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GENERATIONALLY SUSTAINABLE HOUSING: PROVIDING FOR A MULTICULTURAL SOCIETY.

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KEY WORDS Immigrant Cultures; Housing Subdivision; Generational Sustainability

ABSTRACT

This paper investigates the divergence between housing patterns and the increasingly complex culture of Australian society and looks at the possibilities of generational sustainability as a product of immigrant cultures. As yeast is to dough, immigrants have brought incremental change to our society in all its aspects. Each wave brings its culture which permeates and enriches the established structures and customs. While the new influences bring change to most aspects of life, the greatest resistance to change is accommodation. Existing housing stock is both an attraction and an inhibitor of social adjustment for the family structures of migrant communities. In contrast to the nuclear family of twentieth century Australia, the newcomers come with extended families. Traditional alternative living arrangements are forcibly adjusted to the new environment, whether by preference or economic necessity. Much of the suburban environment continues to be formed by the single family house. The suburban grid has been formed by the political goal of the owner occupied home, which has in turn determined the successive forms of development at increased densities. Current strategic goals for the housing of Sydney’s growing population require the provision of a wide range of dwelling types to provide greater levels of access to both rental and owner-occupied housing. In the Western Tradition, a wide range of utopian schemes to restructure society in terms of work and home have been proposed since Fourier’s Phalansteré. However, pre-industrial societies have always found means of accommodating successive generations with cultural variants of the extended family in China, India, the Philippines, Japan, Korea, and Islamic societies. Australia now faces the challenge of moving from reluctant market led change to a positive adoption of alternative spatial models, of grasping the opportunity to harness the cultural capital of its contemporary society to reconstruct a generationally sustainable range of housing alternatives.
INTRODUCTION

Australia’s current housing policies are deeply rooted in the nation’s two hundred year history. The political structure of the country as individual colonies until Federation in 1901 had the consequence that cultural patterns of housing grew from the colonial administrative practices of each state. While nominally independent administrations, each state was ultimately responsible to London for direction in all matters of government, leading to direct influence of British patterns on housing development. The British Housing By-laws of 1875 set minimum standards for worker housing as a means to end the worst excesses of industrial exploitation, and these regulations by default set the standards for the housing which comprised the inner suburbs of Sydney. Thus the terrace house of the nineteenth century provided worker housing in the confines of the central city, and expanded to the semi-detached house and much later to the European inspired apartment.

The division of powers from 1901 left housing as a state responsibility, without any nationally co-coordinated housing policy. British law and continental influence on demarcation of public and private spheres, particularly the development of Paris provided a copybook for urban development in the late 19th century. Within this demarcation, there was slow and laissez-faire development of housing policy in NSW until the crisis of public health of 1900 required direct intervention.

Similarly, there was a belated response to the rise of communism and the development of the welfare state, which began in the cold-war environment of the immediate post-war period. Growing initially from a war-time housing crisis, state intervention began within the context of a clearly defined public-private interface, with public involvement restricted to the provision of rental accommodation for those deemed to require it. Across the remainder of the housing market, the principle of home ownership, “the Australian Dream” was promoted politically and supported by a system of financial incentives based on a 30 year mortgage payable during a working life. This policy served the purpose of sustaining political stability by the financial involvement of majority of the population in the housing market. Growing from the national survey grid, the quarter acre block determined the physical form of Sydney’s suburban structures. The provision of a small parcel of land with a cottage also had an influence on the emerging lifestyle of Australian cities. Tony Hall’s nostalgic study of suburban life and the changing role of the back yard outlines its cultural role and laments its demise. However, the outcome of the post-war development of Sydney was to extend this unsustainable pattern of sub-division commonly referred to as the quarter-acre block across the Cumberland Plain, to create the characteristic urban landscape of suburban Sydney. Yet, before the Second World War, the suburban fabric of Sydney was enriched by a wide variety of dwelling forms built on a wide variety of subdivision and land tenure types.

Sydney’s contemporary housing problems continue to place it in the forefront of the world’s unaffordable cities. Relentless pressure from newly arrived internal and external immigrants, and the Metropolitan Strategy continues to push people into an early twentieth century grid pattern which restricts both patterns of development and tenure. The range of housing stock inadequately responds to needs and the entry point to the housing market through rent or mortgage remains out of reach of a quarter of the population. Current housing models remain controlled by patterns of subdivision developed when the aspirations of the working

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1Ownership of a single family dwelling on a block of land with a nominal area of 1012 square metres.
population centred on a single family house on its own block of land. While Sydney continues to be the preferred destination of immigrants there will be pressure to provide accommodation in a framework which represents the aspirations and economic conditions of earlier generations. This framework is increasingly unable to respond to the needs of Sydney’s ever increasing and diverse population.

The Sydney Metropolitan Strategy attempts to address not only the pressing problems of affordability but distribution and equitability in terms of levels of entry to the housing market either by mortgage or lease. In extending the number and range of housing unit sizes, a wider range of family units can be accommodated giving accessibility to facilities and environments previously restricted to larger family units in single family houses in subdivisions derived from nineteenth century patterns. The subdivision grid also determines the available permutations of consolidation which also provides constraints on the internal configuration and accessibility of dwelling form. Ku-Ring-Gai Municipality possesses some eighty-six per cent of single family houses as opposed to the Sydney average of sixty-one per cent. While addressing this imbalance, concurrent social policies address issues of an ageing population who prefer to remain in the family house as far as possible, encouraged by social programs which encourage this in contrast to institutionalisation continues to restrict access to alternative housing types and a more equitable approach to accessibility vi.

Alternative living arrangements and their architectural outcomes for the aged have been explored by Trina Day vii, suggesting that greater flexibility in both tenure and spatial patterns may provide better outcomes for housing within the existing urban framework. While levels of utilisation are being restricted due to ageing and other demographic factors, other unexplored avenues exist to facilitate the release of existing stock for more intensive use and a more equitable level of access to the housing market.

AN UNTAPPED RESOURCE AND HOUSING PREFERENCE

Patterns of immigration to Australia have radically changed since the conclusion of the Second World War, providing and ethnic richness and variety which have altered all aspects of Australian society. Intentions in immigration have also changed. The immediate post war generation of immigrants came under different conditions to contemporary generations. A flood of people left their place of origin reluctantly as a consequence of displacement and the trauma and dislocation of war and while Australia provided a new life of safety and sustenance, it did not replace the life of places now lost or transformed. They arrived into a culturally restricted society viii with narrow attitudes from which grew the ethnic social groupings which provided a sense of continuity with fellow refugees. As these immigrant groupings grew and changed, they also influenced the nature and character of mainstream Australian society, over time creating a new enriched society. However, of all the aspects of Australian life, the housing environment has remained the most resistive to change and subdivision enshrined in land tenure systems remains the most resistant to change of all cultural patterns.

Lester Fei’s study of the housing preferences of the Chinese community in Sydney ix points out that in the contemporary situation, ethnic Chinese migrants come to Australia because they want to live as Australians rather than maintaining patterns of living in their country of origin. Notwithstanding, he also points out the many differences between the general market offerings and the life style of the Chinese families that he interviewed. While families may not
wish to duplicate traditional housing arrangements which grow from the social and family structures of their countries of origin, as no longer relevant in either place, much of current regulatory and industry structures militate against the possibility of choice in terms of choice. The issue of social connections and family structures, particularly with ageing family members which generate expectations of intergenerational care which are not fulfilled by the institutional care considered normal by the greater part of the Australian population. The need to accommodate family members for short or extended periods or to care for aged or sick relatives remains a concern for families unwilling or unable to consider institutional care.

Liu and Easthope's investigation of the demographic structures of multi-generational households based on largely on 2006 census data gives inconclusive results in terms of outcomes for housing choice and casts doubt on the assumption that immigrants live together by choice. For example, living in a multi-generational household is portrayed as traditional practice for some immigrant groups. Some thirty-four per cent Australians born in North Africa and the Middle East live in multi-generational households as opposed to nineteen per cent of the national average. However, spatially much of the thirty-four per cent is located in the outer suburbs suggesting that housing cost may be a significant factor for a group whose socio-economic status reflects their relatively recent arrival.

Overall figures for Sydney suggest that some twenty-four percent of households were multi-generational with the assumed implication that the figures indicate the state of housing affordability rather than preference. The same situation is seen in all other major Australian capital cities and their respective states although, within this grouping, seventy-three per cent of households were made up of members who were Australian born.

Within cities there are also geographical concentrations. In terms of growth during the last three decades, census figures for Sydney reveal that the growth in multi-generational households has been considerably higher than the level of population increase by seven per cent, without revealing the cause of the disparity. Spatially the growth in outer south western Sydney has trebled while in outer western Sydney the figure has doubled.

Finally, the figures do not give any conclusive arguments to sustain an argument for cultural factors, and the question as to whether the chosen living arrangement is actually the preference of the individual or the household remains.

ALTERNATIVE MODELS

Social revolutionaries have long regarded the extended family unit as a barrier to social and economic change. Utopian schemes were proposed to restructure society in terms of work and home as in Fourier's Phalanstere and its off-spring. Robert Owen advocated the transformation of society into small, local collectives without such elaborate systems of social organization. While the proposed social structures may provide greater efficiencies in terms of the mobility of the work force, housing the nuclear family requires more individual housing units, and a corresponding level of social service.

The family unit remains the most sustainable means of social organisation despite its resistance to economic reform and the limitations of social failure. It is within the parameters of the family unit that individuals are sustained and grown, and the institution remains
constant across cultures. Notwithstanding, the levels of variation of family structure within society provide a rich source of possibilities for the future development of housing in Australia. Historically, successive generations of immigrants are considered yeast in the Australian society, transforming life and custom from food to social custom. The challenge of the purposeful utilisation of this process of immigrants accommodating themselves to the existing patterns of housing and lifestyle to develop an alternative to the post industrial revolution’s model of the nuclear family remains.

The societies from which immigrants came reveal significant preindustrial means of accommodating successive generations. There are cultural variants of the extended family which include societies within the Confucian tradition including China, Japan and Korea, but also from without including the Philippines, India and countries with the sphere of Islam. In India, extended family living remains the norm with about 77 per cent of the elderly living with married children or other family members.

An early significant transformation of traditional housing models into contemporary building forms responding to the spatial arrangements of unchanging interpersonal relationships within families occurred in Seoul, in a large development of apartments beside the Han River. Despite a tragic history in the twentieth century Korea as a society has cohered socially and has risen to remarkable levels of success. This success has been attributed to the character of the family unit. The Korean transformation of the high rise apartment to spatially reconstruct the freestanding house has been documented by Choe Jae-pil. While the first development of apartments was unpopular, the developers quickly found that the new residents had begun to re-structure the western plans to accommodate the spatial structure of the traditional rural house for an extended family along with the construction of heated flooring systems and other internal arrangements. Subsequent developments learned from the process and its market implications and the Korean National Housing Corporation began to build to plans which reflected the time honoured divisions and connections which allowed families to live in a way which the spatially segmented plans for western residents prevented.

In Japan, Jin Baek has described the breakdown family structure of the Edo period family home, drawing upon Watsuji Tetsuro’s writings on climate and family. His analysis reveals the substitution of western social values for politically unfashionable traditional views. However, Sekisui Homes have produced dwellings which allow rather than restrict the accommodation of other family members within the context of a modern housing product.

Lester Fei’s study also provides useful insights into both the preferences of first generation Chinese immigrants from a range of backgrounds. While noting that the families of his study did not wish to recreate the places that they came from, there were very specific patterns of use which departed from usual space utilisation. He also detailed those aspects of planning which inhibit expectation and in some cases lead to remedial work.

The most remarkable example of the possibilities of intercultural development is a housing co-operative designed for a number of five families from the Philippines by Hugo Moline. On a site composed of two standard single family housing blocks, five houses with common outdoor areas and gardens has been built in a way which allows interaction to comfortable levels and private family houses which meet all requirements. Kapit-Bahayan Cooperative
was built through a process of extended consultation, and the planning of the units was developed to promote rather than hinder the social support networks of an immigrant group within the standard vocabulary of the Sydney housing market.

While there is anecdotal evidence of Indian families using existing building stock to allow the custom of shared accommodation of extended family units, perhaps the most successful example is the transformation of Ashfield into the area popularly known as Little Shanghai. Documented by Duan-fang Lu, it represents the re-use of the obsolescent fabric of the 1920’s shopping street and its curtilage by incoming immigrants. Central Ashfield was destroyed by the advent of the car, the supermarket and the regional shopping centre. Built at a time when families walked to buy their daily needs from an individual shop keeper, the scale and cost of the commercial property met the needs of incoming migrants with little capital but with sophisticated commercial skills. The fortuitous correspondence of existing fabric with contemporary need has resulted in the resurgence of an area considered ready for redevelopment without the broader considerations of the wider urban patterns which Ashfield symbolises.

CONCLUSIONS

Lester Fei’s documented discussions with developers reveal an awareness of the increasing influence of ethnic minorities in terms of saleability and marketing strategy, but not to a level which would lead to a re-evaluation of design issues to meet the social needs of targeted markets. The housing market is regarded as fickle, and departing from a recognised mean involves a currently unacceptable level of risk. However, in the broader context of housing shortage there is a pressing need to look at alternative solutions. Rather than simply providing market driven choices of housing form to an unsuspecting market, there are other alternatives. Design which exploits the cultural variations of each successive wave of immigrants to provide the basis for housing capable of providing for ongoing generations would give, in the one extendable, flexible unit, the capability to accept the demands changing family structures. The release of these resources may go in some small way to meet Sydney’s insatiable demand for housing,
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NOTES


2 This state of affairs continued until the first Commonwealth State Housing Agreement in 1945. 

3 The outbreak of bubonic plague in 1900 resulted in the Royal Commission 1909. Refer to http://search.records.nsw.gov.au/agencies/4935; 

4 Sandorock, Leonie 1975 Cities for sale : property, politics and urban planning in Australia Melbourne University Press, 

5 Hall, Tony 2010 The Life and Death of the Australian Backyard CSIRO 

6 Olsberg, D & Winters, M. 2005 Ageing in place: intergenerational and interfamilial housing transfers and shifts in later life AHURI Final Report No. 88 Australian Housing and Urban Research Institute 

7 This state of affairs continued until the first Commonwealth State Housing Agreement in 1945. 

8 From 1981 to 2006 the number of multi-generation households in Sydney grew by 36 per cent whiles the city’s overall population increased by 29 per cent. However, much of this growth was in the outer suburbs with the proportion of multi-generational households in outer south western Sydney increasing by 204 per cent and in outer western Sydney increasing by 119 per cent. In contrast, the proportion fell for inner Sydney, lower north Sydney and northern suburbs by between 1 and 14 per cent. 

9 Billy Hughes’ championing of Australia as a bastion of British culture was expressed politically in the White Australia Policy until 1972 

10 Fei, Lester 2011 


12 Desai S.B. 2010 Human Development in India Challenges For A Society In Transition OUP p145 “Financial and social support of the elderly remain, almost entirely, located within the family, although many elderly persons work. They also live with sons/brothers/nephews and other family members, who provide financial and emotional support. While in most areas, co-residence with daughters is rare, it is often found in the North-East. Co-residence is particularly common for the oldest (age 70+) or people who own a considerable amount of land. As fertility declines and urbanization increases, extended families may come under duress, and other sources of support for the elderly may need to be developed “ 

13 Gelezeau, Valerie 2007 The Republic of the Apartments Humanitas Seoul 

14 Returning from climbing on a Sunday afternoon, the author observed four generations of one family at a public bath in Gyeongju, with the degree of mutual care revealing the strength and social utility of the extended family unit. 


16 Lim, Ashley Ga-Young 2009 The Phenomenon of Apartments: Reading Cultural Transition in Contemporary Korea ASR Report, Faculty of Architecture, Design and Planning University of Sydney 

17 Baek, Jin 2010 Climate, Sustainability and the Space of Ethics: Watsui Tetsuro’s Cultural Climatology and Residential Architecture Architectural Theory Review 


19 Author’s notes of conversation 

20 Lu Duan Fang 2013 Forthcoming
‘Green Skins’: reconsidering green roofs as sustainable infrastructure

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Abstract

Green roofs are increasingly seen as a key design strategy to increase the liveability, efficiency and productivity of Australian cities. They are also often seen as an antidote to the impacts of the compact dense city: a spatial layout that is well established in sustainable city discourse (Jenks and Jones 2010, United Nations Human Settlements Programme 2009). The list of benefits attributed to green roofs is broad and widely shared. They include reduction in the heat island effect, noise reduction, energy conservation, amenity, replacement of lost green space, increased property values, and storm-water management (Getter and Rowe 2006, Tourbier 2011). Green roofs it is further claimed transform cities from urban grey to green, (Weiler and Scholz-Barth 2011 p.26) while at the same time mitigating the effects of climate change. There is, however, little evidence to support all of these claims particularly within the Australian context where the development and construction of green roofs is a fairly recent phenomenon.

This paper presents preliminary findings from a larger on-going study that attempts to monitor, test and evaluate the performance of a Melbourne based experimental system focussing, in the first instance, on soils and plant material. Evaluation of the experimental systems employs performance-based criteria in an effort to shift attention away from considering green roofs as simply sustainable building infrastructure, towards a research agenda that considers what they do and how they do it.

Key Words: Sustainability, sustainable cities, sustainable design, green roofs, built environment.

1. Introduction

Green roofs are increasingly seen as a key design strategy to increase the liveability, efficiency and productivity of Australian cities. The term ‘green’ is often used metaphorically to denote ‘sustainability’ and is contrasted to ‘grey’, where ‘green’ is seen as an antidote to the dense, compact city: a spatial layout well established in sustainable city discourse (Jenks and Jones 2010, United Nations Human Settlements Programme 2009). This paper argues that many of the claimed benefits of green roofs are based on a range of assumption and are largely anecdotal. Research is only just emerging and is narrow in scope. The paper aims to do two things – to consider, through a series of case studies, how green roofs reflect ‘sustainability’ criteria and then to detail preliminary outcomes of an experimental green roof system at RMIT city campus in Melbourne.

2. What is a green roof?

Along with green walls, rain gardens, street trees and permeable paving, green roofs are part of an emerging global discourse around greener cities. ‘Green roof’ is an umbrella term used to describe a
number of systems for green rooftops (see Table 1). The list of benefits attributed to green roofs include reduction in the heat island effect, noise reduction, energy conservation, increased amenity, replacement of lost green space, increased property values, storm-water management along with what has been described as ‘green relief’ in highly dense cities (Getter and Rowe 2006, Tourbier 2011). Green roofs, it is further claimed, ‘transform cities from urban grey to urban green’ (Weiler and Scholz-Barth 2009) while at the same time mitigating the effects of climate change.

Green roofs can be extensive, semi-intensive, intensive, floating, elevated, spontaneous or not necessarily ‘green’ in the case of a bushtop (Hopkins and Goodwin 2011). Specifications differ markedly as outlined in Table 1. The dominant distinction in the literature is, however, between intensive, on the one hand, and extensive on the other.

### 2.1 Extensive Green Roofs

Extensive green roofs were made possible by the development of geofabrics and lightweight soils. Plants are essential elements in the functioning of extensive green roofs because they intercept and delay rainfall runoff by holding rainwater in the plant foliage and absorbing water in the root zone causing an eventual reduction in total runoff by 50 percent or greater (Tourbier 2011). An extensive green roof typically has shallow soil (50-150mm), is not irrigated, generally requires little maintenance, and has limited plant diversity and little or no access. Hardy, drought tolerant, low height plants are required in what is often a dry, hot and windy environment. They may provide green ‘views’ for occupants of adjacent rooms or buildings (Kwok and Grondzik 2011). Extensive green roofs can be retrofitted on existing buildings with a slope of up to 35 degrees, although roofs with a slope of over 20 degrees require a baffle to prevent soil slump.

### 2.2 Intensive Green roofs

An intensive green roof in contrast has deeper soil to support a larger variety of plants. Soil depths vary depending on the planting requirements – from 200-300mm for lawn up to 1.5-1.8 meters for large trees (Kwok and Grondzik 2011). Intensive green roofs provide accessible open space and often include larger plants, food growing areas and trees as well as walkways, water features and irrigation systems. Intensive green roofs require high levels of maintenance and greater accessibility.

Because of this difference specifications differ dramatically from extensive green roofs. Intensive green roofs are feasible only on flat roofed buildings and the added weight of soil and water require a
substantial building structure. They are therefore more costly but are considered to be more energy efficient than extensive green roofs and have the capacity for greater storm water retention. To protect plants and occupants in a usually high wind environment intensive green roofs require protection. Green roofs tend to be labor-intensive and require fertilization and irrigation (Tourbier 2011). The potentials for retrofitting existing buildings with intensive green roofs are limited.

Table 1: Green Roof Typologies

<table>
<thead>
<tr>
<th>Extensive</th>
<th>Semi Intensive</th>
<th>Intensive</th>
<th>Floating Roof Structure</th>
<th>Elevated Landscape</th>
<th>Bushtop (AUS)</th>
<th>Spontaneous Green Roof</th>
</tr>
</thead>
</table>

**SUBSTRATE / GROWING MEDIA DEPTH**
- Extensive: 50 - 200mm
- Semi Intensive: 200mm + - 50mm
- Intensive: 300mm +
- Floating Roof Structure: 50 - 200mm
- Elevated Landscape: 600mm +
- Bushtop (AUS): 600mm +
- Spontaneous: Varied / Minimum

**WEIGHT OF SUBSTRATE**
- Extensive: Lightweight
- Semi Intensive: Medium
- Intensive: Heavy
- Floating Roof Structure: Lightweight
- Elevated Landscape: Heavy
- Bushtop (AUS): Heavy / Varied
- Spontaneous: Varied / Light

**VEGETATION TYPE**
- Extensive: Low prostrate vegetation
- Semi Intensive: Shallow rooting plants
- Intensive: Greater plant diversity
- Floating Roof Structure: Wide range of plantings inc flowering shrubs and trees
- Elevated Landscape: Low prostrate vegetation
- Bushtop (AUS): Shallow rooting plants
- Spontaneous: Australian natives
- Elevated Landscape: General: Weeds

**ACCESSIBILITY**
- Extensive: Often inaccessible
- Semi Intensive: Partial accessibility
- Intensive: Accessible
- Floating Roof Structure: Often inaccessible
- Elevated Landscape: Highly accessible
- Bushtop (AUS): Varied
- Spontaneous: Often inaccessible

**INPUT RESOURCES**
- Extensive: Minimal (Natural resources)
- Semi Intensive: Medium / Minimal (Irrigation)
- Intensive: High (Root barrier & Irrigation Leak detection system)
- Floating Roof Structure: Minimal (Natural resources)
- Elevated Landscape: High (All components)
- Bushtop (AUS): Combination
- Spontaneous: Minimal (Natural resources)

**MAINTENANCE**
- Extensive: Minimal
- Semi Intensive: Medium
- Intensive: High
- Floating Roof Structure: Minimal
- Elevated Landscape: High
- Bushtop (AUS): Minimal / Medium
- Spontaneous: None

**NEW CONSTRUCTION**
- Extensive: Common occurrence
- Semi Intensive: Common occurrence
- Intensive: Common occurrence
- Floating Roof Structure: Common occurrence
- Elevated Landscape: Common occurrence
- Bushtop (AUS): Uncommon occurrence
- Spontaneous: Common occurrence

**RETRO-FIT**
- Extensive: Common occurrence
- Semi Intensive: Common occurrence
- Intensive: Uncommon occurrence
- Floating Roof Structure: Common occurrence
- Elevated Landscape: Uncommon occurrence
- Bushtop (AUS): Uncommon occurrence
- Spontaneous: Common occurrence

Use of the terms intensive or extensive roofs has, however, been criticized because it is ‘terminology’ driven rather than use driven, leading to confusion and inaccuracy in the design documentation and client expectations (Hopper 2007). The problem with the use of blanket terms is that ‘…neither clearly reflects the system’s expected purpose or use nor adequately conveys design or maintenance requirements. Furthermore, a terminology-driven, rather than use-driven, approach to the design and construction of green roofs can lead to additional confusion and inaccuracy in design, documentation, and client expectations’
(Weiler and Scholz-Barth 2009). Rather than being simply ‘green’, green roofs serve a range of different purposes depending on design and client intent. This observation is significant because, as the authors suggest, individual green roofs do not necessarily reflect all of the claimed benefits attributed to all green roofs leading to confusion and inaccuracy. This observation forms the basis of the following discussion that explores to what extent green roofs can, and do, realise all of the claimed benefits attributed to them. Based on case studies of five green roofs in the city of Melbourne each of the sites were evaluated against claimed benefits drawn from the literature using the following matrix as an evaluation tool.
## Table 2: Evaluating Green Roofs

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<th>Evaluation Method/Indicators</th>
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<td><strong>Evaluation Method/Indicators</strong></td>
</tr>
<tr>
<td><strong>a. Reduce Heat Island Effect</strong></td>
<td>• Testing the internal building temperature prior to green roof installation vs. temperature with a green roof installed</td>
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<tr>
<td></td>
<td>• Substrate type used (weight and depth): WHC / AFP / SBD</td>
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<td></td>
<td>• Type of plants used to insulate (their positioning to one another and their evapotranspiration ability)</td>
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<td></td>
<td>• Positioning of the Green Roof (aspect and pitch)</td>
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<td></td>
<td>• Input resources (hydro, nutrients, light)</td>
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<td></td>
<td>• Measuring the albedo effect and solar radiation</td>
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<td>• Measuring heat radiation from roof prior to green roof installation and post green roof installation - infrared technology</td>
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<td></td>
<td>• Measuring the R— Value of the roof insulation</td>
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<tr>
<td><strong>b. Noise Reduction</strong></td>
<td>• Measuring internal building decibels prior to green roof installation vs. internal building decibels post-green roof installation</td>
</tr>
<tr>
<td></td>
<td>• Plant species used (size, root structure, density of foliage) and coverage ability (initial planting positions and growth rate / direction)</td>
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<tr>
<td></td>
<td>• Substrate ingredients, depth and weight used – WHC / AFP</td>
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<td></td>
<td>• Local climate affecting growth rate</td>
</tr>
<tr>
<td><strong>c. Increase Biodiversity:</strong></td>
<td>• Microclimate proposed by green roof</td>
</tr>
<tr>
<td>- plants</td>
<td>• Current climate affects</td>
</tr>
<tr>
<td>- invertebrates</td>
<td>• Green roof type applied (substrate, accessibility, maintenance, input resources etc.)</td>
</tr>
<tr>
<td>- birds</td>
<td>• Green roof components used – modular / in-situ</td>
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<tr>
<td>- mammals</td>
<td>• Watering regime</td>
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<tr>
<td></td>
<td>• Plant species and communities proposed – eg. Natives</td>
</tr>
<tr>
<td></td>
<td>• Plant density and coverage ability</td>
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<td></td>
<td>• Animal refuges present (wooden platforms / burrows)</td>
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<tr>
<td><strong>d. Reduce storm water run-off</strong></td>
<td>• Testing storm-water runoff amount, quality (pH, dissolved oxygen, turbidity, ammonia, nitrite, alkalinity, hardness) and travel rate from similar environmental conditions vs. storm-water runoff amount, quality and travel rate collected from a green roof.</td>
</tr>
<tr>
<td>contributing to:</td>
<td>• Type of drainage system applied (SUDS / type of cells)</td>
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<tr>
<td>- water quality</td>
<td>• Type of plant species used – Wetland planters? Rain harvesting strategies</td>
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<tr>
<td>- flood mitigation</td>
<td>• Type of substrate used (ingredients and depth): – WHC / AFP</td>
</tr>
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<td></td>
<td>• Roof slope</td>
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<tr>
<td><strong>e. Improve air quality</strong></td>
<td>• Compare air quality surrounding the green roof against the Ambient Air National Environment Protection Measure: carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, lead and particles (measured as PM10), a measurement that relates to the size of the particle)</td>
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<tr>
<td></td>
<td>• Height of the green roof above ground and proximity to the pollution generators</td>
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<td></td>
<td>• Types of plants species used which capture pollen, dust, filter noxious gases and volatile organic compounds</td>
</tr>
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<td></td>
<td>• Amount of sunlight for photosynthesis to occur – Is the roof North facing?</td>
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<td></td>
<td>• Water supply and amount accessible to the green roof as the CO2 comes from water rather than air pollution</td>
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<tr>
<td><strong>f. Carbon absorption</strong></td>
<td>• Plant species absorption levels / abilities (amount of stomata)</td>
</tr>
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<td></td>
<td>• Substrate absorption levels: AFP / WIK – porous</td>
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<tr>
<td></td>
<td>• Plant species evapotranspiration ability (exposure to sun and water)</td>
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<td>• Drainage systems used (cell / gravel)</td>
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</tbody>
</table>
### SOCIAL

<table>
<thead>
<tr>
<th>Sustainability Benefit</th>
<th>Evaluation Method/Indicators</th>
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</table>
| a. Increase recreational use of space |  - Number of people who use/visit the green roof  
- Green roof amenities (seating / bins)  
- Seasonal appearance and positioning (protection from sun)  
- Levels of noise and surveillance |
| b. Green relief |  - Visual / physical distance to a green roof from inside a building  
- Time spent viewing the 'GREEN'  
- Seasonal appearance of the green roof  
- Distraction factor – measurable?  
- Type of plant species and their aesthetic qualities (colours, sizes etc.) |
| c. Increase food production in city |  - Type of food production crops available and needs in particular climates  
- Space / weight of substrate required to grow crops  
- Buildings appropriate for heavy loads  
- Accessibility and requirements by maintenance / harvesting team |
| d. Increased amenity |  - Type of design elements proposed (seating etc.)  
- Amount of time spent by people using amenities  
- Levels of additional needs of the building occupants (more shade etc.) |
| e. Worker health |  - Number of sick days of employees recorded (decline?)  
- Decrease in stress levels...measurable?  
- Amount of money spent on medicine per employee per year  
- Productivity...measurable? |

### ECONOMIC

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| a. Reduce energy use within a building -heating -cooling |  - Building costs (energy bills, maintenance etc.) prior to green roof installation and post green roof installation  
- Green roof insulation properties (type: substrate, vegetation, drainage cells, aspect, area, pitch)  
- Plant species used and their evapotranspiration ability (exposure to sun and rain)  
- Efficiency of the existing heating / cooling equipment  
- Local weather - climate variation |
| b. Increase roof longevity |  - Type of waterproofing membrane used and its initial lifespan compared to an installed green roof lifespan (inc. cost of maintenance).  
- Green roof coverage - plot sizes, component depth, orientation (protection from sun and rain)  
- Leakage amount – (anti leakage systems employed)  
- Type of maintenance and regularity specified for the green roof (service lifecycle)  
- Green roof type and purpose |
| c. Increase worker productivity |  - Number of employee sick days  
- Quality of worker output  
- Number of worker 'errors' |
| d. Increase property values |  - Additional floor area / garden space (usability of the green roof)  
- Amount and height of other properties overlooking the green roof (who can see it?)  
- Seasonal appearance of the green roof  
- Further economic opportunities: cafés etc. |
| e. Job-Creation |  - Maintenance work for the upkeep of the green roof  
- Amount of green roof specialized industry experts  
- Food production possibilities |
3. Evaluating Green Roofs

Each of the five projects was evaluated against the key criteria with a focus on what evidence was available to establish the claim using a scale that reflected available evidence. Data was gathered using site visits and interviews. The evaluation of one of the roofs - the Venny can be found in Table 3, while the remaining evaluations can be found in the appendix 1, 2, 3 and 4.

What this brief investigation found is that while two of the projects, CH2 and the Pixel building, share a similar intent the remaining 3 are quite different. CH2 and the Pixel building are both office spaces and the aim for each of these projects was to increase recreational space for office workers and to achieve a 6 star energy rating. In three of the green rooftops - CH2, The Venny and the Pixel building - plant health is periodically monitored by University of Melbourne researchers. Freshwater Place, the only intensive green roof examined here, required high levels of resource input and maintenance. All of the rooftops have limited access. In the case of the Venny the inclusion of the rooftop reflected the broader sustainability values of the place with no access to the rooftop other than for maintenance. In four of the five sites there were varying degrees of recreational space for occupants of the building (workers, residents) with no access for others. Visual access came from above. While for each of the sites there is some, often anecdotal, evidence of reduction in energy use and storm water flows, the social benefits of green roofs are largely confined to existing occupants and again, anecdotally, include increased productivity and amenity. As a result claims to social sustainability remain tenuous.

What the above discussion demonstrates is that far from reflecting all of the claimed sustainability benefits each of the green roofs surveyed differed in terms of design intent.
Additionally evaluation and monitoring of the claimed benefits was at best sporadic, often anecdotal or simply assumed.

This analysis was followed by the establishment of an initial experimental system to test, monitor and evaluate plant and growth medium performance against a set of criteria. The project is ongoing and the current round of data collection will finish at the same time as commencement in 2014 to provide a year’s capture of plant growth.
Table 3: The Venny Case Study Evaluation

**SUSTAINABLE BENEFITS APPRAISAL**

1. **ENVIRONMENTAL**
   - Reduce heat island effect
   - Natura Protection
   - Increase biodiversity
   - Reduce storm water
   - Improved water quality
   - Flood mitigation
   - Increased air quality
   - Carbon absorption

2. **ECONOMIC**
   - Reduce energy
   - Increased roof longevity
   - Increase worker productivity
   - Increase property values
   - Job creation

3. **SOCIAL**
   - Increased recreational use of space
   - Green relief
   - Increased food production in city
   - Worker health

4. **GOVERNANCE**
   - Accessible to public
   - Replacement of lost land
   - Policy/guideline
   - Initiatives/incentives/initiatives

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**PLANT APPRAISAL**

1. **PHYSICAL PROPERTIES**
   - Growth
   - Death
   - Pest/Infections
   - Water storage capacity
   - Plant replacement
   - Weed management
   - Pest removal
   - Supplementation needs
   - Nutrient replacement
   - Plant disease/wounding

2. **GROWTH MEDIUM APPRAISAL**
   - Light intensity/level
   - High water holding capacity
   - High air filled porosity
   - Specifically engineered
   - High nutrient level

3. **GROWTH MEDIUM MAINTENANCE**
   - Medium replacement
   - Nutrient supplementation

**GENERAL MAINTENANCE APPRAISAL**

1. **CONSTRUCTION**
   - Layout
   - Perforated water proofing layer
   - Drainage issues
4. Melbourne based Green Roof Experimental System

The Melbourne based green roof experimental system is located on a south-westerly balcony on the tenth floor of building 8, RMIT University. This particular site had been chosen for its predominant harsh wind conditions and minimal exposure to sunlight. The individual test plots consist of 16 elevated mobile planters (modules) that have been assembled together to accommodate the trials of extensive and intensive planting modes. These comprise of nine deep planters (600mm in depth) and six shallow planters (180mm in depth) providing a range of various growing conditions according to their positioning. One deep planter has been included as a control without any plant material. The experiment was initiated in late May 2013 and is ongoing.

Plant species selection divided plants into exotics and indigenous Australian plants broadly. Categories within these two broad collections further represent both monocots (understood to be the prevailing green roof species in plant stress situations) and dicots. The dicots, represented as food crops and both native and ornamental garden plant species. The monocots represent a combination of both indigenous grasses and succulents. During the initial testing phase, plants are expected to become dormant and will remerge into the growing season whereby results will shift rapidly, from the end of August onwards, into the spring growing cycle.

The modules (test planters) are filled with either a proprietary growing medium or a custom-growing medium developed specifically for various planting palettes and to test the attributes of a green roof. These custom growth medium blends, designed and installed on site, focused on air filled porosity, bulk density as well as water holding capacity. In addition, the custom blends focused on the optimum of each category, offering experimental capacity in regard to particle size and subsequently porosity.

Performance-based data has been collected in regard to plant performance including survival rates, plant proliferation rates, physical damage, sun scorch and evidence of
reaction to the watering regime. Experimental cladding systems applied to the green roof modules were also installed and offered a range of benefits. The cladding provided an insulation barrier to the growth medium containers, opportunities for seating and catchment for storm water and self-watering opportunities. Some cladding systems also encompassed lighting to provide visibility during night hours.

Data measurement for plant growth included:
- Height
- Colour of foliage
- Representation of species, specific performance to the species.
- Wind damage
- Coverage
- Dormancy
- Senescence
- Biodiversity
- Calliper of stems
- Produce
- Insect evidence

Data measurement for plant medium included:
- Blend depth
- Water holding capacity via a moisture meter
- Temperature
- pH test before, after and during
- Nutrient levels via a conductivity meter
- Microbe activity
- Porosity
- Evidence of salts
- Insect evidence

5. Outcomes

From the initial testing and monitoring phase it is evident that the extensive module has a higher overall plant performance rating over the intensive module. This is due predominantly to initial vegetation planting sizes and their adaptability and the distance needed to travel in order to access the water reservoir constructed within the module. The growing containers housed within the extensive modules also proved more effective as the overshadowing experience for the plants were minimal due to lower eaves of the containers. This became evident and highly influential to plant growth rates within the intensive module, as the taller growing containers and greater slumpage of growth medium caused shorter time exposure
and more acute angles for plants to obtain sunlight. Due to module positioning on site, a common trend of ‘survival of the fittest’ has presented Brassica rapa (Bok Choy) to grow at faster rates where sunlight is minimal in order to gain access to needed sunlight, overshadowing and dominating nearby plants. This domination process, also evident as a disease present on all Rosmarinus officinalis (Rosemary) species, has been contained and prevented from spreading via the construction and high eave profiles of the growing containers within the intensive modules. The harsh wind conditions affected the majority of plants planted within the intensive module. Rather than the illusion of being protected by the higher growing container eave profile, plants suffered turbulence within their individual microclimates. The plants planted within the extensive modules have built a tolerance to the wind conditions resulting in stronger stamina.

Although many custom growth medium blends reached the desired percentage outcome of developed performance criteria, the proprietary growth medium proved most successful within the stamina criteria including higher water retention however lower insulation potential. A number of custom blends proved to hold higher insulation ratings as they all contained higher amounts of smaller sized particles, minimising air flow and water retention.

