivery of a greater range of housing types and prices, had not been realised.

DWELLING STOCK CHARACTERISTICS

By 2016, the proportion of detached single homes in Cloverdale had dropped to be only marginally more than the Greater Perth average, however in Nollamara it had reduced considerably, with detached dwellings now comprising only 35.4% of the suburb, less than half of that of Cloverdale and the Greater Perth area. In contrast, the proportion of single-storey grouped dwellings in Nollamara had risen to 57.0%, whereas Cloverdale and the Greater Perth area were again almost identical, recording 12.0% and 11.8% respectively.

Of note, the proportion of two-storey grouped dwellings in both case study suburbs had grown by more than 5%, to 6.0% and 6.3% respectively, and both exceeding the proportion in the Greater Perth area at only 4.2%.

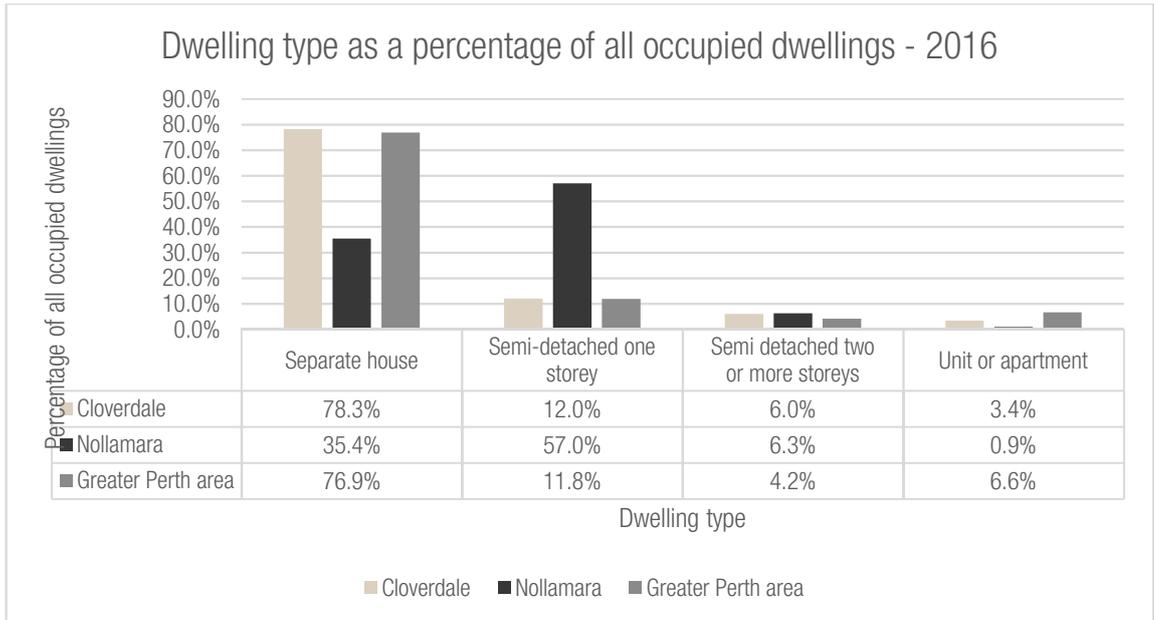


Chart 16: Dwelling types (source: ABS 2016)

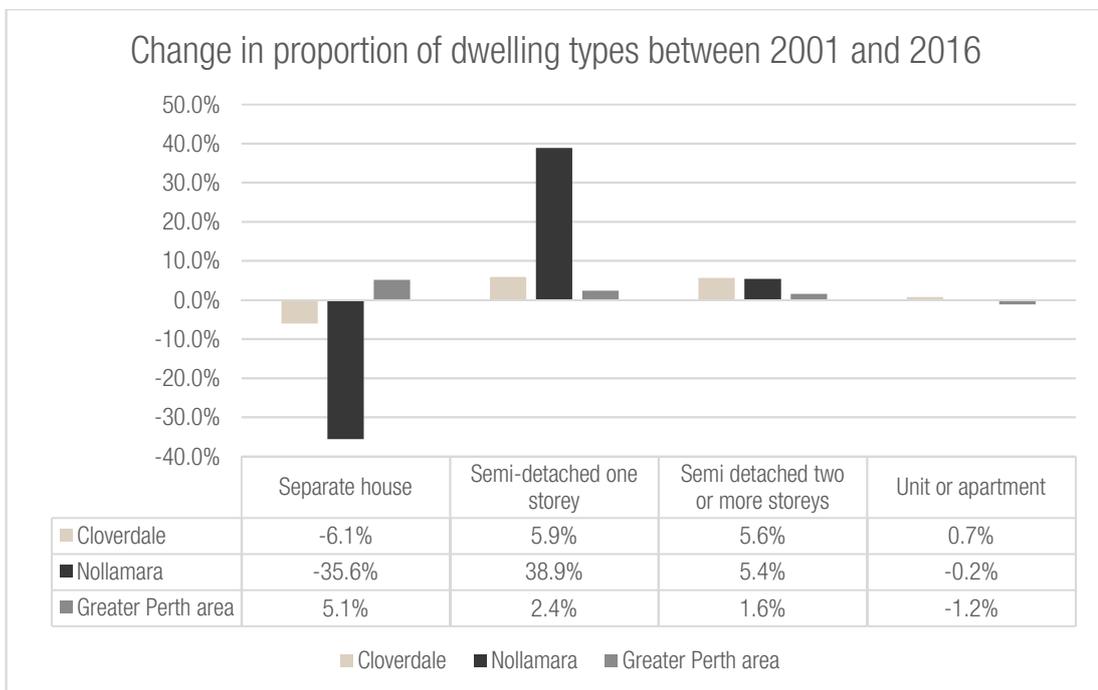


Chart 17: Changes in proportion of dwelling types – 2001-2016 (source: ABS 2016)

A common sentiment expressed by respondents during the interviews and surveys was that micro-developers were either acutely aware of the risk of over-capitalising in a lower socio-economic area, or were made aware of the risks by the building company representatives or financiers¹⁷. A common illustration of this put forward by respondents was a typical reluctance to build two storey dwellings, due to the significantly higher building costs. Although the Census data above suggests that single storey dwellings make up the clear majority of housing development in both case study suburbs, both suburbs contain a higher proportion of two-storey dwellings than the Greater Perth average. Notably, the Census data shows that Nollamara, which has no planning controls requiring additional storeys, had a higher proportion of two-storey dwellings than Cloverdale, which required the inclusion of two-storey development for developments at densities higher than R20 by way of stringent planning controls.

Initial assumptions on the development of two-storey dwellings in Nollamara was that it would primarily be limited to lots which would benefit from higher returns to justify the additional construction costs, such as sites opposite public open space reserves, or corner lots where all dwellings could benefit from an individual street frontage. However, a streetscape survey and examination of aerial photography for Nollamara shows a broad diversity in the construction of two-storey dwellings, as marked on Figure 45, which shows:

1. A two storey dwelling at the rear of single storey dwellings to compensate for irregular lot boundaries preventing a single storey outcome (A);
2. A two storey dwelling at the rear of single storey dwellings on a rectangular lot (B, C and D);
3. Two two-storey dwellings behind a single storey front dwelling (E);
4. A full set of two-storey dwellings, with the rear dwellings as attached dwellings to maximise internal area and help reduce costs (F and G); and
5. A full set of detached two-storey dwellings (H).

¹⁷ Financiers more forcibly so, as it is common practice to refuse lending for projects which are deemed to exceed their potential or projected return.



Figure 45: Nollamara streetscape showing a diverse range of two-storey dwellings (source: Nearmaps 2020)

This finding suggests that the sentiments expressed by many respondents that micro-developers in greyfield areas will only develop a site to the minimum standard and lowest development costs are based on anecdotal evidence only. The application of Belmont’s planning controls since 2001 has not resulted in a higher proportion or range of two-storey dwellings in Cloverdale as has resulted organically in Nollamara, where no such planning controls exist. The situation is even more clear when considering the raw number of two-storey dwellings built in each suburb rather than their proportion of a suburb’s composition. Cloverdale’s increase in two-storey dwelling to reach 6.0% in 2016 was the result of 170 such dwellings being built, whereas in Nollamara the number built was almost double at 291. This challenges several criticisms that the absence of stringent planning controls in Nollamara which explicitly require the construction of two-storey dwellings attracts only the ‘laziest’ developers and results in the lowest quality housing.

By 2016, the Greater Perth area demonstrated a rise in the proportion of four-bedroom dwellings and a reduction in the proportion of three-bedroom dwellings, echoing both the trend of growing house sizes across Australia in recent decades, and the incremental replacement of post-War homes in some older established suburbs, many of which were typically smaller, three-bedroom offerings. Despite pressure to reduce lot sizes, Western Australia’s prevalence of greenfield fringe development, and rising number of houses in established suburbs seeing home extensions or knock-down-rebuilds in more affluent suburbs, has contributed towards this growth of larger homes. Despite having no greenfield land available, and only a few examples of knock-down-

rebuild evident, Cloverdale followed a similar trend with the proportion of three-bedroom dwellings in Cloverdale falling from 67.4% to 53.7% of all occupied dwellings, while the number of four-bedroom dwellings had risen to 26.1%. In contrast, the proportion of three-bedroom dwellings in Nollamara had risen further, making up 75.2% of all dwellings, while four-bedroom homes had reduced in prominence to make up only 7.8% of housing stock.

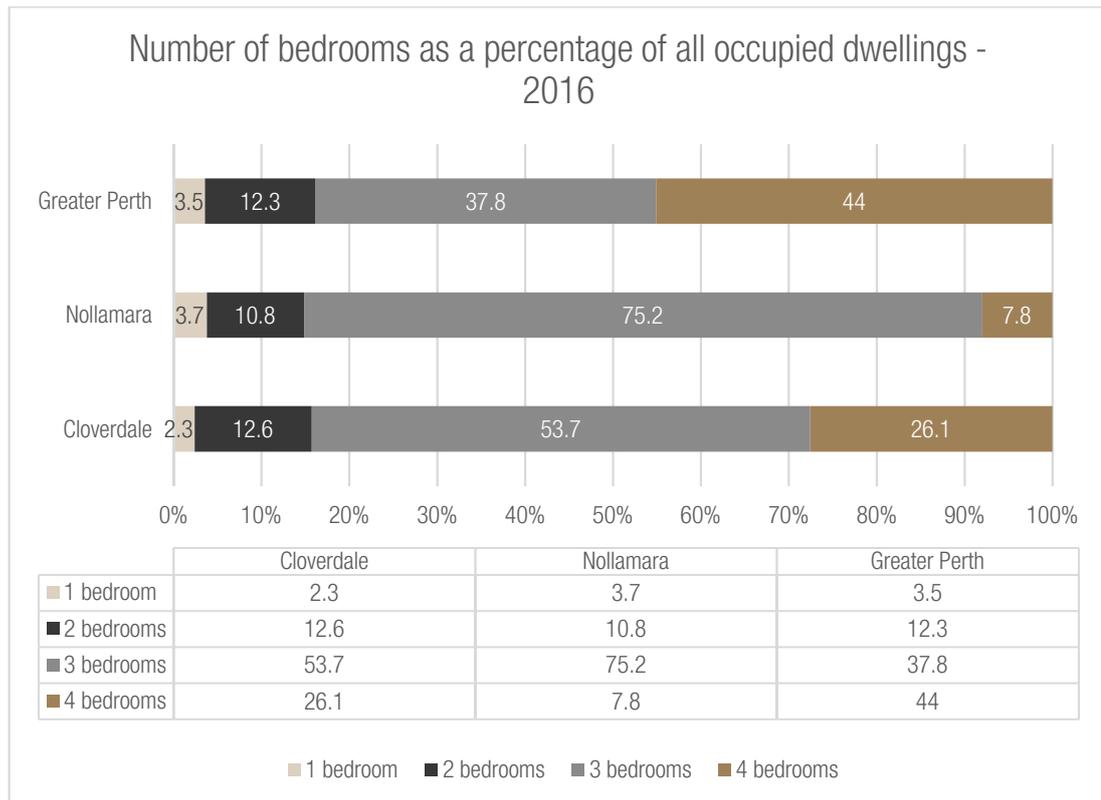


Chart 18: Number of bedrooms per dwelling (source: ABS 2016)

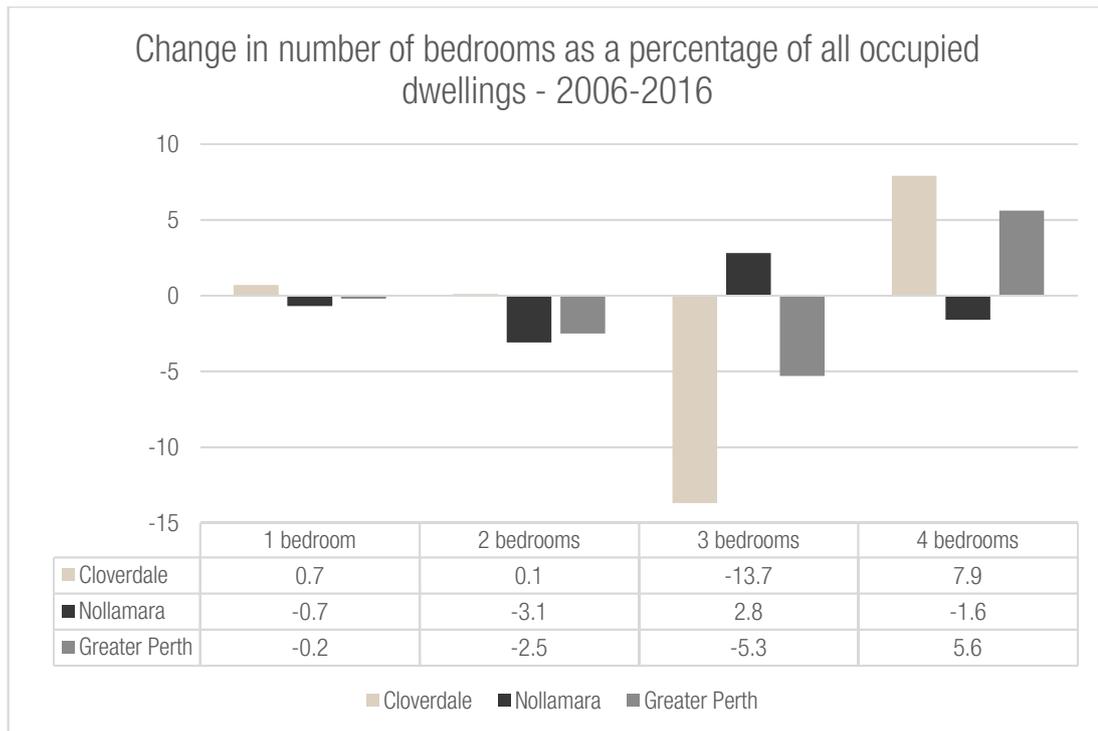


Chart 19: Change in the number of bedrooms per dwelling – 2006-2016 (source: ABS 2016)

This was an important finding, and was contrary to much of the sentiment expressed by respondents in both formal interviews and informal discussions. An emergent criticism of the current process of suburban infill was seeing larger family homes demolished to make way for smaller three-bedroom dwellings, which was therefore unsuitable for the established neighbourhood demographic, and was contributing to a shift in each suburb's demographic composition. The data above suggests that in 2006 the dominant dwelling form was three-bedroom dwellings in both case study suburbs and the Greater Perth area. By 2016, however, this preference towards larger houses saw four-bedroom dwellings become the most prevalent housing offering in the Greater Perth Area. In Nollamara, the prevalence of three-bedroom dwellings had increased further from 72.4% to 75.2%, while Cloverdale had more closely followed the trend of the Greater Perth area with a decline in three-bedroom dwellings and an increase in four-bedroom dwellings. This suggests that following a decade of infill housing development, Nollamara has largely maintained its status quo in terms of dwelling mix (albeit on smaller lots), while Cloverdale has increased its supply of larger dwellings and is moving towards a dwelling mix more closely resembling that of the Greater Perth area average. Suggestions of a significant loss of larger family homes to make way for smaller dwellings were therefore considered to be exaggerated, or anecdotal only.

It was originally considered that two planning controls in particular in the City of Belmont were likely catalysts for this change. Firstly, using targeted density increases rather than a blanket increase across the entire suburb meant that development on land not suitable for subdivision was more likely to be suitable for KDR development, resulting in a larger dwelling, or for renovations and extensions to existing dwellings to add more living area where the land value did not justify a complete demolition and rebuild¹⁸. Secondly, the requirement of the City of Belmont to require two-storey dwellings when developing to an R30 density or above arguably makes the design and construction of a four-bedroom house easier than a single-storey design, especially on smaller lots, and therefore the higher proportion of four-bedroom homes might be expected.

One finding from the data above, however, indicates that this is not necessarily true. The 2016 Census shows that of 651 four-bedroom dwellings in Cloverdale, only 30 (or 4.6%) are described as ‘semi-detached, row or terrace dwellings with two or more storeys’, whereas in Nollamara the result is 38 out of 321 four-bedroom dwellings (or 11.8%). This suggests that in a suburb where the provision of two-storey homes is made mandatory through various planning controls, the intended outcome of a larger diversity of elements such as bedroom numbers is not necessarily seen. Conversely, in a suburb where market-led decisions are made by individual developers, those developers make a determination on where a two-storey dwelling is more viable on a lot-by-lot basis, resulting in a larger investment in the building project in those instances where it was warranted. As alluded to in the previous paragraph, this increase in the proportion of four-bedroom dwellings experienced by Cloverdale may simply be the result of an increase in land values resulting from surrounding infill development making KDR or renovation projects more viable than they were previously. The use of targeted density controls, therefore, might have provided more of an impetus for the diversity in the number of bedrooms across dwellings in a suburb than simply the mandatory inclusion of two-storey homes without discretion.

Housing tenure

By the end of the study period, the situation with regards to housing tenure had changed considerably, most notably in Cloverdale where 2001 Census data showed that homes owned outright were the most common form of housing tenure, at 41.1%. By 2016, the proportion of

¹⁸ It is argued that even in areas with a low inherent land value, the development of new infill dwellings (and particularly two-storey offerings) results in an increase in the land value of even non-subdividable land, thereby encouraging further reinvestment into older suburbs.

homes owned outright in both case study suburbs dropped by twice that of the Greater Perth area, with Cloverdale dropping 15.1% and Nollamara dropping 14.0%.

Although anecdotal arguments and comments received from respondents during the interviews suggested that Nollamara was primarily becoming a suburb of renters, the 2016 Census showed an increase of people buying a house with a mortgage of 7.0%, only marginally less than the Greater Perth Area average of 8.0%. In comparison, Cloverdale only saw an increase of 4.3%. Based on the interview comments, this result was not anticipated. Therefore, despite Nollamara having a considerably large rental market, there was still strong growth in people seeking to become owner-occupiers, almost matching that of the Greater Perth Area average.

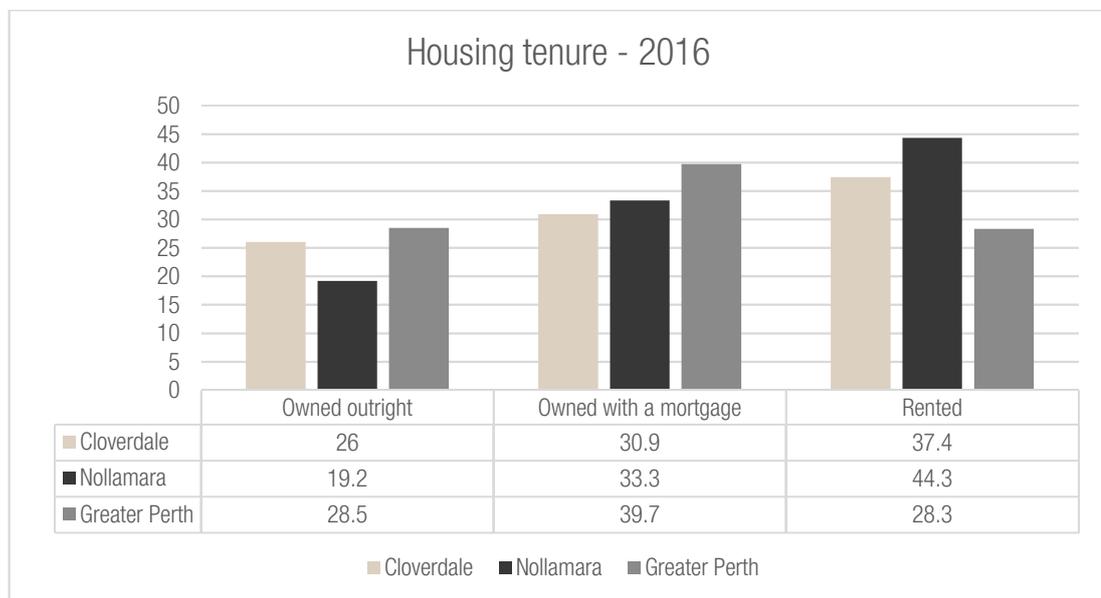


Chart 20: Housing tenure (source: ABS 2016)

The 2016 Census data did, however, record a similar increase in homes occupied on a rental basis, with the increase for Cloverdale (10.9%) and Nollamara (9.4%) being roughly three times that of the Greater Perth area (3.4%). As a suburb, the 2016 Census data shows Nollamara as having the highest rental population, with nearly half of all homes being occupied on a rental basis (44.3%), although rental accommodation was now the most common form of housing tenure for both case study suburbs, while it remained the least common for the Greater Perth area.

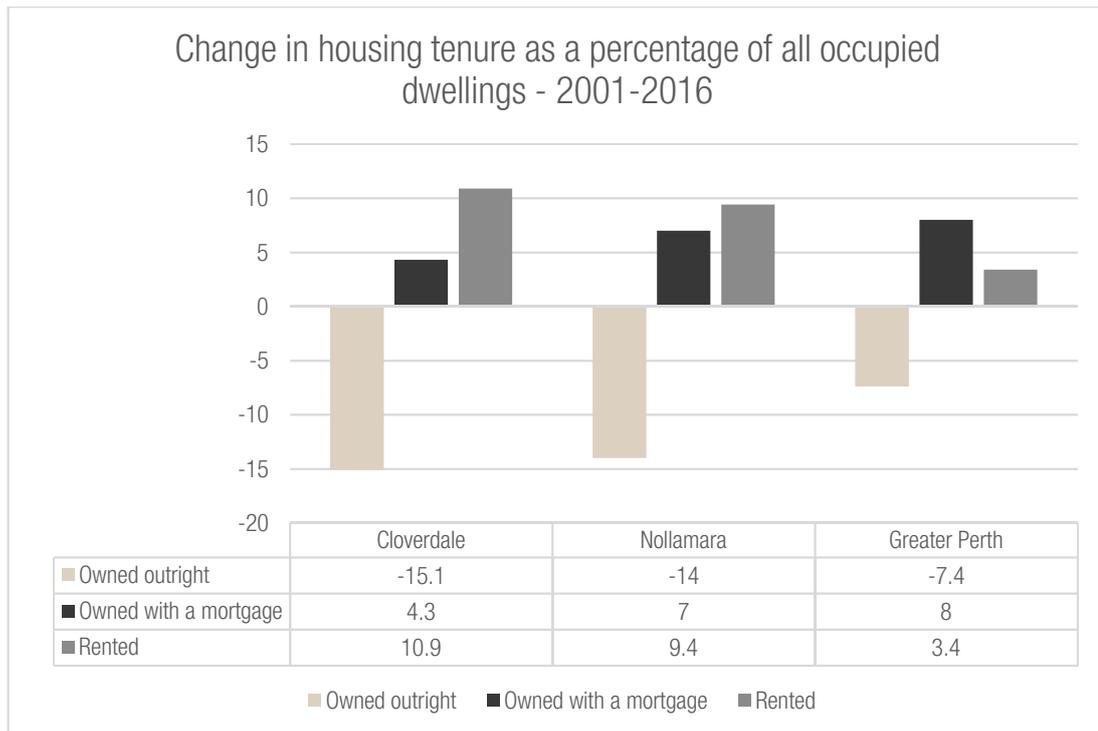


Chart 21: Change in Housing tenure 2001-2016 (source: ABS 2016)

Comments from respondents during the interviews and informal discussions suggested some people still considered the proportion of rental dwellings in Nollamara to be a remnant of the post-War government housing which was so prevalent during the establishment of the suburb. However, examining the housing tenure data in more detail in Table 17 suggests that despite the proportion of rental dwellings in Nollamara increasing from 34.9% to 44.3%, representing an increase in raw numbers from 1,053 rental dwellings to 1,948, was primarily due to the privately-owned rental market. While Nollamara saw a net decrease in government-owned rental dwelling of 7, the increase in privately-owned rental stock jumped from 721 to 1,620 – a net increase of 899 dwellings.

Although the change in Cloverdale's rental stock followed a similar trajectory, it was a lot less pronounced: Cloverdale saw a net decrease in government-owned rental properties of 22, but an increase in privately-owned rental stock from 469 to 813, or 344 dwellings. This is further evidence that the discrepancy between overall tenure type in each suburb in Chart 21 is less likely to reflect historical rental trends of state housing and more representative of recent development trends whereby owners of original post-War dwellings sell or develop their homes, leading to an increase in negatively-geared investment properties under private ownership.

