# KEEPING AHEAD OF THE JONSES: THE INCOMPATIBILITY OF URBAN ENVIRONMENTAL EFFICIENCY AND DEVELOPMENT PRACTICES IN SUBURBS UNDERGOING RENEWAL

Andrew MacKenzie
*University of Canberra, ACT, Australia*

**ABSTRACT**

Planning legislation across Australia explicitly aims to improve the environmental efficiency of the built environment through better design. Likewise, development industry associations also advocate for better environmental outcomes. Yet these objectives are often only achieved on signature projects while the majority of suburban development continues to produce increasingly unsustainable outcomes. This paper reports on a study of a suburb in Canberra that has experienced significant redevelopment of houses in the last eight years. It finds that, despite the majority planners, architects, building designers and residents expressing a desire to achieve a more environmentally efficient outcome, very few houses achieved this ambition.

A sample of n219 development applications submitted between 2003 and 2006 show an average gross floor area of 295 square metres. The research also reveals that these new homes have an average of 2.4 occupants and this equates to over 120 square metres of floor area per occupant. Commonly known as the McMansion effect, this study finds that the majority of built environment professionals and residents are critical of such surplus construction and yet little is known about why such development occurs.

These findings form part of a PhD examining the McMansion effect. It finds that no clear environmental objective exist for suburbs undergoing renewal. As a result, many decisions are made that culminate in an outcome residents find both unsatisfactory and undesirable. It argues that planning legislation can do a lot to curb such developments in suburbs undergoing renewal without undermining the community's right to redevelop.

Urban sustainability Urban regeneration Planning law Residential densities and intensification

## INTRODUCTION

Canberra will celebrate its centenary in 2013, ten years after the city's biggest natural disaster in its short history when over five hundred homes were destroyed by the 2003 bushfires. These two 'anniversaries' represent both a symbolic turning point and end point for the iconic Australian garden suburb in Canberra. A turning point because, by 2013, Canberra's construction of units will have outstripped detached houses for the first time. Hence town centres, not low density suburbs, will be where many Canberrans will begin their home owning dream; and an end point because the last vacant lots of land in Duffy will have been developed since the fires. Almost without exception, these new houses will mark a significant departure from the twentieth century garden suburb home.

The home in Australia during the first decade of the twenty first century has significantly shifted from the austere modernist post war cottages developed in typical low density Australian suburbs such as Duffy (Greig 1995). Architectural styles, choice of materials, improvements in energy efficiency and even the design of gardens reflect this change. What is most visible and measurable is the increase in size of the houses. The average floor area of new homes in Duffy was 286 square metres and they replaced many original government built homes or 'govvies' which ranged from 120 and 180 square metres. This was neither surprising nor inconsistent with national trends toward building larger houses on smaller lots in the last twenty years. In 1993–94, the average lot area for new houses in capital cities in Australia was 802 square metres, compared to 735 square metres in 2003–04. Conversely the average floor area of new houses built in Australian capital cities has increased from 189 square metres in 1993-94 to 223 square metres in 2002-003 (ABS 2006).

A visitor to Canberra who had no specific knowledge of the fire event could drive down Eucumbene Drive on the western urban edge of the suburb and see impressive new houses built on the most desirable blocks of land with distant views to some of Canberra's most iconic scenes. Not only are these houses significantly different to those unchanged by the fires, but the planning codes and regulations are very different to those implemented when the suburb was first built. What remains less clear is why such a shift has occurred and what this says about our relationship to living in the leafy low density environment called the garden suburb. Today, houses occupy a greater portion of the developable space on lots of land leaving only a ribbon of left over space around the perimeter. Figure one provides an aerial snapshot of the changed configuration of the western edge of Duffy over a four year period.