The mobility of the modules and integration of customised, lightweight cladding systems provided new spatial arrangements and programming of space within a rooftop. The specifically designed cladding systems provided evidence of students re-appropriating green roof space through additional module seating and tool storage spaces which tested the cladding’s ability to work with and promote environmental forces such as albedo effect, rain water collection and distribution as well as insulation to the module itself.

6. Conclusions and further research

The research outlined here focuses on evaluating the performance of two key components of green roof systems. In the next phase of the research a new site is proposed for the
experiment that allows for increased access for University staff and student in order to investigate how such a space can or is used. The parameters of this new experiment will respond to the data collected in 2013 and 2014 and will include a post-occupancy evaluation. In this way the research will begin to address social sustainability criteria (see Table 1).

The research approach outlined here, therefore, moves away from generalised claims about the benefits of green roofs towards a focus on performance-based criteria for evaluating green roofs. This shifts attention away from considering green roofs as simply sustainable infrastructure or as objects that denote 'green' and 'sustainable', towards a research agenda that considers what they do and how they do it, providing valuable insights into how green roofs can contribute to the liveability, efficiency and productivity of Australian cities.
References


### Appendix 1

**[GREEN ROOF: CH2 CASE STUDY EVALUATION]**

#### Sustainable Benefits Appraisal

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<td>2. Plant Appraisal</td>
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<td>4. Governance</td>
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</tbody>
</table>

#### Plant Appraisal

1. Physical Properties
   - Surface Type
   -歙胎
   -歙胎

2. Plant Maintenance
   -歙胎
   -歙胎

3. Social
   -歙胎
   -歙胎

4. Governance
   -歙胎
   -歙胎

### Appendix 2

**[GREEN ROOF: FRESHWATER PLACE CASE STUDY EVALUATION]**

#### Sustainable Benefits Appraisal

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#### Plant Appraisal

1. Physical Properties
   -歙胎
   -歙胎

2. Plant Maintenance
   -歙胎
   -歙胎

3. Social
   -歙胎
   -歙胎

4. Governance
   -歙胎
   -歙胎

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### Appendix 3

**GREEN ROOF: THE PIXEL BUILDING CASE STUDY EVALUATION**

#### Sustainable Benefits

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<td>Increased Plant Life</td>
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<td>2. Economic</td>
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<td>Reduced Energy</td>
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<td>Increased Property Values</td>
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<tr>
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#### Green Roof - Hassell Roof Top Case Study Evaluation

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### Appendix 4

**GREEN ROOF: HASSELL ROOF TOP CASE STUDY EVALUATION**

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<td>4. General Maintenance Appraisal</td>
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#### Green Roof - Hassell Roof Top Case Study Evaluation

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<td>Increased rooftop Security</td>
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**Finding common ground: Creating successful places in the redevelopment of Mexico City and Melbourne**

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**ABSTRACT**

La Condesa is an urban precinct in Mexico City that was devastated by the 1985 earthquake; Melbourne’s Central Business District was once considered a ‘useless’ city centre. Both areas are now regarded as fantastic 24/7 urban settings and are highly desirable places to live, work and experience. The aim of this paper is to identify a common (international) urban design mechanism that leads to the creation of desirable redeveloped community spaces. The research team found that despite a number of differences culturally, economically, politically and in the ‘triggers’ that enacted change, the mechanism that transformed the respective cities was remarkably similar: it consisted of a number independent strategies that collectively worked together to achieve a desired endpoint.

**Keywords:**
Placemaking, Melbourne, Mexico City, Urban Design, Urban Redevelopment, Urban Renewal

**Introduction**

Designers wish to create successful spaces. While their efforts may be described as urban renewal, redevelopment, regeneration, placemaking or by various other words, each term brings with it a specific focus of urban intervention and a body of literature to support their creation of new or transformation of existing urban settings. We focus this initial discussion on urban renewal (and what we consider to be an embedded ancillary element, redevelopment).

In attempts at transforming the urban setting, renewal can be categorised in to a number of different approaches that (hopefully) lead to a desired endpoint. And although each has become more sophisticated in application, six general approaches (and any combination of) may be used today to affect change in an urban setting: 1) an economic/market driven approach, 2) a legislative approach, 3) a program-driven approach, 4) an academic/theoretical approach, 5) a community engagement/participatory approach, and 6) a professional/applied approach (Balchin et al, 2000; Cano, 2011; Couch, 1990; Dovey & Symons, 2013; Holden & Scerri, 2013; Hubbard, 2006; Jacobs, 1961; Klemek, 2011; Mier & Ziccardi, 2013; PV, 2013; Wilson, 1966; Woodbury, 1953; Whyte, 1980). Common to each of
these approaches is the fundamental concept of improving people’s lives through the betterment of the urban environment and individually these ‘streams’ of focused intervention suggest aspects of the urban setting that people may wish to emphasise to achieve a positively regarded urban space (see Parliament of Victoria, 2013).

Implied within this paper is a positioning and utilisation of some of the above urban renewal approaches. In this research we employed a combination of the legislative, program and community engagement approaches to establish the ‘lens’ we used to conduct or exploration. The ‘lens’ was dominated by the community engagement approach which we position as involving and/or regarding the community as the focus of renewal and redevelopment efforts. In particular, Whyte (1980) and Jacobs (1961) help frame our approach in that Jacobs (1961) shows that vitality, diversity and life in the city may be created (and/or retained) through people’s sustained use of the urban setting. She also illustrates that urban renewal efforts need guidance and, importantly, principles to work from and to direct one’s decision-making. Jacobs (1961, 1984) has also found a place amongst contemporary Global City debates as her focus on humanising the urban environment while understanding and incorporating economic flows in (creating and sustaining) places has interested a number of researchers (e.g. Derudder, 2009; Taylor, 2004). Whyte (1980) then shows us that ‘process’ in the community-focused approach can be documented, and when ‘process’ is used appropriately it can lead to positive outcomes.

No more is Whyte’s work evident than in the organisation he inspired and which has come to be regarded as a leader in placemaking efforts, the Project for Public Spaces (PPS) (see PPS, 2013). In its work the PPS has also developed strategies that if used appropriately (and amended to suit a respective local community) can ‘create great community spaces’ (PPS, 2011). Creating desirable new and/or transforming existing settings is “linked to a sound understanding of what constitutes a ‘great place’ and the most successful places are those that offer the most flexible spaces and are most open to interpretation by those using them” (Beza, 2013a, p. 120). The understanding of a great place, Beza (2013a) argues, needs to be well considered and may make use of many different approaches leading to identification of elements that individually contribute to a desirable setting. For example, he uses a placemaking argument to suggest that positive (or negative) urban outcomes may be linked to the physical design of spaces (e.g. Evans and Brett, 2011). He also suggests that an appreciation of urban spaces may be based on the experience or cognition of them (e.g. Freeman & Tranter, 2011; Gehl et al., 2006) or on a strong social infrastructure brought about through efforts in community development (e.g. Heywood, 2011).

Initially, one may query an investigation revolving around Melbourne’s Central Business District (CBD) and an inner suburban area in one of the world’s mega cities (La Condesa, Mexico City) in an attempt to find commonality in the creation of successful places. We too queried this, a few times, and as our discussions moved beyond the obvious cultural, economic, political and triggers enacting change differences (i.e. change brought about by urban decline vs. a natural disaster), we realised that our respective urban settings (currently) mainly revolved around people and, importantly, their extended and varied use of the urban environment. What also astounded us during our initial discussions were the similarities in what appeared to be a common mechanism that led to positive urban change in our respective settings. Hence, we set out to explore the respective strategies used by designers and city officials that transformed our urban settings. We then compared the two sets of strategies to identify a common mechanism that may lead to positive urban change.
Methodology

The terms ‘urban renewal’ and ‘urban redevelopment’ are often used interchangeably. However, we have followed Places Victoria (the development arm of the State of Victoria) in distinguishing the two terms (see PV, 2013). In this paper urban renewal refers to a long-term precinct-/district-wide process enacted to positively transform the urban environment for the social benefit. Urban redevelopment focuses on the individual site(s) within a precinct where the positive change is enacted. Although separated by scale the two terms (and practices under each) work in partnership to realise and transform urban settings. The term renewal is used in regards to Melbourne’s CBD because official efforts to turn this area around focused on better utilising the existing precinct’s urban environment (e.g. existing buildings and streets). In La Condesa the term redevelopment is used as it was through a series of individual redevelopment interventions, post-earthquake, which grew into official district-wide initiatives that enacted change in the urban environment.

Material related to the planning and transformation of Melbourne’s CBD and the district of La Condesa in Mexico City was identified and collected. Identifying material involved university library and web-based searches of responsible authority sites, interviews with key city managers and on-site field investigations. The searches and investigations assisted us in piecing together the process of transformation of the respective cities. The mechanism used by city authorities, design professionals (i.e. architects, landscape architects, urban designers and urban planners) and/or residents to enact positive change in the respective cities was framed through examining the reviewed documents and referencing benchmarks in achievement (e.g. City of Melbourne was awarded the title most liveable city in 2011, 2012 and 2013 by The Economist Intelligence Unit). Expert judgment as described by Taylor, Zube and Sell (1987) and the, similar, formal aesthetic model explained by Daniel and Vining (1983) were used to frame the assessment of reviewed material and the respective urban settings.

The following describes the process leading to and enacting change in the cities. The respective city-related sections each present a brief introduction and discuss the strategies we have identified as effecting positive change in the urban setting. Concluding each section is an outline of the mechanism, and its associated strategies, used by each city.

Two Cities: Mexico City’s La Condesa and Melbourne’s CBD

La Condesa, Mexico City

La Condesa (The Countess) is a 300-year-old inner area of Mexico City, which evolved from a private residential estate into one of Mexico’s most desirable urban places to live, work and experience. La Condesa amalgamates three of the five districts that were formed in the subdivision of the original hacienda (estate) that occupied this land. The district is 5km from the centre of Mexico City, 2.15km² in size and has a residential population of 28,937 (INEGI, 2013). Figure 1 presents La Condesa in relation to Mexico and Mexico City and figure 2 shows a general aerial image of La Condesa’s Hipódromo (an urbanised horse racetrack). The distinctive element of La Condesa which has strongly influenced the district’s 300 years of urban development is its horse racetrack. This racetrack was opened for use by the public in the early 1900s. Having been enshrined in contractual urban development preservation
arrangements, the racetrack has been a key public open space feature of the district since then.

Figure 1: From left to right, 1) presents Mexico and the position of Mexico City within the country, 2) the borough within Mexico City that houses La Condesa (i.e. Cuauhtémoc), 3) Cuauhtémoc’s positioning within the larger district area, and 4) the district area of La Condesa (which is divided into three parts, clockwise from the top left: Condesa, Hipódromo & Hipódromo Condesa).

Enacting change

La Condesa has two distinct periods in which the district came to be regarded as desirable: 1) ‘La Urbanización’ (1902–1985)/the urbanisation period and 2) ‘El Renacimiento’/the renaissance period (1995–present). In between these two periods is ‘Despoblamiento y La Reconstrucción’/the reconstruction and out-migration stage took place after the district was devastated by an 8.1 magnitude earthquake in 1985.

La Urbanización

La Condesa and the adjacent district, Roma, were the first official housing developments in Mexico City and were brought about through President Porfirio Díaz’s (1876–1911) political alliances focusing on foreign investment to provide communication and civil infrastructure for the country (Rangel, 2006). By 1902 the two districts provided Mexico City with its first modern housing with mains water, storm water management, sewage and street lighting. At the time, this focus on infrastructure was announced in newspapers and the districts were promoted as “urbanised areas with abundant water supply, paved streets, beautiful parks, wide sidewalks, trees and gardens” (BLLC, 1923).
This development of La Condesa was in stark contrast to other housing developments of the time. That is, urban planning (as a form of land control and regulation) did not exist in Mexico in the early 1900s and the many other housing developments outside these two districts were built without the provision of infrastructure (LODFTF, 1930). Jose Luis Cuevas, who studied under Ebenezer Howard and was considered the first urban planner in Mexico, brought contemporary ideas on urbanisation to the city (Gortázar, 1996). Using the 60,000m$^2$ racetrack (later enlarged to 87,000m$^2$) as the centrepiece of La Condesa, Cuevas applied the Garden City concept to the district. Cuevas’ proposal of a series of elliptical and radial streets running outwards from the racetrack ensured that park and city came together through large green areas, parks, and tree-lined streets. The integration of houses and gardens and wide footpaths and roundabouts with vegetation represented a new urban form in Mexico (Carmona, 2010). The district was realised through a considered ‘design/development plan’ and detailed guidelines which together established a new benchmark in urban typology and, until the 1985 earthquake, La Condesa represented one of the most remarkable development endeavours contemporary Mexico had ever produced. At the time La Condesa reflected an integration of architecture (Art Deco style), landscape architecture, urban design, public open space and social cohesion (achieved through cultural activities) in the heart of Mexico City (Carmona, 2010).

**El Renacimiento**

La Condesa was founded on the remnants of Mexico City’s ancient lake bed and, as a result of the 8.1 magnitude earthquake in 1985, was basically levelled. Many of the buildings that remained erect were unsafe and the district’s population rapidly declined. After roughly a 10-year period of urban dereliction and abandonment, artisans, small families and young business entrepreneurs slowly started taking up residence in La Condesa’s modestly redeveloped studios, apartments, houses and business spaces – its residential population began to grow. Why and how did this occur? Land was inexpensive and a number of government-sponsored strategies attempted to change the perception of neglect that this and the three other similarly damaged council areas had acquired (e.g. four out of Mexico City’s 16 boroughs suffered 80% of the damage caused by the earthquake).

Government-sponsored programs known as ‘programas ordenadores’ focused redevelopment efforts along designated investment and development corridors; and the ‘red de corredores urbanos terciarios’/network of tertiary urban corridors officially identified the areas and roads for redevelopment, and caused people to take notice of La Condesa (Cobos, 2005). The aim of the latter program was to lessen Mexico City’s strong emphasis on centrality and move to decentralisation. This program was to be achieved through the creation of (small) interconnected urban commercial centres where the movement of large flows of people, goods and vehicles could be dispersed throughout Mexico City (Cobos & López, 2004). Pre-earthquake La Condesa was designated as one of these commercial centres and the tertiary road network was put in place to connect the district with the other centres. Post-earthquake, the network allowed for movement and investment to occur in La Condesa along the established tertiary road system. As a result and in a relatively short period of time La Condesa redeveloped. With the district’s redevelopment the perception of La Condesa shifted to a positive one and the newer young residents (some of the established population remained) that were attracted to the area brought different ways of thinking about the use of the district’s urban spaces. This ‘difference’ in the use of La
Condesa is communicated through a constant dialogue between district authorities and residents.

This urban environment, which had primarily been a residential area pre-earthquake, transformed into one of mixed-use and now includes restaurants, bars, department stores, supermarkets and offices which can all be experienced on foot. The total rethink and use of La Condesa by the people of Mexico City have made it an extremely desirable setting to live, work and experience. La Condesa has once again become a ‘place’ within the City. The transformation has been so successful that the early 1900 layout and planning of la Condesa’s urban environment can no longer accommodate the influx of people and urban change. Strong land-use regulation has had to be implemented to protect the district’s architectural heritage and the original Garden City central development plan.

**La Condesa’s strategies leading to change**

In Mexico City La Condesa is considered a ‘ambiente urbano sobresaliente’/an outstanding urban environment and positive change in the district came about in two distinct periods; the emphasis here is on the post-earthquake period. The strategies that combined to allow this transformation to occur are:

1) A ‘fuerza motriz’ (a driving force) behind the (re)development. During the *La Urbanización* period this ‘force’ was Jose Luis Cuevas, the country’s first urbanist. During the *El Renacimiento* period this force was the people moving into the area and bringing with them a different idea of use of the urban setting.

2) A dialogue that allowed the residents of La Condesa to express their views of the district.

3) (Cultural) activities that allowed people to participate and engage in the district.

4) Plans and guidelines directing (re)development and investment in La Condesa.

5) Perceptual change of La Condesa (re-inventing the meaning of the district brought about in the *El Renacimiento* period.

6) Land-use regulation (i.e. planning) to direct urban change.

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**Melbourne’s CBD**

Founded in the mid-1830s Melbourne is one of Australia’s oldest, largest and most contemporary urban environments. The City was originally laid out in a 100m x 200m grid street pattern (referred to as the Hoddle Grid) and encompassed a hierarchy of roads and laneways. The pattern of roads and 3.5km of laneways (2004 fig.) disperse foot traffic by providing alternative pedestrian routes for the CBD’s residents, workforce and visitors (Beza, 2013b). The city’s CBD occupies an area of roughly 2.4km² (ABS, 2011) and is the political and economic hub of the State of Victoria (see figure 3). In greater metropolitan Melbourne people from 140 different nations live in its urban environment which is divided into 31 local council areas – the City of Melbourne is one of these 31 municipalities. In 2011 and again in 2013, the Age newspaper reported that Melbourne is Australia’s fastest growing city with its population currently growing by 1500 new residents a week.
The City of Melbourne generally regards two elements as extremely important to urban renewal: the quality of the city’s streets and the laneways (City of Perth, 2007), and an on-site residential and visiting population that regularly uses the urban environment. In the early 1990s the Postcode 3000 Program was developed to establish a residential base in the City through the provision of financial incentives, technical support, infrastructure development and the marketing of the City (Bird, 1994). Melbourne has been so successful in establishing a residential base that the CBD’s 2011 population of 20,030 (ABS, 2011) is projected to roughly double by 2030 (Melbourne, 2013). Given its current population, some areas in Melbourne’s CBD have already reached capacity (Beza 2013b) and there is pedestrian spill-out from footpaths into the street (e.g. Swanston St.). Pedestrian volumes in the City of Melbourne (e.g. 60,500 people a day walk along Swanston St. (Gehl, 2005)) have increased considerably. No longer can the CBD be described as “an empty, useless city centre” (Day, 1978).

Enacting change

In the early 1980s only a small number of residents lived in the CBD of Melbourne and it was generally thought that the city lacked appropriate physical and social infrastructure (i.e. vitality and diversity). Action to overcome this lack in infrastructure in the city is commonly argued to have physically begun in the mid-1980s (see Gehl, 2005). Plans such as the City of Melbourne Strategy Plan (see City of Melbourne, 1985) and Grids and Greenery (see City of Melbourne, 1987) “presented a development framework and implementation of priorities for land use, movement, built form, community services, city structure and the physical environment” (Gehl, 2005: 4). The Grids and Greenery document also highlighted Swanston St. as the City’s civic spine and identified actions to start the pedestrianisation of this boulevard. But at the time data on pedestrian numbers and movements were lacking. To fill
this gap and help with planning and decision-making Gehl (1994) was engaged by the City to investigate Melbourne’s public spaces and life. The data and recommendations from his study still today serve as benchmarks for measuring the CBD’s civic improvement(s). In his 2004 assessment of Melbourne’s CBD (another is planned for late 2013), Gehl (2005) utilised pedestrian counts and the provision of seating in the CBD to direct a vision of the City. The City is engaged in active assessment and monitoring of the CBD’s urban setting(s), and the data gathered yields information which results in evidence based decision-making.

Officially, the City of Melbourne has its vision, as articulated in its publication Future Melbourne (see City of Melbourne, 2008a). That document sets out a long-term plan for Melbourne’s evolution into a Global City and its establishment as “one of the top ten most liveable and sustainable cities in the world” (City of Melbourne, 2008a: 2). It plans to achieve these aims by setting municipal goals with accompanying targets. This document works in partnership with others such as Towards a Better Public Melbourne and Transport Strategy 2012 (see City of Melbourne, 2012) which advocate for, promote and direct development in the City.

Future Melbourne was developed through a joint effort of community members consisting of a range of organisations (e.g. Property Council of Australia, Committee for Melbourne) and noteworthy community members. As a mark of the effectiveness of their effort and vision, in September 2011 Melbourne was voted as the world’s most liveable city by the Economist Intelligence Unit (The Economist, 2011), the Economic Intelligence Unit also bestowed this title on the City in 2012 and 2013.

**Actions**

Rob Adams, Director, City Design is argued to be the person who has led Melbourne’s CBD transformation into a 24/7 hub (Harvey, 2010). He is supported by a capable team of designers and, importantly, Mr. Adams works with a council committed to improving Melbourne.

Over the years (since the mid-1980s) he has realised a number of projects that individually and collectively contribute to the repositioning of the CBD. But it is not solely the delivery or built form of a project that helped transform this urban setting. A number of strategies were used to enact change in Melbourne and in terms of urban planning the City’s Municipal Strategic Statement (MSS) “sets out the vision, objectives and strategies for managing land use change and development” (City of Melbourne, 2011a: 1). The MSS also recognises that different parts of the municipality need to be managed differently and that development potential varies markedly (City of Melbourne, 2011b: 1). In different parts of the City, precinct enhancement agendas (e.g. Cultural Precincts Enhancement) and programs establish a ground level to high-rise focus (e.g. the CBD’s Bluestone Paving Program) by providing a range of instruments to help City officials, developers and community members structure and achieve a desired outcome.

Since the late 1990s a series of private/public partnerships and civic investments have resulted in a number of outdoor settings for Melbourne’s public. Completed projects in the CBD such as Federation Square, QV and City Square provide venues for people and accompanying outdoor activities. These outdoor venues were produced through a variety of strategies which utilised policy, legislation (e.g. the s163 Agreement in the Building Act) and/or planning (e.g. Comprehensive Development Zone). Each project, however, has
employed a different strategy to provide publicly accessible open spaces and no one strategy has been used regularly.

To capitalise on these outdoor venues, Melbourne appears to have strategically created life on the street by “maximis[ing] the benefits and synergies between outdoor café areas and other public uses in the city” (City of Melbourne, 2008b: 4). Assisting in the production of these city spaces for people, the City’s Outdoor Café Guide (2003) sets out eligibility criteria, principles for public use, design quality standards and guidelines, planning requirements (e.g. permits) and leasing options to guide the creation of outdoor eating/drinking venues. It tries to provide the café and restaurant owner with an understanding of what the City wants and expects in terms of merging private and public interests together on Melbourne’s streets.

**Melbourne’s strategies leading to change**

Melbourne’s transformation of its CBD was enacted by a series of strategies designed to focus change. Extracted from the above material and Beza (2013b) these are:

A) Physical transforming of an urban setting and a cultural/social evolution.

B) Understanding the site, its people and how the design of the space will impact the setting. Included in this understanding is a dialogue with the community and responding to their views.

C) Developing a vision of a desired (city) outcome. The vision must include the setting of goals, identification of target areas, budgets and challenges the area/setting must overcome to achieve the outcome.

D) Appointing a leader or a champion. The leader can be someone and/or an organisation that leads and/or pilots the vision.

E) Developing, implementing and utilising programs planned, tailored and co-ordinated to achieve a specific outcome.

F) Developing, implementing and utilising policies and guidelines (and/or technical notes) to inform and provide consistent decision-making.

These strategies have been gleaned from Melbourne’s transformation (from the mid-1980s to 2013). Importantly, the material that helped lead to Melbourne’s transformation of its CBD suggests that these strategies guide the conduct, requirements and obligations of those involved in creating successful places. The following section brings together the strategies used to transform the urban settings of La Condesa and Melbourne’s CBD.

**Discussion/Conclusion (An Urban Design Mechanism Leading to Change)**

In La Condesa the six strategies that led to an urban transformation resulted from a natural disaster and community-led efforts to implement change in the environment. In Melbourne’s ‘rundown’ CBD a number of focused strategies and, importantly, vision-setting helped direct and affect change in this urban environment. But because these two urban settings and their sets of background circumstances leading to change are vastly different, it is challenging to provide an in-depth comparison that links their circumstances. However, what each setting had in common was a focus on people, their extended use of the urban environment and an existing urban infrastructure that provided the framework for a transformation to take place.

Continuing to put aside the two different settings and the fact that change in each was enacted by very different urban conditions, the respective strategies used to affect change are similar. Figure 4 outlines what we consider the ‘like’ strategies from La Condesa and Melbourne’s CBD to be. The figure also presents what we consider to be a common
theme/title to the respective compared strategies, which is then repackaged for use in figure 5.

<table>
<thead>
<tr>
<th>La Condesa (Strategies 1 – 6)</th>
<th>Melbourne’s CBD (Strategies A – F)</th>
<th>Common themed/titled strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) A ‘fuerza motriz’ (a driving force) behind the (re)development.</td>
<td>D) Appointing a leader or a champion.</td>
<td>i) Champion to lead works;</td>
</tr>
<tr>
<td>2) A dialogue that allowed the residents of La Condesa to express their views of the district.</td>
<td>B) Understanding the site, its people and how the design of the space will impact the setting. …dialogue with the community and responding to their views.</td>
<td>ii) Dialogue between parties &amp; data gathering.</td>
</tr>
<tr>
<td>3) (Cultural) activities that allowed people to participate and engage in the district.</td>
<td>E) Developing, implementing and utilising programs planned, tailored and co-ordinated to achieve a specific outcome.</td>
<td>v) Development of cultural programs to achieve a specific outcome.</td>
</tr>
<tr>
<td>4) Plans and guidelines directing (re)development and investment in La Condesa.</td>
<td>F) Developing, implementing and utilising policies and guidelines (and/or technical notes) to inform and provide consistent decision-making.</td>
<td>iv) Plans, guidelines, policies &amp;/or technical notes for consistent decision-making</td>
</tr>
<tr>
<td>5) Perceptual change of La Condesa (re-inventing the meaning of the city) brought about in the El Renacimiento period.</td>
<td>A) Physical transforming of an urban setting and a cultural/social evolution.</td>
<td>vi) Physical transformation &amp; cultural/social evolution.</td>
</tr>
<tr>
<td>6) Land-use regulation (i.e. planning) to direct urban change.</td>
<td>C) Developing a vision of a desired (city) outcome. The vision must include the setting of goals, identification of target areas, budgets and challenges the area/setting must overcome to achieve the outcome.</td>
<td>iii) Vision development &amp; regulation.</td>
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Figure 4: ‘Like’ strategies to affect change in La Condesa and Melbourne’s CBD.

The strategies set out in figure 5 start with those that are broad in application, shown at the figure’s base, and gradually narrow in focus to provide specific direction to achieve a desired endpoint. That is, the material in figure 5 presents a sequence to implementing the common mechanism to achieve a desired endpoint (e.g. desirable renewed/redeveloped community spaces). Regardless of whether redevelopment or renewal was born from rubble and/or a ‘rundown’ urban setting, common to each mechanism was a champion or champions that led change. The champion (or champions in the case of La Condesa) call for, lead and help to enact change and the start of an urban setting’s transformation. The second strategy seeks to establish an active dialogue between parties in respective environments where a transformation is desired. This dialogue is supported by gathering data about the setting and helps to inform decision-making. Developing a vision for the setting and implementing land-use regulations to direct the transformation is the third strategy in the mechanism to change. Interested parties come together to create a collective vision for a site and begin to develop the means to achieve this endpoint (e.g. goals, identification of renewal/redevelopment sites, budgets and so on). To begin to actively pursue the desired vision for the transformation of a setting, the next strategy is the development and utilisation of plans, policies, guidelines and/or technical notes directing decision-making and actions. The next two strategies work
in tandem, as one responds to the other. The key to these two strategies is to have/frame a physical space of some sort (e.g. formal or informal/temporary or permanent) to provide the (cultural) programs that attract people to use and experience the transforming urban setting. In these latter strategies the physical transformation of the city begins to be implemented and people’s perception of the setting starts to shift.

Figure 5: The mechanism creating desirable redeveloped/renewed community spaces.

* The Melbourne section of this paper is largely an extract from an original contribution by Dr. Beau Beza to the 2012 Places Victoria/RMIT University applied research initiative. The 2012 document containing this material is not publically available but the intent and spirit of the initiative was to make the data/information produced in the project available to the wider community. The original document is titled *Placemaking Applied Research Report 1. Placemaking in urban renewal: Reflections and recommendations on workshop and interviews with three Places Victoria projects*, authored by Susie Moloney, Beau Beza, John Fien, Colin Fudge, Prem Chhetri, Amy Brown and David Trainham.

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Synergistic density: A strategy for residential densification developed in relation to community preferences

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**ABSTRACT**

A recent Perth survey concerning housing preferences reveals that a number of the strategies for residential densification currently being pursued in Perth are not necessarily well adapted to community preferences. In light of this the paper questions the dominance of such strategies and proposes an additional strategy which correlates residential densification with upgraded public open space. It is argued that through this process upgraded public open space could be used to incentivize community support for densification. The potential yield of this approach, at the sub regional scale, is established in a design projection exercise.

**Keywords:**

Infill development, community, greyfields, public open space

**Introduction**

A recent Perth study of housing preferences 'The Housing We’d Choose'¹ (Curtin University & Hames Sharley, 2013) reveals that certain aspects of strategies for residential densification currently being pursued in Perth are not necessarily well aligned with community attitudes. In light of this the paper questions the dominant strategies for residential densification and proposes an additional strategy which correlates densification with upgraded public open space; adjacency to public open space being a highly desired dwelling attribute for survey respondents.

The broader context of this paper is the need for residential urban infill development expressed in the current planning policies of all of Australia’s capital cities. Residential densification is being mandated to conserve both rural and biodiversity rich land on city edges (NSW Government, 2010) and lessen infrastructure costs, commuting times, and the continued concentration of economic and social vulnerabilities on the outer suburbs of our cities (Kelly, Weldmann, & Walsh, 2011). Collectively, capital city

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¹ Commissioned by the Departments of Housing and Planning.
planning policies stipulate that 60% of all new residential development should be infill and yet only 30% is being typically accomplished (Bolte & Weller, 2013, p. 56). Urban planning strategies for achieving residential densification in Perth and other Australian capital cities include Activity Centres, which are the densification of public transport nodes, and the potential of greater residential density along major urban corridors (City of Melbourne, 2010; Duckworth-Smith, 2012; Woodcock, Dovey, Wollan, & Beyerle, 2010). While these fundamental approaches are valid, we believe for Australian cities to be resilient a greater diversity of infill strategies is required.

Community preferences and implications for infill strategies in Perth

The recent study entitled ‘The Housing We’d Choose’ was conducted to explore the relative importance of a wide range of housing attributes so as to establish what Perth households desire from their housing (Curtin University & Hames Sharley, 2013). A subset of this study was an online survey entitled ‘What Matters Most’ in which 866 people were asked to rate the features of a home they placed the highest priority on. 76 attributes, arranged into five broad categories; convenience, local amenities, local environment, dwelling design and dwelling features, were ranked by respondents.

Significantly 69.9% survey respondents ranked being ‘near a shopping centre’ as the most important dwelling attribute. This reveals that dwellings in Activity Centres planned around shopping centres will be relatively desirable, at least in this particular respect. However, 65.2% of respondents regarded a dwelling being ‘away from busy roads’ as being important (2013, p. 67), this dwelling attribute ranking as the 4th most important. Arguably densification produced in relation to urban corridors therefore will not be desirable to communities unless this issue can be mitigated through design. Many of the proposed Activity Centres are also bisected by major roads such as those in Morley, Midland, Stirling and Cannington. Further to this the benefits of an urban lifestyle as promoted in Activity Centres don’t seem to be that popular. Being near cafes and restaurants ranked 12th, easy access to the city (presumably in part through public transport) ranked 22nd, having a range of local employment opportunities also

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2 The current infill targets are at the time of writing are Sydney 70%, South East Queensland 49%, Melbourne 53%, Adelaide 70%, Hobart 50%, Darwin 50% and Perth 47%.

3 In fact much of the infill development that has been achieved in recent years is through opportunistic subdivision of individual lots resulting in the loss of the Australian backyard and its replacement with typically unusable residual spaces (Hall, 2010).

4 A PhD study by Anthony Duckworth-Smith (2012) offers design strategies for potentially mitigating this negative perception of busy roads as living environments.
rated comparatively lowly at 35th and easy access to bars/pubs and nightlife ranked 39th. It would seem in Perth the benefits of urbanity are not as widely accepted as may have been anticipated. Based on the evidence from this survey, the question therefore becomes: what could be a strategy for residential densification which engages with prevailing community dwelling preferences in Perth?

**The potential of densification adjacent to public open space (POS)**

Significantly a dwelling being ‘near a park or reserve’ ranked as the second most important dwelling attribute with 69.3% of respondents regarding this as being important (Curtin University & Hames Sharley, 2013). Despite the apparent desirability of living adjacent to parks residential densification around existing POS has not been proposed as a key infill strategy in Directions 2031 (Department of Planning Government of Western Australia, 2010). Further to this, according to our mapping, the proposed primary Activity Centres only contain 2.64% parkland POS in their current undeveloped state.\(^5\) (Fig 1) While the policy stresses the importance of Perth’s ‘green network’ this constitutes primarily natural spaces, the network is not correlated with residential densification to any degree. In contrast we believe densification around parks could provide an additional and important infill strategy for Perth, one which is potentially closely aligned with community preferences.

Studies internationally have shown that residents are willing to trade off paying higher prices for houses adjacent to good quality POS (Crompton, 2007; Lutzenhiser & Netusil, 2001). Findings have confirmed that a positive impact of 20% on property values abutting a good quality park is a reasonable starting point for estimating a park’s impact (Crompton, 2007, p. 203). A study of 14 neighbourhood parks in a suburban development in Dallas-Fort Worth Metroplex\(^6\) indicated that parks continue to exert an influence of real estate prices at a significant distance from the park. Indeed about 75% of the real estate value associated with the parks occurred within 180m of the park and effects on values only became negligible at 400m, the conventional estimate of a 5 minute walk (Crompton, 2007, p. 209).

\(^5\) Undoubtedly new public open spaces will be provided to accommodate the increased density of Activity Centres. The point being made here is the densification in Activity Centre sites does not have a significant supply of existing POS to graft onto.

\(^6\) There does not appear to be any comparable studies which have been conducted in the Australian context.
Given the apparent appeal of living near POS, as evidenced by real estate values and 'The Housing We’d Choose' study it is our hypothesis that people will potentially accept trade-offs such as living in a higher density setting or allowing higher residential densification\textsuperscript{7} in their neighbourhood if it ensures them access to good quality POS.

We propose that the process for densification around parks in middle ring suburbs could occur in the following manner. Initially the area within a 5 minute walkable catchment of existing parks\textsuperscript{8} could be up-zoned to a range of higher densities. The increased rate base and required developer contributions resulting from this up-zoning process could then be directed to the upgrading of parks so that they can provide greater amenity to residents living at higher densities (Bolleter, 2013). This is an important step in that existing parks in Perth’s greyfield suburbs are typically generic, cheap and mono-functional, catering largely for organised team sports, and as such has not to date provided real incentives for residential densification. According to a process referred to as 'hedonic uplift' (Pracsys, 2012) the proposed upgrading of the parks will stimulate further development in the walkable catchment areas resulting in increased land rates and developer contributions (Bolleter, 2013).\textsuperscript{9} These can be then directed back to the ongoing maintenance of the parks at a high standard.

In this model the upgraded POS needs to perform a nuanced role; this is to offer greater amenity for a greater number of different user groups but not to do this to the detriment of people living adjacent to the park. Studies suggest that 'urban parks,' in which more than 50% of the park is manicured and developed for active recreation (e.g. sports fields) do not produce as significant uplift on real estate values, and as such are arguably less desirable adjacent to dwellings, than 'natural area’ parks; natural area parks being defined as those in which more than 50% of the park is vegetated (Lutzenhiser & Netusil, 2001). This is confirmed by the 'Housing We’d Choose' survey in which 69.3% of respondents felt that it was important that a dwelling

\textsuperscript{7} Haphazard 'do it yourself' (DIY) subdivision of suburban backyards typically achieves a doubling to tripling of current densities but with reduced amenity. Through a planned, precinct based approach it is reasonable to expect this density increase would be higher and with improved amenity.

\textsuperscript{8} A distance which is commensurate with the area of real estate values which are potentially uplifted by the presence of a park (Lutzenhiser & Netusil, 2001).

\textsuperscript{9} The concept in which increments of enhanced value attributable to a parks is used to fund park development is known as the ‘proximate principle’ and was considered conventional wisdom amongst planners and park advocates in the late 19th and early 20th centuries. The proximate principle provided the rationale for John Nash’s development of London’s Regent’s Park, Birkenhead park and Central Park. (Crompton, 2007). This principle has been explored by the author in a previous paper (Bolleter, 2013).
was near a park or reserve but only 24.5% considered it important to be near a sports field (Curtin University & Hames Sharley, 2013). These findings begin to suggest that the upgrade to the park should entail a heavily treed perimeter which provides a buffer to adjacent residents from more active recreation occurring in the centre of the park. The exact nature of the actual park upgrades, however, is not part of the scope of this paper due to it being the focus of a proposed research project which has been submitted to the Australian Research Council for funding. This project, to be run by the AUDRC in conjunction with the University of Western Australia Centre for Built Environment and Health (CEBH), aims to understand community preferences for various different park upgrades with respect to incentivizing density in the adjacent community. This said, in broad terms, the upgrades should engender greater multifunctionality, providing a greater range of recreational, ecological and social infrastructure for a greater number of people at a range of times (American Society of Landscape Architects, 2009).

*Figure 1: Perth’s planned Activity Centres contain approximately 2.6% parkland POS in their current undeveloped state*
Calculating the yield of densification adjacent to POS

The following section of this paper explores, through a ‘design projection’ exercise (Swaffield & Deming, 2011), the spatial potential of residential densification occurring adjacent to upgraded parks in Perth’s greyfield\(^{10}\) suburbs. (Fig 2) Greyfield suburbs have been chosen as a study area for this research as they are typically ripe for redevelopment due to significant under-utilised property assets (Newton et al., 2011).\(^{11}\) Through a GIS scenario analysis the development capacity of residential densification adjacent to parks in the study area will be established. A number of assumptions, as illustrated and set out below, were made in determining the potential for future development in these areas.\(^{12}\)

![Figure 2: The greyfield study area encompasses the Local Government Areas (LGAs) of Bassendean, Bayswater, Belmont, Canning, Melville, South Perth, Stirling, Victoria Park and Vincent (in grey).](image)

\(^{10}\) Greyfield suburbs are the middle ring of suburbs and can be found in all Australian cities. They are characterized by a typically failing housing stock, ageing infrastructure and high redevelopment potential (Newton et al., 2011).