	Cloverdale				Nollamara			
	State or Territory Housing Authority	Other (including private rental)	Not stated	Total	State or Territory Housing Authority	Other (including private rental)	Not stated	Total
Separate house	108	619	13	740	100	509	7	616
Semi-detached, row or terrace house, townhouse	80	168	0	248	207	1,088	14	1,309
Flat, unit or apartment	3	26	0	29	0	23	0	23
Total	191	813	13	1,017	307	1,620	21	1,948
Total (percentage)	18.8%	79.9%	1.3%		15.8%	83.2%	1.1%	

Table 17: Rental dwelling structure by Landlord Type (source: ABS 2016)

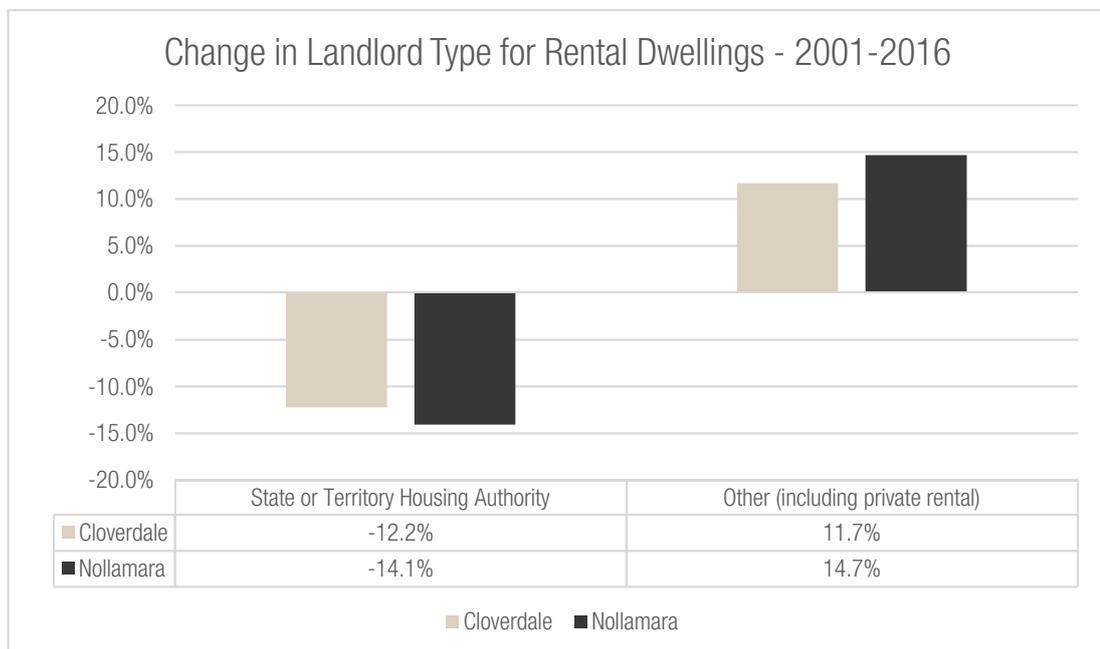


Chart 22: Change in Landlord Type for Rental Dwellings 2001-2016 (source: ABS 2016)

One finding from the Census data pertaining to housing tenure is that as a percentage of all occupied dwellings, Cloverdale saw a smaller increase in people buying a property through a mortgage and a higher increase in renters than Nollamara did. The raw data, however, showed that Nollamara still records the higher proportion of renters. It is argued that while the proportion of rental dwellings in each suburb is often referenced, the *rate of change* in housing tenure is often overlooked: although the numbers are not substantially different, Cloverdale has experienced a greater decline in dwellings owned outright, less growth in dwellings being bought with a mortgage, and a greater increase in the proportion of rental dwellings than Nollamara.

Another finding from the data pertaining to housing tenure is that while the 2001 Census results highlighted the success of earlier Commonwealth housing programs focusing on lost-cost home ownership among lower socioeconomic families rather than fostering a long-term rental population, the 2016 Census results signified a reversal of this trend. Although both suburbs saw a small increase in the number of people buying a house with a mortgage, the greatest growth through the 15-year study period was in the proportion of rental dwellings, a trend which is at odds with the Greater Perth area.

The Social Policy Research Centre's 2016 report, *Poverty in Australia*, argues that housing tenure is a significant factor in measuring and assessing poverty. The report indicated that while some occupants who owned their home outright still fell below accepted poverty line indicators, the outright ownership of one's home usually resulted in greatly reduced housing costs and as such those people "are able to achieve a higher standard of living than those on the same income but with higher housing costs" (SPRC 2016:30). Therefore, measuring the change in proportion of occupants with outright ownership of their homes is an important element in understanding the changes in both case study areas. However, while the notable shift in rental housing from government-owned stock to privately-owned may suggest a positive change towards people managing their housing needs without relying on government support, this might not be a significant indicator in the improving circumstances of the case study suburbs. Surprisingly, the SPRC report also found that while nearly 60% of people living below poverty line indicators were renters, 44.2% were housed in privately-owned rental accommodation, compared with just 11.4% in government-owned housing (ibid.). Therefore, the shift in rental accommodation in the case study suburbs from public housing to the private market is not necessarily an indicator of improving financial situations of the local population.

THE IMPACT OF PLANNING CONTROLS ON HOUSING AND LAND VALUES

As part of this study, an in-depth analysis was undertaken into the long-term effect of planning policy controls on neighbourhood change, particularly in suburban markets in which micro-developers are most active. In order to assess this relationship between planning controls and the emergent built environment, evidence was drawn from house and land sales data from both case study suburbs over the course of a 17-year period. This analysis represents a market-based assessment of market-led infill in comparing the sales performance and market composition of housing in Nollamara, a greyfield suburb with relatively low levels of policy control, with that occurring in Cloverdale, a similar greyfield suburb with more stringent performance-based

planning policy controls. This market-based assessment will help measure the impact of governance on infill development within the case study suburbs, in particular with regards to the resulting impact on housing and lot diversity, and the longer-term impact on price bands within those areas.

The sales data gathered includes all dwelling transactions within each suburb between 1 January 2001 (the year in which the City of Belmont introduced its density controls in Local Planning Policy No. 1), and 31 December 2017. This analysis was undertaken by collating a number of property sales records, and comparing these records by sale price, sale date, and lot size for each respective property.

By recording this data on scatter charts, this analysis is intended to provide a visual representation of the changing nature of key characteristics of suburban environments, notably the size, affordability and diversity of housing options which result from varying levels of planning density controls. The data thus obtained is also being presented to test a range of anecdotal assumptions regarding infill housing models, such as whether density control policies can influence a suburb's capacity to regenerate itself through reinvestment, or whether residents of these suburbs suffer from relatively low suburban mobility.

Further, the data is used to assess the rate of suburban redevelopment experienced by each of the case study suburbs and determine whether this is affected by varying levels of development standards required by their respective planning controls.

In total, 8,979 property sales were recorded and collated across Nollamara and Cloverdale, which represented all recorded sales from within the case study areas between 1 January 2001 and 31 December 2017. Of these, 5,612 were from Nollamara and 3,367 from Cloverdale, with 1,192 of Cloverdale's sales data being from within areas designated with a split density code (primarily R20/40).

For the purpose of comparison, two scatter charts were created for the Cloverdale data, with one showing all recorded sales for the suburb and the second showing all recorded sales only in the areas reflecting an R20/40 density code. This subset of the results was used to assess the changes specifically within areas with a density code suitable for medium density infill, but also to understand how this more localised data contributed to change across the suburb as a whole. As Nollamara had a blanket density code of R40 throughout the study period, only one chart was created for this suburb.

Lastly, the results of this analysis were discussed with two property sales agents, MN and CT, for the purpose of testing the interpretation of the evidence with their experience operating in those markets, and to gather further insight into the trends or patterns which emerged and the implications which could be inferred from the data.

Following advice from the above respondents, a small number of these recorded property transactions were omitted from the analysis prior to plotting the data on scatter charts, which are outlined on the table below. These sales were deemed outliers due to exceedingly high or low sales price or lot sizes. It was considered that these outliers were either a result of an error by the persons entering the sales data into sales registries, or perhaps formed part of a larger multi-tiered property exchange, and therefore were not an accurate reflection of the actual value of the site. Other exclusions included lots which were excessively large in size, as these were considered above the scale of infill projects usually undertaken by the small-scale developers who were the basis of this study, and lots with excessive sales price, most likely through an error in recording the data, or the recording of the sales price for a parent lot as the same sale price for each subsequent grouped dwelling created on the site. Also excluded were sales of property which was not zoned Residential, as it was unrelated to the purpose of this study. These exclusions are outlined and justified on Table 18.

Reasons for exclusion from study	Number of records excluded	Examples of excluded sales records
Land use does not form part of the study	111	311 Abernethy Road, Cloverdale (<i>Commercial</i>) 51 Nollamara Avenue, Nollamara (<i>Business</i>)
Land parcel deemed larger than that undertaken by typical micro-developer	12	25 Montrose Way, Nollamara (<i>1,999m²</i>) 277 Belmont Avenue, Cloverdale (<i>1,653m²</i>)
Sale price excessively low	41	1/1 Ravenswood Drive, Nollamara (<i>\$3,500 sale price</i>) 137B Williamson Avenue, Cloverdale (<i>\$20 sale price</i>)

Sale price excessively high	18	21 Treave Street, Cloverdale <i>(\$81,020,010 sale price)</i> 5/50 Carcoola Court, Nollamara <i>(\$5,280,000 sale price – same price recorded for all 16 dwellings in this development)</i>
Total sales records excluded	182	

Table 18: summary of excluded data

The total of 182 sales records excluded from the study comprised 55 from Nollamara and 127 from Cloverdale, representing 2.02% of the 8,979 total records from the combined study areas. This reduced the combined number of property sales included as part of the study to 8,797, with 5,557 from Nollamara and 3,240 from Cloverdale.

SALES DATA ANALYSIS: LOT SIZE VS SALES PRICE

The three following graphs show:

1. Recorded lot size (x-axis) vs sale price (y-axis) for Nollamara (Figure 46)
2. Recorded lot size (x-axis) vs sale price (y-axis) for all of Cloverdale (Figure 47)
3. Recorded lot size (x-axis) vs sale price (y-axis) for only R20/40 lots in Cloverdale (Figure 48)

The intent of charting this data is to understand the market response to varying levels of governance as it relates to density control, notably with regards to the impact it might have on the diversity of available lot sizes in each case study suburb, and any relationship between lot size and sales price.

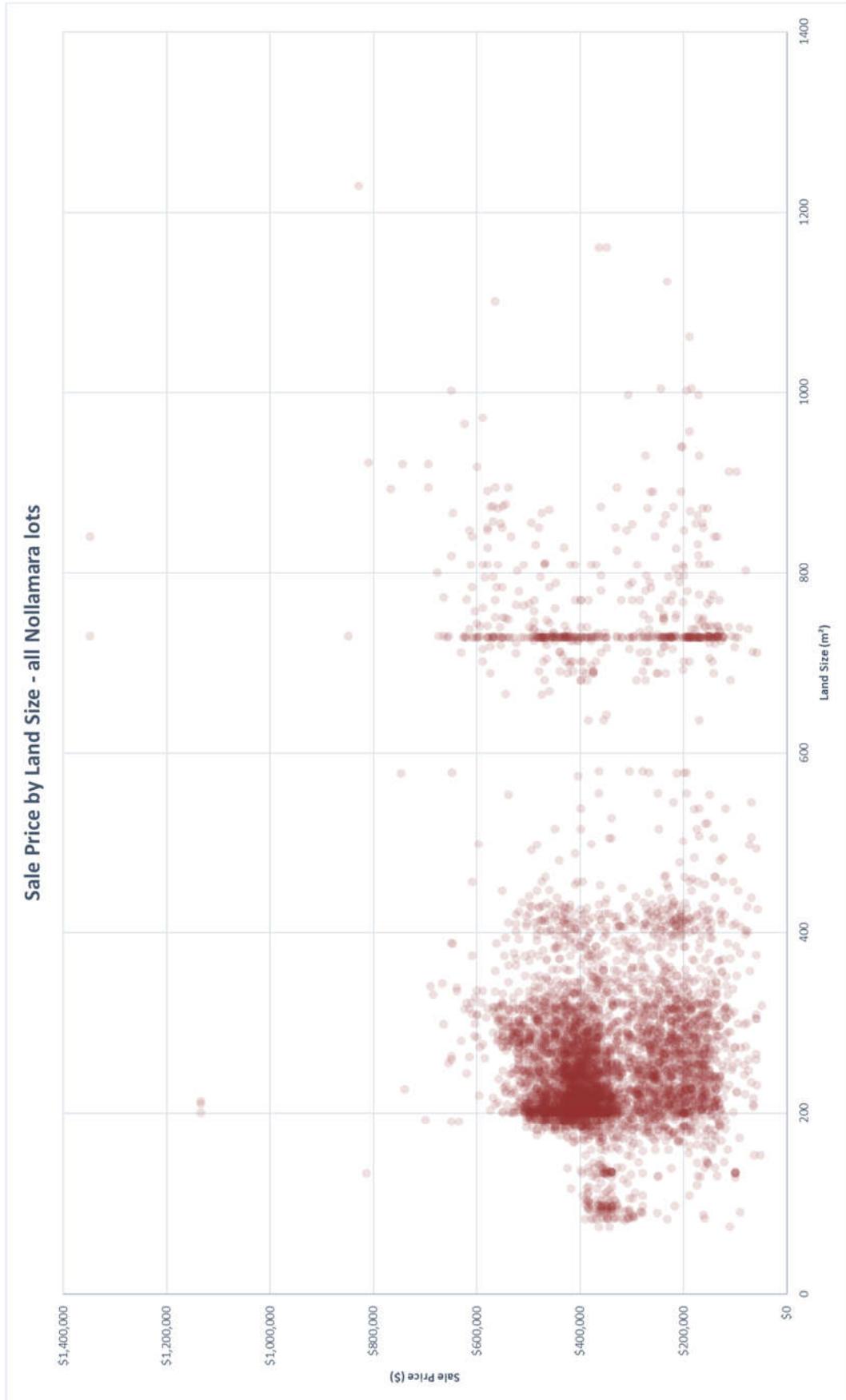


Figure 46: Sale Price by Land Size (all Nollamara lots)

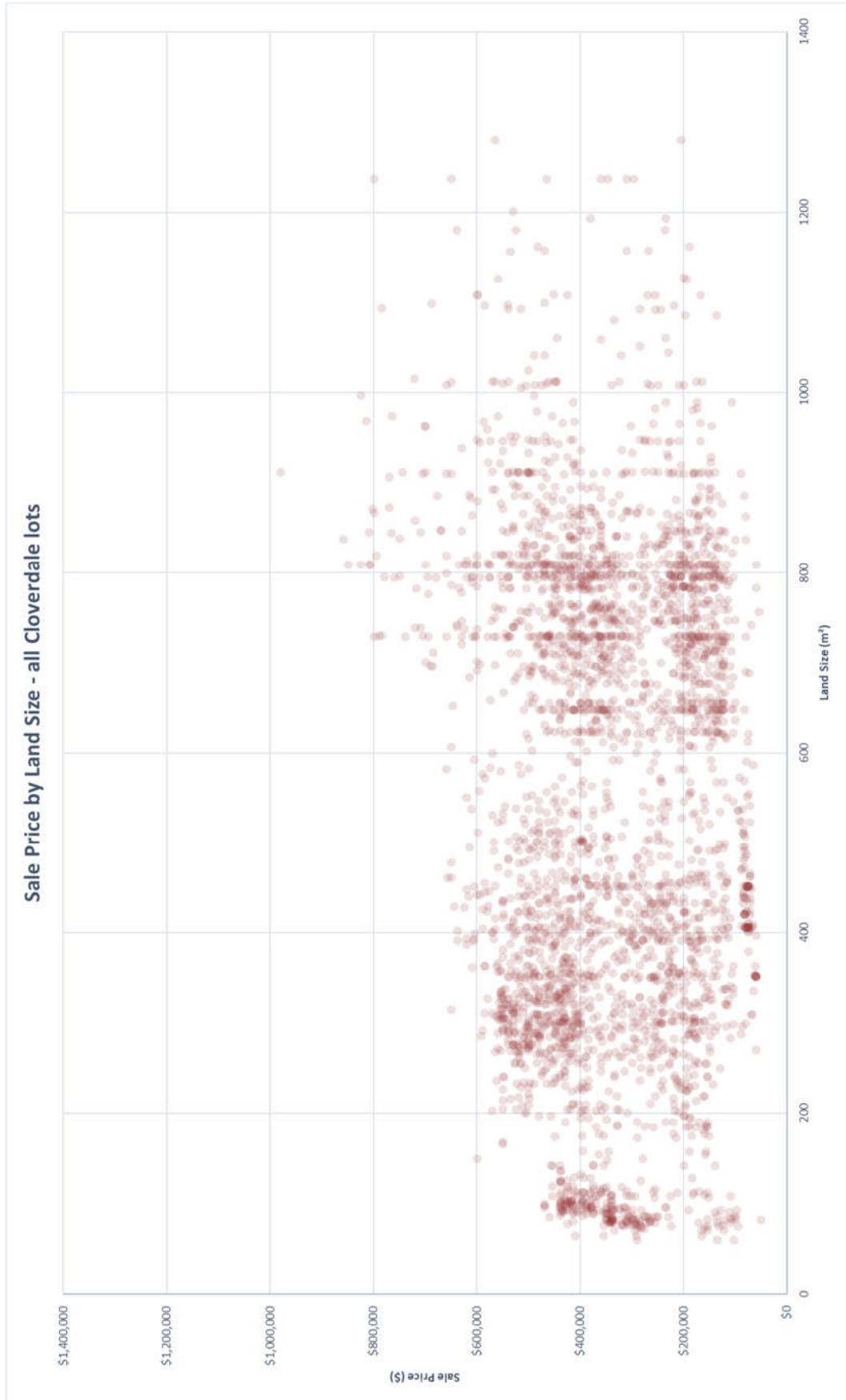


Figure 47: Sale Price by Land Size (all Cloverdale lots)

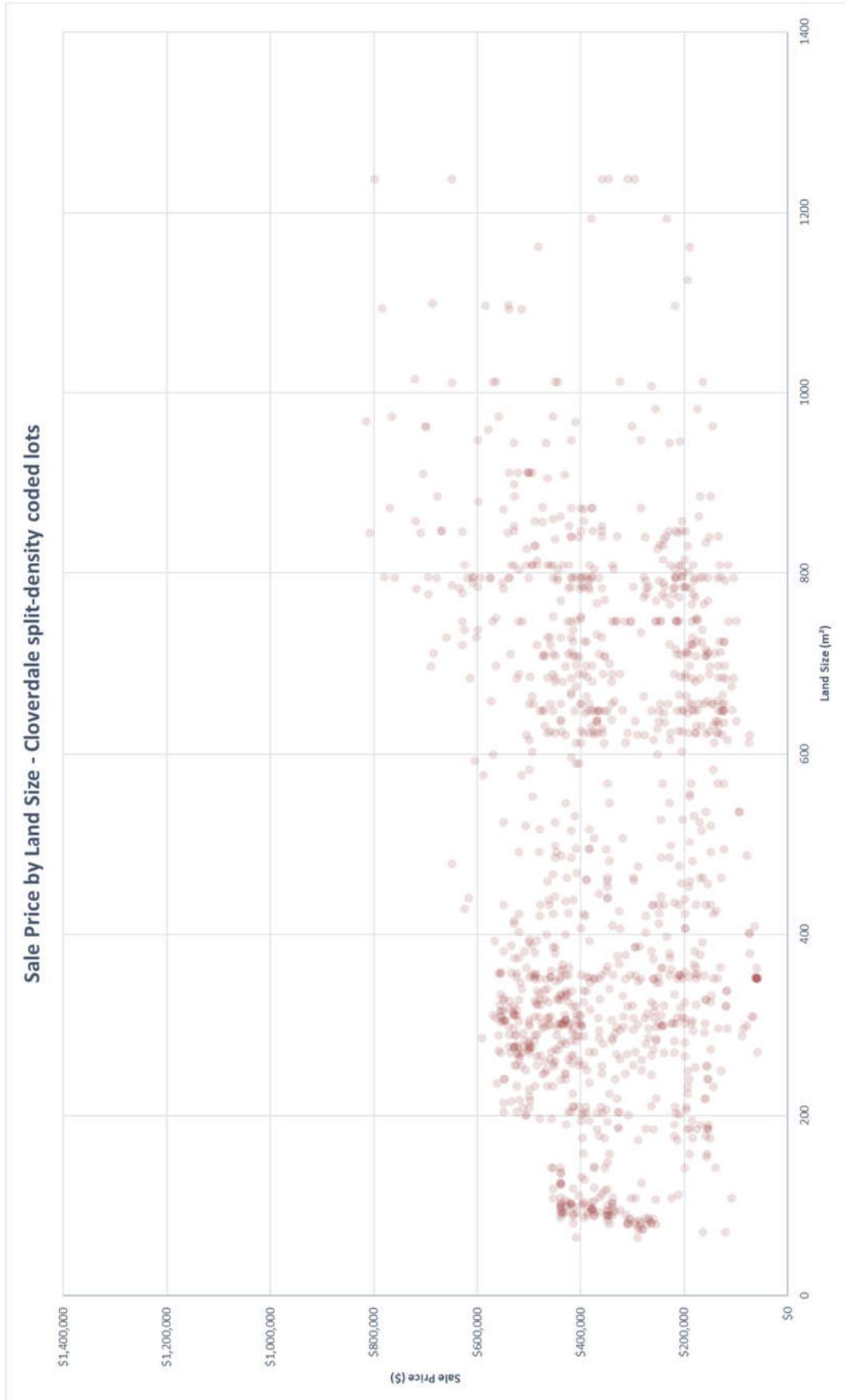


Figure 48: Sale Price by Land Size (Cloverdale split-density lots)

The scatter chart for Nollamara shows two polarised groups of data, the first representing a very large number of lots in the 200-240m² range, and the second representing a smaller cluster of lots in the 700-800m² range. Very few data points exist between these two clusters, particularly in the 450-700m² range.

Upon analysing the data, a number of characteristics typical of the Nollamara suburban environment emerge. First, a very distinct cluster of lots measuring 728m² is evident, which illustrates the largely uniform nature of lots created in the suburb's initial establishment in the post-War period. So uniform were the clustering of these lots that they appear as a near-vertical line on the chart, which represents lots of identical sizes sold for varying prices over time¹⁹.

Second, a particularly dense cluster appears in those lots of 200m² in area. The Residential Design Codes require that subdivided lots with an R40 density code are to be an average size of 220m², with a minimum size of 180m². As is typical in battle-axe style developments, once the subdivision plan has incorporated a compliant vehicle access leg to service the rear lots, generally accommodating 120-130m², there is very little variance in the area assigned to each subdivided lot, which contributes to a very dense cluster of lots of similar size.

Thirdly, the distinct lack of data representing lots between these two clusters, as noted above, shows a clear polarisation, representing a low level of diversity in development options available. There is also a far greater number of sales recorded for lots in the 200-240m² range than in the 700-800m² range, as each large parent lot purchased is inevitably acquired as a development site which, soon after gaining the required statutory planning approvals, returns three or more smaller lots to the market. Sales agent MN commented on this polarisation of housing options, suggesting it was typical of areas developed by investors rather than owner occupiers:

MN: "When you leave something like this up to the market to decide, you soon see that no-one's in this game for altruistic reasons. Very few developers in this space will want to stray too far outside the accepted market for the area. Nearly every developer working through these suburbs wants to maximise their yield above all else."

The scatter chart for Cloverdale (suburb), showing recorded data for the entire suburb, shows a similar range in sale prices to Nollamara, but with a more even distribution of lot sizes. Although less recorded sales data for Cloverdale's R20/40 lots exists, due to the smaller number of total

¹⁹ The impact of time on sale price is not reflected on this chart.

lots designated with the split density code, a similar pattern is visible, with a more even distribution of lot sizes.

The long-term impact on lot diversity is further highlighted when consolidating the sales transactions into ranges of 100m² increments. As Chart 23 shows, the sales data for housing in Nollamara suggests a market saturation of lots between 200-299m², which comprise 61.0% of all transactions in the suburb over the course of the study period. In contrast, lots measuring over 400m² in size comprised a combined total of only 14.1% of all transactions, with the largest subset of those being lots measuring 700-799m² (which includes the original post-War parent lots), making up 6.7% of all transactions.

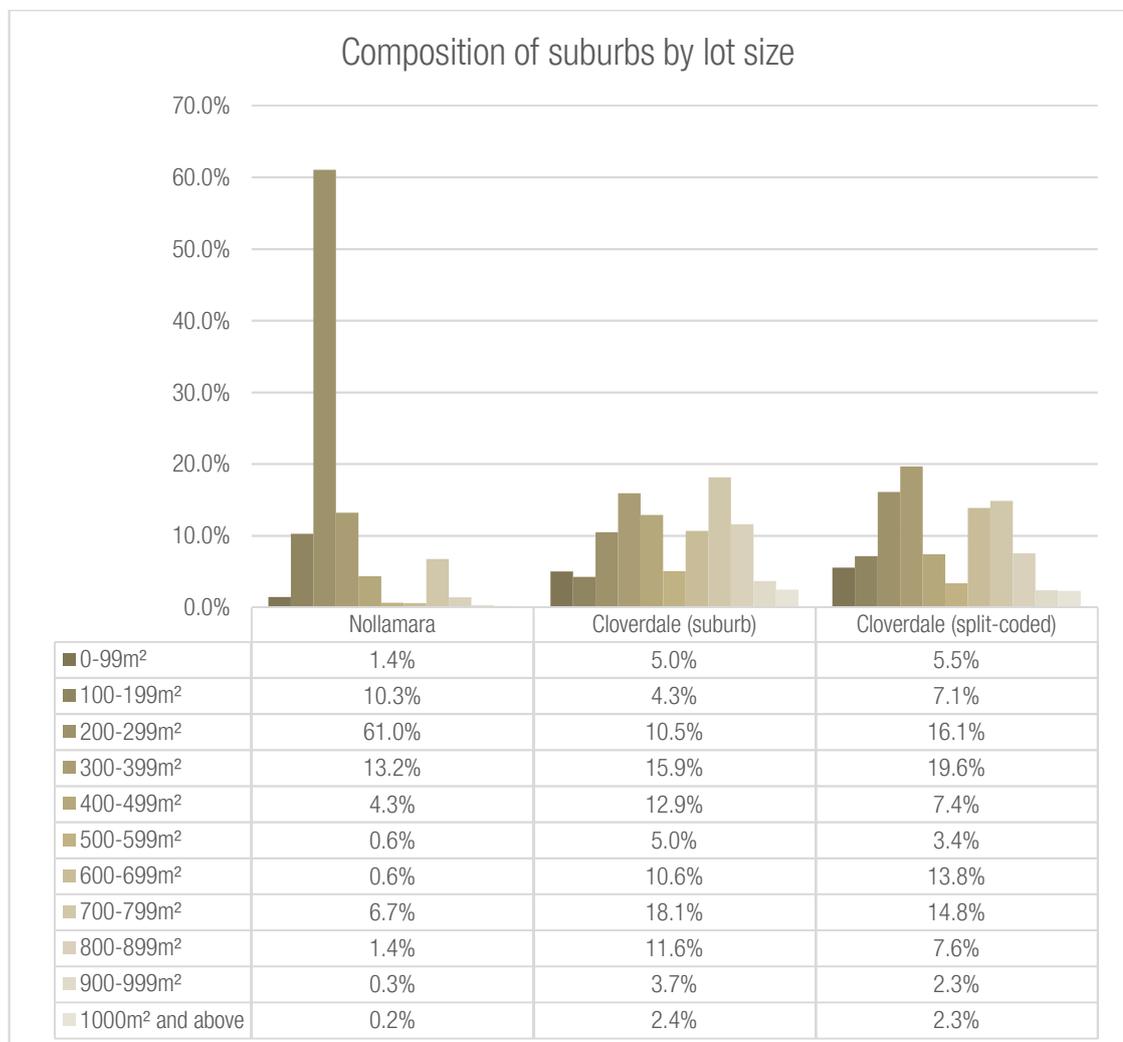


Chart 23: composition of suburbs by lot size increments (source: ABS 2001)

Conversely, Chart 23 suggests a much more balanced composition for Cloverdale (suburb) and Cloverdale (split-coded) lots, with lots measuring 200-299m² comprising just 10.5% and 16.1% of transactions in those areas, respectively. No single category in the Cloverdale (suburb) or Cloverdale (split-coded) transaction data comprises 20% or more of their respective areas, clearly revealing a much less homogenous composition when compared with Nollamara.