The emergence of the garden suburb, and its impact on the form and structure of Australian cities in the nineteenth century suggests an enduring relationship with the detached house surrounded by open space, be it gardens, outdoor workshops, a barbeque area, or a large lawn. Landscapes are not just back yards, patios and gardens, yet recent research and while people today may not have fallen out of love with landscape, their lifestyles and the cost in time and money prevents them from looking after gardens (Hall, 2010). As a result, suburban residents redesign their homes to reflect a preference for other modes of entertainment and relaxation notionally connected with indoor rather than outdoor activities (Mead, 2000). However, this argument sets up a simple binary between inside and outside spaces on privately occupied land. This is an overly simplistic interpretation of the landscape as it doesn't take into consideration the tacit values that contribute to people's preference for living in the suburbs. Nor does it explain the role and landscape relationship which the design and development industry embody in the reconstruction of homes in Duffy or any other suburb undergoing renewal. Be it a response to a large scale disaster such as bushfire, or part of a more 'natural' gentrification process associated with renewal of ageing housing stock.

This paper examines the role and agency of architects, designers, planners and residents engaged in redevelopment projects as a result of the 2003 fires. It explores how the different respondents engaged in the change process, the kinds of choices they made and how the changes that have occurred uncovered the social and political forces that conditioned and influenced their decisions. The reasons the rebuilt homes were substantially larger and architecturally different to those lost were not merely responses to economic opportunism, but included complex understandings about the suburb, home and the dream of the ideal home. In addition, the professional designers and planners had also constructed different suburban identities in and through their desire to produce an environmentally efficient and socially engaged suburban form.

Interpreting the social, structural and physical changes to Duffy represented a snapshot of the values and priorities of social actors engaged in the development process. However, a brief history of the role of the post war suburb in the development of cities is necessary in order to understand the socio-cultural context in which this shift occurred.

***Figure 1: A Quickbird-panchromatic high resolution satellite image of the western suburban edge of Duffy six months before the fires (left) and three and a half years after the fires (right).***

**Suburban Identity in Canberra During the Twentieth Century**

Canberra itself has a particular planning history that is very different to other Australian cities. It was a product of a master plan, or at least a vision resulting from the fathers of federation, and through them, the Australian people who envisioned a National Capital that expressed the symbolic union of the states to form the Commonwealth of Australia (Vernon 2006). The new capital was of such importance that the choosing of the site for a new city and the commissioning of an international design competition reflected the ambition and optimism of the nation in its infancy. The conceiving of a National Capital also occurred at a time when key protagonists of urban and spatial planning were developing their own scientific language and advocating for a substantive role in urban governance and administration at a local and state level (Freestone 2000). As the twentieth century city of Canberra transformed from aspiration, to vision and then reality, the new science of planning was developing an intellectual and professional standing largely advocating the garden city principles for urban growth.

The persistent theme of housing in twentieth century spatial politics in Australia ensured that citizens had a right to their own dwelling and land and this was seen as good for both the physical and social health of the community (Freestone 2000). While many of the urban planning outcomes around Australia varied over the twentieth century, the intentions of the early professional planners were to design cities that were substantially suburban. The detached house on individual lots separated from the street by a strip of lawn containing a street tree became synonymous with the garden city principles exported from Britain at the time. This typology not only became the norm for municipal authorities, developers and home owners, it was acculturated into the Australian identity. The quarter acre block was, for the most part, a myth perpetuated by advocates for home ownership yet it symbolised the right of Australian families to own and occupy a parcel of land (Troy 2004).

During the last decades of the twentieth century, planning and design of the suburb shifted in Canberra as it did in other Australian cities. The major changes after 1980 included a reduction in lot sizes, an increase in house size and an overall increase in density, both in the number of dwellings per hectare but also the amount of built form covering the ground (Gleeson 2006). As with the preceding dominant suburban form, this new compact form was also subject to considerable criticism. Contemporary concerns about changing health patterns of children had been linked to changing attitudes towards the landscape and this is in part attributed to the change in the configuration of suburban lots, and size of available external spaces for recreation (Mead 2000, Tranter 2006, Hall 2008). Likewise the densification of the suburb has also been attributed to increased environmental pollution from runoff which has compounded institutional impediments to effective stormwater management (Brown 2005). Empirical evidence also shows that the increase size of houses on existing lots causes a cumulative loss of urban forest (Banks and Brack 2003).