\(^{11}\) The study area is also roughly commensurate with the Central Sub Region identified in Perth’s overarching planning document ‘Directions 2031’ (Department of Planning Government of Western Australia, 2010)

\(^{12}\) The ‘Transforming Australian Cities’ report produced by the City of Melbourne (2010) will form a guide for this design projection exercise; this report analysed the development capacity of Urban Corridors to establish their potential yield.
Step 1: Selecting significant parks in close proximity to major public transport nodes

While we propose the importance of potential synergies between upgraded parks and densified urban form we believe this densification should occur principally in areas with reasonable access to public transport. We have determined that ‘reasonable access’ can be understood as within a 1400m, or a 5 minute cycle-shed around train stations in the greyfield study area. This decision and its subsequent mapping has allowed us to select parks which could be the potential focus for densification. (Fig 3)

We have, for the purposes of this study, elected to use Christopher Alexander’s specification that a park must be at least 5500m² in size so that in the middle of the park ‘you feel you are in touch with nature, and away from the hustle and bustle’ (1977). Although somewhat arbitrary this provides a guide to the relative amenity a park can provide and the degree of support it may offer to densification in a larger urban context.

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13 The 5 minute cycle-able catchment has been proposed as an alternative to the orthodox 5 minute walkable catchment as it is better suited to the study area’s sprawled suburban urban form. Cyclists travel at average about 17km per hour (Deakin University Australia, 2013) as such a cyclist takes about 5 minutes to travel 1400m.

14 Perth has an electrified suburban train system which covers 173km of track with 21 stations on 4 principal lines which run thru the study area. Perth has a proposed light rail link which is to run north from Perth to Mirrabooka. This has been excluded from this exercise because the proposal is still being studied.

15 This figure is also commensurate with parks bigger than a ‘neighbourhood park’ as defined in Perth’s Liveable Neighbourhoods planning guide (West Australian Planning Commission & Infrastructure, 2007).
Figure 3: Significant parks (5,500m²+) in reasonable proximity to public transport nodes
**Step 2: Establishing an area for densification around the parks**

In this step we have established a 5 minute walkable catchment around the previously identified parks which we propose is up-zoned. (Fig 4) A 5 minute walkable catchment, or 400m, is regarded as being the distance the people will walk to access everyday amenities (West Australian Planning Commission & Infrastructure, 2007). This catchment is also commensurate with the area in which property values could be expected to be uplifted by an upgraded park (Lutzenhiser & Netusil, 2001). It is intended that this would be the area which could undergo significant infill development.

*Figure 4: Areas for potential densification around parks (in yellow)*
**Step 3: Calculating the number of lots which could be potentially densified**

In this step the total number of lots in the aforementioned zones is measured in GIS. (Fig 5) Subtracted from this are lots with heritage listed buildings and all land uses other than 'urban' as defined in the Metropolitan Region Scheme (MRS). This process results in 2662 lots which fit the criteria established and could potentially be redeveloped. We propose that the lots immediately adjacent to the selected parks could be developed at a reasonably high density ~R70\(^{16}\) in the form of 3-4 storeys walk up apartments. This will provide a level of occupancy sufficient to activate the park and give a maximum number of residents a view over the park. (Fig 6) The lots further back from the park, but still within the 400m catchment, we propose could be developed at R25-40 density to reflect prevailing community preferences for semi-detached dwellings.\(^{17}\) Hypothetically if these lots were all redeveloped at an average of R40 then overall 170,000 dwellings could be accommodated. While this is an unlikely outcome, if only a fraction of these lots were redeveloped then this could make a significant contribution towards the 121,000 number of infill dwellings which are targeted in Perth’s planning document ‘Directions 2031’ (Department of Planning Government of Western Australia, 2010).

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16 R70 refers to 70 dwellings per hectare which relates to Western Australian Planning Commission ‘Residential Development Codes.’ The density of R70 in this instance is proposed to equate to 3-5 story apartment buildings.

17 We propose however that these semi-detached dwellings would differ from those that the market is currently delivering, so as to produce more useable outdoor space, and better response to the climate. Examples of such building typologies can be found in ‘Take 7 Housing Australia: How Architects Can Make a Difference (London & Anderson, 2008).
Figure 5: Lots available for potential redevelopment

Figure 6: Densification of the walkable catchment of upgraded parks
Conclusions

This paper has proposed an additional strategy for achieving infill development in Perth’s greyfield suburbs, but is potentially generalizable to the greyfields of other Australian cities. This strategy in which upgraded POS is correlated with increased residential densification could create synergies including the garnering of community acceptance for infill, positive economic effects, and the provision of amenity for residents living at higher densities (Bolleter, 2013). Arguably this strategy, according the results of the ‘Housing We’d Choose’ survey, is aligned with community preferences for dwellings in close proximity to parks, and as such could potentially be popular. While transit orientated development planning (TOD) principles have informed the existing strategies for densification in Perth the author questions their dominance in attempts to densify Perth’s sprawling suburban form. While architectural theorist Rem Koolhaas identified Atlanta as being a landscape ‘not a city’ (1995, p. 835), this same analogy is perhaps even more apt for Perth with its incredibly thin density of 6 dwellings per Hectare (Weller, 2009, p. 181). It is in this context that infill strategies which build upon Perth’s ‘landscape’ condition appear to have validity. This is not proposed as a replacement of existing state government endorsed strategies for densification but as a much needed additional complementary strategy which perhaps relates more closely to Perth’s existing morphology and housing preferences.
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Lessons from the Europe’s “Greenest City”

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ABSTRACT
In 2007, the City of Växjö in Sweden was voted the greenest city in Europe. Over an 18-year period, greenhouse gas emissions per resident have been reduced by 41%. How has Växjö achieved this impressive result and are there any lessons that could be transferred to Australian cities? This paper describes research which compares Växjö with the Victorian City of Ballarat. The research shows that per capita emissions for Ballarat are 133% higher than those in Växjö. Upgrading the typical Ballarat home to a 6-star rating, and installing a gas-boosted solar water heater and 4.0 kW PV system on the roof could reduce per capita emissions to similar levels to those in Växjö.

Keywords: greenhouse gas emissions, Växjö, Ballarat, lessons and opportunities

INTRODUCTION
The need to reduce greenhouse gas (GHG) emissions is now more urgent as the impacts of global warming are increasingly confirmed by climate science. In Australia, nearly 90% of the population lives in cities (UNPIN, 2009) and per capita GHG emissions are amongst the highest in the world (Turton, 2004). Action to reduce the emissions from Australian cities is therefore particularly pressing. There is the potential to learn from those cities overseas which have successfully reduced their emissions. One of those cities is Växjö, in southern Sweden, which in 2007 was named the “Greenest City in Europe” by the BBC because it had reduced its GHG emissions by 41% over 18 years. How has this been achieved and could the lessons learned be applied in Australia? This paper describes research which has compared Växjö and the measures taken to the Victorian City of Ballarat.

VÄXJÖ AND BALLARAT
The City of Växjö is the administrative centre of the municipality of the same name in the county of Kronoberg. In 2012, Växjö was the country’s 38th largest city with a population of 84,800 (Statistics Sweden, 2013). The city hosts a university, a hospital and some 7000 businesses. Average per capita income from employment in 2008 was A$35,714 (Vk, 2013a). With a population of 85,935, the Victorian regional City of
Ballarat is the third largest urban concentration in the state. It has a hospital, a university and various types of industry. There are 8000 businesses registered in the Ballarat region (COB 2013a). The average annual income of the medium lowest and highest quartiles in 2011 was A$34,294.

DEMOGRAPHY, CLIMATE AND ENERGY USE
Although the two cities have comparable urban populations, other key parameters which define the demography of the two cities are quite different (Table 1). The climates of the two cities are also significantly different and are key determinants of energy use and potential renewable energy exploitation (Table 2). The annual daily average value of horizontal global solar radiation is 70% higher in Ballarat. The ambient temperatures in Ballarat are significantly higher than in Växjö, resulting in about half the number of heating degree days. Neither location has a significant cooling demand. The mean wind speed in Ballarat is 50% higher than that of Växjö.

Table 1 Key population and land statistics for the cities of Växjö and Ballarat

<table>
<thead>
<tr>
<th>Demographic Parameter</th>
<th>Växjö</th>
<th>Ballarat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (Locality or UCL)</td>
<td>82,000</td>
<td>85,935</td>
</tr>
<tr>
<td>Urban area (km²) (Locality or UCL)</td>
<td>30.28</td>
<td>113.7</td>
</tr>
<tr>
<td>Urban population density (p/ha)</td>
<td>27.1</td>
<td>7.6</td>
</tr>
<tr>
<td>Municipality or LGA area (km²)</td>
<td>1674</td>
<td>739</td>
</tr>
</tbody>
</table>

(sources: Vk 2013b; Statistics Sweden, 2013; ABS, 2011)

Table 2 Key climatic variables for the cities of Växjö and Ballarat

<table>
<thead>
<tr>
<th>Climatic Variable</th>
<th>Växjö</th>
<th>Ballarat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average daily horizontal global solar radiation (MJ m² d⁻¹)</td>
<td>9.3¹</td>
<td>15.8²</td>
</tr>
<tr>
<td>Average ambient air temperature (°C)</td>
<td>6.3¹</td>
<td>12.2²</td>
</tr>
<tr>
<td>Mean wind speed (m s⁻¹)</td>
<td>3.5¹</td>
<td>5.3²</td>
</tr>
<tr>
<td>Heating degree days (18°C base)³</td>
<td>4101</td>
<td>2250</td>
</tr>
<tr>
<td>Cooling degree days (26°C base)³</td>
<td>0</td>
<td>99</td>
</tr>
</tbody>
</table>

(sources: ¹SMHI; ²BoM 2013; ³BizEE 2013)

Figure 1 shows the per capita GHG emissions for transport, heating and electricity between 1993 and 2011 for Växjö (Johansson, 2013). Total per capita emissions fell from 4.6 to 2.7 tonnes i.e. 41%. Most of this reduction is due to the fall in emissions from residential heating. Electricity use per capita has fallen by 17%. Transport emissions per capita rose steadily from 1993 and peaked in 2005. Since then, they have steadily declined and in 2011 were 9% lower than they were in 1993.
Gas and electricity usage by Ballarat City residents for four years (2004-2007) has been published (DSE 2009) and covers an estimated population of 89,665 persons occupying 33,608 dwellings. The data indicates that on average the city’s residents used approximately 58.5 GJ of gas per customer and 5.75 MWh of electricity per dwelling. The GHG emissions for heating, cooling and appliance use have been calculated using the emissions coefficients published by DCCEE (2010) and are 3.0 and 7.88 tonnes per customer and per dwelling respectively from gas consumption and electricity usage. Assuming customer and dwelling numbers to be the same, per capita emissions due to gas and electricity consumption are 4.08 tonnes per annum.

Transport emissions for Ballarat residents are not available. However, car ownership figures are published by the ABS. In 2011, there were 52,429 vehicles recorded for the 81,338 residents in Ballarat Urban Centre and Locality (UCL). Assuming an annual consumption of 1500 litres of fuel per vehicle and energy content and emission factors from DCCEE (2010), then each vehicle would generate 3.42 tonnes of CO2-e and each resident would be responsible for 2.21 tonnes. Combining the estimated per capita emissions for transport, gas and electricity for the average Ballarat resident gives a total of 6.29 tonnes i.e. 133% higher than the 2011 level for the average Växjö resident (Table 3).

<table>
<thead>
<tr>
<th></th>
<th>Transport</th>
<th>Electricity</th>
<th>Heating</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Växjö</td>
<td>2.08</td>
<td>0.09</td>
<td>0.53</td>
<td>2.70</td>
</tr>
<tr>
<td>Ballarat</td>
<td>2.21</td>
<td>2.95</td>
<td>1.13</td>
<td>6.29</td>
</tr>
</tbody>
</table>

Figure 1 Per capita GHG emissions (tonnes) in Växjö between 1993 and 2005
(source: Johansson 2013)
THE GREENING OF VÄXJÖ

The achievements of Växjö need to be seen within the context of the overall Swedish energy supply system and its associated emissions. The widespread use of low emission energy supply technologies nationally has meant that emissions across all sectors in Sweden in 2009 were approximately five tonnes per capita (SEA, 2011). Växjö has pursued an aggressive policy of its own to reduce emissions. Their commitment began in the 1980s with the conversion of the existing district heating system from oil to a renewable source and then in the 1990s the municipality took the decision to eventually become a fossil-fuel free city (Vk, 2010). The Kronoberg county municipalities’ association has also decided to be fossil-fuel free by 2030. Targets and indicators are essential for such an ambitious process and seven specific targets have been set for 2015 (Vk, 2010). To have achieved their emission reductions to date (and the future), various initiatives have been (and continue to be) undertaken. The City of Växjö uses the ICLEI program ecoBUDGET to guide and follow up on these initiatives. The completed and on-going collaborative (national and international) projects include:

- International – ELMOS (electric mobility), Trailblazer (goods delivery coordination) and Dreams (support to some South East Asian cities)
- Completed projects include: ENGAGE (promotes EU energy and climate goals), CLIPART (tools and procedures to support climate policy and planning), ANSWER (energy efficiency events and competitions), EcoRegion (development of Baltic Sea sustainable development) and SESAC (European projects involving three cities: Delft, Grenoble and Växjö). SESAC projects include: a 532 panel PV system on a senior school; demonstration of the cost-effective utilization of biogas from the sewage plant; and construction of 88 low energy apartments and pre-school;

The initiatives of Växjö have been boosted by the city’s membership of various international and national networks. Signing agreements with organizations with similar goals offers mutual support, enables problem sharing and provides the impetus of a public commitment to action. The international networks to which Växjö belong include:

- The Covenant of Mayors - a commitment of signatory towns and cities to exceed EU GHG reduction target for 2020 by 20%.
• ICLEI – Local Governments for Sustainability, which is an international environmental organization with more than 1000 member cities.
• Plus DME (diesel), REVES (social development) and UBC (Baltic City cooperation)

and the national networks to which Växjö belong include:
• Climate Municipalities (Klimmat Kommunerna) – an association of 22 municipalities and one county covering two million inhabitants committed to reducing emissions.
• Regional network covering Småland, Öland, Blekinge and Halland for environment and sustainable development projects
• Internal environmental network within Växjö e.g. meeting with representatives from each municipal-owned company.

TRANSFORMING BALLARAT
The City of Ballarat has already taken some steps to reduce carbon emissions. In 2003, the City of Ballarat developed a Local GHG Emission Reduction Plan., which aims to achieve effective carbon neutrality for its own activities by 2025 (CoB 2013b). At a regional level, Ballarat is part of the Central Victoria Solar City project, launched in November 2009. Several solar projects have been initiated. These include a ‘Solar Park’ with a 300 kW PV system, expected to generate approximately 420 MWh annually and reduce GHG emissions by 567 tonnes, and two medium-size PV systems (25 and 35 kW) on two Ballarat Health Service buildings, as well as two 9 kW ‘green’ car shelters and two electric vehicles (CSVC, 2010). The GHG emissions associated with electricity use is the largest contributor to the annual per capita emissions of Ballarat residents (Table 3). In contrast, emissions associated with travel are the biggest component (77%) of the annual per capita emissions of Växjö residents. Per capita travel emissions in the two cities are quite similar, Ballarat being 6% higher (Table 3). Emissions associated with heating are more than twice as high in Ballarat compared to Växjö because a significant proportion of the latter’s heat is provided by the biomass CHP system. Emissions for electricity use are two orders of magnitude lower in Växjö due to the combination of the use of low emission technologies nationally and local generation from the biomass CHP.

Ballarat has significant opportunities to enable a similar transition to low emission technologies for heating. Only 4% of dwellings in Ballarat have a solar water heater and assuming that 40% of the gas usage is for water heating, each solar water heater
on a dwelling would reduce the annual emissions per resident to 0.18 tonnes. The emissions associated with space heating can be reduced by improving the building envelope. The average star rating of the houses in Australia is only 2.5. New homes are required to have a rating of at least 6 stars. A 62% reduction in energy use is possible by upgrading a 2.5-star house in Ballarat to a 6-star rating (NatHERS, 2012). Assuming 50% of the gas usage is for space heating, then energy use for space heating and emissions could be reduced to 11.12 GJ per dwelling and 0.21 tonnes CO2-e per resident respectively. There are significant options for the generation of electricity from local renewable energy sources. Each kW of PV installed saves approximately 1.89 tonnes of greenhouse emissions. Currently, only 3.8% of homes in Ballarat have PV systems (AusGov CER, 2013). A 4.0 kW PV system on a home in Ballarat would reduce its emissions by 7.56 tonnes per annum and reduce per capita emissions to 0.12 tonnes. The area surrounding Ballarat has already proved itself to have significant wind resources. The Waubra wind farm, 35 km northwest of the city, consists of 128 turbines with an installed capacity of 193 MW. Each MW of the Waubra wind farm reduces CO2 emissions by approximately 3400 tonnes annually (Acciona Australia, 2013). Other renewable technologies need to be encouraged if further reductions are to be made. Biofuels for transport are being demonstrated in Sweden on a large scale. Studies indicate that within a radius of 80 km of Ballarat up to 300,000 tonnes of biomass is available and could provide up to 30% of the city’s transport fuel (CHAF, 2013).

CONCLUSIONS
Known energy efficiency strategies and proven solar and wind technologies could reduce per capita emissions for Ballarat residents to levels comparable with Växjö. The existence of technologies to reduce GHG emissions alone is insufficient to meet GHG reduction targets. Växjö has demonstrated that leadership and policies are required. A vision – perhaps a “Green Ballarat” - should be promoted by the council. Although the City of Ballarat has taken the initial steps in this direction, a bolder approach will be required. A vision of carbon neutrality for the community needs to be announced. Emission reduction targets and indicators for assessing the effectiveness of policies need to be established. Support for a “Green Ballarat” needs to be widened through international, as well as national, alliances. Moreover, like Växjö, an understanding that a change of this magnitude will take at least 20 years, is required.
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Liveable: Evolving the density models to address our growing pains

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ABSTRACT: Like it or not, our population is growing, and the decision makers of society continue to wrestle with the dilemma of accommodating the dreams of this next wave of new home owners. However cracks are starting to appear in the bricks and mortar as society leans on the comfort of conventional housing models.

Beneath suburban utopia’s veneer lie some dark ills that are of grave concern to the social planners and urban designers. Family violence, youth suicide and mortgage stress have been directly linked with sprawl, and it is evident that the dream is actually unliveable. Typically attention is turned to the opportunities of densification; however the majority of successful and vibrant higher density models tend to be CBD and inner suburban contexts, with a significantly different demographic profile and a paradigm that is receptive to alternate housing and living models.

This paper aims to better understand the impacts of urban consolidation on liveability by finding common ground between the inner Melbourne and outer suburban Casey contexts, and then articulating where the differences lie, what definitions need to be reconsidered, and how this needs to be physically manifested in the outer model.

The study includes an assessment of the raft of benefits of alternate models, which extend far beyond basic higher yields, reaching into the viability of our transit networks, the efficacy of our efforts towards a sustainable city, and the physical and emotional health of our community.

Growth can be in harmony with liveability, and this has a clear built form outcome. Invariably the solutions lie not simply in built form, but in a more foundational shift in the psyche of our society. While not all questions can be answered, the paper seeks to sharpen the dialogue, elucidate the opportunities and pave the first steps for a liveable society.

Keywords: Urban Density, Liveability, Housing, Health and Well Being, Lifestyle
“We are not changing products, we are not changing the way we build, we are doing bugger all” (NHSC, June 2012).

In 2012 the State Government of Victoria announced that once again the Urban Growth Boundary of Melbourne was set to be stretched. The much debated sprawl was being permitted to creep further into agricultural land and to absorb residual green pockets floating amongst existing suburbs. This decision was set against a backdrop of troubling data trends that showed accelerating population growth and widespread concern about the affordability of housing. More land, it seemed, was needed to simply house us.

Superficially the logic was sound and easily digested by the ever present “Aussie battler”, however there lay beneath the rhetoric a far more troubling set of social statistics which challenged the rationale of sprawl. Indicators were surfacing that linked mortgage stress to family violence, and growth areas such as Casey were reporting the highest incidence of family violence in the state. Other social malaises were being picked up by the media, including youth suicide rates (Four Corners- There is No 3G in Heaven, 10 September 2012), and the most basic concern of Melbournians, that of congestion on the roads and commute times, was exacerbating the detachment from the family experienced by the workers.

Figure 1: New housing estate, Lyndhurst VIC, 2012, City of Casey

An onslaught of compounding factors, such as an ineffective public transport networks, the ethical issue of building over some of the highest value soils in Melbourne, time lags in the delivery of crucial community services and infrastructure, and the social isolation
experienced by residents, have all conspired to quietly erode the integrity of the current model of growth.

At the heart of every urban designer is the aspiration to deliver cities that are great places to live, so we cannot simply reject the current model without proffering some realistic and more liveable alternatives, as the dilemma of population growth continues to build pressure on an already stretched supply. It is with the mantra of ‘liveability’ that this paper seeks to reconcile growth area suburbia with a higher density approach. Drawing on precedents of density across Melbourne and analysing the blockages in delivering a better model in Casey, the paper seeks to propose key actions that will progress development towards vibrant and diverse communities and that actually delivers on the promise of a happy home.

*Figure 2: Agricultural land rezoned for residential use in Growth Area, Clyde VIC, 2013, City of Casey*

What constitutes “liveable”?

It is important from the outset to establish what is considered “liveable” as it is from this reference point that judgments are made and aspirations are set. Kevin Lynch epitomised the fundamentals as being:
A vital city successfully fulfills the biological needs of its inhabitants, and provides a safe environment for their activities; and allows people of all ages and background to gain the activities, resources, services, and information that they need (Lynch, 1981).

At its most simple rendering, a liveable place is one that facilitates and promotes healthy daily activities sustainably and with ease.

Unpacking this, the key elements that deliver this outcome are:

1. **Choice** – This is a fundamental ingredient for a democratic society, where there are options available for participation in society that cater to a broad range of socio-economic and demographic profiles. It includes the ability to choose a mode of transport, a level of participation and a housing option that suits an individual’s needs, capacity and preferences.

2. **Connection** – The built environment encourages diverse ranges of people to come into social contact through informal and formal avenues, maintaining a network of support and building a sense of community and place. People are able to access services, and the interactions between community members produce a collective of shared knowledge and resources.

3. **Sustainability** – Human settlement needs to preserve and embed connections with the natural environment through high value ecological reserves, quality vegetation in parks and open space, and extensive tree canopies across urban areas. The patterns and models of development need to foster sustainable behaviours and ensure built form longevity through flexibility and adaptability. Beyond these positive and constructive objectives of the environmental agenda, there remains the residual legacy of past generations and the associated damage and ongoing changes in climate and landscape. These have elevated the need for society to be not just sustainable, but also resilient to the negative impacts and variability in order to remain viable and liveable.

4. **Health** – There is provision of passive and active recreation facilities, with open space and trails set within high amenity contexts. Streets and activity centres are attractive walkable environments with diversity in the retail offer that promotes healthy diets, habits and lifestyles.

5. **Safety** – The most basics of human rights is the ability to live free from harm and injury. Our cities need to provide environments that generate human activity and foster positive interactions, rather than threaten it. In particular, women and children need to feel the same assurance as men in being able to participate in daily life, recreation and leisure without fear.
6. **Affordability** – Daily life activities can be affordably and actively participated in, such as housing, employment, education, access to services, and shopping. In essence, it is the ability to have the basics of life without inducing financial stress.

7. **Accessibility** – Premised on a critical reduction in car dependency, the needs of daily life are located within easily accessible distances, with regular daily functions being within a walkable catchment, a safe and connected network of bicycle trails, and significant activities and destinations easily accessed by public transport. This has recently been epitomised as the 20-minute city principle through the Melbourne Metropolitan Planning Strategy Discussion Paper.

Each of the above elements blend to form a dynamic society within which the community can prosper and grow. It is this liveable outcome that becomes a yardstick for measuring the success of growth areas, and sets up an urgent dialogue around new ways of growing.

**What is happening in Casey right now? Is it liveable?**

The City of Casey embodies a uniquely broad cross-section of urban contexts, including; a band of urban renewal and infill development through key centres such as Narre Warren, Doveton, Hallam, Cranbourne, Hampton Park and Berwick; rolling picturesque landscapes through the foothills of the Dandenong Ranges; one of the state’s fastest and most populous new growth areas along the Clyde and Cranbourne fringes; green wedges of high value agricultural land and peri-urban settlements and coastal villages; then the world heritage listed RAMSAR wetlands along the Westerport Bay shoreline.
Figure 3: Precinct Structure Plan, Feb 2013, Growth Areas Authority

Figure 4: Regional Context Map, 2012, City of Casey
It is reasonably anticipated that the learnings from decades of city building and research should be reflected in flourishing communities, healthy populations and strong economies. The built form would likewise reasonably demonstrate best practice models of housing, employment, transport networks and open space. However, while there are improvements in a select number of developments, an analysis of Casey’s past and current development patterns belies this assumption, and sends out a cautionary flare to decision makers that change is still required before we converge on the liveability ideals.

There are many people who happily live prosperous lives in Casey and may be unaware of some of the neighbouring issues around them, however a cursory glance at Casey’s demographic data reveals some insightful and concerning trends.

In 2011 the population of Casey was 253,000 people, and is expected to increase to 450,000 people by 2036, which is equivalent to the current population of Tasmania. Of the 127,000 Casey residents who currently work, 76% leave Casey every day by private motor car, making it the largest municipal ‘car-force’ in Melbourne. This is reflected in the car ownership levels, with 63.5% of Casey residents owning two or more cars compared to 49.4% for Greater Melbourne. Yet despite this heavy car-dependency, most work within 20km of the municipal boundaries. The 2011 census recorded that as a proportion of transport mode, walking and cycling had decreased.

*Figure 5: Casey Residents Travel to Work & Job Distribution, 2013, City of Casey*
In a punishing mismatch with these expensive vehicle habits, significant areas in Casey experience levels of disadvantage sufficient to appear on the SEIFA index of relative advantage and disadvantage. In particular Doveton and Eumemmerring are in the 10 most disadvantaged suburbs while Cranbourne features in the 20 most disadvantaged suburbs in Victoria. Manufacturing, retail trade and construction dominate Casey’s workforce with professional services poorly under-represented.

*Figure 6: Socio-Economic Index for Areas* 2011 Australian Bureau of Statistics

*Figure 7: Employment Vulnerability Index*, 2009, Centre of Full Employment and Equity, University of Newcastle
On another indicator, the VAMPIRE Index (Vulnerability Assessment of Mortgage, Petrol and Inflation Risk and Expenditure) reveals outer growth corridors like Casey as being at particular risk of experiencing social and economic stress. This is especially noted where newer housing estates have been built in Berwick and Narre Warren (Dodson. J. and Sipe, 2007, 2009). Socioeconomic status, which appears to be a common element in all the social determinants of health, is not always immediately apparent; for example, families with large incomes and large expenses can be as financially challenged as families who are renting and on lower incomes. Hence the vulnerability risk factors now cut across the traditional class divides where even more wealthy homes are experiencing high vulnerability.

Figure 8: Density of Jobs and VAMPIRE Index for Metropolitan Melbourne, 2009, Dodson and Sipe

A notable contributor to this disadvantage and associated financial stress is that between 2006 and 2011, the median household income in Casey increased by 27.2%, whilst the median mortgage repayment increased by 48.1% and the median rent payment increased by 60.2%. In fact, in the past 10 years mortgage repayments have almost doubled. Ironically, until recently the main focus of governmental discussion has been on housing affordability, yet the model of growth applied has done everything but improve affordability. The dispersed, sprawling and uni-function land-use approach has delivered houses that are unaffordable, not simply for their purchase value, but also for their resultant lifestyle costs.
Stella Avramopoulos, CEO of Kildonan UnitingCare, reports that their organisation has had a 50% increase in requests for assistance over the last 5 years. By the time these clients present with mortgage stress they are typically already 5 months behind on their payments, and on top of this 80% also have payments for personal loans or credit cards.

She observes that there is specific emerging vulnerability in growth corridors and new housing estates, where there is:

- young couples and families,
- limited financial literacy,
- high purchasing appetite, and
- significant debt levels.

“We have become concerned about trends we see in relation to family and financial stress, and issues with debt recovery, that are occurring within 2 to 5 years of families having moved into new growth areas. It increasingly is becoming apparent that there is a growing vulnerability in these estates” (Avramopoulos, April 2012).

The great Australian dream has become for some a nightmare, and it is having devastating effects on their lives.

When considering the housing market itself, the City of Casey has mainly been targeted to family groups over the past 10-15 years. The result of this is that Casey’s housing market is predominantly made up of 3 bedroom dwellings (49.4% of total dwellings) and 4 or more bedroom dwellings (40.7%), with very few 1 and 2 bedroom dwellings (7.9%) (Casey, 2013). While this distribution has marginally shifted since 2006, with 1 and 2 bedroom dwellings...
having increased from 4.9%, the supply of housing stock still does not even vaguely correlate with the number of occupants in each dwelling.

By comparison, 35,150 households (43.7% of total households) in Casey have 1 or 2 persons usually resident, 15,200 households (18.9% of total households) have 3 persons usually resident, 17,700 (22.0% of total households) have 4 persons usually resident and 9,400 (15.4% of total households) have 5 or more persons usually resident. So our housing stock continues to be one-dimensional and unresponsive to actual demand.

*Figure 10: Occupants and Bedrooms per dwelling, 2013, City of Casey*

It is not just the volume of housing that is of concern, but also the rate of growth. Growth is not simply more houses (Casey, 2012) but rather demands a raft of social and economic infrastructure to support the incumbent populations. These new suburbs have developed at a remarkable rate, with population increase two and a half times faster in urban growth areas than in Australia as a whole. The number of new residents moving into growth areas was about a third of the national increase in population from 2006 to 2011. During the same years, almost 170,000 detached dwellings were added to the housing stock in growth areas, which on average equates to a new house being completed every 15 minutes (Kelly, 2011).

The supply of crucial community infrastructure such as community services, train stations and bus services, has lagged damagingly behind, and has been well documented in the media. Furthermore, the growth model has been almost exclusively housing focused with no strong nor effective local employment strategies.

Coupled with the aforementioned SEIFA and VAMPIRE indicators, this places serious potential social impacts on the residents. Much like a human body that expands rather than
grows, this is unhealthy. Instead of evolving as a well-balanced body politic that is maturing into an adult body, we instead find ourselves simply swelling with a layer of fat while all the crucial life-giving internal organs remain juvenile and unable to cope with the new body size.

It is therefore with dismay yet little surprise, that we have now observed some very grave physical and social ills with apparent direct correlations to the growth models. These each come with a heavy economic burden on society and are a major setback to any “liveability” objectives.

As an unfortunate real-life extension of the above body metaphor, we find that from a physical health viewpoint, amongst other Local Government Areas (LGAs), Casey residents are more likely to be overweight or obese (ranked 14th of 79 LGAs) or report type 2 diabetes (ranked 9th of 79 LGAs) and 31.2% of people do not meet physical activity guidelines (ranked 7th of 79 LGAs).

According to data from the Victoria Police, Casey has had the highest incidence of family violence in the state for the past five years (2007 to 2012). It also has a rate of 1,218 incidents per 100,000 population which is well above the designated regional benchmark of 930.5 and is on a trajectory of significant and consistent escalation over the five year period (ranked 19th of 79 Councils) (Police, 2008, 2012). Kildonan have identified financial stress as one of the key factors in family conflict and breakdown, and so there is surfacing a direct correlation between the surge in growth area mortgage stress and incidence of family violence. Our model of growth has worsened the social health of our society.

Youth mental health is undoubtedly one of this nation’s biggest health and economic challenges, with 1 in 4 young people experiencing mental health difficulties at any one time (HeadSpace, Strategic Plan 2012-2015). Metro Trains reports that the City of Casey is significantly over-represented in rail corridor incidents, and leading community agencies are aware of, and concerned about, recent serious youth mental health issues that are manifested as clusters of youth suicide in the local community (Four Corners, 2013). The form of our suburbs has exacerbated this disengagement of youth from their social context, with sparse streets and distant activity centres which are hostile to common youth behaviours of hanging out, and which require disposable income to be able to belong inside the internalised malls.

All of the above could understandably feel like a bleak and despairing picture, however this need not be the case. Much of the current trends of development stem from preconceptions of how development should occur, and the models have barely been challenged let alone changed. There are clear opportunities to reinvent ourselves through the simple act of
visioning how we want our communities to function. Adapting the old management chestnut of Stephen Covey’s Seven Habits, we must:

“Begin with the end in mind” (Covey, 1999).

How is our future shaping up? What are the trends?

As human migrations are trending towards cities, the design and appropriation of space within these cities is increasingly important. By 2050 cities are anticipated to make up 70% of the global population (Florida, 2012). This has a massive implication on how the inner, middle and outer rings of Metropolitan Melbourne grow over the next two to three decades.

Figure 11: Global Population Density, 2013, Demographia World Urban Areas

Casey is beginning to experience emerging market segments that require a different form of housing to the large family home. The nuclear family of post-war Melbourne has now well and truly dissolved, instead replaced by the fractured single parent family, where housing choice is limited by the sole income. Fewer than half of all Australian households have children living in them. In fact about a quarter of all households consist of people living alone and roughly another quarter are couple-only households (Kelly, 2012). This is a very different reality which demands a new model.

A tsunami of ageing Baby Boomers are also starting to shift housing modes, downsizing from the family home, seeking greater accessibility, needing community support services, yet desiring quite rightfully to retain their social and family networks built up over a lifetime. As it stands, the housing stock simply isn’t there to enable ‘ageing-in-place’ and society’s
current solution is to move this generation into secluded and gated retirement villages. This compartmentalising of elements of society is contrary to the diversity ideology of many great design thinkers, and bankrupts the community of valuable cross-generational interaction. The ensuing adjustment process and loss of social networks is stressful and can lead to suicidal behavior amongst the older population (Podgorski, 2010).

On the other hand, the ambiguous and unpredictable Generation Y segment have adopted organic and non-linear housing patterns, staying home longer then fluctuating between independence and returning to the family home, and renting while utilising wealth for lifestyle choices rather than home ownership, perhaps finding capacity to buy much later than previous generations. Children are born later, and work patterns tend to lean on the grandparents as part of the child care regime. This protracted intertwining of the lives of parents with their adult children reinforces the need to embed cross generational linkages within our communities.

We are a diverse and changing society, so it is not surprising that our housing, amenity and lifestyle preferences are diverse too, therefore demanding not just greater choice in the market but also flexibility in the stock. The built environment within which we live and work has a direct impact on the way we build relationships and even the way we individually perceive ourselves. Richard Sennett, in exploring this relationship between the body and the city, notes that:

“The spatial relations of human bodies obviously makes a great deal of difference in how people react to each other, how they see and hear one another, whether they touch or are distant” (Sennett, 1994).

It is at this fundamental building blocks level that we must start to revisit our understanding of how our communities should be built. The essence of being human and our basic need for contact, social interaction and diversity must become the foundation for evolving an improved model of growth.

**Why density? How has density been used to improve liveability elsewhere?**

There will always be more than one contributing factor when dealing with complex issues such as those tabled in this paper. However there does appear to be a clear correlation between the social ills and the lower density model of development. It is an obvious locus for attention, holding promise of genuine improvement to liveability.

Higher density would deliver walkable environments for vastly more people, and makes a greater suite of daily needs more accessible. Extricating people from cars brings them into
informal social contact and immerses them in the natural climate, both of which are shown to improve mental and physical health. Business likewise benefits from higher density, drawing a greater number of people into its catchment, and with the greater commercial viability of the business sector comes a safer environment for diversity and innovation. Furthermore, there is an improved viability of public transport networks, delivering a greater pool of potential users within walkable distances of key corridors and nodes, thereby strengthening services to have greater frequency, capacity and reliability.

However density cannot be considered as a generic design outcome, as history has shown a vast array of density models, of which some have been highly successful while others have been close to disastrous.

In the Australian context a discussion of density in any public forum rapidly gravitates to fears of Surfers Paradise-style towers, with its forests of mono-function high-rise residential development with poor public realm outcomes. The privileged climate and location of Surfers Paradise has been the payoff for the density applied, and has therefore been locally successful, sustaining high land values and popularity, but as a model it obviously cannot be replicated to address the concerns of outer Melbourne.

In Melbourne attention tends to turn towards the Le Corbusian-styled high rise social housing patterned on his Unite d’habitation model and its ‘vertical garden city’ aspirations. These flats met the affordability goals of successive governments, but the more relevant liveability indicator was extremely poor.

“Pilloried as ghettos and incubators for drugs and violence, they have survived 40 years of stigma and neglect while providing affordable housing for thousands of Victorians” (Age, 2005).
As these towers systematically fall in an attempt to redress what has been seen as a failed social venture, the tendency is to tar density as a whole with the same brush, and to retreat back to the security of detached individual housing on the urban fringe.

Where both of these precedents have failed is in their lack of diversity, both of demographic and of use. Jane Jacobs championed diversity as being at the absolute crux of her classic thesis *The Death and Life of Great American Cities*.

“To generate exuberant diversity in a city’s streets and districts, four conditions are indispensable:

1. The district, and indeed as many of its internal parts as possible, must serve more than one primary function; preferably more than two. These must insure the presence of people who go outdoors on different schedules and are in the place for different purposes, but who are able to use many facilities in common.

2. Most blocks must be short; that is, streets and opportunities to turn corners must be frequent.

3. The district must mingle buildings that vary in age and condition, including a good proportion of old ones so that they vary in the economic yield they must provide. This mingling must be fairly close-grained.
4. **There must be a sufficiently dense concentration of people, for whatever purposes they may be there. This includes dense concentration in the case of people who are there because of residence.**

   … In combination, these conditions create effective economic pools of use.