Sales agent CT suggested that the greater diversity in the Cloverdale study areas could reflect a higher incidence of people developing sites with a mindset of occupying one of the resulting dwellings in the future:

CT: “To me, this really reflects that developers in these suburbs [Nollamara] aren’t generally looking to live in their projects once they’re finished. Where that is the case, you tend to see more variation in the outcome because they might consider sacrificing one additional dwelling if it means a bigger home which they’ll be living in.”

CT also suggested, however, that the more even distribution of lot sizes could also be attributed to smaller developers who simply did not have the financial capacity to meet the additional costs of building to the standard required to earn the higher density codes under the Belmont policy, notably the inclusion of two-storey dwellings to unlock the higher R30 or R40 density code. It was suggested that developers in those circumstances would often build fewer dwellings, resulting in larger lots, and construct those dwellings to the maximum size their budgets would permit.

Both respondents also noted that there was very little difference in the sales price range between the larger parent lots and the smaller, subdivided lots. This challenges the claim of some authors supporting infill housing in that it can lead to the creation of more affordable dwellings, with Weller (2009) suggesting that only factors such as affordability will make Australians finally relinquish their aspiration for backyards. This sales data suggests that instead of prices dropping as lots get smaller, buyers are simply making the trade-off between a larger yard with more outdoor space, and a newer dwelling with only small private courtyards. One respondent also noted, however, that without the ‘development potential’ price tag afforded to the larger parent lots, its sale price would be much lower, arguing that buyers are therefore paying more for newer homes on smaller lots in real terms. This suggestion, while ostensibly correct, may strictly be academic, however, as it draws parallels to findings in the previous chapter that buyers seeking to occupy an original post-War dwelling on a larger lot were generally priced out of the market by the ‘development potential’ price tag as the additional cost for an older, and often obsolete, house without the additional financial return coming from future development was not feasible (and

rarely were such greyfield suburbs seen as sought-after locations by people with the capacity to be more discerning).

SALES DATA ANALYSIS: SALES DATE VS SALES PRICE

The same data has been plotted below on three new charts below, showing:

1. Recorded sales date (x-axis) vs sale price (y-axis) for Nollamara (Figure 49)
2. Recorded sales date (x-axis) vs sales price (y-axis) for all of Cloverdale (Figure 50)
3. Recorded sales date (x-axis) vs sales price (y-axis) for only R20/40 lots in Cloverdale (Figure 51)

The purpose of the following charts is to examine the long-term impact on sales prices for each case study suburb, and to understand the extent to which this can be identified as being a result of planning density controls. By plotting this data, each scatter chart visually represents the range in sale prices in each suburb over time, as well as the deviation from the average price and the rate of sales. The lot size for each sale has not been represented on these following charts.

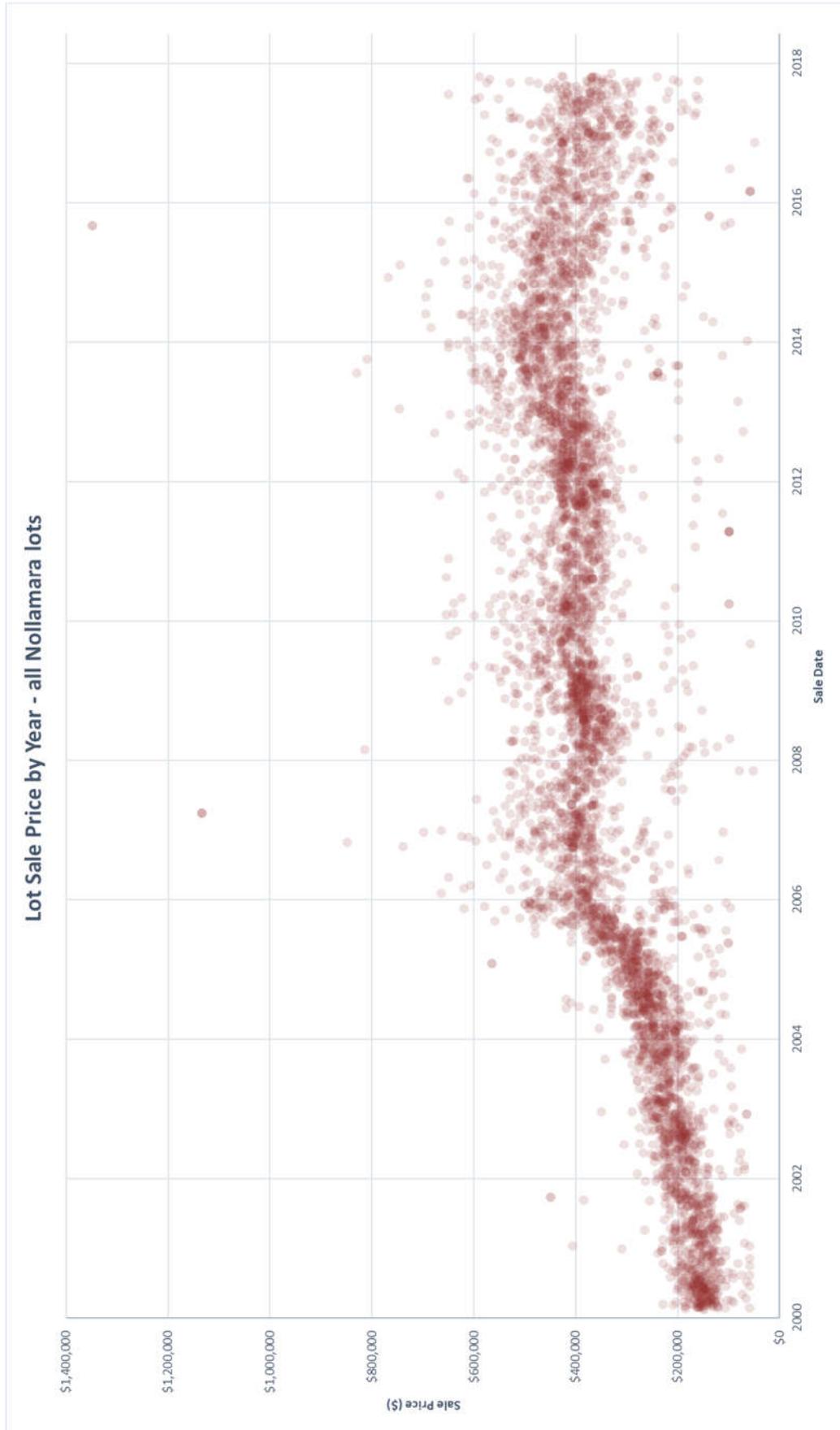


Figure 49: Sale Price by Year (all Nollamara lots)

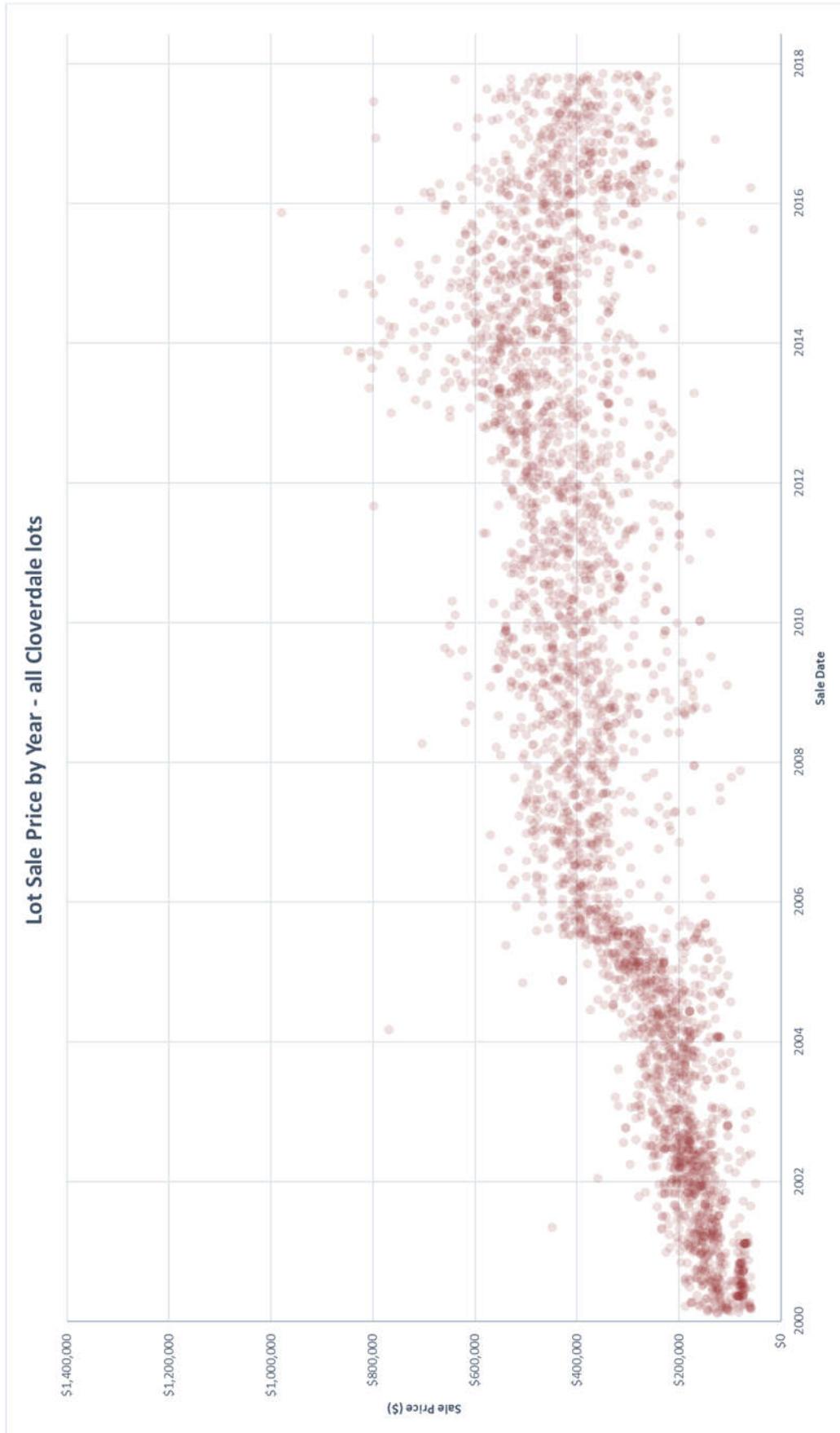


Figure 50: Sale Price by Year (all Cloverdale lots)

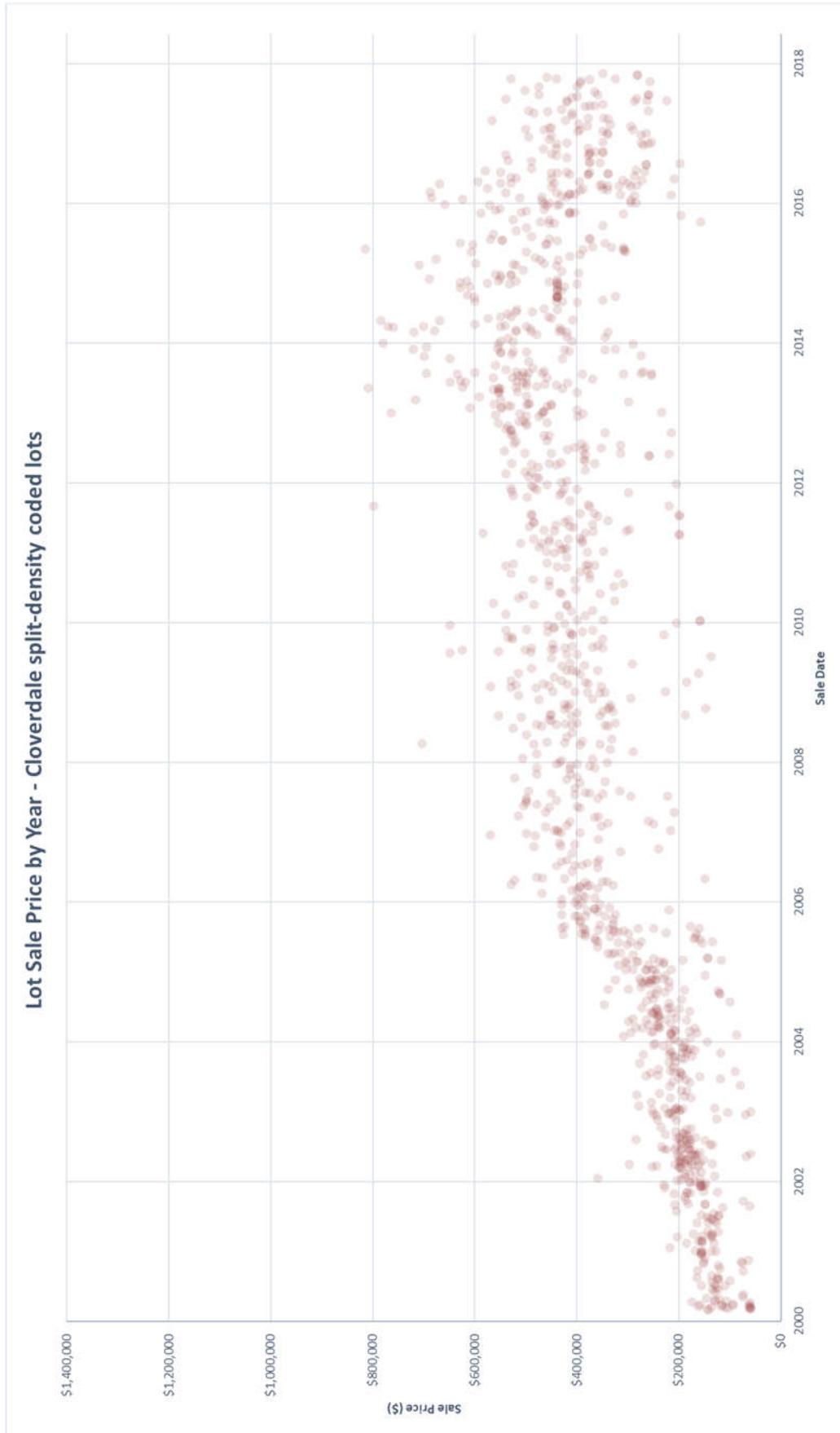


Figure 51: Sale Price by Year (Cloverdale split-density lots)

The plotted data on each chart shows a similar trajectory in sale prices for each suburb between 2001 and 2017. A sharper increase in sales price is evident during 2005-2006, representing the impact of increased population and housing demand resulting from the state's mining boom, followed by a period of fluctuation, and a gradual easing of prices between 2014 and 2017.

These three charts show that Nollamara experienced a much lower deviation in house prices throughout this period, demonstrated by the more consolidated band running through the graph. Although Cloverdale prices followed the same trajectory and fluctuations as those in Nollamara, both Cloverdale as a suburb, and Cloverdale's R20/40 areas, have developed a much less consolidated price band, representing much higher range in property values over time.

The resource persons, MN and CT, both suggested that the consolidated price band seen in the Nollamara data represented a suburb lacking in diversity in dwelling types, as an oversupply in one particular commodity meant there was not only more competing product for buyers to choose from, but there was also less to market as a point of difference in order to interest buyers. Buyers usually differentiated on the basis of the number of bedrooms, the age, and lot size of a dwelling as a primary concern. Secondary concerns included feature items such as internal or external colour schemes, quality of fit-outs (such as laminate versus stone bench tops in kitchens), or minor architectural features (such as external render, roof gablets, or plinth bands).

CT: "Like you've seen, in some of these suburbs it's not that there's another similar house nearby, it's that the exact same house is nearby. And around the corner, and across the road. If one seller wants ten [thousand dollars] more than someone else selling exactly the same house two doors down, there's very little they can add to justify that."

Both respondents suggested that in the absence of the space required for larger additions, such as extensive landscaping or a swimming pool, and the restrictions sometimes inherent with altering the exterior of one dwelling in a matching group of three or four, sellers were generally limited to improvements which could be made to the interior of a dwelling. CT also noted that many items once considered a luxury or 'upgrade' to a house, such as stone bench tops or air conditioning, were now considered by most buyers to be standard features. He suggested that the proliferation of such items being included as bonus offers through project home builders in recent years had skewed buyers' perceptions over what constituted an acceptable standard or minimum quality, particularly for buyers looking for entry-level housing.

Both MN and CT suggested that the scatter charts for Cloverdale, particularly for the split-density coded lots, were representative of a buyer's market with greater diversity of options, and argued that the diverse range of lot sizes available, outlined in the previous set of charts, played just as much of a role as the diversity of housing types.

MN: "Now you start to see how one dwelling might stand out against another. You could have two identical three-bed homes, but this one has a backyard that's 40 or 50 square metres bigger... well, now you can start to justify a higher price, and the buyers will understand that difference."

MN further argued that the varying housing densities which resulted from the performance-based split density codes also resulted in a broader diversity in house typologies and subdivision arrangements. For example, numerous examples existed where developers had built two dwellings by subdividing a parent lot lengthways, creating two narrow lots with individual street frontages, rather than a more typical battle-axe arrangement. MN suggested that not only did the individual street frontage usually result in a higher sale price, but meant that the dwellings were more likely to appear unique as they were not necessarily built as part of a 'matching set' of grouped dwellings, leading to further differentiation in the buyer market.



Figure 52: A typical suburban block showing a heavy reliance on battle-axe subdivision configurations, and grouped dwellings built with matching materials (source: Nearmaps 2020)



Figure 53: Typical side-by-side subdivision configurations which show less reliance on repeated floor plans and matching colour schemes (source: Nearmaps 2020)

In co-plotting the data on a single chart and examining a polynomial trendline for each suburb, the long-term impact of this price consolidation can also be seen. Figure 54 shows both data sets co-plotted, with sales data for all Nollamara lots in red, and all Cloverdale lots in blue. Trendlines have been added with a solid trendline representing Nollamara and a dashed trendline representing Cloverdale. The trendlines suggest that although both suburbs follow a similar trajectory over the period of the study, the average sale price band for Cloverdale, which started slightly below Nollamara in 2001, had risen to be marginally higher than Nollamara by 2017. This suggests that maintaining greater diversity in lot sizes and house typologies, and the broader socio-economic demographic mix local governments hope will be attracted to a suburb as a result, has been a contributing factor in the long-term improvement in average sale prices in Cloverdale.

The trendlines also suggest that the more agglomerated house prices in Nollamara, at least in part due to a lack of diversity in house types, was not a significant problem during periods of high housing demand, such as during the mining boom years of 2005-2006, but meant that those house values were less resilient when the demand waned in subsequent years.

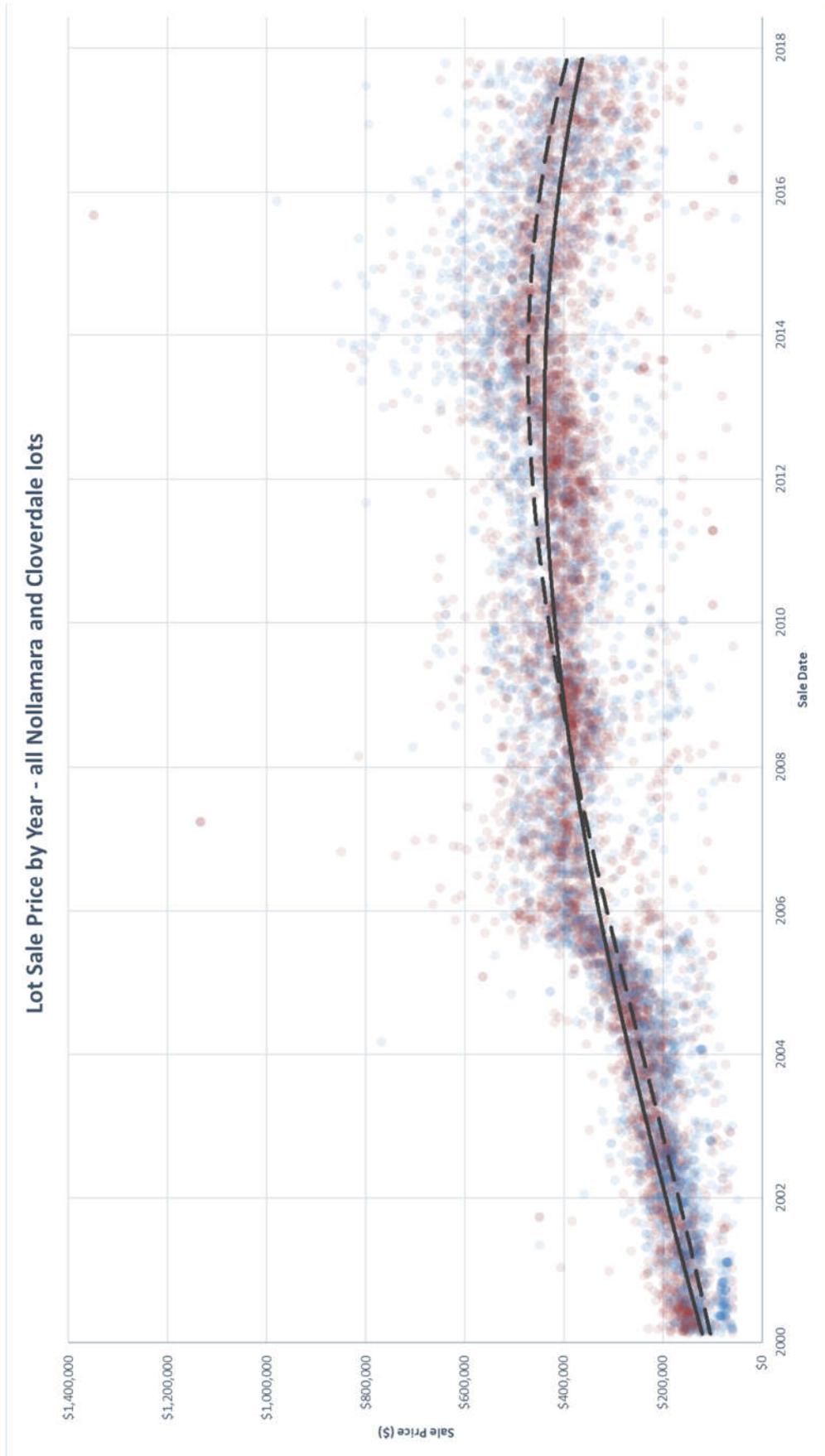


Figure 54: Sale Price by Year (all Nollamara and Cloverdale lots)

SALES DATA ANALYSIS: LOT SIZE VS SALES DATE

Lastly, the same data has been plotted below on three new charts, showing:

1. Recorded lot size (x-axis) vs sales date (y-axis) for Nollamara (Figure 55)
2. Recorded lot size (x-axis) vs sales date (y-axis) for all of Cloverdale (Figure 56)
3. Recorded lot size (x-axis) vs sales date (y-axis) for only R20/40 lots in Cloverdale (Figure 57)

The purpose of the following charts is to examine any relationship between the application of varying levels of governance for infill housing and the rate at which redevelopment occurs in a greyfield suburb. By plotting this data, each scatter chart visually represents the range and variability of market options, and its impact on market saturation over time. The price of each sale has not been included on these charts, as they reflect the general trends in lot sizes over time only.