As with any new design movement, the compact city, its variants including new urbanism and smart growth, have been promoted as the new way to design with all the positive outcomes espoused by advocates. Yet like all movements before, the compact urban form is, in part, a response to consumer demand and a product of strategic and coordinated responses to economic pressures and market opportunities. Organisations engaged in the development of suburbs, include the large home building and product manufacturing companies and they have dominated the housing industry and influenced planning policy (Gleeson and Low 2000). When Duffy was first developed in the early 1970's the primary drivers of house design were efficiency and affordability and this reflected an austere conservative pioneer settlement typically described by Boyd (1964). Design, comfort and individual expression were secondary luxuries that, in the twenty first century, could now be afforded. Yet at the same time the planning codes in little more than

thirty years have shifted from mandating minimum size dwellings to restricting maximum sizes. These changes not only reflect changing social values, but also the changing intuitional arrangements between the different social actors engaged in the redevelopment process and this has affected the character of the suburb.

**The Recovery of Duffy 2003-2010**

On 18 January 2003, in the middle of a heat wave, a fire burning in the Namadgi National Park south west of Canberra broke containment lines and rapidly spread to the western urban edge of the city. Duffy was the first major urban area to be engulfed by the fire front. By late afternoon, over two hundred properties were damaged beyond repair, large tracts of urban bushland, local parks and many street trees were also burnt. Across the city over five hundred houses were lost, including entire forest settlements in the National Park. Remarkably only four lives were lost, however it was the biggest natural disaster the National Capital had experienced in its short history.

The damage to property and public infrastructure in Duffy resulting from the 2003 fires created a demand for development unusual in scale and context in two ways. Firstly, the scale of damage caused by the fire was unforseen. Consequently ACT Planning and Land Management (PALM), other government agencies, local professionals and the community had no preconceived strategy to cope with so much infrastructure loss, or to manage the rebuilding of private dwellings and public amenity. Secondly, the number of applications to rebuild was unprecedented in an established suburb. Suburban development of this magnitude usually occurred on greenfield sites and relied on a master planning process to achieve desired outcomes. In the case of Duffy, no master plan existed and redevelopment occurred using the planning codes designed for a different urban form, in a suburb planned and built under different policies in the 1970s.

Principally the scale and speed of reconstruction in Duffy was ‘gentrification on steroids’. As such, the processes that occurred in Duffy may also occur in other suburbs undergoing renewal, but are less dramatic and noticeable due to the much longer time frames yet the outcomes remained the same, which was a profound reconfiguration of the suburban landscape. These changes included; the increase in house size without necessarily resulting in an increase in the number of occupants, increased diversity of architectural forms, an increased interest in environmentally sustainable or ‘green’ technology and a decrease in the size of open space on private blocks.

The agents for this change included the planners, building designers, architects and landscape architects working with residents in a market buoyed by a glut of vacant land. Almost half of all residents sold their land after the fires resulting in over one hundred blocks coming onto the market in a very short period. The other change agents were the residents. Including those who had lived in the suburb for most of their lives, and merely wanted to return to a suburb, albeit a permanently reconfigured one and new residents building new houses on lots sold after the fires.