   *All four in combination are necessary to generate city diversity; the absence of any one of the four frustrates a district’s potential*” (Jacobs, 1961).

The Melbourne CBD has become an exemplar of this diversity, repeatedly voted within the top echelons of the world’s most liveable cities (Economist, August 2011). It is the most intensive example of a high density yet supremely liveable development. Moving from a mono-culture of corporate activity and being a night time wasteland in the early 1990’s, it has now injected profound change to deliver an excitingly diverse mix of uses including inner city residential living, people-focused streets with wide paths, outdoor seating and lush tree canopies, a strong restaurant and entertainment scene and remarkable promotion of sustainable transport modes above vehicles.

Moving away from the CBD a little, Forest Hill, South Yarra is an inner ring suburban precinct that has likewise undergone a striking renaissance in its built form, with a proliferation of high density residential towers which have been well executed to deliver mixes of uses and quality public realm interfaces. Its proximity to multiple modes of public transport has enabled it to keep the employment of Melbourne’s CBD within easy reach, thereby evolving the density model towards residential and mixed use. As an urban renewal project it carries the challenge of needing to retrofit a network of quality open spaces and parks that have a relationship with the new developments.
The density model evolves once more as we step into the middle ring suburb of Glen Waverley. Traditionally a classic dormitory suburb with rolling suburban dream lots of detached housing and backyards, Glen Waverley is now undergoing a fascinating transformation towards a genuine higher density transit-oriented development. It becomes a case study in the value of street based activity centres and their capacity to foster authentic character and diversity sought for liveable communities.

“...wherever we find a city district with an exuberant variety and plenty in its commerce, we are apt to find that it contains a good many other kinds of diversity also, including variety of cultural opportunities, variety of scenes, and a great variety in its population and other users. This is more than coincidence. The same physical and economic conditions that generate diverse commerce are intimately related to the production, or the presence, of other kinds of city variety” (Jacobs, 1961).
During the 1980’s a significant internalised shopping mall was built decimating the main street syphoning the pedestrian flows away from the transit interchange into an encapsulated environment. It championed the generic blandness found in internal shopping malls across Melbourne, and the sense of place died. Businesses struggled to survive, then an aberration appeared in the 1990’s with the arrival of a high rise Novotel with cinemas and restaurants (the architectural quality of which is for another discussion). Positioned at the opposite end of the town centre it has gradually led a phoenix rising for the main street. Higher density mixed use and commercial developments have begun clustering behind the main street and adjacent the station, and the highly characteristic dominant Asian population have planted a vibrant heart once more along the main street radiating from cinemas.
This is a telling precedent for Casey, where activity centres are the central hub of activity, community meeting and service delivery. This needs to be reclaimed from the mall.

“Once a mass of bodies packed tightly together in the centers of cities, the crowd today has dispersed. It is assembled in malls for consumption rather than for the more complex purposes of community or political power” (Sennett, 1994).

Resistance against the generic mall has been ongoing, however there are local successes emerging. Street based activity centres have a pivotal role to play in delivering the liveability aspirations, and are critical to building a core of higher density development. In particular, it could be the key to the localisation of the work force.

Mike Cullen of Urbacity analysed the performance of all of Perth’s 63 centres and found strong evidence that traditional street based town centres deliver superior employment benefits.

“Active streets, facilitated by retail shops facing streets inspire a broader and more intensive mix of economic activity measured by the range, number and mix of employment. The jobs mix widened in traditional centres when compared with centres with a mall."
Traditional towns: For every 2 retail jobs in a traditional town there were 5 non retail jobs

Mall dominated: For every 2 retail jobs in a mall dominated centre there were 2.2 non-retail jobs

Malls: For every 2 retail jobs in a mall there was 1 non-retail job either within the mall or just outside it” (Cullen, 2012).

Furthermore, negotiations between Casey and a major national developer has found a reluctance to deliver mixed use above shopping malls, whereas there are numerous precedents throughout suburban Melbourne where higher density mixed use is seamlessly integrated into street based centres. These are powerful findings that can be directly related to delivering the aspirations of a liveable Casey.

When it comes to outer ring suburbs of Melbourne there have been mixed results in the quality and success of higher density residential. Casey’s neighbouring municipality, Dandenong, has a proliferation of 3 storey walk-up developments clustered around the edge of the city centre. However it carries a legacy of poor building stock from previous years along with some unfortunate siting, hence the model does not always present as a “housing-of-choice” option. Recent developments are starting to improve on the model, and it is clear from the sheer volume that there is a market demand for the higher density.

Likewise in Stockland’s Mernda development, there has been successful higher density 3 storey walk-ups delivered in a new growth area, coupled carefully with high quality open space and walkable proximity to the activity centre.

Selandra Rise in Casey’s Clyde North growth area is a local demonstration project that has made significant inroads into the building blocks of a liveable housing estate, focusing on early delivery of community infrastructure, connected open space and promotion of sustainable living. It has dabbled with alternate density models, but remained within the safety of conventional construction methods and land ownership models.

What is preventing the successful uptake of density in Casey?

Despite the well documented and widely published principles of liveability and density-based development patterns, there remains a frustratingly low uptake in the outer metro construction sector. The products available on the market do not align with the readily available demographic profiles nor with the stated preferred stock (Refer Appendix: Table 1 to 3 for details).
Discussions with the Stocklands Regional Manager, Mike Davis (Davis, 2013), reinforce the findings from current industry research into what these barriers are to the uptake of a greater mix of dwelling types and higher density developments. Davis distils these into four key challenges.

Firstly there is the dilemma of appetite for the product. There remains a predisposition in outer Melbourne to the backyard, and the authors note that this belief has been actively reinforced through the messaging of Minister for Planning, Matthew Guy, at industry forums and through mainstream media. He states:

“Having a backyard should not just be the domain of the wealthy; it should be an aspiration that any family can achieve” (Guy, 2012).

This premise pits itself against the much needed culture change spruiked in notable recent research. The majority of successful and vibrant higher density models tend to be CBD and inner suburban contexts, with a significantly different demographic profile and a paradigm that is receptive to alternate housing and living models. There is an understanding of what is valued and important, and hence an informed trade-off takes place in order to attain a desired lifestyle. Out in the fringe of Melbourne the product on offer tends to appeal to a far more middle Australia market, such as teachers, receptionists, taxi and truck drivers, and blue collar workers. They arrive from nearby suburbs that emulate their new home context, with around 80% of buyers coming from within 5-10km of the actual project. Hence they bring with them the same expectations of housing, and do not relate to the city living of inner suburbs.

This comes at a price as the buyer will gravitate towards familiar detached and large dwellings with the archetypal backyard that are beyond their needs, but also often beyond their financial capacity. The real world implications of this decision are often not understood
until they have moved in and experience the induced travel habits. Shifting this appetite is therefore a fraught challenge, and requires a fundamental shift in the self-identity perceptions of the market but also in the messaging of government.

In order to meet the required higher densities in new estates, developers have attempted to take a shrink-wrap approach without necessarily changing the housing model. The lot size has reduced and the house space planning has been finessed to reduce overall footprint, yet it still tries to convey an impression of being a conventional home. The resultant built form can feel squashed and claustrophobic, and is not always partnered with the key ingredients of quality open space, high amenity pedestrian links and walkable proximity to activity centres that make successful higher density living.

**Figure 17: Shrink-Wrap Approach in Housing**
These compressed models become inferior yet defining of density for the market, and are therefore eschewed and not valued as highly as the bigger cousin.

The second barrier to delivery of higher density is the economics of development in a growth area. Financial institutions are nervous about the unknown risks of committing to untried models making it difficult to source the necessary funds. This pushes some of the smaller and volume developers back towards easily financed conventional housing models. A larger national developer notes:

“More and more of the smaller developers who do not have a balance sheet are not able to get access to funding and they’re finding their margins are being squeezed or they can’t get funding in the first place. The supply side is continuing to dry up. The larger players have better access, but even their capital is getting scarcer” (NHSC, June 2012).

Even if funding is secured, it typically comes with a web of onerous strings attached, including pre-sale rates of up to 70%, demands of higher equity, guarantees, holding the land as leverage, uncompetitive lending rates and expectations of an increased internal rate of return. Each of these conspire to create untenable burdens on the development and become extremely difficult to achieve each of the criteria. The cost impost then needs to be amortized across the number of units being constructed, which then hits the highly sensitive price point and counters the affordability intentions.

Thirdly, the approvals environment favours the easily understood and assessed conventional housing models. Higher density proposals, which are often poorly conceived and lack the
A mix of dwellings, require greater negotiation and pose delay risks in the issue of permits. This becomes another layer on top of the standard risks of greenfield development, where land purchase agreements are conditional on rezoning, environmental assessments, traffic studies and yields. In all of these time is the enemy, with holding costs gradually eroding the return on the investment.

A fourth barrier exists in the actual construction of higher density developments (PCA, 2011, 2012). There is a notional threshold point of up to three levels which, once breached, introduces numerous costly additions to a project. These include the requirement of a unionised workforce, larger scale hoisting and higher tonnage cranage, more sophisticated onsite OH&S systems, extensive scaffolding, expensive basement carparking, more complex construction methodologies and even the basics of different material types. Each of these add costs to the build which is then distributed across the sale price of the units. Unfortunately, the build cost in outer suburbs is virtually the same as in inner suburb, but without the desired apartment sale price. This lower price point in outer suburbs reduces the commercial viability especially when building between 4-6 storeys, and developments greater than 6 storeys are effectively unheard of in Casey.

Beyond these four barriers, local governments also often attempt to induce a higher density outcome around significant activity centres and transport nodes through statutory controls such as Urban Design Frameworks, Development Plans and Incorporated Plans, however this policy support for higher density can of itself become a barrier to suitable development. The specific density yields stipulated in these plans can at times be so far beyond what the market is capable of delivering that development arrives at an impasse, and the turn key projects that may trigger desirable companion projects are simply unable to proceed.

Even when all of the above seemingly insurmountable barriers are addressed, and a high density development looks like it might get off the ground, the everyday objections to a planning application can sabotage a whole project. So can the idealistic vision of higher density liveable suburbs actually be achieved in outer suburbs and growth areas?
What needs to change to successfully implement liveability outcomes?

There are several strategic interventions that can be easily acted on in order to activate a higher uptake of liveable outcomes in Casey.

1. Covenants
   Contrary to the desire to migrate towards improved densities, much of the growth area subdivisions come with covenants on the lots that prevent future consolidation. Lifting these covenants around strategic sites and corridors will assist in encouraging improved densities and future development options.

2. Turn key projects
   Statutory controls such as Development Plans need to make provision for front-end turn-key projects that can become the catalyst for a broader transition towards more liveable outcomes. Clauses can be included that describe the desired liveability outcomes of development against which a proposal can be measured, rather than rely simply on the metrics of dwelling yields. This flexibility requires a more cooperative relationship with developers.

3. Local precedents
   Government may need to play a partnering role with the private sector in order to generate local precedents that demonstrate the viability of higher density development models in the Casey context, assisting in alleviating some of the perceptions of risk held by financial institutions. There may be a role for Department of Treasury and Finance to work with the financial institutions or organisations such as CEDA to develop more accessible funding models that encourage appropriate development in growth areas.

4. Urban Growth Boundary
   The elastic nature of the Urban Growth Boundary can’t continue, as with each expansion it releases the backward pressure to develop more sustainable, intensive and liveable outcomes. At some point the protection of the agricultural values of the land and its quality soils needs to become the story, rather than their loss. Food security and localised production needs to be treated seriously, and the expectation of an alternate urban form and its benefits communicated. The boundary itself needs to be more than a line on a map, as that line has already been so easily redrawn. It is proposed that this edge be embedded through the establishment of a high value ecological corridor that runs the length of the boundary. This would put a natural
reserve within easy reach of nearly all residents, provide habitat and movement corridors for indigenous fauna, and would redress the denuded landscape imposed by white settlement.

5. **Building typologies**

The brick veneer, hip roofed three bedroom typology is a short-term thinking solution that does not recognise the seismic shifts happening within society. Flexible and modular systems are now well developed and delivered by experienced builders in Australia. Harnessing these flexible forms will even allow lower density areas to adapt to changing patterns of usage as demographics change and the emerging technologies permit alternate ways of working and living.

6. **Industrial relations**

The option of an agreed transitional union presence needs to be explored with union organisations to seek to break down the apparent impasse with 4-6 storey developments. A negotiated outcome could promote growth in the building sector thereby supporting the union’s membership. Seeking an understanding of the values of the unions such as fairness and safety are clearly critical in moving the discussion towards resolution. If a compromise position can be reached it would have significant benefit to the viability of higher density liveable developments.

7. **Marketing**

As whimsical as it may seem, there needs to be a concerted effort to address the lifestyle expectations and beliefs that are clung to in the market. Fear of the unknown leads buyers to hold onto the less liveable and unsustainable model of growth. Misperceptions of what higher density living is like are pervasive simply because there is no other messaging out there. Any images of happy families or retiring couples enjoying the views from their balcony, playing in a central park or relaxing in a downstairs café, are invariably attached to conventional housing models not higher density. The more adaptable younger generations have recognised the value and are actively deciding to choose renting to achieve a lifestyle rather than home ownership, however this requires displacement from Casey to be able to access the product. A new story needs to be told of living on the fringe, one that promotes a liveable built form and champions diversity.

*Figure 18: Consolidation and Subdivision of Traditional lots offer choice, City of Casey 2012*
CONCLUSION

Looking ahead to future development in Casey, there are encouraging indications that the community may be receptive to improved liveability through a higher density model. The community’s vision ‘Casey C21 Building a Great City’ articulates greater aspiration than the market might indicate:

“Casey will be a model for outer suburbs across Australia… A sustainable city which works to achieve the best possible social, economic and environmental outcomes for its citizens… Self-sufficient with a full range of learning, employment, shopping, leisure and social services…” (Casey, 2013).
Working from this premise, our plans for growth need to entertain genuine density solutions which build a strong sense of place and foster local employment opportunities. This needs to be an evolved density model that responds to the outer suburban fringe context. Distilling the positive outcomes achieved by more intensive inner densification helps to build a design brief for Casey.

1. Mixed use development along street based activity centres and around transit nodes
2. Tapering of density to 3 storey walk-ups to address an integrated network of transit corridors
3. A final taper to a reinvention of conventional housing that incorporates new flexible and modular forms of construction that can respond to societal transitions and delivers a strong socially active street edge.
4. Utilise public open space more effectively to be inclusive and facilitate mingling of demographics
5. Building stock that provides opportunity for alternate uses over time
6. An overall comprehensive cross section of housing stock that correlates with the occupant numbers.
7. Connected high amenity people-focused paths and networks
8. High ecological value vegetated corridor along the Urban Growth Boundary

"In one sense, the design and build of new spaces is easy. It is overcoming what imprisons us in the past that requires real innovation.." (McAllum, 2013).

These are all immediately achievable if there is industry willingness. Developers need to work cooperatively with both state and local to overcome the current barriers, and through constructive partnerships start moving our communities towards thriving and liveable places.
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ADDITIONAL RESEARCH MATERIALS


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Urban Water ToolKit: raising creeks and growing cities

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ABSTRACT
This paper investigates the use of an Urban Water Toolkit in the development of local infrastructure solutions in response to food production and energy, land and water supply pressures as part of a climate change adaptation strategy. The Urban Water Toolkit lays the groundwork for a new way of structuring cities with particular emphasis on raising urban creeks to create multifunctional ‘flood zones’ that provide opportunities for water management, wildlife habitat, transport, recreation and urban agriculture. The inner city Brisbane neighbourhoods situated in the historical catchment of Western Creek are the setting of a pilot study that demonstrates the application of the Urban Water ToolKit.

Keywords: Urban agriculture; Green infrastructure; Retrofitting cities; Raising creeks.
Introduction

The rapid growth of cities, development pressures and limited public funding have challenged the ability of local governments to protect natural areas and to provide sufficient ecologically healthy, accessible green space. Historically, natural features, such as creeks, have not only physically defined neighbourhoods, but have also provided settings for shared experiences that have united generations. The urban design challenges are therefore, twofold. On one hand, to develop a practical approach to the integration of green infrastructure in the densification of existing inner areas with particular emphasis on the consequent changes to land use and development planning. On the other, to recognise how social innovation is capable of anchoring urban change more firmly into the community fabric.

The Urban Water ToolKit is part of a suite of strategies for enabling a water sensitive, catchment-based approach early in an urban retrofit design process.

Context

Government policy calls for new understandings about how to plan our cities with in-built resilience to higher temperatures, more intense flooding, unpredictable rainfall, and more extreme bushfire risk. These pressures will affect electricity, water and telecommunications infrastructure and the reliability of service provision to the community (Major Cities Unit, 2012, p. 136; Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, 2013, p. 66). Green infrastructure is seen as key to improving the sustainability and livability of Australian cities (Major Cities Unit, 2012, p. 137).

Land use and infrastructure planning in South East Queensland must now incorporate total water cycle management and water sensitive urban design principles (Department of Infrastructure and Planning, 2008, p. 132). Queensland’s community gives green space a high priority and is not happy with population growth and the resulting increase in urban densities, generally preferring to live in low or medium density residential neighbourhoods (Brisbane City Council, 2006).

There is a significant body of work tracking the ecological health of urban waterways, identifying watershed issues and protection and restoration measures (Walsh et al. 2005, Wenger et al. 2009, Roy et al. 2009). There is, however, little understanding of
how to integrate urban design of cities with green infrastructure to meet the challenges of rapid urbanisation and uncertain future climate scenarios.

**Green Infrastructure Pilot Study**

The *Green Infrastructure: Connecting people with landscapes through urban retrofitting* research project developed new urban typologies for existing inner-Brisbane neighbourhoods within the Western Creek catchment. The typologies were developed based on double the existing population density, and in recognition of natural features, such as creeks and existing vegetation stands.

The Western Creek Pilot Study is located approximately three kilometres South-West of the Brisbane CBD in a 416 hectare catchment of the Brisbane River, and in terms of location is an Urban Neighbourhood (P5) designated for higher density (30-100 dwellings per hectare), walkability and mixed use (Council of Mayors & Queensland Government, 2011). The Western Creek catchment is currently low density, predominantly character housing, averaging 10 dwellings per hectare and approximately 11,500 residents or 4,160 households. The area is planned to increase to 16,000 residents by 2026 (Brisbane City Council, 2006) and to 22,500 residents by 2031 (Department of Infrastructure and Planning, 2008) which will put pressure on the catchment’s open space, the health of the Western Creek waterway and the Brisbane River.

‘Major’ flooding in 2011 (Bureau of Meteorology, 2011) from the Brisbane River (see Map 1) mimics the pattern of inundation experienced when rainfall on the catchment causes ‘minor’ flooding. The flood event in 2009, showed a clear picture of how even minor flooding brings the creek alive again.

Map 1: Aerial view of 2011 floods in the Western Creek catchment
The potential to protect or reinstate the remaining fragments of open space and natural areas to provide an ecological link between two core biodiversity areas, the Mount Coottha National Park and Brisbane River, and to daylight\(^1\) the creek, make the Western Creek catchment an ideal pilot study area.

**Background Research**

Early research established the viability of introducing green infrastructure to the Western Creek Catchment given the extent of permeability remaining in the Western Creek Catchment, the significant public ownership of land within the original creek corridor, and the opportunity to re-create important ecological links (Grgic, 2009). Extensive urban design analysis of the open space, stormwater drainage, topography, traffic and movement networks, social/retail hubs, water sensitive urban design (WSUD) opportunities and walkability, set the framework for development of the pilot study (Grgic, 2009).

In 2010, a workshop, facilitated by urban planner and community consultant, Dr Tamsin Kerr, was held to explore the social and cultural significance Western Creek once held in the early 20th Century. The attendees had memories of the creek when it was still in existence and the Memories Workshop mapped the remembered creek alignment and

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\(^1\) ‘Daylighting’ is the redirection of a previously piped stream of water into an above ground channel to return to a more natural state and improve riparian environment.
recorded insights that revealed the role it once played for people in the Western Creek Catchment.

In an integrated teaching and research setting, Masters of Architecture students tested density solutions across more than 100 sites considering detailed factors of site location, and planning and building design based on Brisbane City Council (BCC) and Queensland Government guidelines (Council of Mayors and the Queensland Government, 2011; Queensland Government, 2010). This formed part of their coursework for Architectural Design Studio Semester 2, 2011-2012.

The development potential to increase density was identified on a site-by-site basis, by the researcher, Marci Webster-Mannison, considering the potential impacts on solar access, visual privacy, acoustic privacy and views. Density was determined by analysing the suitability of the site to accommodate secondary dwellings, duplex, attached dwelling (e.g. row housing), low rise apartments (up to three storeys), medium rise apartments (four and ten stories) or mixed use. Excluded from consideration for increased density, were all character houses, and existing medium density developments on the basis that some of the older apartment buildings would eventually become affordable housing, critical in this inner city area characterised by middle-high income earners and a dearth of public housing. The site-by-site analysis was mapped for the whole catchment and recorded in a spreadsheet for further use in the density hydrological analysis of alternative development scenarios.

**Creating the Western Creek Catchment Proposition**

The Western Creek Pilot Study was an iterative research-by-design process combining analysis and design activities including hydrological assessment and modelling of the catchment, development of options, various consultations and design charrettes, to establish the feasibility of creek rehabilitation in terms of consistency with local area plans, potential to contribute to urban infrastructure (e.g. stormwater drainage, flood mitigation, water supply, transport, green links, etc) and the social character of the neighbourhood. The key steps in the process included: Step 1: ‘Layer’ mapping (water (see Map 2), movement, urban form, landscape, parkland and clumps of trees, open space networks, climate and services and agriculture); Step 2: Site density potential identified; Step 3: Green Infrastructure strategies developed (catchment-wide, sub-catchment, street and lot); Step 4: Green infrastructure opportunities (water retention,
treatment and reuse) identified; Step 5: Concept plans prepared; Step 6: Hydrological modelling of options (Webster-Mannison, 2013).

**Water ToolKit: ‘big’ moves**

The Water ToolKit was developed for the Western Creek Pilot Study by E2Designlab to provide a site-specific green infrastructure framework to underpin the urban design exploration of sustainable urban forms that may support a population increase. The Water Toolkit was applied in a variety of ways, at a variety of scales, throughout the design process, initially to determine some ‘big’ moves for the main creek which established the direction for continued analysis and redesign of the catchment.

A key early decision was the precautionary approach in the planning of the collection, treatment, storage and reuse of water at each ‘scale’ of development (building and lot; street; sub-catchment; creek/catchment wide) to reduce cumulative negative impacts on the main creek, mainly in terms of water quality and flooding. The ‘big moves’ in terms of land use strategies were determined as follows:

1. Retreat: Ensure all new development is outside of this flood extent and use the space for green infrastructure only (sport, recreation, amenity, food production, ecological corridor, bioretention, wetland, lakes); or
2. Flood sensitive: Develop inside the flood extent with flood sensitive building design plus green infrastructure; or
3. Flood mitigation: Reduce the flood extent in locations, to allow for development that will be unaffected by flooding. This may be achieved by increasing the cross section of the creek (and therefore capacity, with excavation to create more of a stepped or graded flood corridor rather than a small creek line within a broad flat floodplain). Where localised filling within the floodplain is proposed, there will be an increase in peak flows and therefore an increase in flood extent downstream of where the flood corridor has been squeezed (reduced in width). So narrower waterway corridors are balanced to accommodate more development upstream with a wider flood corridor downstream.

Map 2: Western Creek Pilot Study_Water
Map 2 - Catchment shading illustrates topography, white valleys shading to dark ridges. The table identifies sub-catchment permeability/impermeability ranging from 12% to 70.3%. The concentric circles illustrate the proportional area available for stormwater treatment wetlands (outer circle), bioretention (middle) and food production (inner circle).

The ‘big moves’ in terms of main creek strategies for the waterway corridor, flooding, creek mouth, Milton Drain and Frew Park were determined using the 2070 predicted inundation extent compared with 100yr overland flow. Waterway corridor ‘big moves’ involved replacing the existing stormwater pipe with a recreated 'creek'; maintaining a maximum of 50% imperviousness throughout the catchment; and integrating green infrastructure opportunities including locations for water retention, treatment and reuse.

The flooding ‘big moves’ involved containing flash flooding within the open space corridor and creating a defined overland flow path (maintaining a 60m biodiversity corridor where possible). The creek mouth strategy was for a riparian corridor that extends to the river. The only exposed part of the creek remaining, Milton Drain, an existing trapezoidal concrete channel, would be retrofitted by removing the concrete edges, battering back (max 1:4) and planting the edges with Mangroves in the tidal range and Casuarina as an upper riparian band, leaving the concrete bed of the channel in place. Frew Park (former Milton Tennis Center) was identified to become a
stormwater harvesting facility with a wetland and lake (freshwater, receiving stormwater runoff from the catchment and kept separate from the waterway corridor).

The ‘big moves’ for each of the sub-catchments (see Map 2) were also determined. Slope analysis determined if streetscape bioretention pods were feasible, and if not, opportunities to incorporate larger systems (bioretention or wetland) at flatter points further down in the sub-catchment were identified. Downstream opportunities became incrementally bigger to manage the increased catchment areas and hence the volume of stormwater runoff).

Symbiotic land use clusters were identified, such as industrial water users & wastewater treatment, light industrial sheds & water users, high density & commercial and mixed use & high density. Landscape was prioritised: existing landscaped areas retained, existing clumps of trees retained and connected, shady walkable streets created, and a 60m wide biodiversity corridor created in conjunction with recreated creek and overland flow paths. Where a 60m corridor was not achievable without significant loss of existing housing, a low density zone around the waterway which has a landscape and street design strategy that supports the ecological corridor was created. Facilities and services were integrated in the biodiversity corridor where possible without compromising the ecological function of the ‘forest’ corridor. Food production areas were integrated at 6m2/person in locations that receive a minimum of 6hrs/day sunshine.

The Water ToolKit further developed specific guidelines relating to scale (for building and lot, street and sub-catchment scale), permeability, roof water collection, stormwater treatment, wastewater (greywater/blackwater treatment and reuse to reduce sewer load) and food production. The guidelines separately addressed the lower and upper catchment areas (upstream of Norman Buchan Park), and the proposed land use and density.

An initial concept plan showing the ‘big moves’ for the main creek was created in a workshop with Marci Webster-Mannison (architectural and urban design input), Malcolm Eadie, E2Designlab (water engineering), and Sally Boer, E2Designlab (ecology).

Students undertook detailed layer mapping and analysis creating many options at a catchment-wide and sub-catchment basis, as well as housing proposals for specific sites. Finally, multi-disciplinary urban design workshops were held with participants
representing urban design & architecture: Jim Gall, (Jim Gall Architects), Cameron Davies (Deicke Richards); Landscape Architecture: Arno King (Deicke Richards); and Water Engineering and Ecology: Malcolm Eadie and Peter Breen (E2Designlab).

The Urban Design Workshops built on the students’ analysis and design options to test the workability of the proposed urban design outcomes for the integration of green infrastructure and the doubling the existing population (Scenario Three).

**Modelling Scenarios & Results**

Three Scenarios were established, representing all of the seven sub-catchments, to quantify the impacts of densification with, and without, green infrastructure: 1. Scenario One_ Existing Situation; 2. Scenario Two_ Future Un-mitigated Urban Intensification Scenario (population densification without green infrastructure); and 3. Scenario Three_ Mitigated Urban Intensification Scenario (population densification with green infrastructure).

Quantitative modelling was undertaken to measure the benefits from employing green infrastructure solutions as part of urban intensification of the Western Creek catchment. Microsoft Excel spreadsheets were used to measure change from existing for un-mitigated and mitigated (using green infrastructure) urban intensification scenarios. Hydrological modelling used MUSIC Version 5.01 (eWater Model for Urban Stormwater Improvement Conceptualisation). Indicators measured were physio-chemical properties of stormwater quality; hydrologic indicators for stream health and flood resilience; potable water demand; and wastewater discharge.

The modelling substantiated the multiple benefits that green infrastructure may provide when integrated with urban intensification, representing a doubling of the population in Scenario Three_ Mitigated Urban Intensification of the Western Creek Pilot Study. Scenario Three showed a reduction of up to 30% in peak stormwater flows (at the catchment outlet), up to 70% in annual pollutant loads, and 30% of demand on mains potable water supply in comparison to Scenario One_ Existing Situation. Scenario Three further demonstrated improved flood resilience, reduced pollution from stormwater and wastewater discharges, ecological services, landscape amenity, less demand on regional freshwater sources within the broader bioregion and food security through integration of urban agriculture (Webster-Mannison, 2013).
Conclusion

The Western Creek Pilot Study examined new ways of understanding a green typology for the growth in density of cities and practical ways to move towards a more sustainable urban form based on knowledge about how the critical geophysical, historical and ecological landscape, unique socio-economic and cultural characteristics change our sense of place and influence continuing community development.

Furthermore, the significance to urban retrofitting of green infrastructure in defining neighbourhoods and ‘breathing’ life into communities, and how it may be integrated in the design process is revealed. The site specific Water ToolKit provided an evidence base and framework to embed green infrastructure solutions as part of urban intensification.

Ultimately, this research may lay the groundwork for how the urban realm may be restructured over time as part of a climate change adaptation strategy, and to reflect ecological and social values important to a healthy environment and community.
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Teenagers and the City

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Key words
Urban Design, Teenagers, Children in the City, Civic Engagement

Abstract
Teenagers are key users of public spaces in cities, however, they are often excluded from public spaces and planning policies that frequently discourage and restrict their use of these places. This study acknowledges that designing for teenagers has the potential to create diverse and inclusive spaces for all ages where new social interactions are able to cultivate, facilitating inclusive and cohesive urban environments. Therefore, it speculates on tactics for creating the teenager-inclusive spaces, using the Hobart city centre as a case study. This involves an in-depth investigation into existing research in order to propose urban strategies of informal and temporary interventions that facilitate ‘active and productive’ engagement, that assist in creating more inclusive cities for teenagers.
Introduction

Although teenagers are one of the key users of public spaces, their presence is often regarded as undesirable due to the common perception that they are responsible for anti-social behaviour. The active engagement of teenagers in cities around the world is often limited through planning exclusions and restrictive uses of public spaces, particularly through ‘surveillance, curfews, move-on and anti-congregation laws’ (Malone 2001, p.7). For example, Patsy Eubanks Owens, a landscape architect with an extensive knowledge on teenagers’ spatial needs, describes how in Davis, California the spaces regularly used by teenagers for social interaction were removed in order to eliminate teenagers from the area, as it was perceived that their presence and ‘loud’ forms of socializing disturbs and frightens passerby’s (Owens 2002, p.159). Similarly, in Australia, Local governing bodies often employ strategies of locating teenager-friendly spaces on the fringes of cities or away from shopping malls and active public streets, with the underlying implication that teenagers are better off if ‘not seen and not heard’ (Malone 2002, p.164). However, although these strategies of exclusion can prevent potential conflicts between teenagers and adults, they also minimize young people’s ‘opportunity to observe and engage in the development of the social and cultural capital of their communities’ (Malone 2002, p.165).

Significant research has been undertaken in order to identify reasons behind the lack of teenage-friendly spaces in cities, the policies that restrict their use of public spaces, the adult/adolescent conflicts over spaces, and where and why these boundaries are contested. (Owens 2002; Malone 2002; Mathews et al. 2000; Vanderstede, 2011; Duzenli et al. 2010). However, there is less research into how designing for teenagers has a potential to create diverse and inclusive spaces for all ages where new social interactions are able to cultivate, and facilitate an inclusive and cohesive society. This paper speculates on strategies for creating teenager-inclusive city spaces, using the Hobart city centre as a case study.

This research draws on literature that highlights the problematic relationship between teenagers and their urban environment and considers ways to address this issue, through design strategies that prioritise the active engagement of teenagers within the public realm of the city. In particular, it examines the potential of identifying how teenagers’ spatial networks can be enhanced to reinforce particular relationships between teenagers and the city (Vanderstede 2011). It draws on ideas presented by Wouter Vanderstede (2011), Quentin Stevens (2007) and Jeffrey Hou (2010), who support the development of temporary and informal use of urban spaces to promote active and productive engagement that allows for a diversity of uses, and argues that this approach can inform strategies for the provision of teenager-inclusive spaces within the city.
Teenagers’ use of Public Spaces: review of literature

Increasingly the needs of children and young families are being addressed in the design of cities, creating spaces for the active engagement of a broader cross-section of the community. It is acknowledged that locations that welcome children are by default also places for mothers, fathers, grandparents, and friends of all ages. Although the design of cities frequently accommodates smaller children, less attention is focussed on providing spaces for teenagers. With a lack of provision of suitable facilities, teenagers have nowhere to go, and urban spaces become places to ‘hang out’, to alleviate boredom (Matthews et al. 2000; LCC 2011). However, teenagers’ presence is often perceived as problematic; even if teenagers are not behaving antisocially ‘adults interpret their hanging out as an unproductive use of time that will lead to delinquency’ (Owens 2002, p.159). Many business owners feel that teenagers’ presence affects their sales as their probable customers ‘don’t go into shops to avoid [potential] conflict’ (LCC 2011, p.12). As a consequence, teenagers are often excluded from the design of urban spaces, with policies, rules and regulations frequently discouraging and restricting their use of urban space (Owens 2002; Vanderstede, 2011). In particular, uses counter to those formally prescribed are regarded as a form of transgression that should be controlled (Standler and Schwab 2005).

Owens (2002, p.156) and Mathews et al. (2000, p.282) suggest that teenagers can be understood as the ‘hybrid’; they are no longer children, but not adults yet either. This transition between childhood and adulthood represents a key shift in the nature of teenagers’ social development, which is central to their engagement with the city (Matthews et al. 2000, p.280). Research suggests that teenagers use particular types of spaces beyond the realm of home and school for socializing and testing the boundaries of their own identity. Spaces that are neither home nor school, but places such as shopping malls, parks, squares, bus stops and streets where teenagers ‘negotiate [their] autonomy’ are described as ‘thirdspaces’ (Matthews et al. 2000 cited in Vanderstede 2011, p.168). The occupation of these spaces is key to teenagers’ sense of urban identity, as they offer places that allow them to ‘hang out’, and provide ‘the stage for performance’ where teenagers attempt to ‘construct the self within the selfless sea of [the] city’ (Malone 2002, p.163). While policies of exclusion dominate, teenagers are either problematic or absent, as a consequence there is a need to develop proactive strategies for inclusion and engagement of teenagers in the city.

Research suggests that teenagers need to be integrated with other demographic groups as ‘they need opportunities to participate in the adult world and to learn lessons from that participation’, and that this integration can also be beneficial in controlling anti-social behaviour (Nightingale & Wolverton 1993 cited in Owens 2002, p.162; Standler and Schwab, 2005; LCC 2011, p.14). It is suggested that the failure of designers and planners to address teenagers’ requirements within public spaces disregards their needs for psycho-social development (Owens 2002 p.162 and Duzenli et al. 2010, p.201).

Gaining insights into teenagers’ needs, preferences and priorities is central to understanding the implications for design of appropriate urban spaces and facilities (Duzenli et al. 2010). However, the concern for accommodating teenagers in the city is not limited to the provision of amenity alone; it’s a matter of grasping the cognitive, emotional and imaginative dimension to being young. In order to define the parameters of appropriate design for teenagers within an urban environment it is important to understand their social and functional requirements, otherwise these spaces risk being underutilised (Silbereisen 1988 cited in Owens 2002, p.161). A report on anti-social behaviour in the CBD by the
Launceston City Council interviewed a number of teenagers who suggested that there needs to be more activities in order to make the city ‘a place to be’, and as well as a providing ‘more seating…tables and chairs…large screen… landscaping [and] undercover areas…’ (LCC 2011, p.13). Similarly, a survey conducted by Epinion Capacent on behalf of the KOMPAN Play Institute (2007), which analysed teenager’s play and outdoor activity in the United Kingdom, the Netherlands and Denmark identified specific needs of teenagers in regards to recreation, leisure and socialising. The key activities that were identified can be understood as active - social interaction, watching, performing and relaxing, or productive - artistic expression, sport, outdoor learning, crafts and making (Kompan Play Institute, 2007).

Designing for Teenagers in Public Spaces

This study speculates on ways to facilitate teenagers’ active and productive engagement with the city, suggesting strategies that can be used to inform planning and design processes. In particular, it highlights the importance of identifying ‘teenager space networks’ as a basis for framing strategies for engagement. It considers ways of establishing these as ‘primary planning layers’ that inform the organisation and use of urban space, and suggests tactics for understanding opportunities for temporary and informal uses that provide teenager-friendly environments (Vanderstede 2011).

Wouter Vanderstede and Catherine Robinson argue that ‘teenager space networks’ are ‘vital to [a teenager’s] experience of space’ (Robinson 2000, p.430). Vanderstede (2011, p.176) describes teenage space networks as ‘the whole of spatial elements and structures relevant to teenagers’. Identifying these networks highlights particular patterns of movement and spaces of occupation, which Vanderstede proposes can be integrated as a ‘layer’ in the planning process (Vanderstede 2011, p.176). He draws on techniques used by Travlou et al. (2008), which asked teenagers to map their most favourite spaces in the city, which were marked by a series of dots. Vanderstede suggests that the dot map could be used as a starting point for further analysis by linking these locations together to provide ‘spatial structures in the urban tissue’. Research by Travlou et al.’s revealed key locations for teenagers: educational facilities, shopping areas, public transport, urban squares and green spaces, recreational areas, and bicycle routes. Vanderstede (2011, p.180) suggests that linking the dot map of spaces identified by teenagers highlights ‘primary planning layers’ of the teenagers’ space network. He also identifies ‘secondary planning layers’ that are created by linking smaller scale spaces, snack bars and other incidental places in a similar manner. Vanderstede (2011, p.170) draws on Kevin Lynch’s (1960) theories of urban legibility, which suggest that paths, edges, districts, nodes and landmarks provide the key ‘elements [that] underpin the (perceived) spatial structure of a city’. He proposes using Lychian strategies to intertwine primary and secondary layers together to give legibility to teenager space networks, which provide a strategic framework for urban planning and design (Vanderstede 2011, p.181).