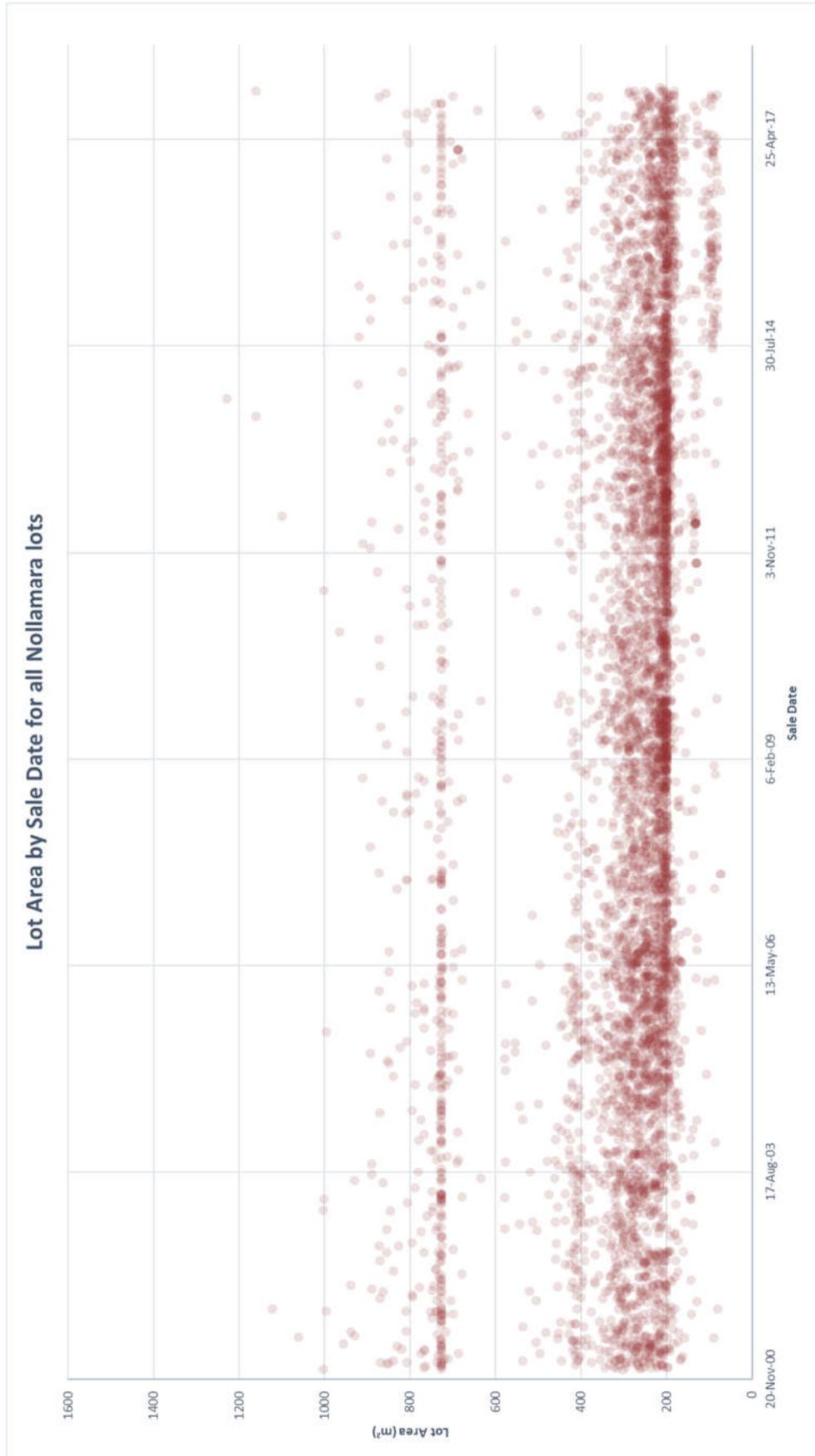


Figure 55: Lot Size by Sales Date (all Nollamara lots)

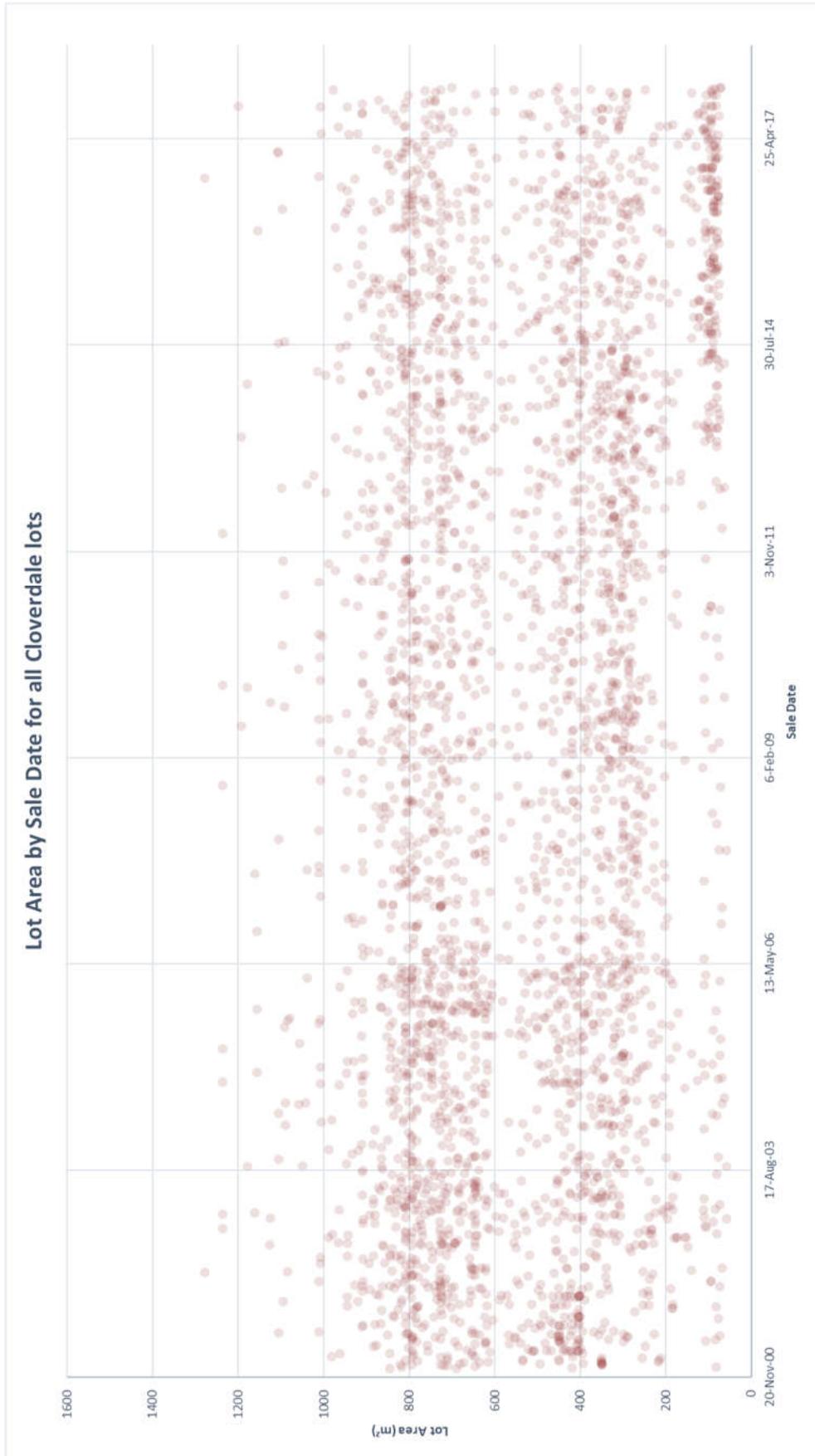


Figure 56: Lot Size by Sales Date (all Cloverdale lots)

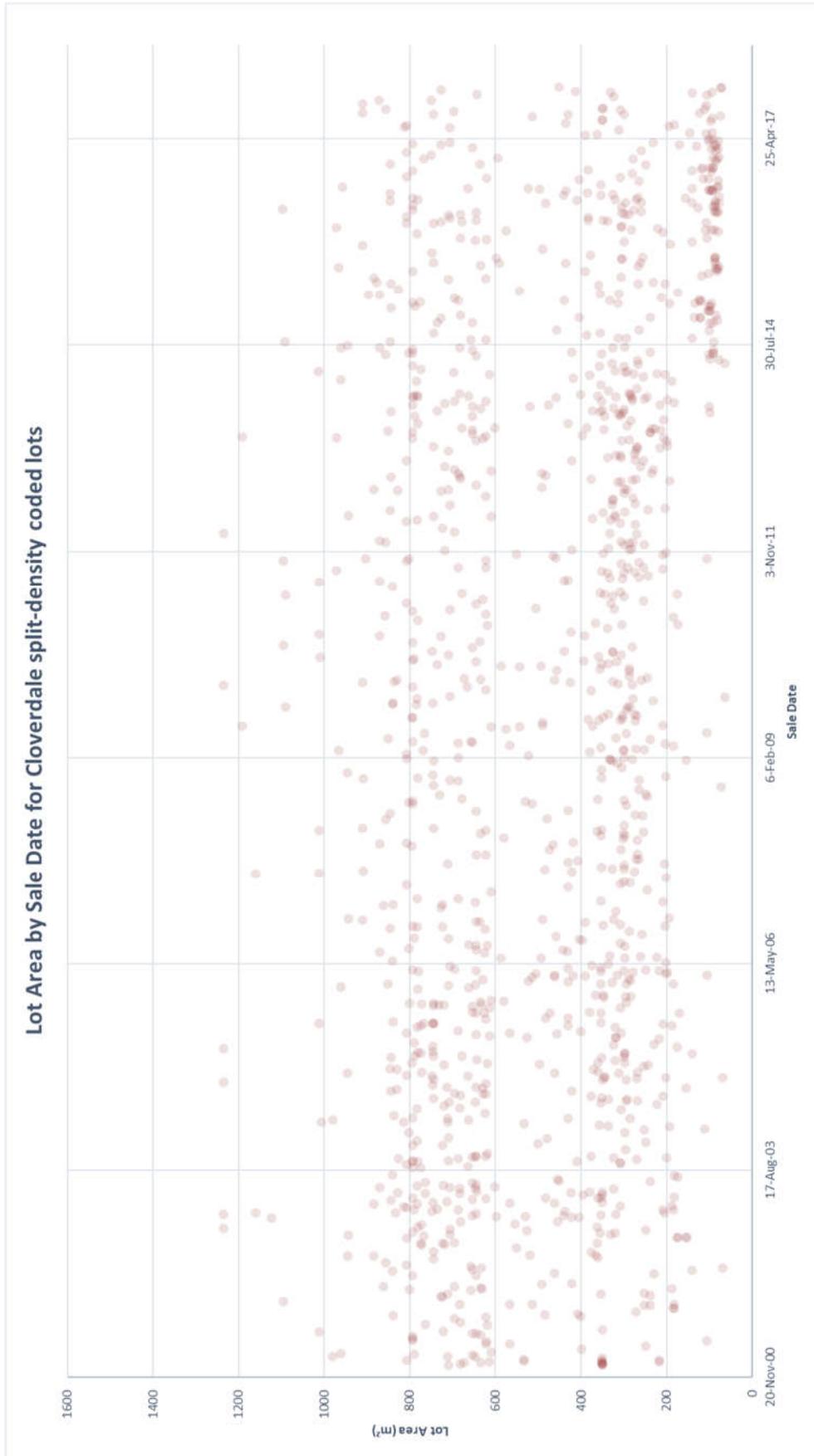


Figure 57: Lot Size by Sales Date (Cloverdale split-density lots)

The plotted data for Nollamara again emphasises the growing polarisation in housing diversity, with an apparent paucity of market supply for lots ranging from 400-700m² in size. A noticeable trend is that the purchase of larger parent lots continues at a consistent rate, however there is a significant increase in the concentration of subdivided lots around the 200-220m² size which supports the suggestion that each parent lot purchased is redeveloped at a higher density, adding more smaller offerings to the market in its place. Also noticeable is a small cluster of lots in the 75-100m² range emerging from late 2014. This represents the gradual introduction of smaller one- and two-bedroom walk-up apartments, generally built in groups of 6-12 on parent lots, which slowly increased in popularity following the 2009 amendments to the R-Codes discussed in the previous chapter. These smaller areas, representing an apartment's strata title areas rather than traditional lot sizes, are also emerging as a niche market offering, although there is unlikely to be any housing product which will bridge the gap between these apartment offerings and the smallest permitted R40 land parcel of 180m².



Figure 58: Typical suburban two-storey apartment projects in Belmont, flanked by detached single dwellings (source: Nearmaps 2020)

In contrast, the data for Cloverdale as a suburb shows an increasing market depth across nearly all lot sizes, which is also reflected in Cloverdale's split density code areas. Cloverdale has also seen an increasing number of apartments added to the market, with the City of Belmont widely regarded as being supportive of the development of these products in suburban areas to further broaden the housing diversity in the area.

Both resource persons regarded the above charts as representing a consistent but reasonably rapid rate of change for each suburb, although both highlighted the homogenising outcome of market options in Nollamara as confirmation of the consolidated sale prices demonstrated for the suburb in the previous chart. Both also noted that although Cloverdale's split density lots demonstrated a much broader diversity in lot sizes, and ostensibly house types, than Nollamara, it was much more significant when considered as a contribution to housing diversity for the broader Cloverdale area.

SUMMARY OF SALES DATA ANALYSIS

The assumptions made prior to examining the sales data were largely supported by the findings. Through the formal interviews, informal discussions with resource persons, and the writer's own experience in managing and implementing urban infill development projects, it had been anticipated that the City of Belmont's density control policies would have resulted in a broader diversity of dwelling types and lot sizes, particularly when considering Cloverdale as a suburb rather than only the recoded R20/40 lots in isolation. Although it could be argued that this comparison is unfair, as it includes Cloverdale's single dwelling R20 lots, it serves to contrast the two approaches to suburban renewal which includes the City of Stirling's blanket approach to increasing density for Nollamara. Further, despite less data being recorded for Cloverdale's R20/40 lots, a similar trend towards greater diversity in housing types, lot sizes and sale prices was clearly evident when compared to the data from Nollamara.

It was also assumed that the City of Belmont's targeted approach to increased density would lead to a higher rate of growth in perceived house values over time, as a result of reduced competition for similar housing, and the increased capacity for the resulting stock to maintain value when periods of high demand eased off. Although the end difference between the two case study suburbs was not as pronounced as anticipated, perhaps more important was that over the course of the study period, average sale prices in Cloverdale surpassed those in Nollamara, to finish in a higher net position, suggesting a level of suburban renewal with higher market approval.

The outcomes presented in the above charts suggest that the housing markets active in the case study suburbs closely adhere to the 'price mechanism', an economic principle which refers to the impact of surplus and scarcity of a commodity on price. This is clearly contrasted in the recorded sales data of the two case study suburbs: in Nollamara, an abundance in supply of dwellings similar in age, typology, lot configuration, and quality of fixtures has seen a compression of sale prices,

whereas in Cloverdale, which sees a more diverse market range, also experienced greater variability in property values.

This principle of scarcity can hinder attempts to bring about suburban renewal in two ways. First, as seen in the charts above, the lack of market diversity in Nollamara results in abundance of competing product with little to distinguish between the various offerings, which is represented by little variation in sale prices. A largely homogenous housing supply similarly attracts a largely homogenous buyer profile, as other demographics or socio-economic groups look elsewhere to meet their needs. This therefore poses a challenge to those planners who maintain that a broad and diverse demographic is essential for healthy suburbs, or for revitalising distressed neighbourhoods.

Secondly, as homes on original large lots become more scarce within Nollamara, homes on similar large lots in neighbouring suburbs with no increase in density codes are also perceived as increasingly scarce, and as a result are seen as being of higher value. In addition to this, they can also be perceived as being in a suburb more worthy of preservation or protection, which also contributes to an increased perception of these suburbs as more desirable locations. This only adds a further obstacle for distressed or aging neighbourhoods, which are often already struggling to counter broadly-held perceptions as being undesirable locations. In that way, the blanket redevelopment of one suburb can have a positive impact on house prices for suburbs adjacent to it, without them having to implement any changes to their planning controls or housing stock. Therefore, increasing density as a strategy to attract reinvestment in greyfield suburbs and encourage suburban renewal and redevelopment, can further benefit neighbouring areas instead.

Lastly, the results of the sales data analysis appear to confirm the initial assumption that greyfield suburbs typically benefit from more stringent planning policies to generate suburban renewal, and that adopting a market-led approach usually resulted in lower-quality development outcomes as those suburbs were more easily targeted by the 'lowest common denominator' of developers. This validates Hoover and Vernon's iteration of Neighbourhood Life Cycle theory, which further supports the suggestion that greyfield suburbs are often the location of poor quality infill, whereas more affluent areas often seem to see higher quality outcomes delivered.

The importance of this data is in testing the findings of the literature review, in which it was argued that some neighbourhoods had failed to generate ongoing investment and renewal subsequent to the initial surge experienced during the establishment of those suburbs in the immediate post-War years. As a result, it was argued, these areas have experienced a long-term residualisation of its lower socio-economic residents, and have emerged as distressed neighbourhoods associated with disadvantage and localised urban poverty. At face value, the

examination of the sales data above suggests that the renewal of greyfield suburbs is better served by having more stringent density control policies in place, requiring a higher level of reinvestment to unlock higher housing densities, rather than relying on market-led infill alone.

The data does, however, appear to challenge the notion of reduced resident mobility in greyfield suburbs, as both suburbs saw a high number of property transactions over the study period, although it is not evident from this data alone whether the sales of subdivided smaller lots was to investors or owner-occupiers. Both data sets show numerous examples of dwellings with more than one transaction recorded within the study period, with some showing as many as five sales records in that time. This suggests, at least anecdotally, transactions between owner-occupiers rather than investors, who typically aim to hold on to property for longer periods. Both Neighbourhood Life Cycle Theory and the Invasion-Succession model suggest, however, a level of inward and outward migration still occurs in distressed suburbs, and that these migration movements can even accelerate the effect of this residualisation. It can be argued that a house selling numerous times in a short space of time could be the result of being located in an undesirable suburb, or due to poor experiences of the occupants, or from a broader view of an area as a transitory location only. Poor growth in long-term house values resulting from these perceptions means that existing owner-occupiers are less likely to be able to capitalise on any increase in equity of their homes to help finance a move to a higher socio-economic area.

Also notable in the streetscape audit of the two study areas was the number of examples of knock-down-and-rebuild developments (KDR), where a single dwelling is demolished and replaced with another, usually larger single dwelling, or examples of significant extensions or renovations to original dwellings. Earlier findings above suggested that examples of KDR, itself a form of gentrification, were usually limited to non-greyfield suburbs where the higher land values and estimated long-term growth could justify the purchase of a house, regardless of how dilapidated, solely for the purpose of demolishing. Due to lower house and land values, and the perception of being an undesirable location to live long-term, the earlier findings suggest that greyfield suburbs struggled to attract the necessary reinvestment unless the result was a higher yield from a development site through the increase of density codes. The traditional double-brick-and-tile construction so commonly used in Western Australia often exacerbated this situation, as even many decades after construction homes would usually not reach such a dilapidated state as to be

uninhabitable, thereby retaining a cost element based on ongoing use rather than demolition²⁰.



Figure 59: A typical post-War double-brick-and-tile dwelling built in 1955, structurally sound despite being over 60 years old (source: Nearmaps 2020)

The resource persons supported this, noting that KDR developments were generally limited (or even non-existent) in lower socio-economic areas, as were significant extensions or renovations of established dwellings. Instead, renovations tended to be smaller projects undertaken incrementally, such as re-roofing, painting or landscaping, rather than larger projects such as adding additional rooms or additional storeys, or complete renovations undertaken as a single project. It was also suggested that this enabled the retention of some older building methods and materials which are often sought by buyers, but no longer used in construction of homes. Such features include the building of homes on raised limestone footings, jarrah floorboards, leadlight windows, higher ceilings and ornate cornices.

²⁰ This is often represented in real estate sales listings for aging houses using the common headline 'Renovate or Detonate', which reinforces that an aging house may appear dilapidated, but could also be retained for ongoing use.

The streetscape audit revealed a number of examples of KDR development in Cloverdale in areas with a density code which precluded further subdivision. This suggests that the increased reinvestment in the suburb's split-coded infill areas, particularly with the significant prevalence of two-storey dwellings resulting from the City of Belmont's performance-based policy controls, has had a flow-on effect on the perceived desirability of the suburb as a whole, thereby promoting investment on sites even when additional yield could not be realised. Further, this helps shed long-held stigmas of suburbs perceived as undesirable, comprised of residences not worthy of retention, or not worthy of reinvestment without the promise of additional yield.



Figure 60: Aerial photos of a low-density area in Cloverdale dated January 2008 and February 2018, respectively, showing examples of KDR development in red, and examples of significant extensions to original dwellings in yellow (source: Nearmaps 2020)

This finding suggests that the use of targeted density increases in suitable locations within a suburb can bring about increased gentrification and reinvestment in the remainder of the suburb, either through KDR development or significant extensions or renovations to established dwellings. The use of blanket density increases across an entire suburb, as implemented across Nollamara, further promotes a perception of a suburb comprised of dwellings only worthy of demolition, inhibiting internal gentrification or the shedding of stigmas. Gentrification through the construction of new grouped dwellings is perceived differently, as a commercial exercise for micro-developers rather than an investment in a suburb by an owner-occupier. There were no examples of KDR development found in Nollamara.

Lastly, comments by both resource persons, CT and MN, suggested that buyers in some markets feel excluded from some areas based on the private amenity or space a dwelling offers (typically private outdoor space), which is usually a direct result of the lot size or subdivision configuration. Both respondents could recall dealings with clients who were generally satisfied with the layout or number of bedrooms of a house, but found the accompanying private outdoor space inadequate, generally due to a perceived need for a rear yard to accommodate the needs of children, or pets, outdoor space for a hobby, or additional outdoor storage such as a garden shed. In comments above, both respondents suggested that the provision of larger outdoor space also gave the sense of flexibility for a dwelling, noting that buyers could often envision the benefit of room to add features such as a pool or landscaping, or even for a small extension to a dwelling to which adding a second storey might not be practical, or economically feasible.



Figure 61: Typical suburban infill area showing the limited provision of rear yards on developed sites (source: Nearmaps 2020)

Figure 61 shows a typical suburban block demonstrating that only two development projects included a rear yard sufficient to provide an area of lawn – one being a side-by-side subdivision creating two dwellings, and the other being an older-style subdivision of three dwellings where the car parking areas were combined under a detached carport near the middle of the parent lot. Comments from CT and MN suggested that many buyers with one or two children might find a

typical three-bedroom dwelling suitable, but would be reluctant to consider suburbs like the one pictured where suitable backyards were scarce. As a result, these buyers are often limited to housing in estates in fringe suburbs where smaller, but regularly-shaped lots are more readily available, leading to further homogenisation of the demographic composition.



Figure 62: A row of terrace homes on 180m² lots in Halls Head, with flexible courtyards suitable for lawn and small trees, but located approximately 75km from Perth (source: Nearmaps 2020)

This research finds that lot size, or provision of private outdoor amenity, is overlooked in much of the literature surrounding housing diversity. Dukinfield (2009) notes ‘size’ as one of six characteristics of housing diversity (which also incorporates lot size), although refers mostly to its relationship to reduced maintenance, or as a means of reducing the overall cost of land and thereby increasing housing affordability. Most sources, however, focus primarily on diversity of dwelling types and configurations, and aspects surrounding affordability. Many emerging principles in housing also put considerable emphasis on the built form aspects of dwellings, with little or no mention of lot diversity. Aging in Place, for example, focuses on minor modifications and additions to construction standards (such as door widths, kitchen orientations, or light switch heights) to increase the flexibility of housing for aging occupants, with little focus on external elements.

The findings above suggest that while explicit policy controls mandating diversity in size and configuration of lots created through a development project would likely be both cumbersome and unpopular, a performance-based approach to increasing density such as that implemented by

the City of Belmont is more likely to result in a far more diverse range of lot sizes and configurations than a ‘density-as-a-right’ approach, such as that followed by the City of Stirling. The results suggest that in a market in which micro-developers undertake the vast majority of infill projects, performance-based governance is more likely to see a site’s overall yield determined by the level of investment the developer is prepared to put towards a project, whereas a ‘density-as-a-right’ approach is more likely to see the yield governed solely by the applicable density code, with the quality of the project adjusted to suit budget constraints.

The sales data from the Cloverdale study area suggests that a strong market exists for lot diversity, due to the number of transactions of intermediate lot sizes throughout the study window period. Figure 50 and Figure 51, plotting sales price by year, also demonstrate a broadening of the price range in the study areas over time which the respondents suggest could be a result of a combination of a broader range of dwelling and lot diversity, a broader demographic profile amongst buyers looking in the area. Conversely, Figure 49, plotting the same data for Nollamara, still demonstrates a broadening of the price range although to a lesser extent.

The research also finds that any policy controls intended to encourage a broader range of dwellings and lot sizes in greyfield suburbs are likely to be significantly different to those implemented in greenfield areas, where large parcels are typically developed for market by one large developer. It is noted that the provision of a wide range of dwelling sizes is considerably less complex in a greenfield-type development, where even the smallest lots are generally rectangular, with individual lot frontages and vehicle access. Greenfield developments are also typically levelled, or result in individually retained lots, which removes the complication of dealing with sloping sites, particularly on sites surrounded by established housing.

CONCLUSION

This chapter assessed the impact of planning controls on the two case study suburbs introduced in Chapter 6, particularly with regards to their potential impact on the evolving built form environment, on population and housing characteristics, and on the house and land values for each area.

Through the use of a longitudinal series of aerial photos, it was evident that the rate of neighbourhood redevelopment was higher with Nollamara’s blanket application of a medium-density code for housing than it was for Cloverdale’s performance-based approach to infill densities. The diversity of resulting housing stock in Nollamara, however, was even further

reduced, with sets of three-bedroom villa developments comprising the vast majority of new housing. In comparison, Cloverdale's diversity in housing stock increased throughout the course of the study period, to end up more consistent with the typical housing diversity seen across the Greater Perth area.

The data also suggests that despite an increase in housing options and housing prices in Cloverdale at the end of the study period, the resulting impact on family composition, education achievement, and other typical indicators of socioeconomic status and poverty, were much less than anticipated at the beginning of this research. In some cases, the outcome was the opposite of what had been anticipated, demonstrating that the creation of greater diversity of housing choices and housing prices had little to no impact on the socioeconomic, educational or familial composition of those moving into an area.