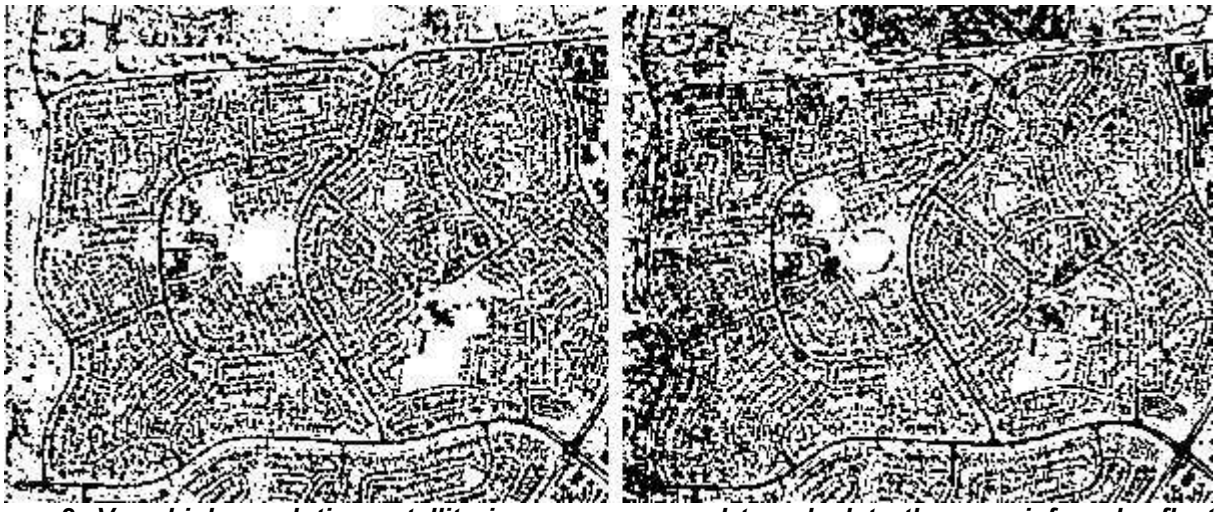

***Figure 2: Very high resolution satellite imagery was used to calculate the near infrared reflective index- a measure of surfaces that reflected heat and light- these include roofs, pavements and roads represented by the black pixels. The left side image is 2002 and the right side image is 2006. The western edge of the suburb experienced a 15% increase in built surfaces compared to the unaffected eastern edge. This increase in almost entirely attributed to increased house sizes.***

**Understanding the Agency of the Social Actors in the Recovery Process.**

This paper examines how the designers, planners, architects and residents framed their role in crafting the reconfigured suburb. It adopts a sociological stance developed by Gans (1967) to understand the agency of the social actors involved. In his study of the planned estate of Levittown, Gans proposed that the consumer-producer dynamics determined many of the design outcomes of a suburban estate. He argued that suburban developments were a combination of producer motivations and consumer demand and the features of this dynamic were found in both specific relationships to do with suburban development and more generally in terms of everyday life actions of residents (Gans 1967, 1988).

Twenty planners, architects and designers- or producers, and twenty seven residents- or consumers undertook semi-structured interviews. The questions were designed to elicit stories about their involvement that described their agency in the redevelopment process. I was interested to know how individuals reinterpreted their decisions, practices and experience through re-telling their redevelopment story, and in doing so, uncover their agency in the development process. The questions required the respondents to recall their involvement in a particular project, their relationship to the other social actors in the process and their contribution to the recovery process. They were also asked to reflect on how the changes to the suburb had changed its character.

Consumers were also asked to participate in a detailed interview designed to create individual life stories based on topoanalysis (Bachelard in Marcus 1979). Topoanalysis is the "systematic psychological study of the sites of our intimate lives" (Bachelard, 1969). It explored the phenomenological union between dwelling spaces and past experience. Cooper- Marcus (1979) extended this theory to interpret dwelling spaces that included an environmental or landscape context (Cooper-Marcus, 1979) and developed the environmental autobiography as a result. This approach was designed to frame the resident's experience into a coherent narrative in the context of the lived space, namely their home and suburb. Developing an environmental autobiography linked the individual to a sequence of events over time and space provided a link between the individual and the landscape. The recollection of these experiences did not render each event as a discrete quantifiable unit of measurement, but rather a series of critical reflections that articulated how residents responded to changes in their environment over time. By reflecting on the events some years after the event, they expressed the totality of their experience to the changing environment. Such an approach identified the complexity of incremental change in attitudes and attachment to place.

**RESULTS**

While it was clear that many of the producers could clearly articulate a set of priorities to do with the process of design , the consumers arrived at a point of resolution from a more complex set of values associated with occupying and appropriating their new home in the suburb. This was exemplified by the producers and consumers different understandings of the redevelopment process. The producers arrived at a philosophical stance from primarily a professional practice position and hence their relationship to the project was informed by those values. However the consumers did not have a predetermined philosophical view about design and development but rather were bound to make decisions in and through the circumstances at the time as well as incorporating their embodied experience of living in Duffy before and after the fires.