For Vanderstede (2011), Lynch’s elements of urban legibility provide a way of highlighting underlying urban networks that give a sense of order and logic to the city. In contrast, Quentin Stevens (2007) parallels Lynch’s conceptual thinking, but defines five elements that he suggests highlight opportunities for particular types of activity or engagement (Stevens 2007, p.14). Stevens suggests that: paths can encourage new types of interaction, ways of movement and meanings; intersections of paths locate points that can support spontaneous activities; boundaries define spaces with different characteristics, identifying sites that may encourage new behaviours, new types of play or performance; thresholds
are the zones between two spaces of different characteristics that offer the potential to support particular activities that involve actors and spectators; and props are temporary or informal objects that stimulate play and heighten visual aesthetics of the space i.e. public art, street furniture, play equipment. Each of these elements contributes to the urban legibility and also encourages unique types of engagement that create memorable spaces and experiences. Stevens (2007) argues that this provides a strategic framework for urban spaces that encourage play, freedom and a sense of fun, emphasizing the idea of the city as a network of spaces that can be appropriated for incidental activities that may be temporary or informal. These ideas are particularly useful for considering the engagement of teenagers in the city, highlighting how the generic characteristics of different spaces can provide particular conditions that support active and productive engagement.

A complementary approach is offered by Jeffrey Hou, who emphasizes the potential of 'unconventional public spaces' to be adopted by 'excluded' demographics (Hou 2010, p.3). He suggests particular 'forms of action' - that involve the 'taking over' of spaces within the city: appropriating, reclaiming, pluralizing, transgressing, uncovering and contesting spaces. Appropriating space involves suspending typical uses in favour of temporary activities; reclaiming a space involves the re-use of unused or neglected parts of the city in order to enhance the diversity; pluralizing a space entails adding activities in order to enhance the density and diversity; transgressing is achieved by temporarily occupying an urban space and introducing new relationships; uncovering allows for re-invention of memories connected to the public space history; and contesting space is to disregard imposed policies for use in a multiple of ways in order to better serve the community. Hou argues that:

Although the actions may be informal and erratic, they have helped destabilize the structure and relationships in the official public space and release possibilities for new interactions, functions, and meanings. (Hou 2010, p.30)

Hou (2010, p.26) contests that temporary/informal activities that are shaped by everyday users within the public space are more likely to encourage new interactions, meanings and experiences than conventional, imposed uses. This correlates with Stevens’ (2007, p.106) assertion that 'meanings certainly adhere to the built environment but they cannot be fixed there and cannot easily be enforced'. Considering how urban spaces may allow such temporary uses, and accept transgression as a positive, rather than negative, process could highlight the value of facilitating multiple uses of spaces to support diverse activities and user groups, and this could potentially support the needs of teenagers.

This study suggests a three-tiered strategy. Mapping primary sites for teenagers - schools, shopping areas, public transport, urban squares and green spaces, and recreational areas – and charting the paths that link these spaces highlights socio-spatial relationships that could form 'primary planning layers'. Overlaying Stevens’ five elements onto recognised networks defines key paths, intersections, boundaries, and thresholds, provides ways of understanding potential sites for new activity within these ‘teenager space networks’. Assigning tactics of appropriating, reclaiming, pluralizing, transgressing, uncovering and contesting spaces can promote temporary/informal spaces and activities of occupation that encourage active and productive engagement, which can be facilitated by the provision of elements that provide props for social interaction.
Hobart City Centre as a Case Study

Hobart is a city of approximately 210,000 inhabitants, and although only 2,000 people live in the city centre, there are almost 10,000 students attending inner city secondary and tertiary institutions (Gehl, 2010). This offers a potential degree of diversity and liveliness to the city, however currently there are limited opportunities for teenagers to engage with the city beyond the boundaries of these institutions. The strategies and ideas presented by Vanderstede, Stevens and Hou offer ways to consider how the city could identify more opportunities for active and productive engagement of teenagers, by highlighting ‘teenager space networks’ and provide opportunities for temporary and informal uses of urban spaces. Mapping ‘teenager space networks’ and defining the paths, intersections, boundaries and thresholds within these spaces identifies locations that could be adapted in order to accommodate new activities, and therefore lead to the production of a more inclusive and cohesive urban environment for people of all ages.

Identifying the location of educational and recreational facilities, shopping areas, public transport, urban squares and green spaces and mapping the interlinking paths highlights the ‘primary planning layer’ of teenager space networks (image 1-3). In Hobart this reveals six key paths of movement that teenagers use on a daily basis (image 4). Mapping the location of these spatial networks allows ways of understanding the paths, intersections, boundaries and thresholds that could identify site interventions, which provide props for social engagement (Stevens 2007, p.14). Detailed investigation of these spaces highlights different tactics of appropriating, reclaiming, pluralising, transgressing, uncovering, and contesting space that are required to provide both informal and formal places that support active and productive engagement (Hou 2010).
Mapping the paths between key facilitates reveals that many spaces within these networks are inactive, disused or underutilised, and generally not particularly targeted towards teenagers’ needs. Gehl Architect’s (2007) study of Hobart’s *Public Space Public Life* draws attention to the quality of the urban environment, and provides criteria to evaluate the spatial and functional quality of the city. Gehl (2010) maps the location of cafés, public seating and benches, which provide places to gather; and key recreational facilities such as public art, galleries and museums, theatres and cinemas, and these maps can be integrated with the teenager space networks (image 1-3). The quality and character of these spaces is evaluated through an assessment of active/inactive frontages, and the extent of on-street and open car-parks, which affect the quality of the pedestrian experience (Gehl 2010). Overlaying the map of ‘teenage space networks’ onto these diagrams highlights the relationship between these factors, which emphasizes the sites that could be transformed in order to enhance teenagers’ experience of the city, through localised interventions.
Image 2. Public transport / urban squares and green spaces

Image 3. Public art, galleries and laneways / inactive frontages and parking
Gehl’s report indicates that currently most of the café seating is concentrated around the Elizabeth Street Mall and Liverpool Street. Public benches are scattered throughout the city centre, but many of these are not in locations that form a part of teenagers’ paths of movement. Indeed, detailed inspection reveals that in many instances the positioning of benches does not foster social interaction. Also, although there are several public art installations in the city centre, most are inactive and do not engage the passer-by. In terms of the quality of the streetscape, most of the active frontages are within the commercial zone of Elizabeth Street Mall. Inactive frontages dominate many of the paths that are key to teenagers’ spatial networks, creating dull and unattractive environments.

The analysis of the individual paths within the teenager space network reveals different conditions, and opportunities. **Path 1** is the most indirect route, which has several points of intersection with other paths, however the current sequence of spaces does not support any particular opportunities for interaction or engagement. In contrast, most of the streetscape on **Path 2** consists of active frontages, with shops and restaurants, but the route is also dominated by on-street car parking and bus stops. Although this path is comparatively active, the spaces at the north end do not engage with teenagers directly. The Elizabeth Street Mall is a contested space in which teenagers’ presence is currently regarded as problematic, and the Bus Mall at the south end of Elizabeth Street is a key space for teenagers, particularly after school. It is adjacent to one of the most popular socializing spaces in the city, Franklin Square, which serves as a point for various informal and temporary activities such as concerts and art installations. Teenagers and youth in general use this spot to ‘hang out’ and socialize whilst waiting for a bus to other destinations. **Path 3** is mostly inhabited by older teenagers, as it is predominantly TAFE and university facilities. As it is a high traffic network with inactive street-frontages and cars lining each side of the
road spaces: it does not offer many engaging opportunities for teenagers. **Path 4** connects to residential areas and cinemas, but it is also characterised by narrow footpaths with no gathering spaces and curb-side parking. Although teenagers use **path 5** as their way to Youth Action Resource Centre, the legibility of this path is not strong and this important space for teenagers is disconnected from other key locations in the city. **Path 6** connects to the waterfront, providing a view to the river and other historic buildings, but it is dominated by traffic and parking whilst disregarding opportunities for engaging teenagers in any particular way.

These six paths are key to the teenagers’ experience of the city; however, their current condition offers limited opportunities for engagement. Enhancing the legibility, spatial quality and opportunities for activities for teenagers within these networks could support the engagement of teenagers in the city. Understanding the ‘teenager space networks’ as particular spatial types suggested by Stevens (2007) – paths (PA), intersections (I), boundaries (B), thresholds (T), props (PR) - could provide stronger catalysts for teenager-friendly uses and activities. Furthermore, strategies of appropriating, reclaiming, pluralizing, transgressing, uncovering, and contesting the use of urban spaces could become central to the brief for the design of these places. Indeed, these strategies could lead to the development of informal and temporary urban intervention spaces that encourage ‘active and productive’ engagement between teenagers and city’s public environment in creative, fun and engaging fashion.

Currently the city centre of Hobart is characterised by inactive street edges, underutilised space, car-parks and on-street parking which have an impact on the pedestrian environment. However, the quality of the urban space in general, and teenager space networks in particular, could be significantly altered by activating particular street frontages and replacing car-parking spots in key locations, providing seating, planting and more spaces for gathering. Mapping of ‘teenage space networks’ highlights key locations that can support the inclusion of teenagers in the city, and more detailed exploration of Stevens’ five city elements can reveal opportunities for interventions that can support new ways of teenager engagement within the city. In developing an understanding of opportunities of appropriating, reclaiming, pluralizing, transgressing, uncovering, and contesting the use of urban spaces, consideration is needed of the props that could facilitate active and productive engagement and support teenager-friendly activities and create a more inclusive and engaging set of urban spaces for all (image 5).
Props for social interaction – active and productive engagement

Opportunities for particular spaces can be highlighted by drawing on precedents that encourage creativity, interaction and socializing that support active and productive engagement, as a key aspect of teenager’s experience of the city. These examples show different types of installations that provide props for social engagement. Two examples of alternative types of street furniture offer alternatives to conventional benches. The Enzo outdoor furniture, which was designed for the Museum Quarter in Vienna, is 100% recyclable, coloured moulded plastic furniture that is fireproof and resistant to damage. The elements can be rearranged into different configurations, which can accommodate different types of activity and a varying number of people (image 1-2). These large-scale elements create ‘cocoons of space’ that can populate urban squares or laneways, and the ambiguity of their form allows them to be appropriated for various uses (PPAG Architects 2010; MN*LS Architects 2010). In Montreal, twenty-one Musical Light Swings create a fun and interactive intervention in the city. Each swing activates a musical recording, and a light underneath the seat of the swing seats casts playful shadows onto the pavement (image 3-4). If all the swings are in use at the same time they produce a singular melody, and the space is filled with moving patterns of light (ESKI 2011).
Two further examples provide catalysts for productive or creative engagement. The Song Wall at London’s King’s Cross station is an interactive installation that engages tactile, visual and auditory senses. The design consists of approximately 3000 yellow and black plastic balls across a 35m long wall, which constantly displays various images and messages (image 5-6). Each ball can be moved to create different words and sounds (CSM 2012). An alternative form of productive engagement is offered in Place au Changement project in Saint-Etienne, France, which turned an unused and neglected urban site into a space where residents gather together and take roles in different events and activities (image 7-8). The collective activities such as gardening, building and working with tools allowed residents and teenagers to form an attachment to the final outcome, to take pride in it and learn different skills which would help to develop their identities further (Collectif ETC 2011). Accordingly, any of the interventions could be installed within any of the city elements.
Conclusion

This paper examines issues central to the engagement of teenagers in the city. It identifies strategies for mapping teenager space networks and identifies how to support the active and productive engagement of teenagers in the city. Using Hobart as a case study, it maps the key paths that form the networks of spaces used by teenagers, and charts the particular city elements to determine potential locations for teenager-friendly spaces, using ideas drawn from Vanderstede, Stevens and Hou that provoke ways of supporting tactics for temporary and informal engagement. Precedents offer examples to demonstrate different kinds of interventions that could occupy these spaces to support active and productive uses of urban spaces. This offers ways of considering alternative uses of urban space to encourage the development of more inclusive environments that support rather than exclude teenagers from engaging in an active and productive way with the city, and by default provides a more inclusive and cohesive environment for people of all ages.
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Authors' biographies
1Mia Marelja is a Masters of Architecture student undertaking a collaborative research project with the Hobart City Council and the University of Tasmania School of Architecture & Design, which considers speculations on the council’ future engagement in promoting Children in the City. The project involves both theoretical research and detailed auditing and mapping of Hobart, to understand existing conditions, and to speculate on future investment
that may facilitate places for interaction between children and the city, developing a social brief for these sites, and speculative propositions that enhance the experience of the city for children and young families.

2Helen Norrie is an academic in the School of Architecture & Design at the University of Tasmania (UTAS), and founder of the Regional Urban Studies Laboratory (RUSL), a collaborative urban design research initiative that explores the opportunities for the future sustainable urban development, particularly in regional centers. Academic, postgraduate and undergraduate design research investigations explore a range of urban issues, focusing on the role of architecture in developing a relationship between urban design, development and planning. Helen is the coordinator of the collaborative research project between UTAS and the Hobart City Council that seeks to promote Children in the City.
Getting There Together: Affordable family-friendly housing as catalyst for partnerships and place making

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**Abstract**

*Current national, state, and local planning policies recognize the social, economic and environmental advantages of providing affordable housing suitable for a diverse range of household types in inner Melbourne, and yet these policy goals are largely unrealized. Recent trends in inner-city Melbourne show a diminishing supply of family-friendly housing, which is increasingly difficult for low-to-moderate income households to access.*

*The paper details the potential of an interdisciplinary collaborative research project to act as a catalyst to increased diversity through a placemaking approach. Working with key stakeholders, the project engages design-research and deliberative planning methods in a novel partnership, and aims to identify and overcome perceived barriers to the inclusion of affordable, family-friendly housing on well-placed inner-city locations ripe for urban renewal.*

**Keywords:** family-friendly housing, affordable housing, co-research, partnerships, Melbourne

**Identifying barriers to spatial equity and placemaking in the inner-city**

When it comes to the delivery of affordable and diverse housing, there is a growing gap between rhetoric and reality. The Australian Government’s National Urban Policy (2011: 20) states as its first ‘liveability’ goal, “Facilitate the supply of appropriate mixed income housing by encouraging a range of housing types to suit diverse household needs across metropolitan areas”. Further, this housing should be located “close to facilities and services, including jobs and public transport, in more compact mixed use development” (idem).

The Discussion Paper underlying the new Melbourne Metropolitan Planning Strategy is in furious agreement with this goal, stating: “Neighbourhoods should cater for people’s housing needs over their lifetime... Continuing current trends are unlikely to provide sufficient stock to meet people’s needs or widen people’s housing choices in the areas they want to live.” (Ministerial Advisory Committee, 2012: viii). In fact, “providing
diverse housing in the right locations at a reasonable price” (ibid: 68) is one of three key ideas underlying the principle of a 20 minute city with easy walking, cycling and public transport access to jobs and services.

When it comes to the capital city local government of Melbourne, again the rhetoric states:

“Our housing has to be suitable for our residents as their needs change over their lifetime. It should be accessible to people from all walks of life… To meet these needs, our housing must be affordable, support diverse communities and be good quality” (City of Melbourne, 2013: 7).

Nor is it government alone that recognizes the values of housing affordability and diversity. In April 2013, an ‘Urban Coalition’, including the Australian Institute of Architects, National Growth Areas Alliance, Planning Institute of Australia, Property Council of Australia and the Urban Development Institute of Australia, called for a National Infrastructure Fund to support affordable housing, close to jobs and services, through tax-deductable bonds (Urban Coalition, 2013).

The reality is that 92% of new apartments in the City of Melbourne built since 2006 are one or two bedroom units, despite considerable “demand for family-friendly apartments in the City of Melbourne” (City of Melbourne, 2013: 53-54). Conservative estimates of couple families with dependents suggest that they will constitute approximately 8,000 households in the City of Melbourne by 2031, equivalent to 9% of new households and 180 new family households per year. The current very limited supply of three or four bedroom apartments are geographically concentrated in Southbank and Docklands, where there are no public primary schools and limited family-friendly infrastructure such as playgrounds, public open spaces, childcare centres, in addition to community and recreation facilities; furthermore, these dwellings “are only available to those on high incomes” (ibid: 54). So the 25 year project to increase residential density and mix in the inner-city is still incomplete: while numbers of residents have increased, they are from an increasingly narrow age and socio-economic background (Adams, 2008, City of Melbourne, 2013).

This narrowing works against the goal of increasing liveability or placemaking, which in addition to providing housing, aims to support neighbourhoods in developing appropriate land uses, linkages, amenities, and sociability. Placemaking is a process that by its nature is multi-faceted and consultative, and is concerned with creating public space that has economic, health and happiness benefits to users (PPS, 2008).
From an equity promoting perspective, placemaking can “redress social and environmental equity via spatial interventions” (Sutton and Kemp, 2011: 114). Placemaking requires the harnessing of supporting infrastructure, new and existing, that cannot necessarily be provided by commercial developers alone.

The draft metropolitan planning strategy speaks of “two Melbournes – a successful and ‘choice rich’ inner core and a fringe with few choices – and the growing distance between where people [can] afford to live and where jobs [are] located” (Ministerial Advisory Committee, 2012: 26). In Melbourne, there are presently no areas in the central city or inner suburbs where households in the lower two quintiles of income can afford to buy or rent at the median price (ibid: 35). Despite unmet demand for family-friendly apartment units in the well-serviced inner and middle suburbs of Melbourne and Sydney (Kelly, 2011), there is virtually nothing in the 3 or more bedroom range being built in Australian infill development sites (Rowley and Phibbs, 2012).

A number of reasons for this policy implementation failure have been posited, including higher construction costs for multiple unit housing, absence of an integrated planning approach to address housing intensification, lack of government funding for social housing, lack of supportive planning-related policies (inclusionary zoning, density bonusing), longer planning time-frames and higher risks/uncertainty in the inner-city than on the fringe (linked to resident opposition in some cases), and perceived cultural barriers to acceptance of children growing up in inner-city flats (Rowley and Phibbs, 2012, Fincher, 2007). The unsustainability of restricting low-to-moderate income families to outer suburban neighbourhoods has been graphically documented (Dodson and Sipe, 2008), and so the question remains: how can government, private sector, and civil society break out of the impasse between societal goals and unsustainable, unliveable and unproductive urban outcomes?

‘Getting to Yes’ is an 18 month collaborative research project (March 2013-August 2014), co-funded by a University of Melbourne internal grant, along with the Victorian State Government, the City of Melbourne, and the Urban Development Institute of Australia. It is intended to bring together some of the major actors, including private developers, local and state government, and social housing providers/advocates, to share in the development of the research and the dissemination of its findings. The question asked in the research is simple: ‘What are the major barriers to creating family-friendly affordable housing in inner Melbourne, and how might these barriers be overcome?’ The methods stress partnership development and co-research. A survey of local private developers, social housing providers, and planners, supported by the
respective peak organizations, will discover whether there are common views of ‘the housing problem’ that can be addressed deliberatively. Quantity surveying analysis of family-friendly housing developments in central Melbourne will be contrasted with international best practice developments. An interdisciplinary masters design studio, with active participation by local and state government, developers, social housing and charitable foundation ‘clients’ will cost out options for family-friendly housing in a part of inner Melbourne (Arden McCauley) slated for intensification.

**Co-research: building relationships across disciplines and sectors**

Inner-city residential development can be considered to comprise three sectors: 1) private commercial residential development, including financiers, developers, design and construction professionals, and real estate/marketing, 2) the not-for-profit social housing associations, which incorporate development activities with long-term housing maintenance and ongoing tenant management, and 3) federal, state and local government, including public housing provision, planning and regulation, and financial support through grants and programs. With direct provision of public housing by government in steady decline throughout Australia over the last two decades, a greater emphasis on maintaining a diverse range of affordable housing options has fallen upon the commercial residential and not-for-profit housing sectors (Beer et al, 2007, Yates et al, 2004). However, building in central city areas is a complex process that involves considerable risks for financiers, developers and construction firms. As a consequence, the commercial residential development industry tends to be both conservative with regard to product innovation and demanding of a higher return on investment. Where there are relatively few firms operating, this can result in a loss of diversity of housing types, tenure options, and household types, as well as reducing housing affordability (Charter Keck Cramer, 2012, Birrell et al, 2012, Burke and Hulse, 2010, Gurran et al, 2008, Coiacetto, 2006). The not-for-profit sector is likewise constrained by having to compete with commercial developers, and the necessity to maintain a property portfolio acceptable to banks (for future financing), state and federal governments, and the needs of their tenant-list, although they are becoming increasingly sophisticated in operating in this environment (Milligan et al, 2013).

Beer et al (2007), and others, have suggested that preferences for a neo-liberal market-based solution to housing affordability and housing diversity have led state and federal governments to rely on ‘institutional’ (that is, ‘directing’ not ‘doing’) planning mechanisms coupled with tax concessions, which have proved largely ineffective (Beer et al, 2007: 13, Burke and Hulse, 2010: 826). If this is the case, then one possible alternative action is to foster a greater cooperation between the ‘doing’ sectors of the
As King (2001: 7) noted, ‘housing systems operate within dynamic open systems’, that is, external factors as diverse as inflation, employment levels, lack of services, poverty, or crime affect local housing demand and so housing problems can rarely be solved through purely ‘housing’ solutions implemented by a single sector of the housing industry. Providing space and opportunities for partnerships across sectors opens the prospect for reducing the gap in interdisciplinary knowledge that leads to a lack of certainty and an inability to price or assess risk accurately, but also offers the chance to redefine and widen definitions of success in projects. Currently, ‘success’ is largely confined to sector-specific definitions, and so project success in the commercial development sector, almost exclusively determined by profit margin, fails to adequately engage with wider placemaking objectives of sociability, linkage and (external) amenity. In contrast - success in the not-for-profit sector is concerned about sustainably increasing the stock of affordable housing in appropriately serviced locations, but the low numbers of projects delivered means that the critical mass needed to transform neighbourhoods is missing. This disconnect, as noted above, leads to higher costs, more conservatism in product delivery and a loss of diversity and liveability over the long run.

Examples exist in Melbourne of partnerships between developers and public and social housing providers, such as the redevelopment of the Kensington and Carlton public housing estates, the Nicholson in East Coburg, and the Mariner and Merchant projects in Melbourne's Docklands (DPC, 2013, DHS, 2013, Places Victoria, 2012, HCA, 2013). However, it is not yet apparent that these project specific partnerships have substantially increased the stock of affordable and diverse housing options near jobs and services for low income households, improved local ‘human-scale’ amenity, or critically, provided a model that might act as a catalyst for broader industry change.

As part of the research methodology, in conjunction with efforts to more fully understand the organisational structure and operating logics of the key firms and organisations active in developing new housing, Getting to Yes incorporates a masters-level studio that uses design as a research tool to better understand some of the complex relationships between costs of procurement, development yields, planning tools, occupancy profiles and typologies of mixed-use building design across a range of sites within the Arden Macaulay precinct of inner-city Melbourne. This is a placemaking approach premised on the idea that good places are the product of ongoing processes of assembly, engagement, and negotiation among key actors in specific locales. Unlike most graduate studios, the subject has attracted a mix of students from urban planning
as well as architecture, working intensively together in interdisciplinary teams. In addition, the students are being 'advised' by construction management students, as part of those students cost management courses, on costing and value management issues. The aim of this hybridisation of studio pedagogy is not only to mimic real-world enablers and constraints on the production of affordable housing, but moreover, to engage industry research partners directly in the production and review of speculative work that is driven by parameters they have provided, with the possibility of reflexive learning. For the City of Melbourne, which has provided suggested sites, the studio allows it to better understand the intersection of planning policies with affordable family-friendly housing procurement. For Housing Choices Australia, who have provided the design brief, as well as the UDIA and Places Victoria, the studio enables a range of occupancy profiles, construction methods and land-use mixes to be trialled. For the Lord Mayor’s Charitable Foundation, who have also involved themselves in the studio, it provides potential models of affordable housing on real sites to consider, and allows them to have a hands-on learning experience that can inform them about the direction and extent of involvement in future funded projects. Through in-studio presentations, seminars and formative critique, industry partners are becoming part of the teaching team as well as co-researchers invested in the outcomes, without the usual risk or constraints. To date, industry participation has been enthusiastically embraced with in-kind contributions made from all major partners including the giving of time and expertise, and perhaps most importantly, data regarding financing parameters, in-house design guidelines and space standards, and other criteria that determine whether projects are given the green light or not. For students, final outputs will include detailed architectural and urban designs informed by these criteria and cost management parameters, and a greater understanding of the 'real world' of affordable housing practice, as well as exposure to potential employers.

The importance of ongoing inter-disciplinary and inter-sector dialogue

While there is no silver bullet to the vexed question of encouraging and maintaining the diversity and liveability of inner-city neighbourhoods with high land and building costs, the potential of partnerships between commercial developers, social housing providers and universities is for a more effective transfer of each sector's strengths across the industry as a whole. In the case of the commercial development sector, this lies in cost discipline, the ability to source private financing and the ability to manage large projects. For the social housing sector, they bring to the table the ability to operate and manage residential buildings over long time frames on tight budgets, and the
experience of matching particular types of dwellings and locations to tenants with specific needs or expectations (again over long time frames). Universities and research institutions can provide a platform where the various sectors can engage and interact in an atmosphere that promotes discussion and learning, while simultaneously encouraging the next generation of planners, developers and designers to consider placemaking as a generator of equity in both its senses: economic and social.

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Manhattan has figured heavily as a hyperbolic provocation throughout the overhaul of Victoria and Metropolitan Melbourne’s planning approaches. However its use has rarely progressed past a discussion of raw density or a formal interrogation of tower versus low-rise. In this paper, Monash Architecture Studio (MAS) investigates issues of quality, character and intensity in relation to future development through the application of a rhetorical lens that reconceptualises Melbourne as Manhattan.
Victoria’s state planning frameworks - the metropolitan strategy for Melbourne in particular – are in the midst of significant change (Minister for Planning, 2012a). Planning zones are being re-examined and consolidated, and tremendous development sites are being gazetted around the existing CBD and inner suburbs. All of this will be necessary to cope with a projected population in excess of five million by the early 2030s (Department of Planning and Community Development, 2012a). A recurrent rhetorical tactic is a hyperbolic positioning of ‘Manhattan-style density’ as key facet of this necessary growth (Rintoul, 2012). The notion of Melbourne as an iteration of Manhattan is a bold provocation – accommodating issues of density, usage mix, quality and the elusive notion of ‘character.’ However, despite its implicit potential, the general discussion has rarely moved beyond old binary of tower versus low-rise, and an attendant discussion around density.

In order to expand this dialogue, the Monash Architecture Studio (MAS) offers ‘Melbourne as Manhattan’ as a lens for re-examining urban approaches within Australian cities. Through a speculative process, the authors interrogate the implications of redeveloping the city as Manhattan-style urban fabric. What kinds of new urban potentials are unlocked when we move away from the existing models of activity centres, corridors and tall podium towers – when we re-interpret the rhetoric of Manhattan in an antipodean fashion?

Background

2010 saw a shift in State Governments in Victoria. It also saw a shift in metropolitan planning policy. The incoming government proposed planning approaches that involved the repeal of VC71 (Liberal Party of Victoria, 2010) - the corridor intensification policy that built on a pedigree of research undertaken by Rob Adams and the City of Melbourne (2010). Instead, the incoming government re-approached the notion of nodal intensification – indicating that they would rationalise the array of neighbourhood, principal, major and specialised activity centres, concentrating development in these nodes and in a handful of large major development sites, as well as specific territories in newly consolidated zones.

Fisherman’s Bend formed an integral part of this proposal. As the largest inner urban industrial locale, close to the city and transport, the site could support the kinds of concentrated development this approach would require. The proposal called for a new financial, commercial and residential annex to the existing CBD – but was announced as a series of aspirational benchmarks and capacity figures rather than an urban design. It was suggested that the site – divided into four staged precincts – would house 50,000 new residents (DPCD, 2012b).

In the months that followed, the site was absorbed into larger discussion around a consolidated, Expanded Capital City Zone (Minister for Planning, 2012b). A simple planning diagram indicated the footprint of the overall zone (Fig 1.), identifying a number of once independent projects like CBD north and E-GATE that could conceptually be addressed under the aegis of an expanded CBD. But more concrete imagery – scale, types of buildings,
street frontages, massing and character, was absent. Commentators and journalists were drawn to whatever evocative material was provided, however oblique. In this light, comparisons to other cities were inevitable – notions of visual and compositional similarities to Kowloon and lower Manhattan were rife (Ziffer, 2013). The dialogue culminated in the unofficial adoption of the ‘Manhattan-style’ moniker (Rintoul, 2012).

The notion was polarising. But the type of ‘Manhattan density’ that was being raised, as both spectre and provocation, bore little resemblance to the projects already in place in the Docklands and Southbank, as well as the planned works for Fisherman’s Bend. One of the largest planning submissions to date, for 2000 new apartments (Danckert, 2013) across five towers on a site in the riverside Lorimer precinct (Fig 2.), is dominated by its hulking, six story podium – an unbroken mass that stretches across the entire one and half hectares of developable land. The rhetoric of transforming Melbourne into a “world-class city”, like Manhattan, ratifies intensive high-rise development in and around the CBD; yet the model proposed at Lorimer is rarely found in Manhattan itself. This is countered with the hyperbole of “abolished height restrictions” resulting in “wall-to-wall skyscrapers” spanning the expanded CBD zone; a vision that is less reflective of Manhattan than its fictitious alias, Gotham City (Fig 3). While Manhattan is no stranger to towers, the nature of its density is more complex than that acknowledged by this discourse. Figure 4 shows the arrangement and scale of plot sizes in NYC’s Bowery and Alphabet City, and Melbourne’s Southbank respectively. In the latter, small clusters of higher population density – typically tall podium towers on larger lots – are sited in areas of markedly lower residential densities. In contrast, the fabric of the former is characterised by a finer grain and a less punctuated distribution of density. Arguments around density that fail to consider these issues of grain size and mix also forego a deeper and more useful discussion around character and quality.

A more pronounced example of these discontinuities in the discussion of density may be the Montague precinct. At 50 ha, the precinct is tipped to accommodate 25,482 residents (p.14, City of Port Phillip, 2012) and an additional population of 10,000 workers. Areas of the precinct will have to accommodate upwards of 510 residents per hectare. The intense densities within the Montague structure plan should also be considered within the widely available figure of 220,000 new residents for the expanded CBD (Places Victoria, 2013). Densities vary across precincts, but Southbank, for example, might encounter densities as high as 700 residents per hectare. Regardless, the total number housed is less than a fifth of the nearly 1.2 million new residents that will need to be accommodated by 2031 (p.10, DPCD, 2012a).

MAS was intrigued by the missed potentials in the framing of Melbourne as Manhattan. The immediate results of such positioning seem to evoke densities that do not reflect the overall densities of residential Manhattan; that posit formal types that are ill-matched to the diverse urban mix found across Manhattan; and critically, that necessitate substantial points of
density within an expanded CBD. Starting with a literal transplantation of the fabric of lower Manhattan across the expanded CBD, MAS unpacked and began to assess the actual density and character implications of such rhetoric.

‘Fat Corridors’

Adopting the Melbourne as Manhattan maxim literally – developing at the island city’s nominal urban density - would require a just a little over three Manhattan island analogues – a little over 15000 hectares – to take us to a population of around eight million. This is not as facetious as it might first seem. These literal transplantations of Manhattan have resonances with an established planning heritage; as extensions or inflations of corridor intensification or as adjuncts to established thinking around growth and employment corridors (p.13, DPCD, 2008). The initial investigation explored one possible alignment for a single Manhattan footprint – a superimposition of the fabric from Fisherman’s Bend through the CBD, Richmond and the eastern suburbs to Ringwood.

The speculative mapping implicitly associated areas of the inner east with locales in New York – Richmond became Greenwich Village, Hawthorn mapped to Chelsea, Box Hill and Blackburn to Harlem (Fig. 5). Conversely, territories that mapped to spaces like Central Park were conceived of less as straight-forward sites of public amenity than as urban conservatories – regions that preserved a certain kind of built form or suburban character; notions of a much more fragile and intangible sense of amenity. In the Inner Eastern scheme, much of the leafy expanses of Camberwell and Surrey Hills remained untouched – an acknowledgement of their own difficult relationships with intensification processes (Dovey et al., 2009), and their role as a potential reservoir of a certain kind of open-space amenity amidst higher density developments.

Even this initially superficial application presented intriguing potentialities – proposing a provocative level of development in a traditionally reactive heartland of suburban restraint. The proposal demonstrated the power in conceiving of development corridors as contiguous artefacts, rather than mere flows of passengers, freight and capital – building on parallel transport lines and thickened, diversified Manhattan-style fields of development.

But the scheme also exposed issues in the glibness of its application. Existing transit corridors – including the Lilydale train line and the Box Hill and Burwood tram lines – would prove insufficient in terms of both frequency and catchment capacity. Lateral connections – the kinds that hook Manhattan into Jersey City, Brooklyn and the dense residential hinterland, were also resolutely absent.

Most importantly, the scheme only hinted at an approximation of the resulting form (Fig. 6). In following through the hyperbole, density and height data were derived from existing built form on Manhattan Island. There was a level of detail and resolution that was not embedded in this literal transplantation of large-scale urban structure. In order for MAS to push past a
crude application of a ‘carpet’ of Manhattan fabric to an existing Melbourne conditions, a
deeper understanding of the scale, scope and types of densities embodied in the Manhattan
model needed to be carried out.

**Investigating Manhattan**

Manhattan’s material density can be understood by unpacking its zoning code. The zoning
approach (New York City Department of City Planning, 2013) dictates use as well as visual
bulk and physical structure – primarily through a measurement known as the ‘Floor Area
Ratio’ (FAR) – a relationship between site footprint and occupiable space. Ancillary height
limits, set-backs and site coverage rules (Barnett, 2011) are incorporated into a number of
ordinal zoning schedules – R10, for example, describes high density tower developments
with a FAR of 9 or 10, and heights between 40 and 70 metres.

Scrutinising Manhattan’s zones (Fig. 6) indicates that the bulk of residential development is
zoned R7 – which encourages developments that only infrequently exceed 25 metres in
height. A naïve interpretation of this type density of would suggest that this is similar to
developments allowed under the former VC71 scheme, and the current typologies factored
into broader development across newly rationalised zones. For example, the
Comprehensive Development Zone is described as “…generally high and medium density
apartment style housing, possibly above retail and commercial uses, where appropriate”
(DPCD, 2013). The core difference, of course, is that rather than being organised into linear
corridors or activity clusters, these zones are thick fields that span territories between a
number of avenues and cross-streets and high intensity transport linkages.

A secondary consideration is that the interweaving of zones facilitates a unique mix of urban
programme. While the bulk of high density dwelling occurs outside of the forest of towers
that typify ‘Manhattan-style Density’, both commercial and manufacturing zones remain
valuable sites for certain mixes of housing. Away from the regionally and nationally
significant financial districts there is a finer grain – regions of lower height and fundamentally
denser commercial properties. These areas are able to accommodate mixes of uses and
engender active street frontages and street-life. Special Use Zones allow for the deft
manipulation of planning covenants within regions such as the Theatre District. And in most
residential areas, small commercial overlays – literal zoning insertions into the mass of the
building form – allow for locally scaled admixtures of bodegas, restaurants, retail and smaller
studio offices.

MAS took this model and began to explore the implications of applying it to Melbourne. If
housing requirements for the expanded central city zone would require the hyper-extension
of antagonistic urban forms to accommodate densification, how could we actually achieve
the positive Manhattanisation of Melbourne?
Broadway to Broadmeadows

The fat corridor proposal was expanded to seriously engage with a new broad field (Fig. 7) that would stretch from the planned northern gateway of the CBD – the Arden-Macaulay and E-Gate sites – to Tullamarine Airport. The transect would pass along a territory delimited, at various points along its length, by the Upfield and Craigieburn rail lines, the convoluted tram-lines to Maribyrnong, Footscray and Airport West, the choked traffic arteries of Mount Alexander and Keilor roads and the CityLink toll road. A number of the potential routes for the planned Airport Rail Link also cross this region.

The territory already possesses points of nodal intensification – clusters of high-rise and high density development along Mount Alexander Road. Major development sites include the vast Maribyrnong defence site, as well potentially developable areas of Essendon Airport and the Moonee Valley Racecourse. Similarly, significant portions of industrially zoned land in Airport West will be open for redevelopment as manufacturing migrates northward, over the ring road (City of Moonee Valley, 2007). This is coupled with frequent small, simple subdivision developments in the suburban hinterlands of Niddrie and Strathmore (Spatial Economics, 2012). The general picture is one of a region undergoing significant change. However, the projected population increase of 13,000 (p.10, DPCD, 2012) does not appear commensurate. The notion of Melbourne as Manhattan pushes past this – moving beyond conceptions of corridors to total fields with higher performing densities and overall intensities.

MAS proposed shifting the focus from these nodal sites to the territories between – building up thick fields of activity that would intrude into the otherwise unbroken expanses of residential zones through a buffer of mixed uses and a finer, denser grain development. The effect is further amplified as the buffer is expanded – Figure 8 shows a best fit buffer of 400 metres between the revised Commercial and Mixed Use zones in the region. The results begin to resemble a thick latticework of development – with Mount Alexander Road taking on the role of Broadway; integral, but not entirely pre-eminent within the surrounding network.