Finally, this data presented in this chapter found that the provision of a greater diversity in housing types and lot sizes did contribute to a broader range in the value of housing in a suburb, and the resilience of that value when the market declined.

The following chapter will present the discussion and further analysis of the findings of this research, as it relates to the research questions outlined in Chapter 1.

8. DISCUSSION AND ANALYSIS

INTRODUCTION

This chapter examines the influence of urban governance and policy controls on greyfield suburbs, and whether the market responses to suburban infill could be used to assess the efficacy of these policies in achieving the desired outcomes of neighbourhood renewal. The research questions established in Chapter 1 are used to assess the extent to which the current policies governing small-scale infill housing reflect an understanding of the developers acting as agents of change in greyfield suburbs, and their role as a part of the broader mainstream development industry.

This chapter will outline the discussion and analysis of the findings of this research with respect to addressing those research questions.

THE THEORETICAL PERSPECTIVES OF NEIGHBOURHOOD CHANGE

The first research question presented in Chapter 1 sought to ask:

- 1. What are the theoretical perspectives and contexts that underpin neighbourhood change, and how do they cater for the contemporary push towards the redevelopment and consolidation of established suburbs?*

In Chapter 3, several theoretical perspectives of neighbourhood change were explored, including theories from the ecological, subcultural and political schools of thought. That chapter sought to evaluate the ongoing validity of those theories, particularly given the changing nature of our cities from generally concentric, dense urban centres to broader, low density suburban environments over the course of the 20th century. With cities now focused on the more efficient use of well-established suburban areas to accommodate future growth, a number of new complexities have been added to planning and development processes. This posed the question of whether the impact of contemporary planning interventions on greyfield suburbs would still fit within the framework of those theoretical perspectives.

In considering the application of planning theories to suburbs emerging from periods of decline, the work of Winter and Bryson discussed in chapter 4 suggests an outcome more closely aligned with the political schools of thought. The trajectory experienced by their case study of Newtown wasn't predetermined but was instead deemed to be the result of a combination of the conditions under which the suburb was established, and broader macroeconomic forces in subsequent years. Winter and Bryson suggest that a suburban area established adjacent to particular employment types, and without supporting transport infrastructure to connect residents to employment bases further afield, are effectively left dependent on the future success those industries. In their case study, the area was also established with the assistance of a federal housing scheme, thereby limiting the size and quality of resulting dwellings. As the focus of this intervention was also on helping lower socio-economic families enter into home ownership, the suburb from the outset had an above-average aggregate of working class residents compared to surrounding suburbs established in a more traditional, market-led manner through individual private home buyers. Both case study areas of this research were established in a similar manner, also with considerable involvement from a number of government housing schemes – as well as those provided by the State Housing Commission under the Commonwealth-State agreements, significant numbers of houses in Nollamara and Cloverdale were also developed as War Service Homes, with others built under the State Housing Act, the McNess Housing Trust, and Evictee programs.

A conclusion can therefore be drawn that, as with Newtown, the case study areas of Nollamara and Cloverdale underwent similar conditions during their initial development, with large concentrations of low-quality housing being built by the State Housing Commission in a very short timeframe. It is also not unrealistic that a similar class of occupants were encouraged to move into the area and to become home owners, albeit with financial assistance from the government: “By 1961, over 80% of the homes built by the Commission were sold ‘on a purchase basis’ rather than being let to tenants” (Menck 2014:137). As a result, these suburbs were subject to the same dependence on the surrounding industrial employment base, and a similar trajectory of gradual decline can be seen in both case study suburbs, mirroring that experienced in Newtown.

It was found that as the employment base was gradually eroded throughout the 1970s and 1980s, primarily in response to global competition across many industries, the resident population was left isolated. Many residents were tied to their homes through ownership and this made it more difficult to relocate to pursue housing closer to other employment opportunities. Those who took this route out of affected suburbs could expect a significant financial loss, as often those suburbs held little appeal to draw new residents to the area once the initial promise of steady employment and generous wages had dwindled. As a result, this high owner-occupier ratio was found to

constrain the inward and outward migration of an area, which was the core tenet of earlier ecological models of neighbourhood change.

A counter argument that was identified to this outcome was that even without the impact of Globalisation on workplace stability of these areas, the suburbs would likely have continued through the various lifecycle stages, albeit at a slower pace. It was noted that as newer suburbs continued to spread further out from central areas, a natural inclination to seek newer or more aspirational housing would act to draw higher socioeconomic or more mobile groups to those new areas, leaving residualised groups of original residents, as well as increased purchasing opportunities with which to draw a second generation of inhabitants to the area. In competition with those newer fringe suburbs, it was found that these middle-ring suburbs with older housing stock are more likely to attract new occupants of a similar or lower socioeconomic position to the remaining original residents. To that end, Globalisation could be seen as only a catalyst to accelerate the natural lifecycle progression, and not as an agent in and of itself.

A further counter argument to the impact of Globalisation in Perth post-War suburbs was the suggestion put that Perth suburbs were even less impacted by the residualisation of lower socioeconomic groups than other Australian cities. Firstly, the much lower pre-war population of Perth meant that the resulting post-War suburbs weren't as geographically distanced from the central city areas as other capital cities, as its metropolitan region was still in a state of relative infancy and had not yet undertaken the huge outward-reaching sprawl it is famous for today²¹. The residents of these post-War suburbs were therefore less likely to be isolated from other employment bases, including the CBD area. Secondly, with the local and international automotive industry reaching new heights in the post-War era, and being further subsidised by the federal government, individual car ownership began to become firmly entrenched in Australian culture, particularly that of Perth residents. In a reasonably short space of time, Perth had among the highest rates of car ownership per capita in the world. Access to employment from areas further from home meant that the impact of Globalisation was reduced. This line of thinking was already well established in even the earliest post-War government housing estates, with Menck (2014:83) noting that "the first groups of public housing constructed in the 1940s were celebrated for their proximity to public transport. However, housing developments of the post-War period increasingly assumed widespread private car ownerships".

²¹ The post-War suburbs of Nollamara and Cloverdale, both undeveloped areas in 1953, are each located approximately only 7.0kms from the Perth CBD (as the crow flies).

The nature of early suburban landscapes, seen by many as a means of those sufficiently wealthy to escape the declining urban areas, also posed a threat to the relevance of Life Cycle theory as new suburbs were established in an organic manner by owner-occupiers. For many, it was hard to conceive such a new and high-class standard of living, where each land parcel held only a single house, and each individual house was the responsibility of its owner, could decline into a widespread area of disrepair. The ample space between dwellings, low-scale nature of the built form, and large garden areas surrounding each house, provided ample light, ventilation and vegetation was designed on the promise of a bucolic environment away from the declining inner urban areas.

Perhaps the most important distinction that was found for the ongoing relevance of Life Cycle Theory was that between the dense urban environments which were prevalent during the time the theory was initially conceived, and the vastly different, low-density suburban environments which exploded in the post-War era. As summarised in chapter 4, this decline and disinvestment in urban areas, particularly by owners of tenanted apartment blocks, led to a broader consensus that urban areas had devolved into slums, leading the push by many in power to instigate a process of 'slum clearance'. The introduction of these slum clearance policies in many Australian cities during the early part of the 20th century was a reaction to these urban areas reaching the final stage proposed by most iterations of life cycle theory: an area primarily made up of low-income rental housing, depreciated values and associated social problems.

By definition, the housing density and ownership model of these urban areas lent themselves to a natural progression through life cycle stages, as it was based on the action (or inaction) of just a handful of property owners who existed in an economic environment largely unaffected by broader macroeconomic conditions. Regardless of the social, political or economic circumstances, people still had a basic need for housing. The resident population, primarily being renters, were also far more mobile and generally able to move quite freely between different rental residences as their economic position permitted, which further contributed to the inward and outward migration of different socioeconomic groups so essential to the ecological models. As the conditions of the urban neighbourhoods declined, so too did the socioeconomic status of renters naturally drawn to the area, closely aligning with the stages of Life Cycle theory outlined in Chapter 3.

It was found that the low-density environments created in the post-War suburban landscapes, and the associated push for individual home ownership significantly changed this paradigm in two fundamental ways. Firstly, the increased levels of home ownership meant individuals had a heightened responsibility, and economic incentive, to maintain and upgrade dwellings periodically. Secondly, the low-density nature of suburbia meant that one homeowner allowing

their property to decline into disrepair impacted only one house in a street of many, rather than creating an outcome which affected a larger number of residents (as was the case in older urban apartment buildings). This resulted in suburban environments less likely to be impacted by internal forces, as the civic responsibility was shared over a much larger number of owners. The research showed that this resulted in suburbs better able to withstand the natural decline implied by the subcultural theories. Further, the higher levels of individual ownership meant that resident migration was greatly diminished, and large scale abandonment of areas described as the ultimate stage of ecological theories was almost impossible. On the other hand, as these areas were typified by high levels of individual home ownership, they became far more exposed to the external forces of broader political and macroeconomic conditions. The capacity for people to own and maintain homes was entirely contingent on the stable employment and income of those residents. In this social and economic environment it was identified that theories from the political school of thought began to play a far more significant role in understanding change.

The acceleration, or manipulation, of this process of suburbanisation, particularly through the interventions of the Commonwealth-State agreements and the War Service Homes housing programs as outlined in Chapter 4, rapidly changed these growing suburban landscapes from a lifestyle which only the most affluent could afford, to one which was heavily subsidised to be within reach of those least likely to afford it²². The flow-on effect was a change from the seemingly natural ability of a suburb to avoid the decline brought on by widespread disinvestment, having been built, owned and occupied by the higher socioeconomic groups, to an imprudent combination of quick and cheap housing built for occupants of the lowest socioeconomic groups able to scrape over the subsidised hurdle of ownership. How those owners would afford the increased ongoing maintenance of poorly constructed housing did not factor into the initial equations of the federal or state governments.

An example of this accelerated process of suburban decline was found in the results of Menck (2014), referencing the Maniana estate in the Western Australian suburb of Queens Park (located less than 4km away from the case study area of Cloverdale). Menck (ibid.) outlines a period in 1954-55 when the State Housing Commission constructed 300 homes in the Maniana estate in only 31 weeks:

“Plans to construct the development, initiated in 1953, noted it as urgent, on account of the increasing number of evictees requiring housing... Maniana was sited to serve the growing Welshpool industrial area. Designed by notable

²² In effect, leapfrogging the middle classes in between.

architect and planner Margaret Feilman in 1953, Maniana demonstrated Garden City design. By 1959, however, the local Road Board described the area as a slum, indicating the high ideals of the Garden City had failed to manifest” (p90).

Although touted as the failing of town planning principles, the Maniana example demonstrated a suburb moving through the stages of Life Cycle theory at a rate even faster than the key proponents of the ecological models could have anticipated. It was found that the decline experienced in as little as four years did not allow sufficient time for the typical stages of neglect or obsolescence, or the influx of lower socioeconomic groups (Hoover and Vernon 1959), with the suburb seemingly transitioning almost immediately to the stage marked as ‘district-wide deterioration’ (US Home Owners’ Loan Corp 1940).

The Maniana case described by Menck (2014) presented an argument that the ecological models are not reliable in explaining neighbourhood change, as the suburb appeared to skip various stages as it transitioned towards decline. Most important for both Life Cycle theory and Invasion-Succession theory is the conflict and pressure applied to a suburb through the inward and outward migration of incompatible socioeconomic groups, with the financial capacity of those groups gradually declining as the suburb’s housing stock continues to age. As was found with the political theories of neighbourhood change, it was found that the migration of different socioeconomic groups may be described as a catalyst of suburban decline by the ecological models, rather than an agent in and of itself.

A contrary view was put arguing that the artificial conditions by which Maniana was established in the post-War era, heavily subsidised by state and federal government programs, meant that the suburb could hardly be considered as meeting the initial ‘Grade “A”’ or ‘Healthy’ stages outlined in the various iterations of Life Cycle theory as the housing, although new, was already small, poorly constructed, and lacking in many features seen as ‘standard’ in the broader market. This was supported by Menck’s description of Maniana’s housing stock upon completion:

“Features such as garages, double sinks, breakfast bars, television space, built-in storage areas and bathrooms with separate baths and showers were common in even modest private homes but generally omitted from SHC [State Housing Commission] homes” (2014:134).

Additionally, it was argued that the initial resident population drawn to the area included a significant proportion of lower socioeconomic occupants, which traditionally only occurred as a result of several generations of natural inward-outward migration. This was considered to add

further support to the findings of Winter and Bryson, who suggest that the conditions by which a suburb is established are often fundamental in forecasting the likely longevity or sustainability of an area, or a potential need for future intervention through such planning mechanisms described in detail throughout this study.

The concept of intervening in the typical life cycle, formalised in Hoover and Vernon's 1959 adaptation of Life Cycle Theory, has provided an interpretation which can be applied in many middle ring suburbs today. The application of increased density codes in the Nollamara and Cloverdale case study areas is an example of such intervention, with both respective local governments attempting to manipulate land values and reinvestment to each suburb through the increase of density codes and lot yields. In this model, the nexus in the lifecycle stages will result in either:

- A revitalised neighbourhood with more intense housing and an influx of new residents;
- A stable neighbourhood with an older demographic moving out to make way for younger families; or
- Further decline into an undesirable neighbourhood, with population losses as residents leave the area.

Despite the anecdotal, and often pejorative feelings expressed about the case study suburbs used for this research, the often-negative responses from survey and semi-structured interview respondents, and the streetscape audit indicating a number of low-quality infill housing outcomes, it was found that the analysis of Census data indicated positive growth in population and socioeconomic indicators for both areas. It was further found that the analysis of market data indicated a significant reinvestment in these suburbs, which resulted in the removal of older, obsolete original housing stock to make way for newer housing of much higher construction quality and environmental performance. Numerous authors (Sharam et al 2012; Trubka et al 2008, Newton et al 2011) outline the positive social, economic and environmental outcomes which can be achieved by such policies implemented in areas ahead of decline.

This research found that the debate over whether ecological or political theories best explain typical neighbourhood change hinges primarily on the conditions of establishment of that suburb and the predominant tenure of the resident population, as areas comprised largely of owner-occupier populations are subject to different forces of change than those exhibiting a higher rental population. In that sense, low-density suburbs with higher than average rental populations are analogous to earlier urban environments which were often comprised of tenanted apartment

buildings owned by landlords: the ability to make decisions on the character and quality of a suburb and its housing stock is out of the hands of a large number of its residents.

In applying this thinking to Australia's middle-ring suburbs, the initial establishment of these suburbs in the post-War era and the fervent push by state and federal governments towards developing new suburbs for housing, and encouraging individual home ownership, resulted in an environment largely exposed to the machinations described by the political schools of thought. In the instances of Newtown, and the case study suburbs of Cloverdale and Nollamara, this was also represented by the eventual impact which macroeconomic forces and moves towards a globalised economy would have on the employment and wages of residents, and subsequent condition of those housing areas.

Later efforts to intervene in those neighbourhoods through the use of planning mechanisms further correspond to the political schools of thought, notably aligning with the views of Downs (1981) that a key unifying principle of the political theories is that change is brought about by economic, political or social forces outside a neighbourhood, rather than being the result of machinations by the residents themselves. The implementation of the planning mechanisms investigated earlier in this thesis require a combined approach from state and local government, politicians, planners and land owners – the 'active entrepreneurs' referred to by Logan and Molotch's Growth Machine theory – often with little regard for the residents themselves. These mechanisms create the economic and statutory conditions required to make the redevelopment of an area viable, by generating a significant uplift in the residual land values, and encouraging the significant reinvestment into a suburb by outside participants²³.

An important finding from this research, however, is that while those political theories of neighbourhood change are applicable at the macro level, the actual delivery of housing in redeveloping greyfields occurs through a process far from that described by Logan and Molotch as a 'coalition'. Interview respondents made numerous comments of the hostility and antagonism which existed between project home builders and micro-developers, service and utility providers, and local and state government bodies. The vision of active entrepreneurs and 'local elites'

23 Assuming a typical construction cost per dwelling of \$200,000, the 2,334 net new dwellings built in Nollamara between 2001 and 2016 represents an investment of more than \$466 million over the study period in construction costs alone, vastly in excess of what would have been spent on knock-down-rebuild housing during that time had density codes (and therefore, land values) not increased. The actual value would have been up to one-third higher, as 'net new dwellings' does not take into account the demolition of the original house cancelling out one of the new grouped dwellings of an infill project.

working together as a ‘growth machine’ to reap the benefit of neighbourhood change is seldom seen in reality at this level.

Regardless, the changing demographic among residents, particularly with regards to income, education, and housing tenure, suggests that the importance of political theories in understanding neighbourhood change in Australian greyfields may only be temporary. The typical models of infill housing provision implemented by small-scale developers in recent decades, and the resulting surge in the proportion of homes occupied on a rental basis, and subsequent increased mobility of residents, means that the future of these suburbs is likely to revert back to the pressures outlined by the ecologists²⁴. To that end, it can be argued that the predominant form of housing and ownership determines the theory, rather than the other way around.

CHARACTERISTICS OF SUBURBAN GREYFIELDS

A second overarching research question asked:

2. *What are the typical characteristics and features of suburban greyfields, and what factors account for their recent emergence as a key focus in contemporary planning circles?*

The review of relevant literature revealed that the focus on greyfields in Australia was similar, but not identical, to the same discussions being held in other countries. Particularly in the United States, the term ‘greyfield’ was still primarily used when describing the conversion of large land parcels resulting from the failure of local and sub-regional shopping malls – a term focusing on the immediate visual appearance of a former retail site surrounded by large paved parking areas. In literature primarily discussing the Australian and New Zealand experience, the ‘greyfield’ terminology implied a sense of aging rather than appearance, per se, yet was not universally applied to all suburbs of the same era. Despite the different application of the terminology, it appeared that all Western countries were placing a significant emphasis on middle-ring and peripheral residential neighbourhoods which were generally considered to be physically, technologically or environmentally obsolete. It was argued by many that the low-density nature of much of the existing built form, their simple street layouts, and their close proximity to inner-city urban areas made those suburbs prime locations for urban and suburban intensification.

²⁴ Somewhat ironically, given that these suburbs were largely created as a direct response to the decline of inner-city urban areas impacted by those same forces.

Importantly, much of the broader infrastructure, such as roads, schools, utilities, and public open space reserves, are already in place, and can be maintained or upgraded to support future housing options.

As discussed in earlier sections, a key characteristic of those suburbs deemed ‘greyfields’ was the appearance of symptoms or signs of decline which could be attributed to the policies and practices implemented during their initial establishment. For that reason, many suburbs which were established during the same time period (generally all in the immediate post-War era), but had successfully managed to maintain active investment through cycles of aspirational property purchases, the renovation or extension of original housing stock, or the replacement of original houses with new houses of higher value, were excluded from the discussion. Across Australia, and particularly in Perth, a number of readily identifiable characteristics were identified in greyfield suburbs which would also be considered typical across all suburbs built in the same era: roads generally adhered to simple grid layouts, parent lots were generally large and rectangular (although usually ranging from 728m²-900m², making them slightly smaller than the genuine ‘quarter-acre lot’ epitomised by the Great Australian Dream).

However, despite the findings of authors such as Winter and Bryson (1998) that these suburbs were primarily made up of readily-identifiable government-built housing, nearly two decades of incremental and piecemeal infill has – at least in the case study suburbs – seen the emergence of a new dominant housing identity. While some remnant examples of the original post-War dwellings remain, large portions of the case study suburbs have been redeveloped with contemporary housing, albeit delivered in much the same manner as the much-maligned housing which preceded it. Future studies will prove invaluable in determining whether this ‘second chance’ lifecycle has demonstrated learnings from earlier eras of housing delivery and resulted in genuine, long-term suburban renewal, or whether these suburbs will once again emerge as failing or obsolete neighbourhoods for future generations to remedy and reinvent.

With regards to the recent emergence as a key focus in contemporary planning circles, the literature review and the interview respondents suggest two main reasons. First, with changing global attitudes towards the ecological impact of human activities over the past two decades, the housing stock in many Western countries dating from the post-War era has been increasingly criticised as being poorly conceived, poorly constructed, and representing an inefficient use of residential land. The move towards consolidated urban environments has forced state and local governments to reconsider the future use of older established suburbs as a ‘new frontier’ once again. In doing so, such suburban areas have come under renewed scrutiny for providing new housing options, particularly those within a close proximity to central business districts, or those considered to be comprised of obsolete or inefficient housing and infrastructure. Most

importantly, this focus is primarily on those suburbs which have failed to redevelop under their own steam over recent years, being overlooked by developers as a poor return on investment without some planning-based intervention to bolster reinvestment. This supports the earlier finding that age alone is not a determining factor of identifying or categorising suburban greyfields – the conditions and processes under which a suburb is established are a more relevant determinant.

A number of interview respondents also noted that in Perth, in particular, a building and development industry had evolved over a number of decades which was heavily dominated by project home building companies whose business model relied on the rapid delivery of standardised house designs. A number of reasons for this were suggested, including Perth's strong historical preference for single dwellings on detached lots, the city's relatively small geographical size at the outset of the post-War building boom, Perth's car-dependent nature and inadequate public transport system, historically low land prices (in comparison to other capital cities), and the historical reluctance of Perth residents to buy 'off-the-plan' housing products.

As recently as a decade ago, many project builders in Perth offered house designs with limited flexibility, leaving it to land developers to create housing lots to suit. It emerged through the interview process that a much stronger synergy had emerged in more recent years between land developers and project builders (with some companies now undertaking both roles under different business entities). As a result, project builders now offer a vast number of housing options, with standardised products suitable for lots as narrow as 4.5 metres in width. In return, land developers generally create entire land estates comprised of lots tailored to fit a range of standardised widths (generally, 10.0m, 12.5m and 15.0m wide). It was suggested that the result had been a means to further delay stronger state government moves to compel consolidated urban environments by offering outcomes considered much more economical in land area (although delivered under the same Fordist production methods as new housing estates were in the post-War era). As such, even in an era of more efficient use of land as a resource, Perth's outward fringe had continued to expand primarily through the ongoing construction of single dwellings, albeit on much smaller land parcels. It was argued by a number of respondents that only recently had light been shed on a building industry which had become so finely tuned at converting greenfield land that many players now struggle working on infill and consolidation outcomes. It was found that the small-scale nature of suburban infill does not generate sufficient margin on a project-by-project basis for an industry which has evolved into one dependent on high volume, which usually demands high staffing and overhead costs.

THE INFLUENCE OF POLICY MECHANISMS ON GREYFIELD RENEWAL

In order to assess the influence of different approaches to planning policies governing the redevelopment of established suburbs, it was asked:

3. *To what extent have the various levels of suburban governance influenced the revitalisation and renewal of suburban greyfields?*

It was conclusively found that the overarching mechanism implemented by the respective local governments in the case study suburbs – being the increase in residential density codes – has had a significant impact on the rate of redevelopment within those neighbourhoods. Prior to this, decades of gradual decline and disinvestment, coupled with enduring stigmas and being poorly perceived, meant that these were often considered as suburbs of last resort rather than an aspirational lifestyle option. The enduring image of life within these neighbourhoods, while often being based on stereotypes only, made the suburbs the subject of anecdotes or punchlines based on the socio-economic or ethnic mix of residents. As a result, these suburbs had little to offer to aspirational home buyers and home builders as a place of financial or personal investment. Instances of ‘knock-down-rebuild’ development, where a single original dwelling is replaced with another single dwelling, were virtually non-existent – a clear indicator that the inherent value in the land and housing stock would simply not justify the expense to do so. The principle of increasing the residential density, thereby increasing the potential yield of each lot, gave a significant impetus in the form of an almost-instant increase in land values.

The efficacy of the individual approaches by the respective local governments for the case study suburbs is less simple to surmise. For example, the data showed a number of positive changes in Cloverdale which were arguably the result of the planning controls implemented by the City of Belmont in support of a split density code mechanism. While both suburbs showed a saturation of 3-bedroom dwellings at the beginning of the study period, Nollamara’s market-led infill – where the size and configuration of new dwellings was at the discretion of the developer – would only further exacerbate the situation with the proportion of 1, 2 and 4-bedroom options declining over the course of the study window. Conversely, Cloverdale would demonstrate by the end of the study period a range of dwellings sizes far more comparable to that of the Greater Perth area, with a notable drop in the proportion of 3-bedroom dwellings and an increase in the supply of larger 4-bedroom dwellings.

However, although it was initially assumed that this was the result of the City’s policy requiring the construction of two-storey dwellings in R30 and R40 developments, Census data would

demonstrate that this may not be the case, as less than 5% of these larger dwellings were described as ‘semi-detached, row or terrace dwellings with two or more storeys’. Therefore, it could not be argued that the policy controls had a direct influence on this outcome, but may have had a secondary effect, acting as a catalyst by generating an uplift in the residual land values in surrounding R20 lots through the perceived increase in the quality of developments taking place in the R30 and R40 areas.

Although harder to quantify, it was also noted from a streetscape analysis of both suburbs that enforcing a two-storey outcome in certain situations did not necessarily result in dwellings of higher quality, in terms of design, finishes, or appearance. Arguably, a number of the ‘short cuts’ typically employed by project builders in single-storey homes were also applied to the two-storey designs which only exacerbated the perception of a ‘cheap’ result. For example, it was identified that a common technique of builders was to construct homes with face brick, with only the front elevation treated with an acrylic render finish. While this can often be concealed or disguised on single-storey homes, the use of this technique on a double-storey dwelling makes the transition between acrylic render and face brick far more obvious, and difficult to disguise.



Figure 63: The use of render to the front elevation only becomes more obvious on a two-storey dwelling (source: author)



Figure 64: An double-storey infill project in Cloverdale which is significant in size, but presents as a low quality outcome as the design includes no features, render, contrasts or embellishments (source: Nearmaps 2020)

A number of respondents from the interviews also suggested that the requirement to build double-storey dwellings often simply spread already-tight development budgets even thinner, rather than resulting in higher-quality development outcomes (Figure 64).