Consumers understood the role of the producer as an ethical one, that was, to arrive at a better outcome through their skill and knowledge. The consumers' motivations were different to the producers in two ways. Firstly, the consumers understood the redevelopment project from an everyday life perspective. For them, it was about living in the suburb and reconceptualising how that lived experience would change in a new social and physical space. Secondly the consumers were not equipped with the same language and skills specific to design and development. However, it is too simplistic to suggest that consumers and producers were mutually exclusive in their language and philosophical stance. Consumers may not have used the same language to express design ideas, but they did possess at least some ideas about how they wanted their house to look and function.

For the Consumers, the decision to reoccupy their space became a trade-off between different push and pull factors. Whereas Gan's study focused on more formal relationship between the provision of amenity, the economic and opportunity costs of moving into a suburb, this study focused more on the emotional costs of change and how the tacit understandings about home, community, space and landscape affected individuals' decisions. This trade-off between relocating and rebuilding affected decision making, both in terms of the residents' choice to redevelop their block of land, but also how their values, circumstance and approaches to design and development impacted on their home and the suburb.

A central argument of this paper posits that the residents' rationality, their understanding of how they occupy the space and conceptualise their homes, explained the differences in house size generally. There were exceptions that could not explained by the data. However, this paper argues that different conceptualisations of living, dwelling and occupying the home and the block were reflected in the design of the new houses, most notably the increase in house size, the architecture and the changed configuration of the landscape.

**Engaging in the process of change- the producer's perspective**

The producer-consumer interaction was neither linear nor clearly articulated. As a result complicating factors came into play. The emotional wellbeing of the consumer was particularly relevant and this manifested themselves in two ways. Firstly the producer was particularly aware of the need to return the consumer to a stable state as quickly as possible although not necessarily and idealised and imagined past. Secondly the producer managed the process of change rather than necessarily taking carriage of the final form. Ultimately, the producers, despite good intentions were limited to the extent that they could engage the consumers in broader discussions about the most suitable design outcome from a social, environmental or even economic perspective.

For the producer, the process of design represented a fortuitous confluence between the consumers' expectations and their professional interest. Design became a dynamic and evolving circumstance as the producers endeavoured to achieve the appropriate balance between their own philosophical stance and the pragmatic considerations of the design process in order to achieve a desirable outcome for the consumers. The planners, in particular, had to accommodate residents who wanted to build as quickly as possible and those who wanted to wait, often for a few years. This indecision caused more pressure and tension, between those consumers who saw themselves in a race against rising prices and those who wanted time to recover emotionally and consider their options. Therefore the pragmatic response from the producers was to help people to decide by giving them as much information as possible. Many felt they should encourage consumers to adopt a holistic and reflective approach to considering their future needs.

The consumers who adopted this holistic approach and were prepared to consider how they wanted to live in the house and the suburb actually produced a home that was both more appropriate to their needs in terms of size but were also happier with the outcome. Where as those that adopted a fragmented approach treated the home as a list of component parts in which each member of the home expected to have autonomy over their own space produced a much larger home and the residents were often less happier with outcome. It was therefore important to consider the communication process in order to understand how that impacted on the development outcomes. I propose many of the producer- consumer relationships involved the following stages.

1. Initially, the producers negotiated with the consumers based on their preparedness to engage in the process of change by focussing on the tangible project; the house and the block of land.

2. The producers considered their own ethical considerations that dictated the nature of their relationship. They were facilitating the consumers' aspirations by engaging in a dialogue about what was ethically good and right. At this stage notions of sustainability, efficiency, and the consumers' aspiration were discussed, but not clearly defined.

3. The implementing of the design operated within an incentive model whereby cost and benefits were negotiated between the producer and consumer. Some of those costs and benefits such as size and materials were tangible and measurable, and others factors were intangible such as efficiency spaciousness and comfort.

4. Finally, the technological limitations, regulatory requirements and cost benefit trade-off eroded the initial aspirations of both the producers and consumers. Only on reflection could the producer consider both what is good in terms of their agency in the process but also what in fact their agency was.