The site investigation raises intriguing potentials extracted from the provocative figure of Manhattan. How might one adapt the ability of the Residential Growth Zone (RGZ) to incorporate certain as-of-right uses, like small retail premises, when proximate to existing commercial zones? Could this offer a model similar to NYC’s small commercial overlays? Could analogues of the FAR approach generate more complex formal results than the limited selection of classes offered under the reformed and consolidated zones? How might lateral transport links be strengthened in order to foster new fields of intensity?
Conclusions

Manhattan as Melbourne is not intended as a literal planning apparatus or a realisable, designed outcome – rather, it serves as a distorting lens through which to reconceptualise the city. To conceive of Melbourne as a Manhattan requires a radical shift – in scope, in intensity, in ambition. The rhetorical position should encourage a dialogue beyond the delivery of standard, developer driven apartment complexes, beyond the tired dichotomous positions of stultifying suburbs and localised pockets of hyper-density. It should push beyond the immediate inner city and consider the broad territory of Melbourne’s urban fabric.

It is hoped that design experimentation around the rhetorical position of a *Manhattanised* Melbourne will engender a broader discussion – beyond hyperbole and hysteria of high-rise versus low rise, into a deeper discussion about character, quality and form.
Reference List:


City of Melbourne, 2010, Transforming Australian Cities

City of Moonee Valley, 2007, Airport West Activity Centre Structure Plan


Department of Planning and Community Development (DPCD), 2008, Melbourne@5million

Department of Planning and Community Development (DPCD), 2012a, Victoria in Future


Department of Planning and Community Development (DPCD), 2013, New and improved Residential Zones Fact Sheet


Figures:

Fig 1. Expanded Capital City Zone (DPCD, 2011)

Fig 2. 2000 Apartment development in Lorimer Precinct (Artisan Architects)

Fig 3. Melbourne as Gotham City (MAS)
Fig 4. Comparative density + form, Southbank and Manhattan (MAS)

Fig 5. Initial test of overlaid Manhattan fabric – CBD to Box Hill (MAS)

Fig 6. Resolution of initial test – CBD to Box Hill (MAS)
Fig 7. Residential Zones in Manhattan (MAS, NYC Department of Planning)
Fig 8. Proposed ‘Fat Corridor’ from CBD to Tullamarine Airport
The city as an urban playground
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Abstract
Australian cities lack spaces that are suitable for children, and this affects the potential to provide inclusive environments for people of all ages. Locations that welcome children are by default also places for mothers, fathers, grandparents, and other children – and these spaces also extend to the widest sectors of the community. Developing child-friendly spaces will contribute to the future growth of cities as inclusive and cohesive environments.

While many urban strategies promoting children in the city focus on providing playgrounds and recreational facilities, this study considers the design of the city as an urban playground. It examines how understanding children’s play can inform the design of play space, acknowledging that this process is not limited to the provision of amenity alone - it is a matter of grasping the cognitive, emotional and imaginative dimension to being young. The study examines the different types of play – active, social and imaginative – in order to understand how the built environment can create ‘embodied spaces’ that lead to the haptic engagement of children.

This is not merely an issue of where to put the swing set! This study examines the characteristics of flexible play spaces that can be used for a diverse range of activities, and presents sets of criteria to evaluate play environments that can also be used as strategies for planning and design. This leads to a series of precedents that provide real life examples of where this criterion has been implemented.

Speculations are then made on how councils, planners and designers can come ‘playworkers’, agents that proactively facilitate the design of urban space to promote the active engagement of children in the city, providing flexible play spaces that can be used by people of all ages.

Key words: imaginative play | inclusive and cohesive environments | children | act of play
Introduction

Australian cities lack spaces that are suitable for children, and this affects the potential to provide inclusive and cohesive environments that actively engage people of all ages. Danish architect and urbanist, Jan Gehl (2010) argues that the active engagement of children in the city provides an indicator that urban spaces have been designed to accommodate a multiplicity of users, as locations that welcome children are by default also places for mothers, fathers, grandparents, and others. However, existing planning and urban design policies in Australian cities rarely include strategies that proactively support the needs of young children, and this affects the way the city functions and is experienced.

The UK’s Commission for the Built Environment (CABE) lists ‘Ten principles for designing play’, which include: drawing on the positive character of existing good quality public spaces, enhancing the surrounding setting, providing play environments that engage the community, embrace different types of play for children of all ages in ways that challenge and excite them; and creating play spaces that are close to nature, well-maintained and balance surveillance and safety with seclusion and separation (CABE 2011).

However, creating play spaces in the city for children not only addresses practical issues of providing space for occupation, it also allows children to form an emotional connection to the urban environment. Psychologist Donald Winnicott asserts that play is an integration of internal and external worlds (Wilson 2009), which involves exploration and interpretation. Christopher Day (2007) argues that adults and children interpret differently; adults experience places in relation to ‘use’, whereas and children are preoccupied with ‘experience’. Children experience spaces through a process of exploration that is characterized by haptic engagement, which involves a ‘transaction between body, imagination and environment’ (Bloomer and Moore 1985, p.105). Haptic engagement fosters the development of ‘embodied spaces’, or ‘locations in which human experience and consciousness takes on material and spatial form’ (Low 2003, p.9). This assists children in making the connections between people, places and urban form that underpins development of a ‘sense of place’, and is ‘essential for well being and the feeling of safety, security and orientation’ (Aravot 2010, p. 202).

Play theorists believe that play is not an ordered action; it is incidental and cannot be predicted. The physical structure of play environments needs to allow flexibility that supports different types of activities and engagement (Hertzberger 1991). Different types of play have differing socio-spatial dimensions, and play environments need to address practical issues that affect experience and use. This study considers how understanding the spatial and environmental needs of different types of play - active, social and imaginative - can inform the design of the city in a manner that engages children both physically and emotionally. It proposes conceiving of the city as an urban playground that not only supports the participation of children in the city, but it also promotes the development of inclusive and cohesive environments for people of all ages.

This is not merely a matter of where to place the swing set! It involves questions such as: can an understanding of the act of play be used to inform the design of child-friendly environments; what are the design requirements for different types of play; where in the city can these spaces be developed? The study does not focus on the derelict areas of the city, as discussed by Whyte in his Social Life of Small Urban Spaces film (1988), people want to use spaces that are comfortable, close to the action of the city environment and that can been seen from the street. It calls on councils, planners and designers to become ‘playworkers’, agents that facilitate play
by creating environments that support different types of play that encourage a diversity of uses by a broad cross-section of people.

**Types of play + spaces for play**

Play theorists define different types of play, and outline how these activities affect the development of a child. Barnard (1980) defines four main types of play: active, which includes physical exertion and movement; social, such as talking with friends, make-believe, (similar to social play) where children create new situations from their surroundings; and creative play, making things and exploring. Barnard observes the different effects that play has on a child’s development suggesting that: active play provides a way for a child to regain emotional equilibrium; social play helps a child to learn about other people including their personal emotions and values; make-believe play helps a child to understand what it is like to be in someone else’s shoes; and creative play improves a child’s self-expression. Wilson (2009) expands these fields to sixteen types of play, which fall loosely under Barnard’s four categories. In contrast, Freeman and Tranter (2011) focus on the categories of creative and make-believe play, which they group under a single heading of imaginative play. The diagram below (figure 1) illustrates the relationship between these ideas, highlighting three key types of play: active, social and imaginative.

![Figure 1: PLAY RELATIONSHIP DIAGRAM, 2013, (by Katherine O’Byrne).](image)

While Wilson (2009) describes imaginative play as a child imitating what they have seen around them, as a way of informing the child of the adult world, Freeman and Tranter (2011) believe that imaginative play is an exploratory action rather than an
act of pure imitation. Play involves processes of interpretation that incite physical and sensory engagement, which allows children to make an emotional connection to both people and places. Understanding the different types of play can inform the environmental design requirements of urban spaces that support the haptic engagement of children through the act of play.

Play spaces require interesting and adaptable physical environments that provide shelter, safety, and connection to natural elements, and they should also facilitate haptic engagement and stimulation of senses (Casey 2007). Barnard describes particular spatial requirements for different types of play. He suggests that active play requires large, open areas (preferably well-drained and grassy), which may include boundary markers that can be used for ball sports or other active games. In contrast, social play is more flexible, and can occur in a variety of sizes of spaces that may accommodate small or large groups of children. These spaces must provide an appropriate micro-climate and also provide seating (but not necessarily formal benches) or objects to lean on. The space also needs to have a sense of enclosure and privacy, which can be achieved through landscaping, fencing or earth mounds. These spaces must be quiet and provide opportunities to observe other people. Creative and make-believe (imaginative) play requires an environment that allows the child to explore and discover new things. Barnard (1980) suggests that imaginative play requires the child to be able to modify the environment, providing loose materials or the opportunity to dig, as this allows the child to personalize the space or to use materials as props (sticks, rocks, leaves). This allows children to interpret and transform the environment (Barnard 1980).

Criteria for play spaces

All play spaces need to address three universal issues: the need for supervision, the requirements for safety, and the potential for social interaction. Varying degrees of interaction or surveillance are required for children of different ages, allowing supervision from a distance or active participation in the play activity (Hughes 1995). Similarly, Tonkiss (2005) suggests that the urban environment provides different opportunities for social interaction of varying degrees of formality: planned engagement, everyday activity and incidental encounters. This tripartite definition provides a useful way of considering the social ordering that can also apply to the design of play spaces.

Play spaces should also address issues of scale, amenity and adjacency. Monchaux (1981) notes that cities are generally designed for adults, and suggests that the scale of play environments needs to be reconsidered so that children do not feel alienated and are able to engage with the spaces of the city. Alexander (1977) contests that the structure of urban space should ‘offer invitations’ to people to use the space, but allow activities to unfold naturally, and that urban spaces should be conceived as ‘public outdoor rooms’, which are partially enclosed and provide shelter from wind, rain and sun. He recommends adjacency to main pedestrian routes to ensure a sense of connectivity and potential social interaction. These patterns apply to play spaces, which may also establish varying degrees of interaction or surveillance, allowing supervision from a distance or active participation in the play activity.

The Kompan Play Institute (2010) identifies six key principles for the design of play grounds: accessibility; 360° design, that allows play from all sides of the equipment; multifunctional; offer diverse play opportunities such as horizontal nets to lie, sit or stand on; provide clear colour and design signals; and solutions for special needs, where appropriate. These principles underpin the design of their proprietary play equipment (figure 2).
These principles specifically apply to the design of play equipment. However, play theorists believe that traditional play equipment is often inflexible and monofunctional, designed primarily for children, and reinforcing the separation between the engagement of children and adults. This limits the interpretation of a child and is often not the most effective way for a child to play (Lefaivre & Döll 2007, Wilson 2009). In contrast, more flexible play spaces that are integrated with the city provide a greater level of flexibility to accommodate different types of play, and a broader range of uses by both children and adults. A series of precedents below provide examples of play spaces that offer alternatives to conventional, contained play grounds. They accommodate different types of play, allowing for supervision, safety and varying degrees of social interaction that facilitate planned encounters, everyday activity and incidental encounters by people of all ages, which assist in transforming the city into an urban playground. These examples below provide ways of understanding how to create child friendly spaces that are not only beneficial for the children but also developing the character of the city as a cohesive and inclusive environment.

Flexible play spaces

The examples selected below illustrate play spaces in different types of environments: open spaces; formal urban squares; underutilized spaces, like laneways and vacant sites; and in new urban developments. Each of these play spaces address issues of supervision and safety, and provide opportunities for social interaction, which is variously planned engagement, everyday activity and incidental encounters; they are each of different scales and provide, or require, different levels of interaction by parents/adults. These examples share the functional characteristics of Kompan Play institute’s six principles, however they are all flexible play spaces that support active, social and imaginative play, rather than specifically designated playgrounds.

Robert Winston’s ‘monster’ (figure 3) is a freestanding structure in an open parkland that encourages children to interpret and use the form as they wish, imagining the space as a cave, ship, mountain or cubby. It also allows for interaction of children of various ages and skill levels, and it accommodates various types of active, social and imaginative play. The sculptural form provides an interesting urban ornament, and parents can supervise from a distance, or can assist children to crawl through holes, or climb up and slide down the structure. It acts as a landmark in the city, and a catalyst for both active and passive engagement of people of all ages.
Daniel Buren’s art installation, Les Deux Plateaux, is located in the historic urban square of the Palais Royale in Paris (figures 4 and 5), and it provides different types of interpretative and haptic engagement. Its series black and white-striped columns of varying heights create a visual contrast to the sandstone arcades of the adjacent buildings, and provide props for social interaction and play. The functional ambiguity of the installation allows it to be utilized in a range of imaginative ways by people of all ages. The varied sizes of the columns allows for multiple modes of interaction: children climb on and jump off the plinths of various heights, running around and in between a broad diversity of people, who are intertwined within the space. It provides a play space that facilitates social interaction and accommodates the needs of supervision and safety. Although the columns are tall enough for children to hide behind, they are low enough to provide a level of surveillance for parents while still allowing the children to have a sense of independence. The site is highly trafficked by tourists and locals, due to its proximity to the Louvre, and the adjacent arcade provides a sense of enclosure and protection from the elements. Although not designed specifically as a play structure, Les Deux Plateaux addresses the Kompan principles of accessibility and play from all sides; it is multifunctional, allows a diversity of uses and it stimulates sensory engagement. It also provides a space that can accommodate planned engagement, everyday activity and incidental encounters for small or large groups of diverse users.
Figure 4 and 5: Les Deux Plateaux, Palais Royale, designed by Daniel Buren, 1985-6, (image by Stephan Edelbroich)

PlayMo (figures 5 and 6) is a temporary intervention that can be installed in a range of different environments. It consists of a collection of milk crates that can be moved to create various configurations. The transparency of the milk crates allows children to 'hide out' in and socialize whilst still being able to see what is going on around them, and also allows a level of natural supervision by parents. PlayMo uses everyday practical objects to create a flexible play space that offers opportunities for active, social and imaginative play, transforming both the play object and the space in which it is located. The flexibility of this modular structure allows it to be placed in a variety of spaces throughout the city, selecting environments that provide a suitable micro-climate, are adjacent to pedestrian routes and a safe distance from vehicular traffic. It can be continually reconfigured, but this requires participation between both children and adults, requiring that the parents join the children in the play activity.

Figure 5 and 6: PlayMo, 2011, (image by David Wheeldon).

Superkilen in Copenhagen (figures 7 and 8) is a large urban space with three distinct areas that are identified by colour and function: the Red Square; the Green Park and the Black Market. It is located in one of the city’s most ethnically diverse and socially challenged areas. The three linear zones are bordered by roads and overlooked by housing. Each zone offers different facilities and is populated with a series of objects from the home countries of the neighbouring residents. The Red Square contains play and exercise equipment, and is edged by cafés, restaurants and markets. Its pavement is painted with bright orange, red and pink colours, which is visually stimulating and demarcates the space into different zones. The Black Market provides a place where locals can meet, with barbeques and a long communal table,
backgammon and chess, a fountain and a slide. The Green Park is a grassy space for sport and physical activity. It is linked to the other spaces by a bicycle path that also connects to the neighbourhood beyond. The undulating ground plane of the Green Park and the Black Market provides a natural play space for children of all ages. Superkilen provides different types of play spaces, which vary from formal to informal. It allows varying levels of socialization, safety and surveillance, and possibilities for different kinds of interaction and engagement by people of all ages (Archdaily 2012).

![Figure 7 and 8: Superkilen, design by Superflex in collaborations with BIG architects and Topotek1 landscape architects, 2012 (image by Baan).](image)

### Strategies for creating cities as urban playgrounds

CABE suggests that by ‘taking a more playful, imaginative approach to the design of public spaces [designers] can help to cultivate a sense of place’ (CABE 2011). However, currently the provision of child-friendly spaces in many cities is regarded as optional, rather than essential to the development of positive urban environments. In order to consider the design of the city as an urban playground it is necessary to understand the agency of councils, planners and designers to facilitate this process. Wilson (2009) uses the term ‘playworker’ to describe an adult that supplies elements to play with, but does not interfere with the play, allows the play to happen naturally and to be interpreted as the child wishes. This study advocates for the council’s planners, designers and consultants to take on the role of the ‘playworker’ to develop directed strategies to facilitate play through the development of the city as an urban playground.

Considering the spatial requirement for different types of play as part of the underlying brief for cities sets up parameters for the design of the city as an urban playground. This requires identifying the appropriate microclimate, providing a balance between quiet seclusion and active paths of movement to allow planned engagement, everyday activity and incidental encounters, and addressing scale, amenity and adjacency. Spaces need to allow haptic and sensory engagement, and provide appropriate surveillance and social interaction. Play spaces need to be located ‘where children would play naturally’ (CABE 2011); that allow children to physically engage within the space so they are able to form a level of emotional connection that is central to the development of a sense of place (Seamon 2008). Jan Gehl suggests that ‘children…see other children at play and get the urge to join in, or they get ideas for new games by watching other children or adults’ (Gehl 1980,
The examples illustrated above demonstrate that flexible play spaces can also provide places for parents and other adults to rest and socialize, so they are used by all age groups and demographics, at different times of the day and year.

Liane Lefaivre suggests a bottom-up (driven by citizens), rather than top down (driven by government) model of PIP: participation (interactive process between residents and municipality), interstitial (the in-between) and polycentric (network) model (PIP) to create a series of play spaces throughout the city (Lefaivre & Döll 2007, p.122). In particular, the PIP model highlights the role of the ‘in-between’ spaces of cities and how they can provide multiple small play areas that become part of a network of play spaces that are integral to the city. These spaces can act as landmarks or nodes that not only provide amenity for children, but also aid in the overall orientation or legibility of the city. Different types of spaces provide locations for planned engagement, everyday activity and incidental encounters. Laneways, undercrofts, vacant lots and pavements can be analysed to evaluate the specific microclimate and balance between quiet seclusion and active paths of movement, in order to test the potential of these locations to become part of the polycentric network of flexible urban play spaces.

Hobart as an urban playground

Like many Australian cities, the CBD of Hobart is predominantly a commercial and shopping district. In this city of 212,000 people there are less than 2,000 people living in the city centre (ABS, 2011). However, there are several schools around the periphery, and the adjacent suburbs are home to a broad demographic, including many young children and teenagers. Although the city has good quality parks and a beautiful waterfront on the periphery of the CBD, there is very little provision for children. The Hobart City Council has recently developed two strategies that are directed at children, the Youth Strategy 2008 – 2011 (HCC, 2008) and Children and Families Strategy 2010-2013 (HCC, 2010). However, these strategies focus on providing playgrounds and recreation facilities, rather than flexible play spaces that are part of the network of everyday urban spaces. Opportunities exist for these strategies and policies, as well as the Arts and Cultural Strategy (HCC, 2002) and other policies and procedures outlined in the city’s Development Plan to specifically address the requirements for flexible play spaces. This involves thinking beyond merely the pragmatics of the provision of functional infrastructure, to consider a stronger ideological position for the character of the city.

In Hobart two key places act as flexible play spaces that can be used for play by people of all ages, providing models for future development. Theses spaces address issues of safety, security and surveillance, are well-located to provide ideal microclimates and adjacency to other facilities, allowing for varying degrees of planned engagement, everyday activity and incidental encounters. These spaces provide examples of the characteristics of urban spaces that could be continued to be developed across the city.

Salamanca Square (figure 10 and 11) is located in a ‘diverse neighbourhood that provides its own natural surveillance through the presence of inhabitants and visitors’ (Gehl 2010, p.44). The square provides an ideal play environment, which provides opportunities for interaction and socializing of people of all ages. It contains a variety of functions, including housing, shops, cafes, as well as public toilet facilities. The orientation of the square maximizes the northern sun and provides shelter from the wind. Grass areas, seating, a fountain, a small stage and chess set provide entertainment for a wide range of age groups, and the cafés and restaurants surrounding this well maintained space, provide varying degrees of child/parent engagement.
Mathers Place in Hobart (figure 12 and 13) is a formerly under-utilised laneway that has been re-designed to create a successful play space for children, which can also be enjoyed by people of all ages. The new play space is adjacent to the city library, a theatre, a child care centre and the 50 & Better Centre, which offers activities for seniors. It is also part of a network of laneways that provides a key connection from the central city Mall to a major multi-storey carpark and the municipal library. This ensures that the space is used in different ways by a broad demographic of people.

Two grassed areas allow children to play or for people to relax. Low concrete walls and timber boxes provide play elements that can be climbed on and also offer places for secondary seating that complements the long bench that wraps the lower space. The multilevelled seating allows easy interaction between users, but provides enough space that interaction is encouraged but not forced. The slight slope on the site provides physical containment that addresses the safety of young children. Clear sight lines across the space allow for easy surveillance of children, and the pathway that runs next to the space allows social interaction and incidental engagement between a variety of users. A low metal panel separates the play space from the adjacent driveway, and a collection of large, super-strong magnets can be attached to this panel, allowing children to interact and personalize the space.

These examples provide a starting point for Hobart to develop as an urban playground with a network of flexible play spaces.
Conclusion

This study argues that rather than restricting the engagement of children in the city to contained playgrounds and recreational areas, planners, designers and consultants can be charged with the brief to maximize the potential and understand the whole city as an urban playground. The examples and criteria outlined above can be used as part of this process. Prioritizing the design of urban spaces to accommodate different types of active, social and imaginative play for people of all ages offers opportunities to create interesting and dynamic spaces, so that the use of the city is not restricted purely to commercial functions. The design of the city needs to address issues of scale, amenity and adjacency. This extends not only to the provision of play spaces, but also understanding the safety, surveillance and opportunities for social interaction along the paths that lead from the neighbouring residential areas into the city centre. Increasing the vitality of the city centre does not necessarily rely on attracting more people, but encouraging people to stay longer, and this has a flow on effect for both commerce and also for the active engagement of residents and visitors of all ages.
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**Images**

Figure 1: O’Byrne, K 2013, *Play Relationship Diagram*, diagram.

Figure 2: KOMPAN 2001, *Altair*, drawing.

Figure 3: Winston Play Sculpture 1961, photograph, viewed 10 May 2013, <www.flickr.com/photos/sandiv999/4518060844/>.


Figure 10 & 11: Hurkett, B 2007, *Salamanca Square*, photograph, viewed 8 June 2013, <http://www.flickr.com/photos/54692220@N00/350390189/>.

Figure 12 & 13: Mathers Place 2013, photograph, viewed 9 June 2013, <http://taseatlocal.wordpress.com/>.
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Authors' biographies

1Katherine O'Byrne is a Masters of Architecture and undertaking a collaborative research project with the Hobart City Council and the University of Tasmania School of Architecture & Design, which considers speculations on the council' future engagement in promoting Children in the City. The project involves both theoretical research and detailed auditing and mapping of Hobart, to understand existing conditions, and to speculate on future investment that may facilitate places for interaction between children and the city, developing a social brief for these sites, and speculative propositions that enhance the experience of the city for children and young families.

2Helen Norrie is an academic in the School of Architecture & Design at the University of Tasmania (UTAS), and founder of the Regional Urban Studies Laboratory (RUSL), a collaborative urban design research initiative that explores the opportunities for the future sustainable urban development, particularly in regional centers. Academic, postgraduate and undergraduate design research investigations explore a range of urban issues, focusing on the role of architecture in developing a relationship between urban design, development and planning. Helen is the coordinator of the collaborative research project between UTAS and the Hobart City Council that seeks to promote Children in the City.
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Railway Stations:
Public Realm Gateways to Sustainable Futures of our Cities

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ABSTRACT

Train stations are places of connection in our cities and are the gateways of urban space. They represent one of the most exciting places to experience. Some stations make great destinations offering shops, restaurants, museums and exhibition spaces to commuters. While new architecture at railway stations acknowledges heritage, the urban spaces around them provide excellent public areas and rationalise functional needs. Grand spaces with monumental structures, including constant movement of people and trains makes for an exhilarating experience. Modern or historic, great train stations add another level of excitement in the regeneration of our cities. Adding into the mix of the sustainability paradigm, place making of railway stations transforms into sustainable urban centres and signature architecture, but how does it support an environmentally sustainable future? This paper reflects the journey of exploring the challenging situations of balancing the requirements between historic, operational, functional, economic and innovative sustainable design solutions during the Flinders Street Station Design Competition in Melbourne. The author highlights how the unique spatial, social and cultural circumstance of this world-renowned city railway station possesses specific resilient and sustainable design answers to a public realm and city space that challenges established thinking.

Keywords: Railway Station Design, Sustainable Design, Regeneration, Sustainable Urban Centres, Public Spaces, and Signature Architecture.

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Introduction

"Since the world's first railway station, Darlington, opened in 1826, stations have always maintained a special place in the public's affection. The lure of the great railway terminus has always been especially strong: the breath taking grandeur, swagger and opulence of the architecture inextricably fused with the dizzying prospects of adventure, romance, escape or challenge offered by far-flung destinations." - Steven Parissien (Parissien, 2001)

Rail transport infrastructure, especially railway stations, significantly contributes to the quality of life, sustainability and economy of urban centres. Station buildings play a major role in efficient and vibrant places, and are at the forefront of innovation and modernity; after all, many great civilisations in history have used infrastructure prowess as a symbol, as well as a function (SKM, 2012).

These train stations hold high symbolic value and are central to the life of many people across all sections of society. During the planning, design and construction of railway stations and its wider related infrastructure, direct and indirect wider impacts (positive or negative) must be considered to ensure that all opportunities are exploited. Stations also support a sustainable urban form (Barret, 1996).
Benefits can be grouped in five broad categories: quality station design, quality urban design, urban integration, environmental sustainability and economy. These categories sit at the core of the design and development process for the changing of Flinders Street Station into a sustainable urban centre of Melbourne.

**Quality Station Design**

All over the world railway stations, transit centres and transport interchanges are evolving from functional spaces and buildings that conveyed symbolic values of their city and society, to new vibrant and active urban centres and destinations. As well as being transport hubs, these stations generate high footfall past commercial activities creating life and vitality (Roös, P. & Juvara, M, 2012)

The design of a railway station needs to be sensitive to the local surrounding urban area, incorporate practical environmental sustainable design elements to the building and the landscaping, and provide the functional services and amenities for daily commuters to enjoy their travel experience. In any community, the railway station is an important piece of public infrastructure which impacts directly on people’s decisions to use public transport.

It is, therefore, important that it provides a high quality environment which is legible, safe, sustainable and attractive. The design approach thus considers key criteria for the successful design and delivery of the railway station and need to include the following key principles:

- Efficiency - Station Functionality;
- Integration - Passenger flows;
- Safety - Passenger safety and security;
- Place Making - Station forecourt and Station design; and
- Connectivity - Accessibility and interchange

**Quality Urban Design**

While new architecture at railway stations should acknowledge heritage, the urban spaces around them provide excellent public areas and rationalise functional needs.
Station buildings play a major role in the urban spaces and public realm (Bertolini, 1998).

The same level of thought that goes into the architecture of the station, type of trains, the fitting of carriages and the graphics, needs to be employed for fixed infrastructure in the rail environment.

The public realm elements such as landscaping, walkways, roads, bridges, elevated track-structures, and sound barriers are critical components to be considered in quality urban design (Bournet, 2001). The architectural language of these elements, and its appropriateness to the location, are paramount (Roös P. & Juvara, M, 2012). The holistic integration of all these elements will provide for a development that results in an urban environment with “sense of place” (Ahmed, 2001).

**Urban Integration**

Urban integration involves the correct inter-relation between the railway station infrastructure and the urban space that it occupies. It recognises the specificity of the location: its structure, functions, movement needs and, very importantly, character. With due consideration of engineering feasibility, different alignments, or positioning within the urban space (side or centre of a corridor for example) can generate different urban solutions (Vuchic, 2005).

Ground floor, building fabric and landscape treatment of surrounding spaces is also integral to the design, so that the value added of the new rail station, and the rail corridor is maximised (SKM, 2011). Opportunities for development must be identified, and design guidance prepared to take advantage of the transport corridor (Roös P. & Juvara, M, 2012).

**Environmental Sustainability**

Station and transit buildings have a long operation life, and are interconnected with their urban environment. These projects leave behind a legacy long into the future. It is thus extremely important to provide environmentally sustainable outcomes, and consider mitigation of environmental impacts, especially on-going impacts, and the direct link between the rail project and the communities that it will serve. It is also essential to pre-empt any future adaptation of station buildings and infrastructure against possible changes to the climate. The outcomes of the sustainable station design solutions will continue long after construction is completed, and potentially may
have a visible, positive impact throughout the whole life of the station and transport corridor assets.

**Integrated Sustainable Design**

It is well known that the built environment, including associated transport infrastructure and services, makes a major contribution to greenhouse gas emissions worldwide and that the development of more sustainable cities and infrastructure is essential (Jabereen, 2006). For railway station design, the design team needs to understand the symbiotic relationship which rail projects and transit centers have with the built environment. Design needs to acknowledge that sustainable transport is core to creating cities that are liveable, walkable, and sustainable, whilst also providing a higher quality of living. These aspects are used as basic principles to inform an integrated sustainable design methodology.

Applying lessons learnt from recent projects demonstrating these principles of sustainable design is the Regional Rail Link project (RRLA, 2011), Melbourne Metro Underground Rail Study, and the Rowville Rail Link Study (DOT, 2012). These projects include the development and implementation of an Integrated Sustainable Design Method (Roös, 2011).

**Economy**

The global economic crisis has prompted two parallel debates about the nature and workings of urban areas. In battered Western economies, consumer spending has rapidly decreased and Governments no longer promote shopping as the goal of a strong society (Roös P. & Juvara, M, 2012). In parallel, new studies on urban societies are focusing on subjective aspects of ‘Quality of Life’ and well-being, which include sense of belonging, community and other indicators that point to urban identity (Girardet, 1992).

Urban centres are key to identity and social interaction of the city, they are the places that give their name to whole communities, as well as play the important role of a stable local economy (Williams, 2000). Strong centres play a key role by creating necessary focal points at the urban scale, and connect spaces to living communities (Alexander, 2002).
A new way to sustain urban centres as community places is the development of railway stations as sustainable urban centres, providing a breath of functions beyond the transport system (Vaughan, 2009). Stations link the high-density urban environments where walkable communities can flourish in a social, and economic positive outcome (Elkin, 1992). The regeneration of Flinders Street Station in the CBD of Melbourne provides for this opportunity of creating a sustainable urban centre.

The Opportunity: Flinders Street Station

The first railway line built in Victoria was a suburban railway from Melbourne to Port Melbourne in 1854, and on this line the Flinders Street Station, Australia’s first city railway station was built as a result of an architectural competition held in 1899 (Ward, 1982) (Davies, 2012). Today the station is the city's central transport hub and a much loved Victorian landmark. Constantly visitors to Melbourne will photograph the distinctive corner of the station with the ‘clocks' under the dome, which has become an iconic image of Melbourne (MPV, 2011). It is also a landmark in continuous operation as a station, protected and valued for its ongoing use as both origin and destination for most suburban train services.

The station plays a vital role in the urban context of Melbourne. It is located in the city as such that a central position links the city, the precinct north of the Yarra river with Southbank’s arts precinct, to the east Federation Square, Birrarung Marr Park, and on to the sports and entertainment precinct (Davies, 2012). This location provides the opportunity to design new functions to revitalise place and introduce new activities, such as a potential transport theatre and design library centre as indicated in Figure 2.
Recently the opportunity to redevelop this station was realised when the State Government of Victoria, Major Projects Victoria, launched a staged design competition seeking innovative design proposals that will reinvigorate the historic Flinders Street Station, improve its transport function and unlock the urban design and development potential of the precinct (MPV, 2011).

The required overall objectives for the regeneration of the station are (MPV, 2011):

- Upgrade the station to its former glory, in the tradition of other great cities around the world, as a Victorian and international icon and a focus of the Melbourne Central Business District (CBD);
- Restore and protect the Administration Building and other heritage elements to include adaptive re-use of areas that have high public interest, such as the ballroom, to be accessible to the public;
- Improve all aspects of the transport function of the station and adjacent transport modes and cater for significant growth in transport patronage;
- Better integrate the station with its surrounding precincts, such as Federation Square, providing better linkages between the CBD and the Yarra River;
- Better utilize the land adjacent to rail and air space above rail on the western portion of the site;
• Provide significant civic space while allowing for a distinctive and memorable architectural outcome with a mix of uses; and
• Provide a value-for-money solution capable of being (at least partially) self-funding.

In a complex operating rail environment, the achievement of the above objectives is a challenge, as well as very difficult to incorporate in a design solution. Adding the aspirations of achieving high environmental sustainability targets compounds on the complexity, and requires a carefully planned integrated design process and method.

The Method – Integrated Sustainable Design

Complex processes and challenges are involved in the incorporation of sustainability initiatives into the design of railway stations and their related transport infrastructure and the urban precinct. For sustainability to be successfully integrated, the objectives and requirements for Environmentally Sustainable Design (ESD) must be considered at a very early stage in any railway station project. This requires an integrated design approach. The approach has two key features. Firstly, the whole design team is committed to the opportunity to be involved and actively contribute to achieving sustainability requirements, and secondly, design decisions will embed sustainability which will be carried through to the construction stages of the project and have long term whole of life sustainable outcomes. Design decisions consider sustainability as an holistic approach, and by using the Integrated Sustainable Design Methodology, as demonstrated in Figure 3, sustainability outcomes consider economic, environmental as well as social principles.
Application of the Method

Using the Integrated Sustainable Design Method (Roös, 2011), and to deliver effective solutions that integrate environmentally sustainable principles throughout the life cycle of the Flinders Street Station project, the competition entry design team included as fundamental inputs to all design decisions the following design principles in the architecture, building, engineering and urban design (John Wardle Architects - Grimshaw, 2013):

- Holistic approach - identify the urban context with key requirements in relation to ecology, biodiversity corridors, green landscape and local environment;
- Integrated Environmental Design - Passive design, solar optimization, thermal and local climate responsive, adaptive design;
- Resilience - Climate change impacts and future changes in environment;
- Energy Efficiency - Efficient local energy and renewable energy design solutions, net zero energy buildings, including a local centralized CCHP (Combined Cooling, Heating and Power) energy center;
- Materials - Materials selection to minimize toxicity;
- Waste efficient strategies, recycling and re-use;
- Water Conservation - Water efficient design, recycling options, rainwater harvesting, systems to avoid runoffs (demonstrated in Figure 8 below);
- Economy - Whole of life thinking, life cycle analysis and sustainable whole life costing, value for money solutions;
- Constructability - Efficient construction options and minimize waste; and
- Delivery - Sustainability principles can only be implemented from design through construction if it is supported by a robust Sustainable Design Strategy.

**Sustainable Design Outcomes Flinders Street Station**

The integrated sustainable design considers a holistic environmentally sustainable outcome that is embedded in the Flinders Street railway station on a precinct wide scale. The proposed design solution, considering the brief from Places Victoria, included functional, transport, operational, heritage and urban integration requirements. Response to the brief from the John Wardle Architects, Grimshaw and SKM competition entry team, included in the design environmental sustainability considerations. The design results in integrated sustainability with the potential achievement of a Regenerative Net Zero Energy Building Precinct (RNZEBP), demonstrated in Figures 4 to 7 below. The vision for the project is to include aspirational outcomes for targeting a 6 star rating under both the Green Star Communities Tool and the potential new Green Star Custom Tool for Railway Stations.

To achieve best practice sustainable design outcomes, the whole design team was involved establish best for project sustainability targets. The design response uses passive bioclimatic inspirations, using nature as teacher in building design and results in the integration of passive thermal labyrinth ventilation, climate responsive facades, and intelligent environmental building systems. The consideration of these passive bioclimatic principles is paramount in local sustainable design practice (Hyde, 2008).

Opportunities for water efficiency as well as innovative technology for energy harvesting are included. Innovative design solutions includes a regenerative-net zero energy precinct, aspiring to be carbon neutral through the inclusion of a centralized energy centre utilizing combined cooling, heating and power technology for all buildings, including the track side energy storage initiative from regenerative braking of trains.
Figure 4: Central Energy Centre (Source: Grimshaw / John Wardle Architects / SKM, 2013)

Figure 5: Trackside Energy Recovery System (Source: Grimshaw / John Wardle Architects / SKM, 2013)
The design philosophy is underpinned by a cradle to cradle approach, considering a whole-of-life outcome which will not only result in a precinct that performs in an energy efficient and ecologically manner, but also translates into a precinct with a railway station and buildings that considers the minimisation of waste and includes better functionality with extended sustainable outcomes in the reduction of maintenance and operational costs.

Figure 6: Kinetic Energy Harvesting (Source: Grimshaw / John Wardle Architects / SKM, 2013)

Figure 7: Solar Photo Voltaic PV Panels (Source: Grimshaw / John Wardle Architects / SKM, 2013)
Conclusion

Train stations are places of connection in our cities and are the gateways of urban space. This paper argues strongly that stations are places of high symbolic value, railway stations have the potential to be centres for urban communities, initiate activity that in essence provides the three pillars for sustainable development, supporting social, economic and environmental outcomes. Adding into the mix of the sustainability paradigm, place making of railway stations can be transformed into sustainable urban centres and through signature architecture be the symbolic representation of community culture.

The Flinders Street Railway Station has the opportunity to be a catalyst as a strong city centre and can strengthen its key role as a necessary focal point at the urban scale, and connect the surrounding spaces to a living central precinct. The Flinders Street Railway Station can act as a catalyst for creating an urban park in the centre of Melbourne, demonstrated in Figure 9 below. Considering the opportunities for
integrated sustainability opportunities for the station precinct, the Flinders Street Railway Station redevelopment can set new benchmarks for environmental sustainability. This opportunity created by the redevelopment of the Flinders Street Station into a Regenerative Net Zero Energy Building Precinct should not be wasted.

Figure 9: Central Elevated Park - Flinders Street Station (Source: Grimshaw / John Wardle Architects, 2013)

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A TIMELY, ORDERLY, AND EFFICIENT ARRANGEMENT OF PUBLIC FACILITIES AND SERVICES—THE OREGON APPROACH

EDWARD J. SULLIVAN* & BENJAMIN H. CLARK**

Since 1973, Oregon has regulated land use at the local level by requiring cities, counties and the Metro Service District, the three planning and regulatory agencies, to have binding plans to which land use regulations and actions must conform, and to assure that those plans meet statewide planning standards (called “Goals”)1 which include:

• Process Goals—Citizen Involvement and Planning generally (Goals 1 and 2)

• Resource-Related Goals—Agricultural, Forest, and Natural Resources (Goals 3–5)

  • Goals Relating to Human Interaction with Land—Air, Land and Water Quality, Natural Disasters and Hazards, Recreation and Energy (Goals 6–8 and 13)

  • Urban-Oriented Goals—Economy of the State, Housing, Public Facilities and Services, Transportation and Urbanization (Goals 9–12 and 14)

  • Goals Relating to Special Areas—The Willamette River Greenway and the Pacific Coast (Goals 15–19)

Statewide Planning Goal 11 deals with public facilities and services and, as originally adopted in 1974, provides as follows:

To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.