Although Nollamara saw a surge in the number of semi-detached single-storey dwellings across the suburb (an increase of 38.9%), an unexpected finding was that the proportional increase in two-storey dwellings in the suburb (5.4%), was almost identical to that seen in Cloverdale (5.6%), despite the City of Stirling implementing no policy controls which required their inclusion in order to unlock higher density provisions. The net position by the end of the 15-year study period showed a higher proportion of two-storey dwelling in Nollamara (6.3%) than in Cloverdale (6.0%). Given the comments of many respondents, it was anticipated that the suburb's historical context and a fear of overcapitalising would have seen fewer instances of two-storey development.

Nonetheless, the sales data, streetscape analysis, and Census data all suggest that the physical built form environment has been significantly influenced by the policy controls implemented by both case study local governments. The extent to which this also applies to the social and economic composition of each suburb will be addressed in subsequent research questions.

THE MARKET EVIDENCE OF NEIGHBOURHOOD CHANGE

A key element of the research was to identify trends and patterns in the market evidence across two case study suburbs, and whether this could be used to better understand the substantive outcomes of different approaches to the governance of greyfield renewal. It was asked:

4. *What are the market responses to the current approach to suburban infill, and can this be used to assess the efficacy of policy controls?*

The sales data indicated a largely positive response to the housing redevelopment approaches used in both case study suburbs. Firstly, the data included nearly 9,000 property transactions over the 15-year study period, which was fairly even divided: 5,612 in Nollamara and 3,367 in Cloverdale. This greatly exceeded the number of transactions anticipated based on the results of the literature review and interviews, which suggested that:

- a) residential greyfields were likely to have a much higher residualisation of their lower socio-economic residents, particularly long-term residents;
- b) the resulting built form was poor quality and unappealing, making it hard for those suburbs to shed decades-long stigmas; and
- c) small-scale developers active in greyfield suburbs were largely doing so in order to create an investment property portfolio for themselves rather than for on-selling the finished product.

From this, it was anticipated that these trends would be reflected by a lower number of property transactions. The net new dwellings gained by each suburb at the end of the study period was 2,334 and 814 for Nollamara and Cloverdale, respectively, and therefore it could not be argued that the total transactions for each suburb represented the sale of newly constructed infill housing only. Similarly, lots considered to be parent lots (600m² or larger) comprised only 508 and 487 of all lot sales in Nollamara and Cloverdale's R20/R40 areas, respectively, confirming a strong market interest in subdivided and developed infill housing as a proportion of all property transactions.

One significant finding which arose from the use of the sales data is evidence of the impact of urban densification on house prices and home equity for existing owners in a neighbourhood. A common criticism of infill housing in Australian suburbs is the notion that it has a negative impact on existing house prices in an area. The sales data charts plotting recorded sales date against sales price suggests this might be true for an area with a blanket use of density code changes, with the

results showing a narrower range in sale prices. It was suggested by interview respondents that this was likely the result of a lack of diversity in dwelling types and a corresponding lack of market range. Conversely, however, the sales data showed that a neighbourhood with a targeted approach to density controls resulted in a greater range of sale prices. This demonstrates that, across a suburb as a whole, targeted increases in density can generate both a positive outcome for housing affordability and maintain higher house prices for existing owners, due to a reduced saturation of housing product and a more diverse target market.

The sales data also demonstrated clear characteristics which were unique to each of the case study suburbs, which could be explained by the various planning controls implemented by their respective local governments. Nollamara was characterised by a higher number of transactions, although within a narrower price range – this likely reflected the higher number of properties for sale (a result of the blanket density change instead of a more targeted approach), and the lack of differentiation in housing options (notably in land size or number of bedrooms). Conversely, Cloverdale was characterised by a lower number of transactions, although these showed a broader price band, likely reflecting a suburb with fewer developable sites, but a broader diversity of options on the market.

Most importantly, the charting of data pertaining to lot size demonstrated a clear divergence in the manner in which developers in each suburb had responded to the respective density controls. Clear correlations can be made between those controls and the sales data when plotted on a chart, particularly pertaining to house and lot properties. What is unclear solely from this data, however, is the flow-on effect these changes make on a suburb-wide basis in terms of socio-economic diversity and socio-spatial polarisation. Although this sales data has been very useful in understanding typical purchasing and development patterns in terms of lot sizes, this study had to rely on a number of other sources, such as Census data, to gain a broader understanding of the efficacy of policy controls.

It is envisaged that in future studies, such sales data could be further analysed, and paired with more detailed qualitative research among local residents, in order to gain a better understanding of other important issues such as the hard-core residualisation of residents, the role that differences in housing tenure plays on suburban mobility and residualisation, and the impact of factors such as emotional ties and other endogenous forces (such as those argued by the Subcultural theories of neighbourhood change).

Lastly, the sales evidence would also prove useful in investigating the impact of urban infill delivery on longer-term equity growth for homeowners, due to such factors as poor longevity of modern building methods, poor design features, a lack of socio-economic growth in a suburb, or

the constant growth in market supply due to ongoing infill projects. This would also help broaden the understanding of the impact of housing and policy controls, and whether our current approach to greyfield revitalisation is providing a only temporary surge for greyfield suburbs, or a genuine long-term revitalisation which demonstrates learnings from past housing eras. Although creating new and affordable housing within middle-ring suburbs is important, encouraging home owners to buy into housing which performs poorly in long-term equity growth, particularly when compared to those in adjacent suburbs, can create a significant problem in terms of socio-spatial polarisation and sowing the seeds for future urban poverty.

GAUGING THE EFFICACY OF PLANNING POLICIES

In seeking to assess the efficacy of planning policies implemented across the two case study suburbs, it was asked:

5. *Are policy controls aimed at increasing housing diversity and increasing the socio-economic mix among residents in greyfield areas having the desired effect when compared with market-led outcomes?*

It was anticipated at the beginning of this study that any changes resulting in a more diverse range of housing would also have a net positive effect on the socio-economic indicators of the community, particularly given the duration of the 15-year study window. It was expected that this would be a long enough period to see significant growth in both the population of each suburb (1,972 and 4,642 additional people in Cloverdale and Nollamara, respectively) and the net increase in dwellings built in each suburb (814 and 2,334 in Cloverdale and Nollamara, respectively). Due to the outcome of the results, however, this question will need to be addressed in two halves.

The sales data evidence utilised in the study confirms that the policy controls implemented by the City of Belmont had resulted in a wider range of housing options. First, the sales data showed a much more diverse range of lot sizes being bought and sold across Cloverdale when compared to data from Nollamara, which showed a much tighter grouping of housing options. Importantly, given the increased value of land designated as having ‘development potential’, original housing lots were generally priced outside of the range considered attractive for genuine owner-occupiers, suggesting that these buyers were limited only to options within the smaller, developed range. This is seen as evidence that when faced with a split density mechanism, as identified and explained in chapter 8, and a higher investment required in order to unlock greater yield on each site, small-scale developers are more likely to weigh up alternative development outcomes which

aren't necessarily dictated by the maximum possible yield alone. Conversely, when small-scale developers are given unrestricted access to a higher density code, it was considered that achieving the maximum yield was the foremost concern, with the quality of those dwellings varying to fit within the developer's budget. As suggested earlier, however, this was not always the case: numerous individual examples existed in Cloverdale where developers had maximised the yield at the expense of quality or design, but when considering the suburb as a whole, Cloverdale presented a much higher diversity in the size of land parcels, and a range of bedroom compositions much more closely aligned with the Greater Perth area.



Figure 65: A Cloverdale development which unlocked the maximum yield through including two-storey dwellings, but failed to include any further features or design embellishments (source: author)

Second, the sales evidence demonstrated that a more diverse range of house prices was achieved in Cloverdale, when compared with the tighter banding of sales prices exhibited by the Nollamara sales data. This spread of prices in Cloverdale also increased noticeably over the period of the study window, suggesting that the range in prices increased gradually in line with the increasing diversity of house and land options which resulted from new development projects being undertaken and completed during the study period. Given the number of sales records compared during the study period, this research did not go into sufficient depth to determine whether this was primarily a result of factors such as the size of the land parcel, or the quality of the final build, or a combination of these or other factors.

Finally, with regards to the composition of dwellings, the data clearly demonstrated that the City of Belmont's use of a split density code mechanism resulted in an increase in housing diversity, although it appeared to be at a cost. While the housing stock in Cloverdale made significant inroads to correcting the historical dominance of three bedroom options, being brought more in line with the Greater Perth area, it did so at a significantly slower rate than seen in Nollamara. At the beginning of the study period, both suburbs were reasonably comparable in size, with Nollamara containing 532 more dwellings than Cloverdale. By the end of the 15-year study period, this difference had blown out to more than two thousand dwellings in favour of Nollamara, which had increased the net number of dwellings at almost three times the rate as Cloverdale.

This research suggests two main causes responsible for this discrepancy. First, the use of targeted density increases rather than a blanket approach indicates that not every lot in Cloverdale had development potential, whereas any parent lot in Nollamara could be redeveloped at a higher yield, therefore greatly increasing the number of opportunities for redevelopment to occur. Second, as suggested by a number of interview respondents, the performance-based density mechanism would effectively filter out the smallest-scale developers (or more accurately, those with the lowest budgets, referred to by some respondents pejoratively as the 'lowest common denominator' of developers), or those most risk-averse, thereby reducing the pool of potential developers to undertake infill projects of such a scale.

However, the driving force behind this planning intervention was not merely to change the range of housing typologies, but to also bring about a wider social and demographic change to the area. A number of the indicators used to measure these changes yielded different results compared to what was anticipated at the beginning of the study.

Although Nollamara still demonstrated a higher rental population by the end of the study period, the rate of change showed a higher proportional increase in people renting in Cloverdale (up 10.9%) when compared to Nollamara (up 9.4%). Conversely, Cloverdale showed an increase in people purchasing a home with a mortgage increasing by 4.3% across the study period, compared to a 7.0% increase in Nollamara. Therefore, while both suburbs had a consistently higher rental population than the Greater Perth area, Nollamara's market-led approach to infill was seeing greater opportunities for owner-occupiers moving into the area, which is in contrast to anecdotal suggestions that the market-led infill in this area was primarily creating opportunities for investors and rental occupants only.

Other indicators showed similarly unexpected results: Nollamara showed a higher proportion and rate of increase in the number of residents completing Year 12 graduation. Nollamara also showed a higher proportion and rate of growth in residents achieving a Diploma, Bachelor Degree,

Graduate Diploma and Postgraduate Degree. Further, the Nollamara population showed a decrease in Trade Certificates of 0.3%, compared with an increase in Cloverdale of 1.3%. As argued by Harding, Lloyd and Greenwell (2001), the evolution of the labour market and demands of a more professionalised economy meant that a positive correlation existed between higher educational achievement and a reduced risk of poverty, which is considered a positive result for a suburb seeking to shed long-held perceptions of being a primarily low socioeconomic environment such as Nollamara.

This increase in educational achievement would also flow on to later employment trends: by the end of the study period, the most common form of employment amongst Nollamara residents was 'Professionals', and at a proportion which now exceeded that of the Greater Perth area average. In Cloverdale, 'Professionals' remained only the second-most common form of employment, sitting behind 'Technicians/Trades'. This trend was also apparent in the SEIFA data, particularly when considering the Index of Education and Occupation, which showed Nollamara's score improving significantly to be above the median value for IEO scores – the only SEIFA indicator for either case study suburb to do so.

Finally, the main indicator to show a reversal of previous demographic trends was that of family composition. The typical infill housing seen in the case study suburbs was considered to be strata developments of 3-bedroom villas in a battle-axe arrangement, which were argued anecdotally to be less suitable for families with children. Although Cloverdale showed marginally greater growth in Couple Families with Dependent Children across the study period, the end result was a composition in Cloverdale of 32.0%, compared to 31.9% in Nollamara – a difference of only 0.1%. The rate of change in data showing Couple Families with Dependent Children was 1.4% higher in Cloverdale than in Nollamara, which suggests that if this broader demographic transition is to occur, it may take significantly longer than planners anticipate.

Therefore, while it can be argued that the targeted approach to increasing suburban density implemented by the City of Belmont did result in a greater diversity of lot sizes and house types over the course of the study period, it contributed to a much slower rate of regeneration and renewal than the blanket approach preferred by the City of Stirling. Contrary to initial expectations, however, Nollamara saw greater change across a range of socio-economic indicators than in Cloverdale. This research does not suggest a causative relationship between the performance against these indicators and the market-led infill housing prevalent across Nollamara, but finds that the more stringent development controls implemented throughout Cloverdale have not resulted in the positive outcomes anticipated, nor had they brought about the broader demographic changes envisaged.

UNDERSTANDING THE SMALL-SCALE DEVELOPER

Another element of this research was to assess whether current planning policies reflected an understanding of the characteristics and motivations of small-scale developers active in the delivery of smaller, suburban infill. It was asked:

6. *Do current policy controls demonstrate an understanding of the players and processes responsible for the provision of suburban infill?*

As discussed in chapter 5, the state's primary planning document, the Residential Design Codes (RCodes), was created to foster a performance-based approach to house design, which would include infill housing across a range of densities. When gazetted in 2002, the document included an option to seek approval based on a range of Performance Criteria, or an option to seek approval by adhering to a series of 'minimum standards' outlined as Acceptable Development provisions. These policy mechanisms fall under the broader categories of Capacity Building and Market Regulation, respectively, as outlined by Adams et al. (2012).

Although later revisions of the RCodes would rename these mechanisms to Design Principles and Deemed-to-Comply provisions, the intent remained the same: the Design Principles (or 'Capacity Building' controls) enabled developers to contribute to the administration of policy controls by giving them the ability to negotiate outcomes in line with the general intent of those policies. Alternatively, the Deemed-to-Comply provisions (or 'Market Regulation' controls) effectively posed a series of 'bare minimum' standards required for a 'tick the box' approach to development approval.

As suggested by a number of interview respondents, developers which make up the traditional 'tiered' development industry typically operate on larger, one-off projects, and place a significant emphasis on brand image and reputation. They generally demonstrate an acute awareness that negative commentary can have significant impacts on other projects, the future of the brand, and the confidence in the market itself²⁵. It was argued that developers in this space are less reliant on

25 As seen recently with the Opal Tower project in New South Wales – even though the structural failures of the building fall under the responsibilities of the contracted builder, the damage to the developer's brand and reputation have been immense. The impact on the apartment market was felt across the country.

expediency, being well aware that more complex projects have significant design and detail stages, involving input from a broad range of third-party consultants, as well as often-lengthy pre-sales hurdles to achieve. As a result, brand integrity, quality and building amenities are all fundamental motivations in successful projects, all of which lend well to Capacity Building policy controls.

This study finds, however, that a functionally different operational structure exists in the smallest layer of the development industry, which typically operates beneath the traditional tiered system. Although generally portrayed as ‘mum and dad’ developers, this research has used the term ‘micro-developer’, which covers a more realistic collection of players operating in this space. As suggested in earlier chapters, it was found that this segment is often permeated by a number of project home builders acting as proxy developers on behalf of land owners, and in doing so often steer those development projects towards outcomes based on expediency and cost-saving, albeit for the benefit of the builder first, with any short-term or long-term benefit to the land owners being a secondary concern.

Although the intent of the RCodes was to provide the greatest flexibility to designers and developers in seeking approvals, the results of this study suggest that it was the mechanism by which approval was sought under the Performance Criteria or Design Principles itself which saw their use decline, as a result of trying to govern a project home builder industry based on expediency and momentum above all else. It quickly became apparent to project builders that no consistency in interpreting Performance Criteria or Design Principles existed between different local governments, or even between different people working for the same local government. Some respondents commented that even asking the same person the same questions on different occasions would yield different answers. Therefore, the certainty which is so critical to builders operating under Fordist production methods evaporated, and builders shifted en masse towards a reliance on the surety of a list of ‘bare minimums’ outlined in the Acceptable Development or Deemed-to-Comply provisions. As summarised by Adams et al. (2012:2587), such market regulating policy controls are important for providing developer confidence, but are criticised as:

- being ‘restricting’, ‘compelling’, or ‘prohibiting’ on developers;
- having virtually no impact on improving developer behaviour or development outcomes; and
- often leading to ‘sameness’ between development projects.

This research has shown that all three outcomes have strong parallels to the criticisms offered by interview respondents and the findings of the streetscape and design assessment of the two case study suburbs, with comments such as ‘cookie cutter’ housing used to reflect on the ‘sameness’

of built form outcomes permeating throughout the neighbourhoods, and suggestions of developers only seeking to meet the bare minimum Deemed-to-Comply standards becoming commonplace.

Policy controls which would be defined by Adams et al. (ibid.) as Market Stimulus or Market Shaping measures are effectively left to individual local governments to formulate and implement at their own discretion. In the case of the suburb of Nollamara, the City of Stirling chose to implement no further policy requirements on developers above those outlined by the RCodes, and applied a blanket density code of R40 across the suburb. In contrast, the City of Belmont applied a number of elements to the suburb of Cloverdale. First, it used a targeted approach to infill development, nominating a range of ‘pockets’ which would benefit from the increase in density. Second, it implemented a split R20/R40 density code, supported by a mechanism requiring greater investment by developers in order to unlock the higher density options.

This research finds, therefore, that while the structure of the state government’s overarching planning policy, the RCodes, presents an innovative approach to housing delivery by providing opportunities to move away from the prohibitive or restrictive controls of Market Regulating policies, the mechanism by which the more flexible outcomes offered by the Capacity Building provisions are implemented do not reflect a sound understanding of a segment of the development industry so heavily dominated by the project home builder market, often driving the development outcome as a proxy developer on behalf of the land owners.

ADDRESSING THE CRITICISMS OF SUBURBAN INFILL HOUSING

A further element of this research was to present a picture of the broad criticisms of small-scale suburban infill and the process by which it is delivered, and whether these criticisms reflect a genuine understanding of the resulting built outcomes in these suburbs. It was asked:

7. *How do the criticisms and assumptions of contemporary suburban infill contrast with the physical built-form outcomes and quality of life in those greyfield suburbs undergoing urban consolidation?*

The results of the in-depth interviews and surveys indicated a generally negative view of infill housing. While a few respondents commented that it was an important response to modern housing pressures, or noted that even housing considered small or lacking in design aesthetics

still provides a valuable resource as a place of residence and security, the vast majority reflected poorly on it, and the general process by which it was implemented. Interestingly, even in general discussions which were not focused on greyfield areas in particular, most respondents viewed the current form of infill housing in a negative light, ignoring numerous examples of exceptionally high-quality developments seen in many locations around Perth.

With regards the built form outcomes, there were many examples found in the Design Assessment and Streetscape analysis to confirm the criticisms made by respondents of the interviews and surveys. Some may not have manifest themselves as a visually obvious example, or may not have presented an immediate problem for owners and tenants. One such example is the future issues which could arise out of fragmented strata ownership across a number of grouped dwellings – these present no differently to lots subdivided on survey strata titles or individual lot titles, and may only cause future issues when further redevelopment of the individual strata dwellings is undertaken in years ahead. Another example was the lack of solar design principles in dwellings which might add further operating costs for an owner or tenant, but usually don't result in a visible impact on the broader streetscape. Others, it was argued, were not necessarily a worthy criticism, such as the repetition of house designs, although it was important to distinguish between repetition within a development, and the simple use of repeated designs haphazardly around a neighbourhood as a cost-saving or time-saving approach to housing delivery.

Some criticisms were not the result of the dwelling design, per se, but were an economic decision made by the landlord. One example of this was the replacement of lawn or garden areas with paving to reduce maintenance time and costs. Although not necessarily symptomatic of the current approach to infill housing itself, it was considered an extension of the development process in general, and some felt it was particularly indicative of the type of micro-developers typically operating in greyfield suburbs, and was a critique also aimed at the delivery of housing stock intended primarily for landlords. Indeed, many of the likely perceived impacts were predominantly the result of secondary design and development elements, such as the lack trees and planting, increased local traffic, and parking.

Identifying symptoms of quality of life was more difficult with the data gathered, as it proved to be a very broad and flexible subject, and one which would ultimately stem from long-term qualitative data from residents. The data gathered for this research included a number of indicators from which further assumptions could be made, although these would require much more in-depth research in the future.

In terms of the socioeconomic indicators, while it is not possible to suggest that a causative relationship existed between the delivery models or policy controls and an improved socioeconomic standing, a correlation was definitely found between the policy mechanisms implemented by the City of Belmont and the diversity of house types and land parcels in the property market. If the theories of neighbourhood change promoting a broader socioeconomic demographic amongst residents as an essential tool in suburban renewal are to be believed, then those mechanisms certainly provide an important vehicle for influencing the development patterns across an area. The results of this study, however, suggest that this greater diversity in housing types or land parcels has not singularly resulted in the broader demographic change anticipated.

One observation which emerged from the study was that claims in some of the planning literature of greyfield suburbs being home to large clusters of migrant populations, and this creating a flow-on impact on broader neighbourhood decline (as further purported by Neighbourhood Life Cycle theory), may be explained as a difference in generational perspective: in previous decades many migrant communities were seen as stemming from poorer countries, with little or no English skills, and likely to struggle to assimilate into the local culture. The various iterations of Neighbourhood Life Cycle Theory make mention of the ‘ethnic and minority districts’, an ‘undesirable population’, and ‘racial transition’ as being indicators of a neighbourhood in decline (Metzger 2000).

However, following numerous restructures of federal immigration requirements, and an increasingly globalised cultural and economic environment, recent years have seen an influx of migrants who are both highly qualified in specialised fields, and highly fluent in English. As such, suburbs now home to enclaves of migrant communities might also present as suburbs with higher formal educational qualifications, higher salaries, and a higher proportion of residents working in professional fields. This may well be reflected in the SEIFA data and socioeconomic indicators of the Nollamara case study suburb in earlier chapters, and future research is recommended to better understand the impact of new migrant enclaves on Australian suburbs as a result of contemporary immigration standards and the globalised economy. This tendency for migrants to cluster in greyfield suburbs may not solely be due to an existing enclave of people from a similar ethnic background already residing there – it is also likely that new arrivals to the country would lack the well-established prejudices about a suburb which exists among the local population. Indeed, someone visiting either case study suburb for the first time in recent years would see very few remnant examples of the original post-War homes which formed a cornerstone of early stigmas about a neighbourhood being primarily home to a high concentration of state housing or lower socioeconomic residents.

Second, it was considered that the slower rate of socio-economic change in Cloverdale when compared with Nollamara may be due to the more gradual influx of the ‘next generation’ to the area, largely a result of Belmont’s selective use of density code increases and more stringent planning controls acting as a disincentive or constraint on micro-developers and the rate at which infill development is delivered. As Australia’s workforce is growing increasingly specialised, and the country moving ever further away from a mercantile economy, a larger proportion of younger people are attaining higher levels of educational qualification. Further, Census data suggests that increased scores for the Index of Education and Occupation come on the back of increased younger population, who typically seek higher education qualifications and more specialised fields of employment. This could suggest that the best approach to improving a suburb’s socioeconomic composition is to enable the rapid influx of the ‘next generation’, bringing with it higher educational qualifications, and employment and income prospects, rather than a slower, more selective process focused on housing diversity. This is further supported by the suggestion above that higher rates of immigration may also contribute to the higher educational qualifications and average salaries found in an area. It is recommended that future studies look into any correlation between these considerations and, further, whether any benefit or consequence was likely to be a genuine long-term outcome, or a temporary variation only.

IDENTIFYING THE ROLE OF SMALL-SCALE DEVELOPERS

This research also sought to examine the role of small-scale developers as a part of the broader development industry, with a particular focus on the renewal of greyfield suburbs. It was asked:

8. *What does the research suggest about the actors most active in contemporary suburban infill development, and their role in the traditional mainstream development industry?*

The responses to the semi-formal interviews provided an overall representation of small-scale developers which differed greatly from the typical understanding of traditional mainstream development companies, but also did not match solely with the ‘mums and dads’ label used so often in discussions. Throughout the course of this thesis it became apparent that using such an epithet was effectively a generalisation and often a misnomer, and generated a poor understanding of the means by which small-scale infill is delivered. As suggested by Adams et al (2012), a poor understanding of private sector developers can undermine the efficacy of planning policies. This sectoral disaggregation of the development industry required a better understanding.

Although the ‘mums and dads’ epithet is primarily used in discussion and media reporting about the industry, this study finds that the term ‘micro-developer’ is more inclusive of the varying players involved in small-scale ‘background infill’, including ‘syndicates’ of friends or colleagues, individuals employed in construction-related fields managing developments as a side project, or even smaller development companies operating outside of the traditional ‘tiers’ of the development industry. The use of the term ‘micro-developer’ throughout this thesis better accommodates the broad range of people undertaking such projects, who account for such a high proportion of infill housing across the Perth metropolitan area. It also allowed for unifying characteristics to be identified.

Importantly, many of the characteristics of micro-developers were in direct contrast to the typical development companies operating on larger scale projects. Based on the results of the interviews and surveys, and the other quantitative data gathered for this research, those unifying characteristics summarise micro-developers as being:

- ***Opportunistic rather than strategic:*** The micro-developer does not usually follow a strategic plan for development, but instead looks for opportunities anywhere within their price range, or sticks to ‘safe’ areas where they may have had successful developments before. Many micro-developers will register their details with numerous real estate agents, who will call them as soon as a development block is brought to the market. In many cases, development sites are sold in this manner before even being publicly advertised. Mainstream development companies were more dependent on satisfying a specific market range or product type, which usually came about through detailed strategic planning at the corporate level. By example, Niche Living undertakes grouped dwelling and medium-rise apartment projects targeting entry-level first home buyers, whereas developer Devwest markets itself as ‘blue chip’ apartment product in more affluent suburbs.
- ***Anonymous:*** Whereas mainstream developers rely heavily on public perception and reputation, the micro-developer generally operates with complete anonymity. The importance of a company’s reputation ensures a minimum level of quality in developments, and even non-profitable areas (ie. POS areas or building amenities) are often completed and landscaped to a very high quality. Further, many developers of greenfield estates will create and enforce restrictive covenants, which guarantee a minimum standard of dwelling which all future owners need to abide by. The micro-developer is not generally bound by such need for quality control – they have no public reputation to speak of, and they can rely on the state of the housing market to offload

any dwellings they create. Their builders are bound by minimum quality standards, through statutory documents such as the BCA, although the builder is bound by the micro-developer's overall budget. In particular, 'finishing items', such as landscaping, floor treatments or window treatments, are included to an absolute minimum standard, or to a standard which ensures longevity and low-maintenance rather than liveability (such as tiling throughout bedroom areas instead of carpets). The micro-developer knows that additional money spent on such items is not likely to result in a markedly higher sale price, or more importantly, rental return.