Over riding all these decisions was the relative cost of delay in decision making and the due processes required by the planning authority in order to administer their regulatory function. In short, no one individual had agency over the outcome of a redevelopment project let alone a vision of the future suburban form. Therefore the outcomes reflected the societal values and institutional and market mechanisms of the design and development process but also broader cultural conceptions of the home and daily life in the twenty first century. As the process of negotiating and facilitating occurred, the major determining factors for decisions were trade offs between these competing social, cultural, financial and environmental factors. Yet the perception remained that the house size relative to block size was a stubborn cultural artefact of popular

perceptions of prudential financial investment, social status and even environmental performance (Hall 2010).

**Consumer's Perspective: The Embodied Memory of the Landscape**

The consumers' relationship to the suburban landscape was psychological as much as it was functional. Despite their struggle to reconcile the potential future fire risk that the landscape presented, the returning consumer held an Arcadian dream about an idealised past. They were not trying to recreate, but look for cues that reminded them of the pre-fire character. The landscape was expected to play a part for residents in returning to a stable but changed state that retained some vestiges of the past. This included recovering the landscape character of the block, the street and to a lesser extent the suburb.

The consumers who returned after the fire and rebuilt had very different motivations and expectations to those who purchased after the fires. The returning residents saw the house as a shell to inhabit; they were starting again, having lost almost all their possessions. To them, the house they returned to contained no embodied memories. They would be able to furnish this new home with only a few artefacts that connected them to their previous life. The only constant for these consumers were the vestiges of the landscape that remained both on the block and in their street. Their reference point in time and space remained the remnant trees and other vegetation that signified the connection between the suburb and their desire for continuity and stability in the community. Many of the returning residents had developed a deep connection to Duffy and were determined to recover a memory of their own experience of the landscape such as walking through the pine forest, strolling under an avenue of street trees, or gardening in their own back yard. These consumers made a connection between their own environmental histories and linked that lived experience to their desire to recover a landscape of emotional as well as material comfort.

These emotional and financial costs significantly complicated the consumer producer relationship and further complicated the consumers' understanding of what they achieved through that process. The houses were often seen as a shell, a place to occupy, not something of architectural merit or a dream home for them to appropriate. Despite the house presenting all these new internal inclusions with extra rooms, their habits and routines continued to be largely unchanged. The consumers who also reported that their houses were better designed meant better thermal comfort, more spacious and lighter and yet the designed outcomes and financial and cost of recovery differed greatly. The different outcomes occurred between the consumers' and the way they reconciled their impact on the suburb in and through the way they conceptualised, designed and operated their house.

This paper argues, perhaps provocatively, that people who thought holistically created a big picture of how they designed their home in relation to the landscape and tended to build smaller houses. Those who thought of their home as a vessel containing a list of component parts and saw their home in isolation to the landscape atomisied their decisions and resulted in building bigger houses. So big thinking people now live in little houses and small thinking people now live in big houses.

**Big People Live in Small Houses- Incorporating Landscape Values**

The big consumers had a different perspective about how the landscape ameliorated and facilitated the new home. They expected the surrounding garden and yard to integrate into the design of the house and spoke of a sort of reciprocal relationship between the inside and outside. The big consumer developed of a sense of stewardship over the landscape around their home, because they were aware of how the landscape operated in relation to the house, but also could be occupied. That is, the house layout was governed by their desire for a balance between internal and external space. Many, but not all, of these consumers were gardeners and spoke of the functional and emotional benefits of gardening and seeing gardens. More so they also understood how the garden played a functional role in lightness and thermal comfort inside the house and how the landscape contained measurable as well as tacit value.

> *"This was an opportunity a fantastic opportunity to get something we dreamed and thought we would never have; we talked about solar passive houses and efficient houses because Australian houses are not efficient. The architect knew that and he talked about the house and garden and exciting possibilities for the garden, the garden is integrated into the design of the house. He told us that we would have to be very active people to manage a solar passive house, which we didn't know at the time" (Returning resident 38).*

The big consumer understood the role of the landscape differently but they also had a different perception of the performance of the house itself and these two concepts are interrelated. They focused primarily on how

their property would perform as opposed to what it looked like. This applied equally to the house, the surrounding garden, and extended to the street despite them having no control over the configuration of landscape elements such as street trees and front gardens outside their own block.