Urban and rural development shall be guided and supported by types and levels of urban and rural public facilities and services appropriate for, but limited to, the

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1 OR. REV. STAT. §§197.175 and 197.250. These Goals are in the nature of administrative rules or statutory instruments adopted by a state agency created in 1973, the Land Conservation and Development Commission (“LCDC”). OR. REV. STAT. §§197.225 to .250. Local governments must receive “acknowledgment” of their plans and land use regulations from LCDC, essentially a certification that those plans and regulations meet the Statewide Planning Goals. OR. REV. STAT. §197.251.
needs and requirements of the urban, urbanizable and rural areas to be served. A provision for key facilities shall be included in each plan. To meet current and long-range needs, a provision for solid waste disposal sites, including sites for inert waste, shall be included in each plan.²

As it evolved, Goal 11 became an instrument by which the urban-rural distinction was reinforced by varying the levels of intensity and extent of infrastructure. Thus, intense and urban-type land uses were prohibited outside “urban growth boundaries” which included cities and sufficient land to provide sufficient housing, employment, commercial and industrial uses for a twenty-year period.³ In particular, the Goal was amended to prohibit the extension of sewer and water lines outside Urban Growth Boundaries in most cases, as those particular facilities and services resulted in pressure to urbanize on lands not designated for urban uses.⁴

The current version of the Goal now provides as follows:

To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.

Urban and rural development shall be guided and supported by types and levels of urban and rural public facilities and services appropriate for, but limited to, the needs and requirements of the urban, urbanizable, and rural areas to be served. A provision for key facilities shall be included in each plan. Cities or counties shall develop and adopt a public facility plan for areas within an urban growth boundary containing a population greater than 2,500 persons. To meet current and long-range needs, a provision for solid waste disposal sites, including sites for inert waste, shall be included in each plan.

² See LAND CONSERVATION & DEV. COMM’N, ORDER NO. 1, shttp://www.oregon.gov/LCD/docs/history/original_goals_012575.pdf.

³ See Statewide Planning Goals 9 (Economic Development), 10 (Housing), and 14 (Urbanization). See also 1000 Friends of Oregon v. Land Conservation and Dev. Commission, 724 P.2d 268 (Or. 1986).

⁴ The Land Conservation and Development Commission revised both Goal 11 and its implementing administrative rule for this purpose. Dep’t of Land Conservation and Dev. v. Lincoln County, 925 P.2d 135 (Or. 1996).
Counties shall develop and adopt community public facility plans regulating facilities and services for certain unincorporated communities outside urban growth boundaries as specified by Commission rules. Local Governments shall not allow the establishment or extension of sewer systems outside urban growth boundaries or unincorporated community boundaries, or allow extensions of sewer lines from within urban growth boundaries or unincorporated community boundaries to serve land outside those boundaries, except where the new or extended system is the only practicable alternative to mitigate a public health hazard and will not adversely affect farm or forest land.

Local governments may allow residential uses located on certain rural residential lots or parcels inside existing sewer district or sanitary authority boundaries to connect to an existing sewer line under the terms and conditions specified by Commission rules.

Local governments shall not rely upon the presence, establishment, or extension of a water or sewer system to allow residential development of land outside urban growth boundaries or unincorporated community boundaries at a density higher than authorized without service from such a system.

In accordance with ORS 197.180 and Goal 2, state agencies that provide funding for transportation, water supply, sewage and solid waste facilities shall identify in their coordination programs how they will coordinate that funding with other state agencies and with the public facility plans of cities and counties.

In addition to reinforcing the urban-rural distinction, Goal 11 also required urban areas to undertake economic development planning for urban areas to analyze opportunities and challenges, provide for economic development policies, assure an adequate amount of needed commercial and industrial land uses over a twenty-year period, and undertake public facilities planning.\(^5\)

The impact of the Goal on urban design is clear – whereas rural areas were required to have basic services (governmental and public health, transportation and other rural public service areas), urban areas were encouraged to focus on economic development and infrastructure planning.

\(^5\) OR. REV. STAT. §197.712.
facilities and services), urban areas were required to have plans that not only provided for residential, employment, commercial and industrial uses for the next twenty years, but also to provide for the supportive public and private facilities and services to support those uses. The planning process dealt with future land needs and allocations, the level and general design of those facilities and services, and their coordination among public and private service providers.\(^6\)

Goal 11 and other Oregon planning requirements also profoundly affect urban design:

- Lands within Urban Growth Boundaries must be available for urban development within a twenty-year period.\(^7\)
- An expedited development approval procedure is provided for certain "regionally significant industrial lands."\(^8\)
- Amendments to Urban Growth Boundaries require an analysis of the need for additional urban lands over a twenty-year period, as well as the location of the expansion areas.\(^9\)

However, even with sufficient planning, the practical impacts of providing for public and private facility and service decisions is also dependent on the availability of funds, the lack of which may frustrate good urban design. Most of the financing tools depend on voters or their elected representatives and include the issuance of bonds,\(^10\) use of local

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\(^6\) Coordination is especially important in the Oregon planning system. Goal 2, relating to the planning process, requires such coordination. In addition, OR. REV. STAT. §197.015(5) provides that a plan is coordinated when:

"[T]he needs of all levels of governments, semipublic and private agencies and the citizens of Oregon have been considered and accommodated as much as possible."

\(^7\) OR. REV. STAT. §197.752.

\(^8\) OR. REV. STAT. §§197.722 to .728). This 2011 legislation allows a newly-created Economic Recovery Review Council, composed of certain state agency directors, to provide for a single consolidated hearing for development review, with limited judicial review. The legislation will remain in effect until the unemployment rate goes below 6%.

\(^9\) Statewide Planning Goal 14 and OR. REV. STAT. §197.298. The Goal contains seven "factors" (the first two relating to need and the remaining five relating to location of the expanded areas) while the statute contains a list of priority areas for eligible expansion areas (emphasizing the use of lands already divided into smaller non-resource tracts, lesser quality resource lands, and only then good farm and forest lands), as well as a possible override of the priority areas in specific circumstances. See 1000 Friends of Oregon v. Land Conservation and Dev. Comm., 259 P.3d 1021 (Or. 2011).

\(^10\) See, e.g., OR. REV. STAT. §§287A.050 to .150.
improvement districts (by which the affected property owners pay for a particular public improvement, such as a water or sewer line or a road),\textsuperscript{11} system development charges (levied on building permits to pay for expanded capacity of water, sewer, transportation, parks, and storm drainage facilities),\textsuperscript{12} regulatory exactions for land or money in exchange for development approval,\textsuperscript{13} and urban renewal funding.\textsuperscript{14} However, such funding is usually uncertain and subject to the vicissitudes of litigation and voter or elected official approval. This practical obstacle may undermine the benefits of good planning and design.

Oregon now has a forty-year old planning program that emphasizes attractive urban design and forward-looking planning. As that program has evolved over time, that program has been used to reinforce the distinctions between urban and rural lands through use of an Urban Growth Boundary, required planning and coordination of public and private facilities and services to support urban uses for a twenty-year period, allow for the focused use of available financing tools to provide those facilities and services, and allow for changes in the urban-rural land allocations to accommodate growth. While financing of those services and facilities is uncertain, the structure to provide them is a model for emulation elsewhere.

\textsuperscript{11} OR. REV. STAT. §§ 223.387-.401.
\textsuperscript{12} OR. REV. STAT. §§ 223.297-.314.
\textsuperscript{13} There are, however, constitutional and other limits on these exactions. See \textit{Dolan v. City of Tigard}, 512 US 374 (1994) and \textit{Koontz v. St. John’s Water Mgmt. Dist.}, U.S. Supreme Court Case No. No. 11–1447 (June 25, 2013).
\textsuperscript{14} OR. REV. STAT. §§ 457.010 to .320. These statutes allow for redevelopment of “blighted” areas, financed by the additional property taxes generated by the additional incremental value of that development.
Engaging the Engagers:
The role of elected councillors in community-based strategic planning

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ABSTRACT
There is increasing expectation by local communities that their councils will involve them in decision making and direction setting. The New Planning System for NSW White Paper builds on this by mandating community involvement in strategic planning. If this process is to succeed, however, local councillors will need to be centrally involved. They are the public’s elected representatives and a vital conduit between the planning professionals and the communities who will inform and respond to the plans proposed. Councillors are also the approval body for the plans and even evidence-based plans are more likely to be approved if they have community support. This paper explores the necessity, benefits and challenges of engaging councillors in meaningful community-based strategic planning.

Keywords: councillors, community engagement, strategic planning, phase transition

INTRODUCTION
Local government strategic planning happens within the context of sustainability and the triple bottom line, plus governance. This paper focusses on the role elected representatives play in the strategic planning process in light of the reforms proposed for the NSW planning system and local government. Whilst the role of councillors is not formally mentioned in the New Planning System for NSW White Paper (NSW Government, DP&I 2013), the Department of Local Government (DLG) recognises that they play a key role in ensuring success of the planning process (NSW Govt, DPC 2013: 10). The recent review of NSW councils, Future Directions for NSW Local Government: Twenty Essential Steps, articulates the importance of up-skilling councillors to enable them to more professionally represent their communities, as a ‘board of directors’ (ILGRP 2013: 27).

This paper is grounded in contemporary research and literature: community consultation in urban planning (eg. Sarkissian 2013; Bell & Hindmoor 2009; Brackertz & Meredyth 2008; Wates 2006), the behaviour of self-organised complex systems (eg. Wilkins 2009; Fletcher 2004; Cohen & Stewart 2000; Kauffman 1995), and my own
professional experience in applying socially sustainable urban planning principles as a local councillor with Warringah Council, 2008-2012.

WHO ARE ELECTED COUNCILLORS?
Councillors are an eclectic mix of individuals from a broad cross-section of the community. Their role is to represent ‘the community’, although this is interpreted in a myriad of individual ways, including support of community groups over ‘the community’. Councillors are traditionally politically independent: in the past two elections approximately 70% of all councillors in NSW were elected as independents. Councillors are not professional planners, nor are they even professional politicians, with the possible exception of the role of mayor, who is remunerated on the basis that it is a more full-time position. Councillors, however, receive only part-time remuneration that ranges from $7,700 min. for rural councils to $34,000 max. for the City of Sydney (nb. data cited here is sourced from the DLG and DP&I websites). This means that most councillors work either part-time or full-time at other occupations.

The politics of local council is generally messy, dramatic and unpredictable. The political make-up of councils generally changes every four years, although the community they serve are enduring, despite significant changes within the communities themselves. Approximately 28% of councils experienced major political change at the last local government election in 2012, when only 4 of the 152 NSW councils had a dominant political party ‘returned to power’. Most councils had either an independent majority returned to council (68%), although not necessarily the same individuals, or the standing mix of political parties and/or independents changed (28%) (DLG and DP&I websites).

WHY INVOLVE COUNCILLORS IN COMMUNITY STRATEGIC PLANNING?
The obvious reason for involving councillors in community-based strategic planning is because there is increasing expectation that government, especially local government, will involve the community in decision making (ACELG, IISF & UTS 2011: 10). Communities are increasingly regarding councillors as their ‘people on the ground’, rather than as their delegated decision makers. They expect their councillors to involve them when and if they choose. Community members are thus all latent activists, in this regard. Whether people do get actively involved depends, first, on the level of impact or interest in the issue and, secondly, on whether they are aware of the issue in the first
place. People may be aware of an issue and not get involved, if they are content to allow council and/or councillors to make decisions on their behalf. However, a truly comprehensive engagement strategy will engage the known active few as well as the silent many and hard to reach. It is the silent many and hard to reach who councillors have daily contact with, often on issues and in circumstances that council and Departmental staff cannot duplicate.

The White Paper recognises that elected representatives are intrinsic to strategic and local planning: councillors are encouraged to move away from the traditional development assessment role and “concentrate on making key strategic decisions about their areas” (NSW Govt, DP&I 2013: 116, 137). Additionally, the integrated planning and reporting framework recognises that “without strong support and commitment [by the mayor and councillors], the council will find it difficult to develop and implement a meaningful plan. The ability of the mayor and the councillors to …. inspire others to participate in that future, will be fundamental to the success of the project.” (NSW Govt, DPC 2013: 10). “A ‘culture of consultation’ is the greatest contributor to successful and inclusive participatory practice” (Brackertz & Meredyth 2008: 34). The most important determinants to building a ‘culture of consultation’ are the organisational culture and the attitudes of elected representatives: councillors who have a positive attitude to consultation, and are actively involved (Brackertz & Meredyth 2008: 6).

The less obvious reason for involving councillors in community-based strategic planning is because they are a vital (and currently very cost effective) conduit to the community, which neither council or departmental staff, nor consultants, can easily duplicate. Stuart Kauffman of the Santa Fe Institute, where the behaviours of complex systems are studied, has modelled ‘laws’ that underpin how interconnectedness comes about in complex systems (Kauffman 1995: 55-57). Using buttons and threads as an analogy, when pairs of buttons (people) are selected at random from a group of buttons and progressively connected with threads (the line of contact), the likelihood that selected buttons will already be connected to other buttons increases. But the interconnected ‘web’ does not grow in a lineal fashion. “When there are very few threads compared with the number of buttons, most buttons will be unconnected, but as the ratio of threads to buttons increases, small connected clusters begin to form…. Obviously, as clusters get larger, they begin to become cross-connected.” That is, it
takes a long time (and effort) to connect the first few buttons. But as the ratio of threads to buttons reaches 0.5 a phase transition occurs and a giant cluster suddenly forms ((Kauffman 1995: 57).

The giant cluster state of community engagement is the state that must be achieved if the community is to feel truly, widely and genuinely engaged such that they will accept 80% code assessment and delegation of development approvals away from their elected representatives to Independent Hearing and Assessment Panels (IHAPs) (NSW Govt, DP&I 2013: 8, 116). But achieving the giant cluster will not happen by using only traditional means of engagement (council websites, media releases, public meetings, information booths) or traditional engagers (council and departmental staff, consultants) and even council hosted social media. These equate to a small number of multi-stranded threads connecting a relatively small number of buttons and clusters. Only when new and diverse ways and means of connecting to the community is maximised will a phase transition be achieved.

BENEFITS OF COUNCILLOR INVOLVEMENT
Councillors are generally untrained in community engagement, but it generally comes naturally to them. Unlike professional politicians, found more commonly at state and federal levels of government, councillors are usually active members of the community who have chosen to ‘step up’ and represent their community in the political arena. The job generally attracts those with a facility for engagement, but all councillors learn and hone their skills rapidly once on the job, resolving diverse and often conflicting issues.

Councillors generally live in their local government area (LGA), which can represent a challenge if they continue to see themselves as community members rather than as ‘professionals’ or ‘board directors’, something the DLG actively works with new councillors to overcome. The benefit is, however, that they connect on a different level to that achievable by council or Departmental staff, or consultants: they are members of the community themselves and generally have deep, if not wide, community networks that differ to those accessible by formal channels. Councillors who engage genuinely with local communities within a ‘culture of engagement’ are able to connect with community members who are either hard to reach, or who may have become disillusioned with formal or bureaucratic forms of engagement (Bell & Hindmoor 2009: 150).
This connection enables councillors to provide the emotional intelligence that Wendy Sarkissian regards as a necessary means to address the 'NIMBY mindset'. She sees NIMBYism as a natural instinct in people to protect their homes and neighbourhoods, their ‘core territory’ and place to which people have the strongest place attachment (Sarkissian 2013). She believes that until planners, designers, governments and developers understand and respect this psychological attachment, the battles will continue. Councillors are the bridge between the planning professionals and the community, able to articulate the ‘instinctive response’ and ensure that “community engagement approaches are sensitive to the deeply emotional nature of these responses” (Sarkissian 2013).

Councillors are also able to assist with closing the consultation loop, something some councils have been criticised for failing to do (Brackertz & Meredyth 2008: 13). They are likely to be more motivated to do so as there is a direct political benefit to their ensuring comprehensive feedback to the community following an engagement process, that they are likely to have been personally involved with.

**CHALLENGES OF COUNCILLOR INVOLVEMENT**

A council’s political mix, the short (four year) electoral cycle, and the mayoral electoral process can all form challenges to undertaking long term and strategic planning, by either assisting or reducing time horizons available within which to implement the vision. 18% of NSW councils are currently dominated by party politics (20% 2008-2012), wherein 50% or more of councillors belong to a political party, but neither independents, nor any one party, have a clear majority. These councils will be at risk of making decisions that are influenced by public sentiment (popularity) and subject to time frames set by either the four year electoral cycle, or the one year mayoral cycle if the mayor is not independently elected. Only 26% of NSW councils have independently elected mayors, versus annual election from amongst councillors. Politics is also exacerbated by community expectations that standards of living will continue to rise, whereas this is unlikely, and “there will be a political tendency to raise expectations that government should fill the gap” (Grattan Institute 2013: 33). The consequence of this is that, regardless of the strength of the strategic vision, implementation over the course of time and within a changing social and urban context will be inherently difficult. *City-making* is about managing contextual change within a conceptual framework and
adding politics into the mix merely generates uncertainties and a likelihood that the conceptual vision will become lost.

Another challenge is the unequal level of connectedness councillors have with the community: some have wider networks, some have deeper networks, and some have smaller networks than they claim to have. Independent councillors, and independently elected mayors, generally have to work harder to achieve the same breadth of community contact as councillors elected on a party ticket, although their connections are likely to be deeper as a result. 57% of NSW councils have 100% of their councillors who are politically independent, or who were not elected on a party ticket. Interestingly, these are all rural councils, although there is no statistical correlation between DLG regional classification and whole-scale councillor independence ($R=0.549$, $P=0.0$). Given that community satisfaction is closely linked to community engagement (Micromex Research. 2012), it would be beneficial to know if there is a statistical correlation between community satisfaction and extent and type of engagement. Unfortunately this type of data is not yet available on a state wide comparative basis and it is hence difficult for councils to “gain a clear understanding of how a council is performing relative to its peers” (ILGRP 2013: 24).

The recommendations of the Independent Local Government Review Panel (ILGRP 2013) to mandate professional up-skilling and increase remuneration for councillors, create full-time ‘portfolio’ positions, amalgamate smaller councils, and require popular election of mayors in all councils with a population of 20,000 or more, will increase the professionalism of the role of Councillors and support the depoliticisation of local government via IHAPs, as recommended in the White Paper. There are currently only 12 councils in which all councillors are officially independent and also have independently elected mayors. Of these, only one has any development assessment independence in the form an independent development assessment panel chairperson.

**CASE STUDY**

Strategic planning is about creating a context within which a ‘slow change’ vision can play out, the essence of city making. Problems occur, however, when the vision is translated into local plans, which the community generally reacts antagonistically to as ‘big change’ proposals. These are difficult to visualise and are assumed to be going to occur overnight. The evidence-based Warringah Housing Strategy, which was
underpinned by the multi-award winning LGA-wide community workshop, ‘Talk of the Town’ (ToTT) (Warringah Council, Media Releases 2010), represented a ‘slow change’ strategic vision. The first version, which was based on data acquired from ToTT, incorporated an inflated housing target to allow for discussion and fine-tuning of densities and locations across the whole LGA over time. The second version, however, fell victim to council politics. Some councillors were unable to vote due to a perceived pecuniary conflict (not shared by all). The resultant unrepresentative mix of councillors removed the inflated targets and selected individual suburbs for densification. This led to a strong community backlash in those suburbs, who were unconvinced by the revised ‘evidence’ and imagined high rise development in their backyard overnight.

Had all councillors had been able to contribute to the process, including engaging community members in the debate, it would have assisted with raising the level of community awareness across the LGA. The debate would then have been more balanced. The process of translating strategic vision into plans is more likely to succeed if the voices of the many are heard against the voices of the few, if views expressed across the LGA can be publically compared against the views of those directly affected (Bell & Hindmoor 2009: 146-149). In such a debate, it is vital that councillors are professional, objective, informed and able to represent the whole community, possibly even at the expense of an impacted minority. But councillors need to be supported in favouring the ‘needs of the many over the needs of the few’, a difficult thing to ask of elected representatives who may want to be re-elected. The recommendations of the Independent Local Government Review Panel (NSW Govt, DPC: 27) go a long way in this, but would be strengthened further if staff were to adopt the practice of hosting regular information sessions for councillors, with attendance placed on the public record. This would ensure councillors are fully informed and across the detail of complex issues, particularly unpopular issues.

CONCLUSION

Councillors can add tangible value to the strategic planning process, the process of maximising up-front strategic community involvement so as to minimise the subsequent reactive backlash and ensure future urban development is socially sustainable. The councils who achieve a giant cluster of community contact will achieve increased community buy-in. City-making is the process of unfolding the vision over time and communities who are actively engaged up-front are also likely to be engaged
over time, building in social resilience to change. But the ongoing process is susceptible to politics and short political cycles. The councils that are able to create a ‘culture of consultation’, utilize the emotional intelligence of elected representatives and craft governance structures that depoliticize the planning and approvals process, will be able to maximize community engagement and buy-in. By exploiting the community networks of councillors, councils will find it easier to deliver a community-based strategic plan with a capacity to absorb and respond to future change (social, environmental and economic).
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A TIMELY, ORDERLY, AND EFFICIENT ARRANGEMENT OF PUBLIC FACILITIES AND SERVICES—THE OREGON APPROACH

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I. INTRODUCTION

The provision of public facilities and services is not an exciting planning topic because it deals with the details of supply, rather than the grander issues of economics, social equity and policy. Yet these details occupy an inordinate amount of time and attention by planners, elected officials, and other policy-makers, and account for a substantial share of unresolved issues in planning law.

This Article sets out the rise of infrastructure planning policy in Oregon under a statewide land use planning system that began in 1973.1 In Part I, we give a brief history and description of the structure of that system, followed by a discussion of the evolution of state infrastructure policy under Statewide Planning Goal 11, Public Facilities and Services, and its implementing rules. Following this background, this Article will examine the application of that policy, particularly with respect to the mechanics (Part II) and financing (Part III) of infrastructure planning and its role in the reinforcement of the separation of urban and rural uses (Part IV).

A. Land Use Planning in Oregon

In 1973, then-Governor Tom McCall made his famous speech to the Oregon legislature decrying the fact that “[s]agebrush subdivisions, ‘coastal condomania,’ and the ravenous rampage of suburbia in the Willamette Valley all threaten to mock Oregon’s status as the environmental model for the [n]ation.”2 The concomitant need to use urban lands efficiently arose from this desire to preserve resource land, so that urban uses would not sprawl onto farm and forest lands. The need for efficiency resulted in policies for thoughtful use of public services and facilities.

Then-Governor McCall’s efforts culminated in the passage of Senate Bill 100—a piece of complex legislation that created a new model for land use planning.3 Senate Bill 100 reasserted state-level

3. For good summaries of the genesis of the Oregon land use system, see Hector Macpherson & Norma Paulus, Senate Bill 100: The Oregon Land Conservation and Development Act, 10 WILLAMETTE L.J. 414 (1974); CHARLES E. LITTLE, THE NEW OREGON
authority over land use policy and zoning that the state legislature had previously delegated to local governments—cities in 1919,\(^4\) and counties in 1947.\(^5\) Among other things, Senate Bill 100 established the Land Conservation and Development Commission (LCDC) composed of seven members appointed to staggered, four-year terms by the Governor and confirmed by the Senate to supervise the Department of Land Conservation and Development (DLCD).\(^6\) The agency was tasked with developing Statewide Planning Goals—i.e., policies that would direct the preparation of comprehensive plans, zoning and implementing land use regulations.\(^7\) These goals may be broken into several categories:

- Process Goals—Citizen Involvement and Planning generally (Goals 1 and 2)
- Resource-Related Goals—Agricultural, Forest, and other Natural Resources (Goals 3–5)
- Goals Relating to Human Interaction with Land—Air, Land and Water Quality, Natural Disasters and Hazards, Recreation and Energy (Goals 6–8 and 13)
- Urban-Oriented Goals—Economy of the State, Housing, Public Facilities and Services, Transportation and Urbanization (Goals 9–12 and 14)
- Goals Relating to Special Areas—The Willamette River Greenway and the Oregon Coast (Goals 15–19)

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\(^7\) Act of May 29, 1973, ch. 80, vol. 1 1973 Or. Laws 129 §§ 4, 5. Senate Bill 100 also established the Joint Legislative Committee on Land Use (JLCLU) to oversee the activities of LCDC which it did effectively until the legislative leadership refused to make appointments in the mid-1990s. Ultimately, the Committee was abolished. Section 197.080 of the Oregon Revised Statutes was repealed. Act of June 13, 2007, ch. 354, vol. 1 2007 Or. Laws 972 § 1.

\(^8\) Macpherson & Paulus, supra note 3, at 418–19.
Within one year of the adoption of the goals, every city and county was required to prepare and adopt a comprehensive plan and implement zoning and other land use measures in compliance with the goals. Some local governments resisted this and other state planning requirements, and the one-year limitation ultimately proved unrealistic. DLCD’s plan review and field staff was tasked with reviewing local plans and regulations for compliance with the goals, after which LCDC would consider “acknowledgement” of plan and ordinance compliance with the goals. Most plans and regulations were completed and acknowledged compliant by 1986. To develop and update these required plans, Oregon has provided well over $25 million in direct grants to local governments since 1973.

B. The Drafting and Adoption of the Infrastructure Goal

As with other goals, Goal 11—relating to public facilities and services—went through an extended process to develop its terms and
provisions. The legislature instructed LCDC to adopt its initial goals before the end of 1974. The process began with a series of public workshops in September and October of that year, including one on “Urbanization and Urban Development.” The first draft for an overall goal used the following language:

Urbanization shall be managed to control the direction, extent, rate and type of urban development; comprehensive plans shall identify the land suitable and necessary for urban development and identify the methods for directing development to these areas.

During development of an urbanization policy, the LCDC found it necessary to provide a separate goal relating to infrastructure, Goal 6, which was set out in close to final form by the LCDC in the draft dated October 24, 1974 for public circulation:

A timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development shall be planned and developed.

Urban and rural development shall be guided and supported by

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16. Id. (language contained in the original draft for Statewide Planning Goal 6, later renumbered as Statewide Planning Goal 11). The coordination of urbanization was justified as follows:

In Oregon, unchecked urban development threatens valuable natural resources and consumes lands that should not be used for urbanization. Yet, in attempting to reduce urban sprawl and direct growth to suitable areas, several important problems and issues must be addressed, including:

- Insufficient land use controls to direct development to suitable areas
- Continuing population growth in urban areas
- Personal preference for single-family homes in the suburbs and for use of the automobile
- Transportation systems, urban services and facilities are not coordinated with desired land use patterns
- Property tax and assessment policies encourage scattered development
- Scattered development results in expensive and inefficient urban services

Id.
types of public facilities and levels of service appropriate to the
needs and requirements of the persons who will reside in urban
and rural areas, with particular emphasis on low and moderate
income housing needs. 17

While proposed Goal 6 did not get the attention that some other
goals received, there were some thoughtful comments. For example,
the Oregon Department of Environmental Quality, the state agency
charged with setting and enforcing rules on air, land and water
quality, commented as follows:

This goal seems particularly responsive to the Ramapo decision. 18
However, it is not clear to what extent there is implied a timetable
established by the county or municipality, and to what extent the
person undertaking “development” is obligated to provide
information. Is the county obligated to address all available
alternatives for siting of all forms of development, or is a party
proposing development obligated to consider alternative sites?

There is some question whether the “rural” and “urban” categories
are mutually exclusive or exhaustive. Where do sub-urban and ex-
urban areas fall in this categorization? Where do unincorporated
towns fall? The wording in the definition of “urban,” particularly
toward the end is confusing. 19

At the public hearing preceding adoption on November 25, 1974,
the LCDC received much testimony on the goals in general and on the
public facilities and services goal in particular. Several of those
concerns were fiscal in nature—how are the facilities to be paid for? 20
Another set of comments suggested that the issue of housing types be

17. LAND CONSERVATION & DEV. COMM’N, GOAL 6 PUBLIC HEARING DRAFT (Oct. 24,
1974). The Goal was accompanied by a series of definitions and (non-binding) guidelines.
18. The reference is to Matter of Golden v. Planning Board of Town of Ramapo, 285
N.E.2d 291, appeal dismissed, 409 U.S. 1003 (1972). This case affirmed a growth
management plan based on tiered service arrangements made in the Town’s comprehensive
plan and its capital improvement plans.
19. Letter from the Oregon Department of Environmental Quality to the Oregon Land
Conservation & Development Commission (Nov. 20, 1974) (on file with authors). The letter
had additional comments on the non-binding guidelines as well.
20. Comments from the City of Hillsboro and the Oregon Association of Realtors,
LAND CONSERVATION & DEV. COMM’N, HEARING RECORD (Nov. 25, 1974).
divorced from that of public facilities and services. 21 Others were concerned over whether Goal 11 could or would require “phasing” of public improvements. 22 Still others were concerned about local control 23 and the inclusion or exclusion of various public facilities and services. 24

In response to these public comments, the LCDC proposed goal revisions on November 30, 1974. 25 Among the changes was a requirement that each local plan provide for certain “key facilities.” 26 There were fewer comments on these revisions, but those received were more focused. Both the Association of Oregon Counties and the Oregon Association of Realtors advocated requiring a shorter list of “key facilities,” and preserving more local government discretion. 27 The Oregon State Home Builders Association stressed the need for a guideline related to inter-regional facilities—contending that certain facilities, such as sewer lines, may need to be greater than necessary in the service area due to a regional need for such services. 28 Another commentator, ESCO Corporation, wanted more attention given to solid waste facilities. 29 Mortgage Bancorporation found the whole notion of infrastructure regulation acted as a “growth restriction.” 30

21. Comments from Tillamook County Board of Realtors, Hood River County Planning Commission, and Douglas County Planning Department, LAND CONSERVATION & DEV. COMM’N, HEARING RECORD (Nov. 25, 1974).
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27. Comments from Association of Oregon Counties and Oregon Association of Realtors, LAND CONSERVATION & DEV. COMM’N, HEARING RECORD (Nov. 30, 1974). The Association was concerned by the continued reference to “public” facilities and services because public services, such as the provision of water or sewer supply, in rural areas may be better provided by privately owned community systems, or individual systems.
29. Comments from ESCO Corp., LAND CONSERVATION & DEV. COMM’N, HEARING RECORD (Nov. 30, 1974).
The first fourteen planning goals were adopted on time.31 The former Goal 6 was revised and renumbered as Goal 11, which provides:

To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.

Urban and rural development shall be guided and supported by types and levels of urban and rural public facilities and services appropriate for, but limited to, the needs and requirements of the urban, urbanizable and rural areas to be served. A provision for key facilities shall be included in each plan. To meet current and long-range needs, a provision for solid waste disposal sites, including sites for inert waste, shall be included in each plan.32

The more difficult question of interpretation lay ahead. While the goal established infrastructure planning as a priority, it dealt with neither the levels of service to be provided for various uses, nor the timing of infrastructure with regard to development.33 Decisions on these issues ultimately evolved from the LCDC, the Land Use Board of Appeals (LUBA), and court decisions applying the goal and the LCDC responses in revising the goal and adopting administrative rules to implement the goal.

C. Early Application of the Goal

When Goal 11 became effective in 197534 it was broadly worded and there was no administrative precedent or case law to define its parameters.

One of the more interesting questions in the early years of Goal 11 was whether schools constitute a “key facility.” On April 19, 1978, then-Attorney General James A. Redden issued an opinion to respond to the following question from DLCD:

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31. See LAND CONSERVATION & DEV. COMM’N, ORDER NO. 1, shttp://www.oregon.gov/LCD/docs/history/original_goals_012575.pdf.
32. Id.
34. OR. ADMIN. R. 660-011-0000 to -0065 (1975).
In determining whether to approve a subdivision for a particular area, must the county governing body consider among other factors, the availability of public school facilities to meet the increased need posed by the new subdivision?35

The question arose from concerns about overcrowding of school facilities, particularly in Marion County, coupled with the continued approval of new subdivisions by local governments, resulting in increased school populations.36 Marion County was on a compliance schedule to make its comprehensive plan and ordinances consistent with the Statewide Planning Goals, and one of its deficiencies was the lack of a key facilities provision linking the planning and siting of public schools with increases in student population.37

The Attorney General’s Opinion discussed the whether Goal 11, in conjunction with Oregon land use legislation, “impose[d] any restrictions or duties on the county governing body in considering new subdivisions.”38 According to the Attorney General, Goal 11 “requires a plan or system that coordinates the delivery of urban facilities and services, including public schools.”39 Moreover, such a plan or system must take into account the nature of the required facilities to determine the need for and timing of their development.40 Where there are significant public health concerns, such as those that arise from a lack of adequate sewage disposal, Goal 11 will not tolerate delay in the provision of facilities and services.41 But because a lack of adequate school facilities would not likely cause a public health threat, a temporary delay in the construction of additional school facilities for a new subdivision may be permitted, especially if there is some capacity for additional use in the existing facilities.42

Linking Goal 11 and Oregon planning statutes, the Opinion states that the Legislature’s basic intent in enacting Senate Bill 100 and related land use provisions “is to promote orderly development by

36. Id.
37. Id. at 1957.
38. Id.
39. Id. at 1959.
40. Id.
41. Id.
42. Id. at 1960. As demonstrated in Part II.C.3 below, planning for school facilities remained controversial and was the subject of legislative initiatives concerning the need for public school sites.
providing for the coordinated use of lands within the state.”

The Attorney General opined that uncoordinated development might impair a county’s ability to effect a plan that provides for the development of a “timely, orderly and efficient arrangement of public facilities and services.”

Later that year, LCDC circulated a policy memo addressing the provisions for public facilities and services. Because Goal 11 states that providing key facilities is a prerequisite to providing housing, local governments were uncertain about financing those key facilities with public revenue. At a December 1, 1978 LCDC meeting, the Commission discussed the intent of Goal 11 in light of housing (Goal 10), and the growing concern about a locality’s ability to provide facilities and services. LCDC concluded that, as a matter of policy, “[t]he Commission does not require public facility planning to the level of engineering drawings or designs as a part of the comprehensive plan for acknowledgment.”

Also in 1978, DLCD issued a “common questions” memo addressing many of the principal concerns local governments expressed about Goal 11, and urban development generally—whether capital improvements programs are required; the meaning of the terms “provision for Key Facilities;” the role of public facilities and services in the adoption of urban growth boundaries and conversions of urbanizable land to urban uses; and whether solid waste sites were required.

First, DLCD explained that Goal 11 had no specific implementing measures, and thus, compliance did not depend on the adoption of any such measures. Oregon state law, however, requires local governments to “[e]nact zoning, subdivision, and other ordinances or regulations to implement comprehensive plans.” Implicit in this obligation is the requirement that regulatory

43. Id.; see also Or. Rev. Stat. § 197.005(1) (2011).
46. See id.
47. Id.
49. Id.
ordinances provide standards for adequate public facilities and services at levels that support proposed development under the plan. 51

In the memo DLCD noted the definition of “key facilities” provided by the goals: “Key facilities are basic facilities that are planned for by local government but which also may be provided by private enterprise. Key facilities are essential to the support of more intensive development and include such facilities as public schools, transportation, water supply, sewage and solid waste disposal.” 52

In advice to local governments, 53 DLCD also addressed the possibility of a capital improvement program, which it stated was not required in order for it to acknowledge a local plan. 54 The plan must simply provide for the delivery of the required public facilities and services—i.e., the plan must provide for key facilities within the financial capabilities of the jurisdiction. 55 This plan must explain how, when, and by whom the necessary facilities and services will be provided. 56 In providing for services, the locality must assess both the alternative methods available to finance the needed facilities, as well as the locality’s ability to provide for this financing. 57 With respect to the timing of the services, DLCD recommended a specific time schedule or capital improvement program. 58 Otherwise, the policies must ensure that public facilities are provided in a coordinated manner and be sufficient to meet the locality’s need for buildable land. 59 Finally, in identifying the service provider, the locality must identify service purveyors, and assess the ability of those purveyors to provide adequate levels of service for the planning period. 60

Because Goal 14 requires a locality to consider the orderly and economic provision of public facilities and services in establishing an

52. Id.
53. This advice was often termed “Common Questions” relating to various Goals and preceded the adoption of administrative rules to implement the goals. Their advantage was that they were non-binding and the advice could change with experience. See Sullivan & Solomou, supra note 13, at 192–221.
55. Id.
56. Id.
57. Id.
58. Id.
59. Id.
60. Id.
Urban Growth Boundary (UGB) and converting urbanizable land to urban uses, that locality must assess whether necessary urban facilities can be provided. To convert urbanizable land to urban uses, extension of public facilities and services will be necessary. Service extensions are one of the first steps to developing more intense urban areas, and serve as method by which growth occurs in a timely and orderly fashion. When service extensions are coupled with capital improvements, public and private development decisions are made with added certainty because land owners know when and how much development may occur, and local officials can prepare budgets that anticipate levels of other support services.\(^61\)

Recalling that certain organizations and corporations were concerned about the need for solid waste sites, DLCD asserted that localities are not required to provide solid waste sites but must inventory solid waste sites and include identified sites in its plan, and existing and future sites must be shown on the plan map. Further, the plan must contain policies that insure future needs are met and that sites will be identified at plan updates, if future sites are needed but not yet identified.\(^62\)

The difficulty with the “Common Questions” papers, such as the one dealing with Goal 11, was that they were not binding and provided no concrete direction for local governments in the interpretation of the goals, most of which were broadly-worded. Ultimately the Oregon Court of Appeals demonstrated the uselessness of the Policy Papers,\(^63\) and the legislature commanded that policy interpretations of goals were to be done by formal rulemaking.\(^64\) Much of this difficulty over informal establishment of policy arose in the context of natural resource lands;\(^65\) however, the need for certainty was also felt within urban growth boundaries.\(^66\) As noted by one critic:

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\(^{61}\) Id. at 6–8.