- ***Inexperienced in the fields of building, design or development:*** the micro-developer is treating the development of housing as a trader would investing in the stock market – they often have little interest or experience in the field itself, other than its capacity to generate profit. Generally, the micro-developer relies entirely on their builder to provide designs, meet minimum development standards, seek necessary certification and approvals, and eventually build the dwellings. In some cases, the builder will also be responsible for finding purchasers for the new dwellings. Some keen micro-developers will attempt to design their own homes, although these are often unrealistic, or even unachievable, and firmly demonstrate the micro-developer's lack of experience. Importantly, micro-developers are often unaware of how dwelling configurations are factored into detailed feasibility studies.
- ***Limited financial position:*** micro-developers are generally using equity established in their primary family residence to finance small-scale development projects. In some cases, micro-developers will combine the finances of a number of family members with the aim of creating a new dwelling for each party involved.
- ***Are not owner-occupiers:*** often reflected in the quality of the design and finish, the micro-developer is generally not interested in residing in the resulting dwellings, but is instead only creating them as a means to engage in rent-seeking activity, or landlordism, or with the intent to sell immediately in order to finance future developments. This separates them from the original developers of post-War suburbs, which were established with owner-occupiers in mind, and therefore included a sense of emotional investment in the dwellings and their general upkeep.

In many ways, it appeared as though micro-developers were being used as a source of finance for a development partnership between local governments and project builders, with those project builders acting in a developer-by-proxy capacity. The builders' reliance on the principles of

economies of scale, and an overarching state government planning policy which allows builders to meet a series of 'bare minimums' in order to seek approval, means that micro-developers can easily become disengaged with the development process, with much of the decision-making process undertaken on their behalf. According to some respondents, it was common for micro-developers to not even visit the project site until the defects inspection following construction, simply approving progress payments requested throughout the build process by the builder. Another respondent, a sales agent for a project builder, made mention of a number of his clients paying significant deposits on infill housing projects even before a feature survey of the site was made or home designs prepared, signing up on only the most rudimentary information (for example, the number of bedrooms, bathrooms and storeys to be included in each dwelling).

The research also revealed that the high-volume project home builders were perceived in a range of different ways, albeit usually in a pejorative manner, although often with little understanding of the inner workings and roles undertaken by those building companies. The employees of the project home builders were generally aware of the negative sentiment held by some, and while some agreed with the principle of the comments, others noted with frustration that it expressed a lack of understanding about the process involved. Despite this, the staff of the project builders genuinely felt that without the existence of such companies, the housing market would be considerably worse off, as the sheer volume of homes required to be built each year would be both unachievable and unaffordable using a bespoke or boutique approach to housing delivery. It was also generally understood that while the project home builders occupied a significant portion of the market, it was led solely by demand, and that people were able to engage an architect and an independent building contractor for a one-off design should they wish to.

9. RECOMMENDATIONS AND CONCLUSION

CONCLUSION

Several clear, unambiguous conclusions can be drawn from this study which are particularly relevant to the treatment and renewal of suburban greyfields in Australia and elsewhere. Given the voracious appetite for the ongoing supply of low density detached housing, coupled with the persistent growth in population since the arrival of the first post-War migrants, these suburbs have taken on an ever-increasing significance in addressing the contemporary planning goals of efficient and sustainable delivery of housing while still providing a foundation for affordability and demographic diversity. More importantly, they offer a unique ‘second chance’ opportunity to address a number of poor practices pertaining to housing provision which formed the very basis of these early suburban areas, and arguably contributed to some of the depressed and blighted neighbourhoods of today, within a generally close proximity to major urban capital cities.

The form and function of the Australian suburban environment has been a quintessential element of national identity for many decades, with some cities – Perth, for example – having it sewn into their urban fabric since settlement. Whether this urban form emerged in our earliest years as a response to managing health and sanitation on unsewered housing lots, as a promise of a bucolic lifestyle to entice settlers away from the inner-city environments of Britain, or a combination of these or other factors, it brought the private ownership of a house and a parcel of land within reach of those who once thought it impossible. The closure of the Second World War, and the massive influx of migrants seeking new beginnings, saw a tremendous surge in the construction of detached single dwellings, further supported by generous federal and state government programs to encourage stability and responsibility through ownership, rather than simply subsidising generations of future rental populations. For Perth, in particular, this influx resulted in enormous pressures on a City still in its relative infancy. Further growth over subsequent years showed little sign of slowing, with Australia recording approximately 1 million new migrant arrivals per decade, for every decade since. With seemingly endless space to grow, this passion for low-density living saw Perth’s urban area balloon, fuelled by cheap land and private car ownership, to become one of the world’s most physically sprawled, yet least densely occupied capital cities.

Even as the planning industry began to acknowledge the problem with unfettered outward sprawl in the late 1970s and early 1980s, there were no concerted efforts to put the brakes on Perth’s continual outward growth. The state’s first overarching planning scheme to address this

inefficient use of land, 1990's *Metropolplan*, touted the benefits of consolidation of established areas as well as future outward growth, but provided little in the form of controls or incentive to push back against the widespread opposition to increased urban densities. As a result, those well-established low-density suburbs changed little as the overwhelming market preference pushed developers to new land on the suburban fringe, and the planning controls of the middle-ring local governments remained largely unchanged.

In particular, those post-War suburbs established primarily through state and federal housing programs in the post-War era, largely comprised of smaller, cheaply built homes with the lowest socio-economic occupants in mind, began to suffer signs of decline and disrepair, with the maintenance or renovation of homes sometimes exceeding the financial capacity of the residents, and the shorter life-span of asbestos or fibro-cement clad homes becoming increasingly apparent. By the time state planning strategies began to focus on the re-use and redevelopment of established middle-ring suburbs in earnest, entire suburbs showing signs of neglect or obsolescence had emerged. These suburbs would become known in planning literature as greyfields.

This research began in response to growing questions about the manner in which the contemporary revitalisation and renewal of these greyfield suburbs was being undertaken, with particular focus on the Australian experience. There appeared an increasing disconnect between the general views expressed in planning literature, and the way in which small-scale infill was delivered in Australian suburbs. On one hand, the literature placed great importance on the role of older residential suburbs, considering middle ring greyfield suburbs as being among the “most significant sustainability challenges in the 21st century” (Newton 2010). With particular regard to Perth's greyfield suburbs, their traditionally simple road networks, large land parcels, and close proximity to the City centre saw them perceived as the perfect opportunity for slowing down the City's inexorable growth into outer-lying pockets on the urban fringe through the more intensive use of existing land and infrastructure already in place.

On the other hand, wide-ranging criticism increasingly emerged about the lacklustre outcomes unfolding across many neighbourhoods, and the seemingly lax approach by some local Authorities to the governance and influence applied to developers operating in greyfield suburbs. While initial concerns often focused on design aesthetics and amenity, other issues began to permeate into the broader discussion as the situation continued to evolve: issues of housing diversity and affordability, its impact on increased concerns regarding sustainability, and the growing socio-economic divide in Australian suburbs were all increasingly presented as further evidence of a bigger, more complex problem.

This push towards a medium-density outcome in established areas is certainly not without its detractors. Due to the unique nature of the residential development industry in Australia, the push for consolidation, particularly through commonly used methods such as blanket increases in density codes, has taken the responsibility of urban infill out of the hands of large-scale, well-funded development companies (traditionally known for greenfield subdivisions or larger multi-storey projects), and into the hands of the micro-developer, fuelling a boom in ‘fly-by-night’ property developers who are often inexperienced within the planning and development process. This ad-hoc approach to redevelopment is often argued to occur in isolation and on a lot-by-lot basis, ignoring the wider planning context captured by the more comprehensive Structure Planning process which considers a broader scope and more homogenous outcome. Further, the cost limitations and lack of capital behind these developments, coupled with very low rates of owner-occupation, exposes the mechanism and the motivation of the micro-developers in assuming responsibility for Perth’s urban infill, resulting in further concerns over a growing number of dwellings built with scant regard for liveability and future occupancy. Lastly, and of particular relevance to this research, was the literature surrounding the relationship between the evolving lifecycles of suburban areas and the increasing socio-spatial polarisation of Australian communities, and the means by which planners can intervene to address such issues.

In short, the urgency and importance placed upon these ageing suburban areas by many authors did not appear to correlate with the standards or long-term planning applied by many local governments, nor the aptitude, experience or financial capacity of those ultimately responsible for its delivery. This uncertainty in the degree to which the planning controls implemented to administer this renewal of Australian suburbs reflected an understanding of the processes by which it occurs, and the people responsible, was instrumental in formulating the initial research problem of this study. In the same way that urban sprawl has been caused primarily as a result of poorly crafted planning controls, it can be argued those examples considered to be a poor reflection of suburban densification, and the growing resistance to it, are similarly considered to be the result of poorly crafted, or poorly applied, policy controls.

The review of literature surrounding urban consolidation and suburban form, presented in Chapter 2, examined the etymology of the term ‘greyfield’, finding that while the use of the term in Australian and New Zealand literature differs marginally from its use internationally, the challenge that it illustrates for Australian cities is found in nearly every Western nation – the re-use of older, obsolete middle-ring suburban areas to serve the future needs of a community. The literature focuses on a broad range of interconnected issues, ranging from housing typologies and addressing the provision of medium-density options, and its ability to cater for mixed-income populations or contemporary living arrangements. Other issues include the capacity for medium

density housing to address the long-held market preference for low-density, detached living, its ability to provide support for local employment, and the activation of local retail and public open space areas.

Literature was scarce, however, regarding the relationship between the various participants in the small-scale development process, and the processes by which it was undertaken. Given Australia's historical passion for real estate speculation, summarised by Sandercock (1979) as our greatest national hobby, it was unsurprising that there was ample research into real estate investors and mechanisms such as negative gearing, with some interview respondents conflating those negative gearing investors with the small-scale residential development process, and vice versa.

The overwhelming results of the few studies investigating the motivations and financial models of negative-gearing investors indicate that negative-gearing investors primarily target established homes due to the potential for immediate rental return, and the reduced importance of short-term equity. This only further separates the negative-gearing investor from the small-scale developer, whose motivations, intentions, and financial models are often the polar opposite of the investor. Therefore, despite their importance in bettering the understanding of investment in the residential sector, these studies do little to identify and understand how and why this incremental change sweeping through greyfield suburbs occurs.

It was originally envisaged that the results of this research would play a part in addressing the quality, longevity, and sustainability of the various approaches to urban consolidation and greyfield renewal. Its foremost focus on the socio-economic and socio-spatial outcomes of suburban planning interventions was anticipated to provide a valuable insight into the contemporary planning controls implemented in older, established suburbs and, most importantly, whether the industry had learnt lessons from earlier housing eras, both in terms of the manner in which housing is delivered and its role in the trajectory of those neighbourhoods over time. In doing so, it was intended to highlight the sector of the development industry most responsible for the delivery of small-scale suburban infill, how contemporary planning controls showed an understanding of the process, and how the people and processes fit within the various theoretical perspectives of neighbourhood change.

The findings suggest a very active sector which does not fit within the traditional 'tiered' development industry, where recognised development companies are ranked according to scale, scope, and capacity. This echoes the findings of Coiacetto (2009:123), who identified the increasing difficulty in characterising developers, suggesting that even a project home builder may be considered a 'developer' when it acquires its own project sites, "but not when it is contracted to build houses on a client's land". As such, references in planning literature to 'developers' or

the ‘development industry’ are often at odds with the people and processes at work in greyfield suburbs. Further, the ‘coalition’ or ‘machine’ of “active entrepreneurs” espoused by Logan and Molotch (2007) in their seminal Growth Machine theory are seldom seen, instead replaced by an often antagonistic or adverse relationship between state and local governments, project home builders, community action groups, individual owners and neighbours.

However, the findings and results of this research will also play a role in understanding and addressing another aspect of housing in Australia which is also referred to as a ‘crisis’ in recent years: housing affordability. It was argued in Carville (2009) that concerns voiced about ‘house prices’ in Australia were largely attributed to a combination of a home’s land component and its location, with the actual cost of housing materials and construction increasing roughly in line with CPI over the course of a number of years, and the cost of trades not being as significant a factor as first thought. The competitive nature of the project home market, and highly specialised focus of individual building companies, further acted as a deterrent to wayward pricing by the industry. Importantly, it was found that housing prices were usually dictated by simple supply and demand mechanisms, with a buyer’s ‘capacity to pay’ being a significant driver in establishing price growth over time. This underscored the importance of greyfield suburbs in meeting the demands of housing in the modern era, addressing not only affordability but other demands such as access and amenity, and the more efficient use of existing infrastructure. The findings also suggested that mechanisms or programs intended to provide minimum yields of affordable homes within a development often struggled to work beyond the initial purchase, after which the value of a home would usually revert back to that determined by standard market demand.

This research’s graphing of sales data evidence over a lengthy study period showed clearly that a targeted approach to greater diversity in house and land choices, through increased residential densities in selected areas rather than a blanket approach, can provide a number of benefits. The NIMBYist attitudes so prevalent in Australian suburbia often view infill housing as the catalyst for an influx of lower-socioeconomic residents moving into a neighbourhood, which impacts negatively on the future resale, and therefore equity, of established homes. Each of the case study suburbs provided evidence to counter these claims. Cloverdale’s experience found that the broader diversity of housing and land choices provided a greater range of house sale prices, indicating that affordable housing can co-exist in neighbourhood with more affluent housing. Importantly, the long-term growth of prices appeared higher and more resilient in Cloverdale than in Nollamara. Therefore, a broader range of house and land choices can support housing affordability initiatives within a suburb, catering for a far greater range of living arrangements and housing needs.

Nollamara, on the other hand, exhibited a demographic trend opposite to that anticipated at the beginning of the research. While there were examples of poorly designed or developed infill, in many instances it was a result of dealing with inherent constraints of a development site (usually an irregular lot shape or sloping terrain) in an attempt to preserve the maximum permissible yield of the site. Further, although the seemingly-lax planning controls implemented by the City of Stirling, and the largely homogenous nature of the housing and land options which resulted over the course of the study window, the suburb had not seen the sort of demographic changes discussed anecdotally by the interview respondents. Although it was anticipated that the more varied built form environment which had emerged in Cloverdale would result in a higher composition of larger family units, or couples with higher educational achievement and incomes, it was not found to be the case. Many of the socioeconomic indicators measured between the two suburbs were only negligibly different, with Nollamara seeing more positive growth in indicators such as educational attainment and professional employment. Put simply, the market-led approach to infill did not necessarily lead to the poor planning outcomes anticipated, when compared with a similar suburb with more stringent planning governance. Although this research recommends further study into this particular finding, it suggests at face value that neither approaches to suburban infill have had the dire outcomes anticipated by detractors to residential densification. In addition, this research demonstrates that identifying the relationships which exist between planning and housing, and the way in which people live and respond to the changing world around them, are not always clear cut. Planning controls which are formulated with sound logic and good intentions need to be continually assessed.

Lastly, the results of this research provide insight into the overarching planning controls governing residential development in Western Australia, the complexities of providing uniformity across a range of suburban environments, and how these planning controls should evolve from here. When the Residential Design Codes were gazetted in 2002, they were seen as an innovative approach to governance, attempting to provide a uniform set of standards so essential for creating confidence in the building industry, but also the flexibility for dealing with unique design proposals.

This research found that the structure of the RCodes does not necessarily reflect a poor understanding of the development process, per se, but was a document which struggled to provide adequate governance for dwellings ranging from single detached homes, grouped dwellings, multi-storey apartments and ancillary accommodation (better known in Australian planning circles as “granny flats”). It was also found that the inconsistent application of the controls within the RCodes added to further frustration in the industry. The growing range of

medium-density housing types, including micro-lots, terraces, dual-occupancy flats and ‘fonzie flats’²⁶, makes it increasingly difficult for a single planning document to cater to all housing types.

But more importantly, the findings of this research suggest that local governments need to place more emphasis on supporting any new state planning controls with local planning policies which address broader public concerns rather than simply implementing generic spatial controls. As a neighbourhood’s streetscapes play a fundamental role in the liveability, amenity, and the broader perception of an area, policy controls need to put adequate emphasis on the design quality and public interface that development projects present, while also demonstrating an understanding of the local context. The predominant nature of double-brick construction in Western Australia only emphasises the importance of this approach, due to the significant lifespan this affords new homes.

The move towards the renewal and re-use of residential greyfields represents a unique ‘second chance’ at creating the middle-ring Australian suburban identity, and this research is seen as contributing in part to the planning industry meeting those aspirations, and as a starting point for further research into a complex, but worthwhile issue.

RECOMMENDATIONS AND POLICY IMPLICATIONS

The findings of this research allow us to evaluate the substantive outcome of the approaches of two local governments in implementing policy controls to facilitate the renewal of greyfield suburbs, and in doing so allows us to identify the causal relationships between policy regulation and built form outcomes. It is clear from the results of the study that both case study areas, Nollamara and Cloverdale, have made measurable progress in the intensification of their suburban area, but distinct contrasts have emerged in the neighbourhood character in each respective district.

Lastly, the results of the study help identify an underreported type of developer, the micro-developer, who largely fails to fit the profile of the archetypal ‘developer’ as appears to be understood by the planning industry and so often described in its literature.

²⁶ Typically small studio apartments built above a detached garage structure at the rear of a property.

Based on the findings and results of this research, the following recommendations are made:

1. Targeted density code increases and shedding neighbourhood stigma

The results of this study revealed that suburbs which had used a blanket approach to increasing density codes had become synonymous with poor quality infill, with just the name of the suburb evoking images of low-quality housing and a low socio-economic population. In particular, those suburbs which had dealt with long-term stigmas for historical reasons had largely failed to reinvent themselves as renewed, aspirational areas, and this study argues that the public perception of these neighbourhoods forms a significant barrier to this. This is despite numerous examples of poor quality infill also being identified in suburbs with more targeted or performance-based approaches to densification.

Even in the absence of a flexible or performance-based density controls, it is recommended that a targeted approach to density code increases, focusing on appropriate locations within a suburb rather than a blanket rezoning of much or all of the suburb, be used in future planning schemes. This would enable the implementation of a wider range of housing densities, even in the medium density codes, and would enable higher density outcomes to be located in the most appropriate locations, such as near transport links, local amenities such as shopping centres or public open space reserves. This would encourage a number of positive outcomes to revitalising suburbs, including but not limited to:

- A higher perceived value of remaining lower density lots, which would result in a higher rate of knock-down-rebuild developments, and maintains options for buyers seeking larger family homes in the neighbourhood;
- The retention of some areas within a suburb which maintain the detached single home environment which has been so central to the Australian suburban identity and lifestyle;
- Drawing in larger developers to a suburb to develop higher density sites with higher building heights, which are typically above the budget and scope of micro-developers;
- The activation of dormant streets and public spaces by maximising the housing density around key locations;
- An improved public perception of a suburb, and its desirability as an aspirational location;
- The same or higher net increase in housing numbers across a suburb once developed; and
- A broader range of housing options.

2. Increasing the use of flexible or performance-based density controls

This study identified that suburbs with a largely homogenous housing stock were also more readily associated with poor quality built form outcomes even though there were many examples built to a very high structural or aesthetic standard. The negative sentiment expressed by many about the quality of the built form stock was often heavily influenced by a feeling of disdain for the development model itself, considered by many as lazy, opportunistic, and detached from the suburbs which it was impacting. This finding highlights an inherent risk to local governments attempting to revitalise greyfield suburbs as it implies that even high quality developments can fail to make a positive contribution to the perception of an area when the suburb as a whole becomes synonymous with poor quality outcomes, or “sameness” in housing options.

Perhaps the most important finding with regards to the application of density controls is that suburbs with ‘as of right’ density controls were more likely to see a more widespread use of repeated house designs, which led to a proliferation of project home building companies promoting standardised development designs as a means to deliver quick and cheap housing products, which played to the development constraints faced by micro-developers.

3. Greater use of Performance Criteria, or ‘Capacity Building’ development controls, supported by local government policies, and greater clarification of non-negotiable standards

This study identified two primary mechanisms within the state government’s overarching planning policy, the Residential Design Codes, namely the use of Performance Criteria or Design Principles, and a more rigid series of Acceptable Development provisions in the development control process. It was found that the project home building sector of the market lacked certainty when seeking approval through the performance criteria approach, leading many of them to seek of approval through meeting the more standardised acceptable development provisions. This was found to be a significant contributor to criticisms of contemporary infill as lacking in diversity, design, or aesthetic elements.

The use of performance-based planning controls is considered an essential planning tool in promoting higher-quality built form outcomes, and play a particularly important role on development sites with constraints such as irregular lot shapes, sloping topography, or sites adjacent to different land uses or residential densities. It is recommended that in order to provide for greater clarity and certainty for the development industry, local Authorities provide

supplementary planning policies which outline the means by which performance-based controls are assessed, or the limits to which acceptable development provisions may be varied, or compensated by other design elements. This allows for uniform development standards to be implemented by the state government, which can be varied to some extent by individual local governments, yet still providing certainty for the development industry.

Although this study found that the use of flexible or performance-based criteria led to numerous benefits, it was important that these were supplemented by local government policies in order to provide clarity and certainty to the development industry. Similarly, clarification and enforcement of non-negotiable standards is also an important element in improving the efficiency of the approval process. One example relating to the policy proposal in the previous recommendation would be to clearly outline acceptable development provisions which will not be varied under any circumstances.

4. Greater clarity of objectives through the promotion of Precinct-based redevelopment plans

The current use of Precinct-based planning in Western Australia is primarily around sites of significant importance (such as areas controlled by a redevelopment Authority), around areas designated by the state government as Activity Centres, or by developers in larger greenfield subdivisions. This study finds that the use of Precinct-based planning plays an equally important role in the renewal of suburban greyfields.

A common criticism emerged during the semi-formal interviews which portrayed urban densification as being a process driven by anonymous developers, with little regard for the broader community, and lax care or attention by the local Authority. Although numerous criticisms were examined, a significant catalyst for neighbourhood dissatisfaction and the emergence of NIMBYist attitudes and action groups was a broader feeling of being left uninformed about the process or vision by which the local Authority was governing urban consolidation.

The use of Precinct-based redevelopment plans, such as local Area Plans more commonly used in greenfield subdivisions, play a significant role in minimising these attitudes. Firstly, it allows for far greater clarity to be provided regarding the overall objective of urban densification. Secondly, it allows the use of co-ordinated structure plans to illustrate additional mechanisms which will benefit the local residents, such as proposed transport networks, new or upgraded local amenities, and the planning controls which will help prevent conflict between the various densities and land

uses. This understanding of the ‘bigger picture’ is essential in promoting a broader understanding of the overall objectives behind neighbourhood revitalisation strategies, particularly when community input and involvement is encouraged during the early stages of planning.

5. Greater policy emphasis on diversity of lot size when discussing “housing diversity”

During the course of this research, the primary focus of most interview respondents when discussing housing diversity revolved around dwelling composition, primarily the number of bedrooms and bathrooms in a house. It was found that the two case study suburbs had a historically high proportion of three-bedroom dwellings at the beginning of the study period. By the end of the study period, this proportion had grown further in Nollamara, while Belmont’s performance-based density controls had seen this trend reverse in Cloverdale, with the suburb’s housing composition brought more in line with that seen in the Greater Perth Area. It was argued that this was an important outcome of Belmont’s planning policies, which would provide a more suitable range of housing types and greater appeal to a broader range of households.

The use of sales data evidence in Chapter 8, however, highlighted a trend which received little attention from the interview respondents, and the planning literature – that being the provision of a greater diversity in lot size in Cloverdale. Respondents CT and MN, both property sales agents, both understood the importance of available open space on a lot, suggesting that while the three-bedroom homes so commonly found in the case study areas might be more than adequate for a family with children, the lack of private open space attached to a dwelling might be a significant deterrent for many buyers, and therefore places limitations on the demographic groups most likely to find a suburb appealing. Importantly, this study found a positive correlation between a targeted approach to housing diversity and housing affordability, which will help to address a significant problem in contemporary housing markets throughout Australian capital cities.

RECOMMENDATIONS FOR FUTURE RESEARCH

This research sought to remain within a defined scope by applying various data to two case study suburbs. Throughout the course of the study, a number of other research opportunities were identified which would add further weight to these findings, and further benefit the planning industry’s understanding of the implementation and impact of planning controls.

As discussed in the response to the research questions above, one finding emerged from commentary regarding the clustering of migrant communities in greyfield suburbs, much of which appeared to be based on the dated understanding that migrants were often from lower socioeconomic regions, had poor English skills, struggled finding employment, and struggled to assimilate in their new communities. This study found that the Census and SEIFA data did not necessarily reflect this, and suggested that the globalised world economy, and changes to Australia's immigration policies, meant that many migrants had proficient English skills and higher educational qualifications, and sought skilled, professional employment on their arrival. While a tendency for new migrants to cluster in localised neighbourhoods may continue, future research is recommended to better understand the impact of newer migrant enclaves on Australian suburbs.

Second, this study found that younger generations of Australians were typically seeking higher levels of educational qualification, as a response to an increasingly specialised future workforce. The findings suggested that greyfield suburbs which promoted the more rapid development of infill housing (through less stringent planning controls and blanket density increases) would benefit from the improved employment and earning potential enabled by a more rapid inward migration of new, younger residents. It is therefore recommended that future research seek to better understand any correlation between this, and whether any benefit or consequence provided a long-term result, or a temporary outcome only.