> *"I don't have a lot of garden and I've moved the spaces around a lot, it a climate appropriate garden…. its lovely full of birds, it's a lot smaller than before because the house is a lot bigger, but it's a garden not a back yard. … so the nature of the garden hasn't changed, but the design has" (Returning resident 23).*

**Small People Live in Big Houses- Reconciling Competing Values**

The small consumer had developed an expectation about how the house would operate in isolation to the landscape. While the persistent cultural assumption about the need to build big for the future drove many of their decisions- the mismatch between the design and their lived experience in home the created a double disconnection. This is best described as a physical separation to the landscape on the block and a physical separation between the internal spaces and their experience of living in the house.

> *"I'd say [the house is ] fitting the plans we have at this stage of our lives. The design works well; the kids have their own quarters that are separated. Although it hasn't been used yet, we've got a space for [our] mothers. I'd say it's satisfactory for me, it's functional. One of the things that have trapped us is that the windows on the north let all the sun in a just cook our furniture, and the heating is in slab which doesn't work very well. Another thing is these big windows are supposed to reflect out UV or whatever, but in summer you have to have curtains or it just cooks the rooms….The architect [also] said you've never been able to utilise this big back yard why don't you add this bit onto what was your back yard and shorten your backyard, which was useless space" (Returning resident 8)*

The small consumer tended to think of the functioning house operating to provide for separate uses for occupants, and accommodating each person's right to autonomy, privacy and independence. Efficiency implied fitting as many elements into the building that the project funding would allow. The value of this type of efficient design inclusion was then monetised and tied to the future property resale opportunity. It was considered prudent to make the most of the opportunity to build as big as possible in order to increase resale value. However by building to the maximum footprint, the consumer not only built to cover all future possibilities, they build out future flexibility subsequently found that they had built surplus to their needs, yet this was not considered inefficient or a problem.

> *"It's kind of it's a rather unusual design it got sort of three or four pavilions if you count the garage, with little sort of connecting corridors between each one . [The architect] created some zones, the family area where we sort of hang out is sort of isolated from here and isolated from there. We're not in each other's laps, our studies are down there and that's a bit out of the road so it's kind of, the layout of it was kind of interesting. Someone can be in the living room watching TV [ but it's] kind of wasted space, we don't use it that much." (Returning resident 12).*

**The EER conundrum-Bridging the Gap Between Theory and Practice**

This case study would suggest that the environmental efficiency rating EER system and green design were at odds with the broader social and environmental landscape values. Many of consumers and producers viewed the landscape as a space that required green technological interventions to improve its environmental performance. Interventions included installing artificial grass or paving to reduce water consumption, therefore improving the EER performance but compromising other significant environmental benefits. As with any policy setting there will be flaws in its application but the difference in the way the house and the landscape were treated in terms of EER performance reflected a broader confusion about the value of the landscape in achieving a more sustainable suburban form.

> *"Peoples habits change, people want bigger house, and they don't want bigger back yards, with all the problems with water usage. So who wants a big back yard for god's sake. People would rather have bigger living area…, live internally"' (Brett, building designer).*

Likewise the EER system was not able to capture the full cost associated with building larger houses surplus to the consumers needs, and yet consumers were aware of the EER rating of their house and to them, this was an indication of the environmental efficiency of their home. This conflating of the concepts of sustainability and discrete improvement in energy efficiency highlighted the gap between the differing aspirations and expectations and the institutional impediments to change in the building process.

## CONCLUSION

The emergence of global environmental urgencies to reframe how we live, have redefined the landscape in the suburb. Despite the demonstrable evidence of the social and environmental benefits of the suburban landscape, planners, designers, and the wider community are “urged to accept a united, if ill-defined, agreement on landscape value as land value and to cede all argument to those who have been entrusted with finally determining it.” (Russell-Clarke,2006 p. 5). The role of landscape in this contested ‘green’ space has been further complicated by the way in which the cultural value of the landscape is manifest In the narratives of the producers and consumers redeveloping in Duffy. Indeed examining the rebuilding of a suburb recovering from fires in and through the narratives of the social actors engaged in building houses presented a persuasive argument for agencies to develop a better understanding of the role played by the landscape in the redevelopment process.