Lastly, this study implies that anecdotal suggestions that greyfield suburbs with stricter governance on infill housing see higher quality outcomes are not supported by economic or social data, but suggest that the growing awareness of 'place making' and the 'economy of place' is influencing the perception people have on infill suburbs. While density control mechanisms such as Belmont's have undoubtedly resulted in a different built form outcome to areas in the City of Stirling, they seem to have had no impact, or even the opposite impact to what would be expected, on the typical indicators of social or economic disadvantage. Similarly, the long-criticised 'blanket recoding' approach to some areas has not necessarily had the dire impact on neighbourhoods when comparing typical economic and social indicators in these two instances. As such, a more qualitative study should be undertaken with the goal of better understanding the role of planning controls and policies (both state and local) in contributing to 'reinventing place'.

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11. APPENDIX ONE: SEMI-STRUCTURED INTERVIEW QUESTIONS

The leading questions for the semi-structured interviews were divided into three main categories, and are outlined below.

INTRODUCTION AND BACKGROUND:

- Describe your involvement and experience with land development.
- How did you become involved with land development in the first instance? What is your background in terms of education or career path? Has this contributed in any way to your development projects?
- Do you consider it a full-time role? A part-time role? A hobby?
- What size developments do you consider yourself capable of? What is your 'bread and butter'?
- What type of development would you avoid, and why?

BUSINESS MODEL:

- How do you generally operate as a developer – as an individual? A partnership? As part of a larger group? How are decisions made with respect to development projects?
- What is the public image of you, personally, as a developer? If you were to become a formal development company, what would be your 'brand'?
- What are the motivations behind your development projects?
- Describe the financial background to your developments – where does the money come from to begin a project?
- What role do government incentives (ie. NRAS credits and negative gearing) play in your involvement in development?
- Describe the robustness of your business model. What risks are involved with your funding model? How do you plan for these risks, or educate yourself to better prepare yourself? When it comes to roadblocks, what is your capacity to 'weather the storm'?
- How do you evaluate your previous developments in terms of success or failure? What constitutes a good outcome?
- What is your involvement with the 'finished product' of the development project? What are the most important elements of the resulting built form? What role, if any, do

builders, designers, local government or state government have in creating the final product?

INDUSTRY KNOWLEDGE:

- Describe the typical research you undertake prior to beginning a development project. How do you identify a suburb? How do you identify an individual site? Do you focus on specific cost segments of the market? What are the reasons for your decisions in this process?
- Once a site has been purchased, how do you decide the scope of the development? Number of storeys, number of rooms, etc?
- What's your understanding of planning practices and regulations? How do you operate within these?
- What elements of the planning have helped you with the development process?
- Where do you see potential roadblocks in the planning process? How do you plan for these?
- How do you engage in the planning environment with respect to negotiating outcomes or resolutions?
- What do you see as your role in the 'bigger picture' of Perth?

12. APPENDIX TWO: SEMI-STRUCTURED INTERVIEW RESULTS AND DISCUSSION

As part of the case studies and project analyses, a number of semi-structured interviews were undertaken with the representatives of the project home builder who undertook the project on the owner's behalf. The interviews were undertaken with a range of staff in order to reflect a typical infill project's movement through the various stages in a project home builder, with positions extending from senior management through to the sales representative, town planning and design staff, and staff from the construction team. The interviews seek to better understand the overall process and procedures involved in the delivery of small-scale infill projects rather than relying on a generally-held perception of the 'development industry'. The interviews were undertaken with reference to the specific development example outlined above, but in a manner which would promote broader discussion about the typical approach of the company, and the industry in general. Respondents were free to discuss other projects or clients (anonymously) which would help compare or contrast the case study example.

The building company was one of a number of building brands which made up a parent group which for many years was Western Australia's largest home builder. A number of interviews were also undertaken with a similar range of staff from a number of building companies which comprised Western Australia's second largest home building group. Although these respondents were not asked about the case study in particular, their input was sought to provide a broader understanding of the project home builder market in general, and the clients they represent. Both home building groups had a number of brands catering for a range of niche housing markets, from affordable first home buyer product through to high-end housing.

Lastly, a number of interviews and semi-formal discussions were had with staff of mainstream developers who undertook larger scale projects across the Perth area, including a development manager operating in large-scale residential apartment and mixed-use projects, and a development manager and general manager of a land subdivision company who developed housing estates ranging from a few hundred residential lots to over one thousand lots in managed stages.

The structure of the questions followed a general sequence which began with forming an understanding of the motivation, capacity and experience typical of their client base, followed by questions more directly pertaining to the case study example. Lastly, the questions focused on the

responsibilities and production model of the company, and its perceived role in the 'bigger picture' of Perth.

1. Describe your typical clients for infill housing? What are the characteristics of the projects they are trying to create?

All respondents provided a similar understanding of their conventional client base, specifically with regards to clients undertaking small-scale infill projects. Although there were a few references to clients who were overseas business people or local landlords who already held a significant number of investment properties, and two references to larger projects undertaken in joint venture partnership with a larger brand-name developer, typical clients were characterised as individuals or couples who were looking to profit from a development project unrelated to their day-to-day career. The term 'mums and dads' was very common, a term which is also used often in the media when referring to small-scale property investors in Australia (although more often as buyers of existing dwellings as investments rather than building of new single dwellings or sets of grouped dwellings as investments). Some of the respondents used the term 'kitchen table syndicates', an idiom which seemed specific to one of the building groups, which painted an image of a couple undertaking a typical development project in the evenings at the dinner table.

B3 reflected on a range of project sizes undertaken by the company previously, although suggested that the generally small-scale nature of projects they are involved with reflects their predominant client base:

B3: "We have some overseas investors who just want to spend money in Australian property. Or some middle tier developers we'll partner with. But predominantly we're dealing with families or individuals. Mums and dads. So that quarter acre infill is a big part of what we do. Well... probably nearly all of what we do with infill."

[move to business model question?] According to a number of the respondents, this was also symptomatic of the nature of the project home industry, as building companies were so highly stratified into very specific house types and housing markets: some building brands built only low-cost first home buyer houses, others were aimed specifically at investors, while others focused only on two storey dwellings. Therefore, although there appeared to be plenty of competition in the home building market, there was surprisingly little overlap between many of the brands. B5 referred to the low-cost building brand in his group, noting that the brand was so highly-tuned to

delivering very low-cost housing that clients were prevented from making any changes to the standard models, and would only build in new housing estates where lots were retained and level:

B5: “They’re only doing absolute bare-bones stuff. You can’t make any changes to the designs. Take it or leave it. And they only build in new estates with retained level sites. If you come in with a lot in an older suburb, even if it’s a vacant lot, sorry, but you’re moved up to the next brand. They don’t want to worry about carting in yellow sand, or any retaining on the boundary. They just want new, flat yellow sand with services in the front corner. Nothing else.”

2. What are the motivations of your typical clients? What are they trying to achieve out of their projects?

The respondents all shared a similar view regarding the motivations of their clients, as primarily a means of providing supplementary income to their daily job, or part of a longer-term investment strategy. Surprisingly, however, most respondents suggested that the clients didn’t actually have any formal strategy, nor had they undertaken much in the way of broader research into the suburb or the market depth, or having any genuine understanding of negative gearing or capital gains, or any of the other costs or incentives associated with housing. One respondent suggested developers operated by an ‘imaginary formula: build house equals make money’, suggesting a broad inexperience with the many pitfalls. B1 also suggested people were often motivated by reports and anecdotes in the media, and were particularly easily swayed by media reports of ‘surging house prices, or bursting bubbles, or housing affordability crisis’:

B1: “I’ll be honest, a lot of the time I don’t think they really know, and that’s pretty scary. There’s a lot of hype out there, and fear, driven by the media. You know, people having to fund their own retirements or their kids not being able to afford their own home. They obviously see it as a safe investment, you know, as security or future income or whatever. But I don’t think I’ve ever seen one with an actual plan about timing or financing or anything.”

3. What is the typical financial position and depth of your clients? How do they finance their projects? How do you perceive their ability to ‘weather a storm’?

Respondents concurred that the overwhelming majority of micro-developers were reliant on bank finance to undertake their projects, and in many cases to buy the project site as well. Two respondents made comments suggesting that while most micro-developers who owned an existing house (either under mortgage or outright) understood the concept of ‘using the equity’ in that property, few of those actually understood how equity was used in a development project, or how it would impact their borrowing capacity, potential risk, or the potential cost of capital. This correlates with a number of other comments made during the interviews suggesting that many micro-developers appeared to be familiar with much of the terminology surrounding development, without much more than a superficial awareness of the process.

As a result, the general consensus was that micro-developers often borrowed a ratio far exceeding what a typical development company would, which greatly reduced their ability to absorb risk or market fluctuations. Whereas a larger developer would typically only seek finance for a portion of the project, some respondents said it was a common practice, and one which was often suggested by the in-house finance brokers, for micro-developers to finance the purchase of the development site and the construction cost of the building contract, but also additional finance to cover any subdivision or servicing costs, any additional finishing items such as air conditioning or landscaping, and even to cover the monthly interest costs of the finance.

B1: “I’d say most of our small-scale clients, the mums and dads, are only looking at their first project. They’ve usually got equity in their own home, but even then they look to finance as much as possible. I mean some will finance the buying of a site, and then the construction, and now it’s getting pretty common to borrow even more to cover the repayments of the finance as part of the overall loan. That’s pretty crazy.”

B4: “The end result is an owner with more than 100% of the project costs being financed. No proper developer would operate like that, and no banks would lend to them to that extent.”

The apartment developer also noted that financiers seldom required small-scale grouped housing projects to have pre-sales prior to releasing development funds, which always required in larger apartment or mixed-use projects. He commented that financiers typically required the equivalent of 80% of the construction costs to be made in apartment pre-sales, which would often require the sale of 50-70% of the apartment stock, but in recent years banks had often increased this requirement to 110% of the construction costs due to the volatile nature of the market in order to further protect the financiers from the increasing rate of buyers defaulting at settlement of the project. The respondent noted that while this helped reduce the financier’s exposure to risk, but also the developer:

AD1: “Perth is really hard for apartments, so you get to test the market depth before committing to build. If you reach the hurdle, you start on site, but if not then you take stock and reconsider what you’re doing before committing to that debt.”

4. How well do your clients understand risk associated with infill development projects?

The general consensus among respondents, that typical small-scale developers are often unclear as their own expectations of a project, are further supported when discussing their broader awareness of risk as it pertains to property development. B3 described typical micro-developers as being particularly guarded at the early stages of a project, suggesting it was symptomatic of people who were clearly unsure of what they were getting into, and often with their family home used as equity for the finance. He also suggested that as the first introduction to a building company was usually through a sales rep, the personality and character of each rep played an important part as many people hold a natural cynicism or suspicion regarding sales reps. B3 also suggested that even a relatively small development project can seem particularly daunting to someone when it’s their first experience:

B3: “I mean, a lot of them have never built their own home before, so if your first development job is building three or four in one go... that’s a lot to take on when you don’t understand the development process. Or you think everyone’s out to take advantage of you.”

Further discussions suggested that this cautious or noncommittal nature of clients often continued throughout the project lifecycle. It was noted that many clients assumed that turnkey items, such as air conditioning or window treatments, were subject to significant mark ups and therefore would be more expensive than if they organised their own trades following completion. There was some merit to this, as a number of building companies applied margins to not only cover their costs in undertaking the additional work, but to actively discourage clients from making excessive or bespoke additions to the build project. The typical margins amongst project home builders ranged from 25-35%, with one company adding a 40% margin to some items.

B6: “That’s true. No doubt. Everything a client adds to the contract will have a margin attached to it. We’re taking on the project management of those items, though, and that takes time or adds liability to us.”

5. How well do your clients understand planning practices and regulations, and building code requirements?

Given that small-scale developers were generally characterised as having little exposure or experience in a property or development-related field, it was unsurprising that the respondents largely concurred that there was little or no understanding of planning regulations or building code requirements. The respondents were generally positive in their comments regarding this, and it was broadly acknowledged that the clients were usually not from a development-related industry, and were treating projects as an investment or wealth creation strategy. There was no frustration or antagonism expressed towards the micro-developers in the sense that they should have more awareness or understanding of planning and building regulations. B2 suggested that at the early stages of each project it was sufficient for the developers to simply outline a few desired elements such as numbers of bedrooms and bathrooms, and a proposed budget, and to let the design team prepare floor plans which were generally compliant with planning and building requirements. He also noted, however, that clients were usually easily persuaded to change these initial requirements, particularly as a result of a poor spatial awareness of the size of the dwelling which could fit on each strata lot. Such requests from clients commonly included a fourth bedroom or separate home theatre room which can't typically be accommodated on 200-300m² lots unless incorporating a second storey.

B1 suggested that the majority of his clients were aware of the yield of their lot, usually based on a discussion with the relevant Council or simply seeing what had been built on neighbouring lots, but were not aware of how this yield was determined or whether certain requirements or criteria had to be met in order to achieve that yield.

B1: "Most of the older suburbs are grid layouts, which means that most of the lots are pretty regular. Nice rectangular lots. But every now and then someone will bring in a triangle or wedge-shaped bit of land, which is OK, but someone would have told them they can fit 'X' number of homes on it, and if you point out some of the issues like where the driveway goes or an impossible slope on the site, they don't care. That yield is the magic number."

B3 made a similar comment regarding clients having a particular yield in mind but not understanding the criteria which had to be met in order to achieve that yield, specifically noting the impact of the split density code requirements implemented by the City of Belmont:

B3: "We've had a few clients who have bought sites in Belmont thinking they can build four homes but without realising how the split density code works. They can have four,

but they need to be double storey. If you only want single storey, fine, but you can only have two. That can come as a real shock when they've already bought the land.”

Other similar comments suggested that while most micro-developers had undertaken some initial discussions with the relevant local government to determine the development potential of their sites, others had simply made assumptions about the potential development, either based on similar development surrounding the site or experience in other suburbs (potentially with different planning controls).

6. What are the typical risks involved with small-scale infill projects? How do you cater for those?

The respondents generally noted that given the historical nature of the Perth market, detached single homes and grouped dwellings were usually low in risk as they represented the vast preference of the buyer and renter markets. It was similarly noted that this was further evidenced by financiers willing to lend more than 100% of the project costs to micro-developers with poor financial backing, as even in the event of default the financiers were still likely to be able to complete a project and recoup any losses. This did not suggest that risks were non-existent.

Given the high lending ratios by most micro-developers, and often poor financial backing, it was generally summarised that time and cost were still critical factors in delivering successful projects. Cost risks could be unforeseen, such as the latent conditions found on the site. B5 cited a number of occasions when the construction team started on site only to find when ‘raking the site’ (scraping through the topsoil on the site using an excavator with a slotted bucket to clear debris and tree roots) that all manner of debris or material was buried. Concrete septic tanks were described as very common in most of Perth’s post-War suburbs, but other contaminants included car bodies, filled-in concrete swimming pools, tree stumps, or old asbestos sheeting (usually from old fences, house cladding or garden sheds). On top of the costs of removal and disposal of these items, clean fill had to be imported and compacted to the engineer’s requirements prior to work commencing. Although this was a risk in development projects of all sizes, it was arguably more prevalent in small-scale sites which were replacing older single homes due to the nature of occupation and use of the sites over the years. The impact was also often greater in smaller developments, as costs could typically only be amortised over three or four dwellings, whereas a larger apartment project could distribute additional costs over a larger number of dwellings.

Less common in larger development projects were unnecessary costs, which were generally summarised as being the result of micro-developers getting emotionally involved with their projects and overcapitalising the development site. All respondents shared examples of micro-developers trying to make unnecessary embellishments, specification choices, or design modifications which served only to push the project costs higher. Despite the broad perception that micro-developers only focused on building the cheapest homes possible, it became apparent that in many cases this was a mindset pushed by the builders in order to not only 'protect' the inexperienced micro-developers from overcapitalising, but more importantly to maintain the rapid progression of jobs to site without delay.

B1: ““Another thing you have to remind some people is ‘don’t over-invest’. ‘Don’t overcapitalise’. Some people have this big vision about what they want to build, but there aren’t really many things you can splurge on that you’ll get your money back on when you sell. Stuff like butlers’ pantries and outdoor kitchens. We can do it, and it’ll cost you ten or fifteen [thousand dollars]. But if you’re building in Balga or Nollamara the market won’t pay for it. You won’t get that money back. No question.”

This mindset was often also further reinforced by financiers, who were acutely aware of the risk of overcapitalisation. B1 commented that micro-developers sometimes were at risk of financiers who would not release the final payment for a project if it didn’t meet their valuation criteria, which put further pressure on micro-developers to be conservative with the overall finish and specification, but also to maintain the status quo with regards to the use of alternative construction materials or bespoke house types or configurations:

B1: “People think it’s always us pushing that mindset, but the banks are much worse. When a job is nearly finished the bank will send someone out to do a val [a valuation], and if they think the house isn’t worth what they’ve financed they won’t release the final payment. So the client has to come up with the money, or... I don’t know. Everything grinds to a halt. Job doesn’t get finished because the bank won’t pay and the client doesn’t have the money.”

The apartment developer and the land developer both suggested this was of particular importance with small-scale infill projects, as again unexpected costs on larger projects could be amortised over a much larger number of units, whereas typical small-scale projects would only result in 2-4 dwellings.

A similar criticism of micro-developers, that they fail to create diverse housing options, also often appeared to be under the firm advice of the project builders who pressured them to aim their product at the safest portion of the market where there was most demand:

B4: “Picture it like a triangle. Or a pyramid. Your median price is along the bottom. The widest part. That’s your buyer market. The further up your pyramid you go, it gets narrower. Your buyer market thins out. If your price is right at the top, your buyer market thins out to nothing. You might not have a buyer at all. That’s how over-investment works. You want to be sitting down here where the buyers are. You don’t want to push your price up here because no-one will buy it.”

It became apparent that the criticism often directed at micro-developers for creating housing considered to be low quality or lacking in diversity was not necessarily the result of a particular objective, but was also influenced by a number of contributing pressures such as the socioeconomic nature of the suburb in which the project was located, the limited financial capacity of the micro-developer, the pressure applied by project builders to move projects to site as quickly as possible, and pressure from financiers that projects not be considered overcapitalising, particularly when dealing with micro-developers who borrowed at much higher rates than mainstream development companies in order to undertake a development.

7. How would you describe the overall business model of your company?

Respondents from both building groups outlined a similar company structure for all of the project home building brands they represented. The individual brands were portrayed as being comprised of two distinct halves. The first half was the administration team who typically worked in the office on a daily basis, and varied in size between the building brands from 35 to 70 people. The administration side was made up of a range of departments and individual roles who co-ordinated each project through the various stages until it went to site. The second half, being the construction team, took ownership of each project as it went to site, and comprised the construction managers and building supervisors, and the sub-contractors who delivered the individual trades required for each build.

A fundamental principle of the typical project home builder business model was outlined by B1, who noted that as the company only started receiving progress payments once the job commenced on site, the entire administration component of the company was effectively an overhead cost, albeit it a vital one in order to move jobs through to construction in sufficient

numbers. This provided further rationale for the reliance of project builders on building standard house models with only minimal changes permitted by clients:

B1: “So you can see the problem there... those people on the admin site technically don’t generate any income, but you still have to pay their wages, and you need them all to get lots of jobs through to site as fast as you can. That’s why we really don’t want people making changes to standard designs and moving this, and adding rooms or whatever. And all the big builders are the same. It’s how they have to be.”

The typical business model of the project builders was depicted as relying heavily on economies of scale, which filtered through almost every facet of home design and construction. The project home builder market was also summarised as extremely stratified, with each building brand being highly specialised to deliver a very specific, limited range of housing products. This highlighted a significant difference in the typical operations and functions between a micro-developer and a mainstream development company.

8. How do you perceive your company’s role in the ‘bigger picture’ of Perth?

The respondents from the project home builders were surprisingly candid regarding the broader public perception of project builders, referring to comments such as ‘lazy’, ‘cheap’ and ‘sprawl merchants’. Despite the overwhelmingly negative connotations, the respondents generally accepted that the basis of these comments, being the strict adherence to Fordist-style production and reliance on standardised products, was necessary in delivering the quantity of homes required in the Perth market. A number of respondents understood the nature of the perception of project home builders delivering cheap housing, although disputed the ‘nasty’ epithet which often accompanied those sentiments. B1 commented that while the housing delivered was considered affordable, the double-brick and slab-on-ground construction methods meant that the quality and durability of those houses was vastly superior to most other states in Australia where lightweight construction was more common, and also to homes built in previous eras where the quality of the individual components was often compromised, or considered deficient to modern building standards. B1 also noted that the ever-evolving BCA (Building Codes of Australia) and NCC (National Construction Code) meant that the construction qualities of housing were getting better all the time, and that project home builders operated in sufficient volumes to ensure that the cost of housing was not rising at the same rate. It was apparent that a number of the respondents had a focus on the construction of the dwellings rather than design or aesthetic elements, as although housing is undoubtedly constructed to a higher standard using higher quality materials, it is usually

the paucity of simple design and aesthetic embellishments, such as roof gables or window fenestrations, or exterior render to front elevations only, which see the resulting housing described in pejorative terms.

In specifically referring to the role of project builders in delivering infill housing, B2 replied that without project home builders being able to utilise repeated house designs, the older greyfield suburbs of Perth would most likely struggle to renew themselves as the level of investment required could often not be justified:

B2: “Perth has a lot of post-War suburbs that haven’t changed in decades. A lot of the homes are reaching the point where the cost of upkeep is outside of the ability of the owner to cover. So, we’re helping those areas regenerate. A lot of the old stuff is being demolished for new housing.”

B2 further noted that micro-developers were essential to the renewal of greyfield suburbs as typical development companies could not operate efficiently at the smaller scale, and the sheer number of micro-developers seeking projects and the competition for sites that this created meant that without their involvement suburban regeneration in Perth greyfields would likely require decades rather than years. Creating a project of a sufficient size that a mainstream developer could manage it would potentially involve the purchase and amalgamation of hundreds of contiguous, individually-owned single houses into one project site, which poses a mammoth task in itself, with a whole range of potential obstacles and challenges.

B1 noted that the operation and number of project homes builders was a positive response to market demand, and that detractors to the industry had multiple other options available:

B1: “I think the market will determine our role in the future. If people want a one-off designed by an architect, that’s available. But they’re not going to be doing that in the fringe suburbs, or in the post-War suburbs. Or near industrial areas, and what-not. Sometimes the only critical part of building a house is the cost.”

Several of the respondents also noted that the size of the project home builders meant that not only could the housing demand be met, but could provide far greater after-sales support. Three respondents recalled situations where a project home building company made significant repairs to dwellings or appliances outside of the statutory warranty period, reflecting an industry large enough in scale to absorb such costs, and sufficiently concerned with the importance of brand and reputation to act in such a manner.

13. APPENDIX THREE: SURVEY QUESTIONS AND EVALUATION CRITERIA

The short-answer survey questions are outlined below.

1. Describe what constitutes typical infill housing in your area.
2. What do you think are the top three motivating factors for people undertaking an infill housing project?
3. In your experience/opinion, what are the three biggest design issues associated with infill housing?
4. What are the top three things a developer would look at to determine if a finished project is successful?
5. From the local government's perspective, what are the three most important elements of the resulting built form of an infill project?
6. How do developers determine the overall scope of a development project (ie. how many storeys, how many bedrooms)?
7. If you could remove two existing policy controls or 'roadblocks' to make creating infill housing quicker or easier, what would they be?
8. What role does the type of infill housing you described in the answer to question one play in the 'bigger picture' of Perth?
9. Given your experience in dealing with developers of infill housing, how would you explain their general approach to housing development?
10. Do you have any additional comments regarding developers of infill housing?

The 'Development Priorities' and Likert scale for the research are shown below:

Inclusion of natural cooling methods (ie. cross-breezes and breeze paths)	1	2	3	4	5	6	7	8	9	10
Speed of development/construction	1	2	3	4	5	6	7	8	9	10
Use of innovative or alternative materials	1	2	3	4	5	6	7	8	9	10
Impact on streetscape	1	2	3	4	5	6	7	8	9	10
'Liveability' of house design	1	2	3	4	5	6	7	8	9	10
Inclusion of water-sensitive design elements (ie. rainwater tanks and greywater systems)	1	2	3	4	5	6	7	8	9	10
Overall development cost	1	2	3	4	5	6	7	8	9	10
Use of innovative design	1	2	3	4	5	6	7	8	9	10
Impact on neighbours	1	2	3	4	5	6	7	8	9	10
Quality of build	1	2	3	4	5	6	7	8	9	10
Inclusion of Solar HWS or Solar PV systems	1	2	3	4	5	6	7	8	9	10
Resale/rental return	1	2	3	4	5	6	7	8	9	10
Creating a one-off 'boutique' product	1	2	3	4	5	6	7	8	9	10
Retention of existing trees on site or verge	1	2	3	4	5	6	7	8	9	10
Quality of finishings (ie. taps, curtains, floor coverings)	1	2	3	4	5	6	7	8	9	10
Inclusion of solar-passive design principles	1	2	3	4	5	6	7	8	9	10

Maximum yield/number of dwellings per site	1	2	3	4	5	6	7	8	9	10
Designing to suit the natural slope of the site (using steps/split levels to avoid site retaining)	1	2	3	4	5	6	7	8	9	10
Provision of housing options for low income tenants or buyers	1	2	3	4	5	6	7	8	9	10
Suitability of dwelling for future occupancy by yourself	1	2	3	4	5	6	7	8	9	10
Selecting development sites based on solar orientation	1	2	3	4	5	6	7	8	9	10
Maximising the number of potential tenants per dwelling	1	2	3	4	5	6	7	8	9	10
Inclusion of 'personal' design elements to floorplan	1	2	3	4	5	6	7	8	9	10
Tailoring dwellings to suit likely future occupants (ie. Building larger family homes near schools)	1	2	3	4	5	6	7	8	9	10
Quality of landscaping (particularly to front yard and verge)	1	2	3	4	5	6	7	8	9	10