How green objectives are measured should reconsider how landscapes are valued at a holistic or suburban scale. To this end the empirical evidence raises the most significant concerns regarding sustainable development. The problems faced in suburbs such as Duffy should be incorporated into the suburban planning approach. Namely that the population of the suburb has and continues to decline, but the gentrification effect of the fire and post fire redevelopment has markedly increased the amount of built form to the extent that the average floor area per person exceeds one hundred and twenty square metres. This is neither sustainable nor desirable for a community facing higher energy costs in the future.

This paper has argued the producers and consumers, their values, actions and decisions, are representative of a broader cultural view of how an affluent western society embodies the home the suburb and the landscape it occupies. It posits that the contemporary suburban renewal practised in Australian cities presents a modern dilemma facing planners, architects and the community. This is best described as a gap between the aspiration to improve environmental outcomes through planning codes designed to facilitate urban renewal and the designed outcomes produced by the persistent narratives surrounding the cultural values of the home and the landscape. Who decides the landscape value of land in the suburb is as important to understand as the aspirations and motivations of social actors engaged in the change process. The emerging literature on the social and environmental costs of such development provides a catalyst to understanding the landscape relationship and the landscape impact of redevelopment in existing suburbs and this paper focuses on one part of this equation.

## REFERENCES


1. ABS ,(2006) 2006 Year Book
2. ACTPLA, (2009) Discussion paper propsal to :Amend energy rating provisions under the ACT House Energy Rating Scheme.
3. Bachelard, G., (1969) The Poetics of Space. Boston: Beacon Press.
4. Banks, J., & Brack, C., (2003) Canberra's Urban Forest: Evolution and planning for future landscapes, *Urban Forestry & Urban Greening*, 1(3), 151-160.
5. Brown,R., (2005) Impediments to Integrated Urban Stormwater Management: The Need for Institutional Reform, *Environmental Management*, 36 ( 3), 455–468.
6. Freestone, R., (2000) Planning, Housing, Gardening, Home as a garden suburb. In Patrick troy (Ed.), A history of European housing in Australia,Cambridge University Press, Cambridge.
7. Gans, H., (1967) The Levittowners : ways of life and politics in a new suburban community, Penguin Press, London.
8. Gans, H., (1988) Middle American individualism: the future of liberal democracy. Macmillan: New York.
9. Gleeson, B., (2006) Australian Heartlands making spaces for hope in the suburbs. Allen and Unwin,Sydney.
10. Gleeson, B., & Lowe, N., (2000) Revaluing planning Rolling back neo-liberalism in Australia. *Progress in planning*, 53, 83-164.
11. Greig, A., (1995) The Stuff Dreams are Made of: Housing Provision in Australia 1945-1960, University of Melbourne Press,Melbourne.
12. Hall, A., (2008) Where Have All the Gardens Gone? *Australian Planner*, 45(1), 30-37.
13. Hall, A., (2010) The Life and Death of the Australian Backyard,CSIRO Publishing, Collingwood.

14. Mead, J., (2000). The Suburban Backyard: Its Meaning and Use in the Contemporary Suburb (Unpublished). Unpublished Dissertation submitted for the degree of Town Planning at UNSW, UNSW.
15. Russell-Clarke, J., (2006). A dilemma for landscape architecture: transcending the useful problems of suburbs and utopias. RMIT, Melbourne.
16. Tranter, P., (2006). Overcoming social traps: A key to creating child friendly cities. In B. Gleeson & N. Sipe (Eds.), Creating Child Friendly Cities: Reinstating Kids in the City, Routledge, New York.
17. Troy, P., (1996) The perils of urban consolidation : a discussion of Australian housing and urban development policies,Federation Press,Sydney.
18. Troy, P., (2004) The Structure and Form of the Australian City: Prospects for improved urban planning.Griffith University, Brisbane.
19. Vernon, C., (2006) Canberra: where landscape is pre-eminent , in D. Gordon, (ed) Planning Twentieth Century Capital Cities, Routledge, London.