\(^{62}\) Id.


\(^{64}\) OR. REV. STAT. §§ 197.040(1)(b), (c) (2011).


\(^{66}\) For example, in Dickas v. City of Beaverton, 757 P.2d 451 (Or. 1988), city approval of an urban residential development was remanded because there were inadequate findings to respond to opponents’ allegations that the local schools lacked capacity to accommodate new students.
Although local governments had to demonstrate that public services were available or would soon be provided to existing urban areas, public facilities planning for future urban development received little attention in the early years of the process. Plans approved prior to 1985 were not required to include public facility plans to accommodate anticipated growth. Local governments were also not required to demonstrate financial capacity to pay for needed facilities. Although a proposal during the initial hearings on establishing planning goals during 1974 by the LCDC’s first vice-chairman, Steven R. Schell, would have required capital improvement plans with financial components to assure provision of facilities within urban growth boundaries, the proposal was not adopted. Not until the acknowledgment phase was nearly over were local governments explicitly required to demonstrate that they would make public facilities available to accommodate future development within [urban growth boundaries].

Clearly, it was necessary to bring more certainty to urban land development in lieu of the broad words of the Public Services and Facilities Goal.

D. Amendments to Goal 11

Goal 11 has been amended four times since its adoption in 1974, in each case to meet particular concerns. In most of these cases, LCDC also adopted at the same time implementing administrative rules to provide detail for its new directions; those rules are discussed in detail below. The following general outline of those changes assists the reader in understanding those general directions.

1. The 1988 Goal Amendments

In 1988, LCDC responded to certain 1983 legislation requiring local governments to provide public facilities plans to support future economic opportunities for business in the state. Under that legislation, LCDC was required to adopt new goals or rules or interpret present goals or rules to provide for certain economic opportunities.

68. See infra Parts I.D.1–3.
opportunities.\textsuperscript{70} LCDC adopted administrative rules to meet these mandates in 1984.\textsuperscript{71} The 1988 amendments reflected a strategy of meeting these mandates by amending the goal to require public facilities plans,\textsuperscript{72} in addition to the previously adopted rules.

2. The 1994 and 1998 Goal Amendments

The 1994 amendments, on the other hand, established a new

\textsuperscript{70} Id. These LCDC actions mandated the following:

(a) Comprehensive plans shall include an analysis of the community’s economic patterns, potentialities, strengths and deficiencies as they relate to state and national trends.

(b) Comprehensive plans shall contain policies concerning the economic development opportunities in the community.

(c) Comprehensive plans and land use regulations shall provide for at least an adequate supply of sites of suitable sizes, types, locations and service levels for industrial and commercial uses consistent with plan policies.

(d) Comprehensive plans and land use regulations shall provide for compatible uses on or near sites zoned for specific industrial and commercial uses.

(e) A city or county shall develop and adopt a public facility plan for areas within an urban growth boundary containing a population greater than 2,500 persons. The public facility plan shall include rough cost estimates for public projects needed to provide sewer, water and transportation for the land uses contemplated in the comprehensive plan and land use regulations. Project timing and financing provisions of public facility plans shall not be considered land use decisions.

(f) In accordance with ORS 197.180, state agencies that provide funding for transportation, water supply, sewage and solid waste facilities shall identify in their coordination programs how they will coordinate that funding with other state agencies and with the public facility plans of cities and counties. In addition, state agencies that issue permits affecting land use shall identify in their coordination programs how they will coordinate permit issuance with other state agencies and cities and counties.

(g) Local governments shall provide:

(A) Reasonable opportunities to satisfy local and rural needs for residential and industrial development and other economic activities on appropriate lands outside urban growth boundaries, in a manner consistent with conservation of the state’s agricultural and forest land base; and

(B) Reasonable opportunities for urban residential, commercial and industrial needs over time through changes to urban growth boundaries.

\textsuperscript{71} OR. REV. STAT. § 197.712(2) (2011).

\textsuperscript{72} OR. ADMIN. R. 660-011-0000 to -0050 (1984).

OR. ADMIN. R. 660-015-0000(11) (1988) (Statewide Planning Goal 11) (amended to add the following language: “[a] provision for key facilities shall be included in each plan. Cities or counties shall develop and adopt a public facility plan for areas within an urban growth boundary containing a population greater than 2,500 persons.”). [Editor’s note: Or. ADMIN. R. 660-015-0000 refers to a list of publications that set out the individual Statewide Planning Goals. Those publications are available from the DLCD archives in Salem, and current versions are available online.]
policy to restrict the establishment or extension of the key facilities of sewer and water outside urban growth boundaries. The 1994 version of the goal dealt with sewer and water systems as follows:

Counties shall not allow the establishment of new sewer systems outside urban growth boundaries or unincorporated community boundaries, or allow new extensions of sewer lines from within urban growth boundaries, or allow new extensions of sewer lines from within urban growth boundaries or unincorporated community boundaries to land outside those boundaries.  

In adopting the new language in Goal 11, LCDC heard little dissent about the proposition that sewer systems, in general, were an “urban” service and that, if allowed to be established everywhere, would contribute to or even induce urban levels of development in rural areas. As to water services, the amended goal provided:

For land that is outside urban growth boundaries and unincorporated community boundaries, county land use regulations shall not rely upon the establishment or extension of a water system to authorize higher residential density than would be authorized without a water system.

These amendments dealing with water and sewer facilities outside urban growth boundaries were broadly worded and gave rise to litigation. In DLCD v. Lincoln County, the Court of Appeals reversed a LUBA decision sustaining an objection to a rural residential subdivision based on the 1994 goal amendment. In that case, there was an existing water system within an area where the subdivision was proposed and required only service connections to individual lots, which did not violate the amended goal. As

74. Id.
75. Dep’t of Land Conservation & Dev. v. Lincoln Cnty., 925 P.2d 135 (Or. 1996). In the meantime there were three other cases, all named DeShazer v. Columbia County, which dealt with the same issue of water being provided within an existing service area. In the first two of those cases, DeShazer v. Columbia County, 31 Or. LUBA 300 (1996) and DeShazer v. Columbia County; 34 Or. LUBA 416 (1998), LUBA rejected the relief on the basis of the goal or because the County did not respond appropriately to the Lincoln County case. Finally in DeShazer v. Columbia County, 35 Or. LUBA 689 (1999), LUBA found that a water association providing service to the area met the goal requirements.
76. Lincoln Cnty., 925 P.2d at 138–41. LUBA found that providing service connections
discussed below, these problems were first met with the adoption of new administrative rules, along with modest goal amendments, in 1998.77

3. The 2005 Goal Amendments

Goal 11 was last revised in 2005. The revised goal includes four new definitions related to public facilities and services. First, a “Public Facilities Plan,” requires description of certain facilities needed to support plan designations in certain urban areas.78 Second, a “Community Public Facilities Plan” describes services and facilities for the land use designations in plans for the unincorporated communities outside urban growth boundaries.79 Third, “Water Systems” are broadly defined to include most public systems.80 Finally, the goal was amended to allow LCDC more flexibility in dealing with “extension” of sewer or water lines.81

to an existing service area within a water district was not forbidden by the goal, which prohibited establishment of new water districts or extensions of their services. However, in Gisler v. Deschutes County, 945 P.2d 1051 (Or. 1997), the Court of Appeals upheld a LUBA determination that where there was no water entity that encompassed the area that included the proposed development, the County was not required to permit individual septic systems, and could reject the proposed development.

77. See infra Part I.E.2.

78. OR. ADMIN. R. 660-011-0005 (1984) (current), available at http://www.oregon.gov/lcd/docs/goals/goal11.pdf. This plan is defined as follows:

Public Facilities Plan – A public facility plan is a support document or documents to a comprehensive plan. The facility plan describes the water, sewer and transportation facilities which are to support the land uses designated in the appropriate acknowledged comprehensive plan or plans within an urban growth boundary containing a population greater than 2,500.

Id.

79. Id. This plan is described as follows:

Community Public Facilities Plan – A support document or documents to a comprehensive plan applicable to specific unincorporated communities outside urban growth boundaries. The community public facility plan describes the water and sewer services and facilities which are to support the land uses designated in the plan for the unincorporated community.

Id.

80. Id. The term is defined as follows: “Water system – means a system for the provision of piped water for human consumption subject to regulation under ORS 448.119 to 448.285.” Id.

81. Id. The definition of extension is as follows: “Extension of a sewer or water system – means the extension of a pipe, conduit, pipeline, main, or other physical component from or to an existing sewer or water system, as defined by Commission rules.” Id. As noted below, the revised goal shifts coverage of extensions to administrative rulemaking, in lieu of dealing the subject in the goal itself. Id.
4. Summary—The Evolution of Goal 11

The revisions to Goal 11 reveal a more sophisticated understanding of public facilities and services, and suggest an evolution in Oregonian growth management during the thirty years that elapsed between the initial goal and the 2005 revision.

The revised Goal 11 is better tailored to meet these objectives, and focuses particularly on the issues of water service, waste disposal and sewer systems.\(^{82}\) As revised, the goal provides that “urban and rural development shall be guided and supported by types and levels of urban and rural public facilities and services appropriate for, but limited to, the needs and requirements of the urban, urbanizable, and rural areas to be served.”\(^{83}\)

The goal requires a provision for key facilities.\(^{84}\) The goal divides public facilities into two categories.\(^{85}\) The first category, “Public Facilities Plans,” applies to cities with a population greater than 2,500 persons that have urban growth boundaries or to counties having unincorporated areas within urban growth boundaries of greater than 2,500 persons.\(^{86}\) These localities are required to develop public facilities plans for areas within their urban growth boundaries.\(^{87}\) To meet current and long-range needs, the plans should include “a provision for solid waste disposal sites, including sites for inert waste.”\(^{88}\) The second category, “Community Public Facility Plan,” applies to unincorporated communities.\(^{89}\) These plans are intended to regulate “facilities and services for certain unincorporated communities outside urban growth boundaries as specified by Commission rules.”\(^{90}\) Cities with urban growth boundaries having fewer than 2,500 persons or counties with unincorporated communities defined by an urban growth boundary with fewer than 2,500 persons are not required to prepare either a public facilities plan or a community facilities plan.\(^{91}\) However, counties are required to

\[\text{References}\]


\(^{83}\) Id.

\(^{84}\) Id.

\(^{85}\) Id.

\(^{86}\) Id.

\(^{87}\) Id.

\(^{88}\) Id.


\(^{90}\) Id.

\(^{91}\) Id.
prepare a community facilities plan for certain unincorporated communities, regardless of population, that do not have an urban growth boundary.92

Goal 11 also focuses on essential aspects of public facilities and services, such as waste disposal, and more specifically, sewer systems. The revised goal explains that local governments may not permit “the establishment or extension of sewer systems outside urban growth boundaries or unincorporated community boundaries,” or “extensions of sewer lines from within urban growth boundaries or unincorporated community boundaries to serve land outside those boundaries except where the new or extended system is the only practicable alternative to mitigate a public health hazard and will not adversely affect farm or forest land.”93 Local governments may, however, allow “residential uses located on certain rural residential lots or parcels inside existing sewer district or sanitary authority boundaries to connect to an existing sewer line under the terms and conditions specified by Commission rules.”94 But local governments may not rely “upon the presence, establishment, or extension of a water or sewer system to allow residential development of land outside urban growth boundaries or unincorporated community boundaries at a density higher than authorized without service from such a system.”95 In accordance with Oregon law, “state agencies that provide funding for transportation, water supply, sewage and solid waste facilities shall identify in their coordination programs how they will coordinate that funding with other state agencies and with the public facility plans of cities and counties.”96

While the focus of the planning guidelines of the earlier versions of Goal 11 was on “recreation needs” and “recreation opportunities,”97 the 2005 version emphasizes the distinction between “urban,” “rural,” and “urbanizable” areas, and provides for appropriate responses for each category.98

92. Id.
93. Id.
94. Id.
95. Id.
96. OR. REV. STAT. § 197.712(2)(f); see also OR. REV. STAT. § 197.180 (codifying Statewide Planning Goal 2).
98. Or. ADMIN. R. 660-015-0000 to -0010 (2008). The key planning guideline of Goal 11 is that “plans providing for public facilities and services should be coordinated with plans for designation of urban boundaries, urbanizable land, rural uses and for the transition of rural
E. Development of Implementing Administrative Rules

As the Oregon planning program evolved, it was apparent that broadly-worded goals and ad hoc interpretations would not be a sufficient basis to carry out state policy. After 1983, LCDC took advantage of its statutory authority to adopt binding administrative rules to provide detailed policy direction in interpreting the Statewide Planning Goals. Goal 11 was one of the first places to which LCDC directed its attention.

1. The 1984 Rules

In 1984, administrative rules were adopted requiring local governments to prepare, adopt, and submit public facility plans for all urban areas with populations greater than 2,500. The new rules require a “public facility plan” as a support document to a local comprehensive plan that describes the water, sewer, and transportation facilities necessary to support the land uses specified in the plan. The local government responsible for preparing the public facility plan must be established via an urban growth management agreement for the urban area. Public facility plans must be prepared before the first periodic review and contain an inventory of existing facilities, a list of proposed projects (with “rough cost estimates”), a policy statement identifying providers of every system and project, an estimate of their timing, and a discussion of funding methods and ability to cover costs of the same.
the adoption of these rules in 1984, public facility planning promoted the conversion of urbanizable land into urban land.\textsuperscript{106} These initial rules responded to the immediate concerns of the legislature, but put off a more contentious discussion over the provision of water and sewer facilities outside urban growth boundaries.

However, two issues plagued the discussion of public facilities and services: (1) concerns over regulatory takings, and (2) lack of guidance from LCDC regarding when/where to extend urban facilities and services into urbanizable areas.\textsuperscript{107} Ultimately the first concern was dismissed as the timing of public facilities and services (as opposed to denial of all development) appeared to raise fewer concerns.\textsuperscript{108} The failure to provide better policy guidance proved to be a more intractable issue, particularly with respect to provision of water and sewer facilities outside urban growth boundaries.

2. The 1998 Rule Amendments

In Part I.D.2 above, LCDC’s attempts to restrict establishment or extension of water and sewer services by amending Goal 11 in 1994 were shown to be only partially successful. To assure that it could respond more quickly to ambiguities in its established policies, LCDC facility plans must include:

1. an inventory, describing the location, capacity, and condition of existing facilities;
2. a list of proposed projects, including type, location, and capacity;
3. rough cost estimates for proposed projects, to generally establish the fiscal requirements of the comprehensive plan’s designated land uses and to assist in reviewing existing funding mechanisms;
4. policy statements, identifying the providers of every system and project;
5. estimates of the timing of each public facility project, which must be commensurate with the comprehensive plan’s projected growth estimates; and
6. a discussion of the funding mechanisms for each project and their ability to cover costs.

\textsuperscript{Id.}

\textsuperscript{106} Nevertheless, these rules provide no basis for review of a public facility plan, as Oregon Revised Statutes section 197.712(2)(c) specifically provides that such plans do not constitute land use decisions. Instead, challenges must await the occasion of carrying out the public facilities plan, for example, in a comprehensive plan. Home Builders Ass’n of Lane Cnty. v. City of Springfield, 129 P.3d 713 (Or. 2006); see also Bicycle Transp. Alliance v. Wash. Cnty., 25 Or. LUBA 798 (1993), aff’d on other grounds, 873 P.2d 452 (Or. Ct. App. 1994). To some extent, this deferral of challenges deprived those plans of meaning.

\textsuperscript{107} Knaap & Nelson, supra note 33.

adopted administrative rules to specify when sewer and water facilities could be provided. Those new rules obviated any ambiguity over the establishment or extension of these facilities into rural areas.109

In *Foland v. Jackson County*, the Oregon Court of Appeals declined to limit the prohibition on extension of water services to residential uses and interpreted the goal as follows:

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109. OR. ADMIN. R. 660-11-0060 (1998). In particular, the new rules provided, with respect to sewer facilities:

   (2) Except as provided in . . . this rule, and consistent with Goal 11, a local government shall not allow:

   (a) The establishment of new sewer systems outside urban growth boundaries or unincorporated community boundaries;

   (b) The extension of sewer lines from within urban growth boundaries or unincorporated community boundaries in order to serve uses on land outside those boundaries;

   (c) The extension of sewer systems that currently serve land outside urban growth boundaries and unincorporated community boundaries in order to serve uses that are outside such boundaries and are not served by the system on July 28, 1998.

   *Id.* With respect to water facilities, the new rules provided:

   (1) As used in this rule, unless the context requires otherwise:

   (a) “Establishment” means the creation of a new water system and all associated physical components, including systems provided by public or private entities;

   (b) “Extension of a water system” means the extension of a pipe, conduit, pipeline, main, or other physical component from or to an existing water system in order to provide service to a use that was not served by the system on the applicable date of this rule, regardless of whether the use is inside the service boundaries of the public or private service provider.

   (c) “Water system” shall have the same meaning as provided in Goal 11, and includes all pipe, conduit, pipeline, mains, or other physical components of such a system.

   (2) Consistent with Goal 11, local land use regulations applicable to lands that are outside urban growth boundaries and unincorporated community boundaries shall not:

   (a) Allow an increase in a base density in a residential zone due to the availability of service from a water system;

   (b) Allow a higher density for residential development served by a water system than would be authorized without such service; or

   (c) Allow an increase in the allowable density of residential development due to the presence, establishment, or extension of a water system.

   (3) Applicable provisions of this rule, rather than conflicting provisions of local acknowledged zoning ordinances, shall immediately apply to local land use decisions filed subsequent to the effective date of this rule.

In short, Goal 11 concerns the provision of public facilities and services. Specifically, the goal requires an “orderly and efficient arrangement of public facilities and services” and is intended to regulate development by limiting facilities and services to “the needs and requirements of the urban, urbanizable, and rural areas to be served.” In other words, by limiting facilities and services to the needs and requirements of the land to be served (i.e., urban, urbanizable, rural), Goal 11 helps prevent the proliferation of urban uses in rural areas that might otherwise result from the extension of urban-level facilities and services outside an urban growth boundary (UGB) to rural land.\footnote{Foland v. Jackson Cnty., 243 P.3d 830, 831 (Or. 2010). The 2005 administrative rules, discussed below, did not affect the outcome of this case.}

The court concluded that the effect of the goal and its implementing administrative rules was to prohibit extension of a city water line to serve a rest stop outside its urban growth boundary and to require that an exception be taken to that goal.\footnote{Id. at 831.}

3. The 2005 Rule Amendments

In 2005, the LCDC loosened slightly the restrictions on providing sewer service outside urban growth boundaries when it amended the rule that addresses sewer service to permit additional situations to qualify.\footnote{OR. ADMIN. R. 660-011-0060(8) (2005). The principal changes are the references to situations that existed as of January 1, 2005:}

- (8) A local government may allow a residential use to connect to an existing sewer line provided the conditions in subsections (a) through (h) of this section are met:
  - (a) The sewer service is to a residential use located on a parcel as defined by ORS 215.010(1), or a lot created by subdivision of land as defined in ORS 92.010;
  - (b) The parcel or lot is within a special district or sanitary authority sewer service boundary that existed on January 1, 2005, or the parcel is partially within such boundary and the sewer service provider is willing or obligated to provide service to the portion of the parcel or lot located outside that service boundary;
  - (c) The sewer service is to connect to a residential use located within a rural residential area, as described in OAR 660-004-0040, which existed on January 1, 2005;
  - (d) The nearest connection point from the residential parcel or lot to be served is within 300 feet of a sewer line that existed at that location on January 1, 2005;
  - (e) It is determined by the local government to be practical to connect the
emphasized the general prohibition on allowing urban services to be provided outside urban growth boundaries and underscores one of the principal objectives of this goal—i.e., to reinforce the state policy on separation of urban and rural uses through urban growth boundaries.

II. OREGON INFRASTRUCTURE PLANNING

A. Introduction

This part of the article will focus upon the mechanics of infrastructure planning in Oregon, both through Goal 11 and its implementing administrative rules and a host of other enactments. Following this introduction, infrastructure planning will be analyzed from the standpoints of economic development planning, intergovernmental coordination and other legislation affecting the provision of infrastructure.

However, one major area will not be explored in this article—transportation. Oregon has a separate goal related to transportation, Goal 12, and a separate system to deal with transportation issues under a different set of implementing administrative rules. Those differences are sufficiently profound as to require separate treatment elsewhere.

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sewer service to the residential use considering geographic features or other natural or man-made constraints;

(1) The sewer service authorized by this section shall be available to only those parcels and lots specified in this section, unless service to other parcels or lots is authorized under sections (4) or (9) of this rule;

(2) The existing sewer line, from where the nearest connection point is determined under subsection (8)(d) of this rule, is not located within an urban growth boundary or unincorporated community boundary; and

(3) The connection of the sewer service shall not be relied upon to authorize a higher density of residential development than would be authorized without the presence of the sewer service, and shall not be used as a basis for an exception to Goal 14 as required by OAR 660-004-0040(6).

Id.


B. Planning for Urban Economic Development

The presence of a statewide land use program has provided the tools to enable coordination of economic development, which was recognized in the 1988 and 2005 amendments to Goal 11, as well as in the 1984 and 2005 administrative rules implementing the goal. These tools were designed to encourage planning for economic development, principally in urban areas where appropriate types and levels of infrastructure may be provided.

As originally conceived during an economic downturn in 1983, LCDC was to coordinate economic development planning. This was to be accomplished by adoption of goals, rules and a local comprehensive planning process to (1) analyze “economic patterns, potentialities, strengths and deficiencies,” (2) provide economic development policies in the plan, (3) provide for “suitable sizes, types, locations and service levels for industrial and commercial uses, (4) “provide for compatible uses near those commercial and industrial sites, and (5) provide for a “public facilities plan” to deal with sewer, water and transportation issues for urban growth boundaries with a population of 2,500 or more.\textsuperscript{115}

Moreover, state agencies providing funding for transportation, water supply, sewage, and solid waste facilities are required to work with local governments to coordinate funding and permit issuance.\textsuperscript{116} In particular, the Oregon Business Development Department is required to provide technical assistance to local governments in planning for industrial and commercial development, streamlining permit procedures and providing data for economic development.\textsuperscript{117} For the most part, these activities are concentrated in urban areas and seek to make enhanced use of existing planning structures.

C. Planning Coordination

Oregon is no different than other states with a diffuse mix of state and sub-state public entities given authority to deal with particular responsibilities. State agencies, a metropolitan government for the Portland urban area (Metro),\textsuperscript{118} local governments (meaning...

\textsuperscript{117} OR. REV. STAT. § 197.638 (2011).
\textsuperscript{118} See Metropolitan Service District Act of 1997, OR. REV. STAT. §§ 268.010–990 (2011); see also OREGON METRO, http://www.oregonmetro.gov/ (last visited Apr. 25, 2013). Metro is an elected regional government for the urban portions of the three counties that...
cities and counties), and special districts that provide services such as sewer, water, fire protection, are all part of the planning process. The possibility of conflicting or cumulatively burdensome actions taken in a given case gives rise to efforts to coordinate land use planning and regulation at various levels. A plan is coordinated when “the needs of all levels of governments, semipublic and private agencies and the citizens of Oregon have been considered and accommodated as much as possible.”

Goal 2 (Land Use Planning) requires that comprehensive plans and implementing measures “be coordinated with the plans of affected governmental units.” Other goals implicitly require such coordination in dealing with such diverse activities as enforcement of state environmental laws, parks planning, and transportation funding.

1. State Agency Coordination

Oregon statutory law provides that state agencies shall carry out their planning duties, powers and responsibilities and take actions that are authorized by law with respect to programs affecting land use. As a result, state agencies and local governments are required to coordinate their land use actions through an LCDC-certified land use coordination program.

Specifically, state agencies with land use coordination programs must participate in local government land use hearings to be able to challenge the ultimate local decision. Similarly, state agencies are normally required to follow local comprehensive plans and land use regulations when issuing or denying agency permits. Typically, that decision is informed by a “Land Use Compatibility Statement” issued

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123. See OR.ADMIN.R. 660-030-0000 to -0095.
Moreover, in cooperation with local governments and state agencies whose rules, plans or programs affect land use, DLCD will periodically “identify aspects of coordination related to uses that require the issuance of multiple permits,” and “update and improve rules regulating the effectiveness and efficiency of state agency coordination programs.” These programs must be submitted to DLCD for review and certification. Upon certification, a state agency may participate in local government proceedings to advance those agency interests identified in its certified program. Generally however, state agencies may not take actions inconsistent with local plans.

2. Coordination by Metro or Counties

Oregon has designated its counties as the planning coordinators for other local governments in the state, with the exception of Metro, which is the regional planning agency for the urban portions of the region. As coordinator, a county or Metro has significant power to deal with provision of infrastructure, especially outside cities. One of the other functions of the coordinator is to deal with the results of the 10-year federal census and allocate the population among the cities and the unincorporated areas of the region.

Oregon law requires coordination of city and county land use plans with the plans and activities of special districts. Coordinators may also determine whether the plans and actions of such districts conform to the goals. If those plans or provisions are inconsistent with the goals or acknowledged comprehensive plans and regulations, they may be overturned.

Another function of the coordinator is to convene a meeting of urban service providers within an urban area for the purpose of reaching agreement on which agency provides the urban service.
According to statute, the contents of these agreements are somewhat detailed; however, neither LCDC nor local coordinators have pressed for completion of these agreements and, because there is no penalty for noncompliance, the statutes are effectively unused. If the coordinator sought to use the statutory power granted it, however, it would be significant.

3. School District Planning

Among other things, school districts in Oregon must acquire and dispose of lands for their facilities.\textsuperscript{133} However, because schools can be either urban or rural uses, these decisions have land use implications, particularly on their effects on rural lands. These impacts moved the Oregon legislature to enact a statute to deal specifically with planning for “large school districts,”—i.e., those having an enrollment of 2,500 students or more.\textsuperscript{134} Under the statute, the city or county having jurisdiction in most cases includes in its comprehensive plan a school facility plan prepared by the district in consultation with it, and undertakes the coordination of planning with the district as required with any special district.\textsuperscript{135} Representatives of the school district and the city or county must meet twice a year and come up with a fairly detailed plan.\textsuperscript{136} Districts that do not fall into the “large school district” category may, but are not required to, undertake this work.\textsuperscript{137}

Perhaps the most controversial part of this coordination process is over the statutory delegation to each large district of the adoption of criteria by which the local government must determine whether adequate school capacity exists to accommodate future residential development. The statute is neatly balanced so that it does not have the effect of the school district declaring or imposing a moratorium on residential development and limiting the ability of a local government to deny a discretionary permit on the basis of school capacity.

\textsuperscript{133} OR. REV. STAT. § 195.110 (2011).
\textsuperscript{134} OR. REV. STAT. §§ 195.110(1)–(2) (2011).
\textsuperscript{135} Id.
\textsuperscript{136} OR. REV. STAT. § 195.110(4) (2011).
\textsuperscript{137} OR. REV. STAT. § 195.110(10) (2011). Metro must also consider the needs of school districts in revising the Portland metropolitan area urban growth boundary. OR. REV. STAT. § 197.299(4) (2011).
4. Parks Planning

After an apparent conflict between park agencies and local governments, the state legislature “grandfathered-in” those uses existing as of July 25, 1997, and allows for their expansion. At the same time, the legislature provided for a planning process to apply to state and local parks where there are adopted parks master plans, provide for a planning process for future parks, and to adopt a dispute resolution mechanism for uses in state parks. The newly amended goal and its implementing rules give LCDC much more power to deal with local governments regulating uses on state park lands.

D. Other Legislative Directions or Limitations on Infrastructure Provision

Five other statutory provisions are of interest in dealing with infrastructure.

1. Limitation on Moratoria

Oregon law severely limits the use of moratoria on new development in land use planning. The accepted view is that planning for a 20-year period should make a moratorium unnecessary, except in cases of infrastructure failure. Thus, it will be difficult to enact or sustain a moratorium.

In order to enact a moratorium, a local government must give 45-day notice to DLCD (but must also accept development applications from landowners and be bound to development rules in existence at the time of those applications), hold a hearing and adopt findings to justify the moratorium. If the action is based on a shortage of public facilities, the local government must make specified findings and take certain actions. Moratoria may last no more than 120

139. OR. REV. STAT. § 197.520 (2011).
140. OR. REV. STAT. § 197.296(2) (2011).
141. Id.
142. A moratorium may be justified to prevent a shortage of public facilities by demonstrating the following:
   (a) Showing the extent of need beyond the estimated capacity of existing public facilities expected to result from new land development, including identification of any public facilities currently operating beyond capacity, and the portion of such capacity already committed to development;
   (b) That the moratorium is reasonably limited to those areas of the city, county or special district where a shortage of key public facilities would otherwise occur; and
days, but if extended, a new hearing and findings are required (which gives interested persons another opportunity to appeal them). In recent years local governments in Oregon have rarely used moratoria.

2. Availability of Urban Lands for Development

Oregon requires that lands within urban growth boundaries be available for urban development within the 20-year planning period, although those lands may be used for rural uses until they are ready for development. The statute enables local governments to commit to infrastructure planning so that, at the end of the 20 year build-out period, the urban area will be developed and furnished with adequate infrastructure.

3. Abandoned Mill Sites

In an effort to support employment growth in rural Oregon, areas that had once been the center of a thriving timber industry, the legislature enacted House Bill 2691 in 2003. The bill provides for the industrial use of certain abandoned or diminished wood product production sites, facilitates amendments of comprehensive plans and land use regulations to that end, and allows for provision of sewer facilities. The statute further provides that the governing body of a
county may amend its comprehensive plan and land use regulations to allow rezoning of an abandoned or diminished mill site for industrial use, without complying with Statewide Planning Goals relating to protection of resource lands or prevention of urbanization outside urban growth boundaries.\textsuperscript{149} From an infrastructure standpoint, the statute permits provision or extension of sewage facilities or establishment of an onsite facility to serve the site.\textsuperscript{150}

4. Other Industrial Lands

In 2003, the Oregon legislature enacted two statutes to allow for industrialization and the provision of sewage services to certain rural lands outside the Willamette Valley, where a great deal of prime farm and forest lands are found,\textsuperscript{151} without requiring an exception to the Statewide Planning Goals.\textsuperscript{152} These statutes have not been tested in an appeal and have largely not been used.

One statute lifts the requirements of the urbanization and infrastructure goals in order to provide available industrial lands and sewer service to serve those lands in rural areas.\textsuperscript{153} However, such

\textsuperscript{149} OR. REV. STAT. §§ 197.719(2)–(3) (2011). (Under subsection (6), the county is also authorized to determine the boundary of the site effectively exempt from the provisions of these goals as well.).

\textsuperscript{150} OR. REV. STAT. § 197.719(4) (2011) provides:

(4) Notwithstanding a statewide land use planning goal relating to public facilities and services or administrative rules implementing that goal, the governing body of a county or its designee may approve:

(a) The extension of sewer facilities to lands that on June 10, 2003, are zoned for industrial use and that contain an abandoned or diminished mill site. The sewer facilities may serve only industrial uses authorized for the mill site and contiguous lands zoned for industrial use.

(b) The extension of sewer facilities to an abandoned or diminished mill site that is rezoned for industrial use under this section only as necessary to serve industrial uses authorized for the mill site.

(c) The establishment of on-site sewer facilities to serve an area that on June 10, 2003, is zoned for industrial use and that contains an abandoned or diminished mill site or to serve an abandoned or diminished mill site that is rezoned for industrial use under this section. The sewer facilities may serve only industrial uses authorized for the mill site and contiguous lands zoned for industrial use.

\textsuperscript{151} OR. REV. STAT. § 197.713(3) (2003); OR. REV. STAT. § 215.010 (2003) (county planning, zoning, and housing codes specifically describing the Willamette Valley).

\textsuperscript{152} OR. REV. STAT. § 197.732 (2011) (describing the exceptions process).

\textsuperscript{153} See OR. REV. STAT. §§ 197.713(1)–(2) (2003).
lands may not be used for retail, commercial or residential purposes. 154 The other statute requires notice to cities in the case of some of these proposals, along with a process for collaboration and conflict resolution. 155

5. Industrial Super-siting for Regionally Significant Industrial Areas

In 2011, the Oregon legislature reacted to the continuing recession by enacting Senate Bill 766. 156 It created an Economic Recovery Review Council composed of five state agency directors. 157 The Council, which will dissolve after the state unemployment rate goes under 6%, 158 has two major functions:

1. To designate by rule five to fifteen “regionally significant industrial area[s]” 159 that will be eligible for an expedited permitting process; 160 and

157. Act of June 28, 2011, ch. 564, vol. 2 2011 Or. Laws 1742 § 3(1). The Council is composed of the directors of the Oregon Business Development Department, the Department of Land Conservation and Development, the Department of Transportation, the Department of Environmental Quality, and the Department of State Lands. Id.
159. OR. REV. STAT. § 197.722(2)(1) (2011) provides:
Regionally significant industrial areas means an area planned and zoned for industrial use that:
(a) Contains vacant sites, including brownfields, that are suitable for the location of new industrial uses or the expansion of existing industrial uses and that collectively can provide significant additional employment in the region;
(b) Has site characteristics that give the area significant competitive advantages that are difficult or impossible to replicate in the region;
(c) Has superior access to transportation and freight infrastructure, including, but not limited to, rail, port, airport, multimodal freight or transshipment facilities, and other major transportation facilities or routes; and
(d) Is located in close proximity to major labor markets.
160. OR. REV. STAT. §§ 197.723(1), (4) (2011). (The expedited process is available only to urban industrial lands, the development of which does not require a goal exception or plan amendment or zone change. In addition, once designated, these areas are “protected” from most changes in planning or zoning designations by local governments.); OR. REV. STAT. §§ 197.726(1)–(3) (2011) (Council decisions are subject to an expedited review process with limited grounds for review.).
2. To hear and determine eligible applications for expedited state and local permits for development of industrial lands of “state significance”\(^\text{161}\) that will all be heard in one proceeding involving application of all state and local criteria\(^\text{162}\) and will be subject to a single appeal with limited opportunities and grounds for judicial review.\(^\text{163}\)

As of early 2013, neither a designation of regionally significant industrial lands, nor any development permit for development of industrial lands of state significance has been tested.

III. URBAN AND RURAL LEVELS OF SERVICES AND FACILITIES

A. Relationship of Goal 11 with Goal 14 (Urbanization)—Curry County

Goal 11 provides separate obligations for the provision of services and facilities to urban and rural areas, stating:

Urban and rural development shall be guided and supported by types and levels of urban and rural public facilities and services

\(^\text{161}\) Act of June 28, 2011, ch. 564, vol. 2 2011 Or. Laws 1742 § 1. These projects are designed to:
\begin{itemize}
  \item (a) Create jobs with average wages above 180 percent of the minimum wage.
  \item (b) Create a large number of new jobs in relation to the economy and population of the area directly impacted by the development.
  \item (c) Create permanent jobs in industrial uses.
  \item (d) Involve a significant investment of capital in relation to the economy and population of the area directly impacted by the development.
  \item (e) Have community support, as indicated by a resolution of the governing body of the local government within whose land use jurisdiction the industrial development project would occur.
  \item (f) Do not require:
    \begin{itemize}
      \item (A) An exception taken under ORS 197.732 to a statewide land use planning goal;
      \item (B) A change to the acknowledged comprehensive plan or land use regulations of the local government within whose land use jurisdiction the industrial development project would occur; or
      \item (C) An federal environmental impact statement under the National Environmental Policy Act.
    \end{itemize}
\end{itemize}


\(^\text{163}\) Act of June 28, 2011, ch. 564, vol. 2 2011 Or. Laws 1742 §§ 2(12), (13). The limited review is important, for the Council’s decision binds both state agencies and local governments unless modified or overturned on appeal. 2011 Or. Laws 564 §§ 2(8), (9).
appropriate for, but limited to, the needs and requirements of the urban, urbanizable, and rural areas to be served.164

The Goal thus differentiates between “rural” and “urban” facilities and services. “Rural” facilities and services simply are those facilities and services that the governing body determines to be suitable and appropriate solely for the needs of rural use.165 On the other hand, “urban” facilities and services are described in detail.166 The definition specifically refers to key facilities and to appropriate types and levels of at least the following services: “police protection; sanitary facilities; storm drainage facilities; planning, zoning and subdivision control; health services; recreation facilities and services; energy and communication services; and community governmental services.”167 These urban services are most often provided by cities.

For areas outside Oregon’s cities, the inclination to deal with public services and facilities has been accomplished through the use of a host of service districts to provide water, sewer, drainage, fire protection and many other public facilities and services of either an urban or rural nature. Special districts may exist within cities, but are more commonly found outside them. Special districts may compete with cities to provide services, and their customers and governing body members may feel a sense of competition with cities to provide the same services.

Goal 11 provides local governments more discretion to determine what types and levels facilities and services rural areas would have, so long as they are appropriate to rural uses. As this part of the article demonstrates, one of the principal sources of planning disagreement in the state is over providing urban services in rural areas where they may be used to urbanize those areas. Such practices violate Goal 14, which provides for the orderly transition of lands from rural to urban. On the other hand, in urban areas, the goal requires specific facilities and services, and also requires coordinated planning for them.

In order to understand Goal 11 as it relates to the requirement that local governments provide for various types of public facilities and services, one must also understand the relationship of Goal 11 to

165. Id.
166. Id.
167. See id. (defining “urban facilities and services”).
Goal 14 (Urbanization). Goal 14 was one of the original goals, adopted in 1975 and amended in 2006. The purposes of Goal 14 are to “provide for an orderly and efficient transition from rural to urban land use, to accommodate urban population and urban employment inside urban growth boundaries, to ensure efficient use of land, and to provide for livable communities.” Oregon accomplishes these objectives through the establishment and change of urban growth boundaries. The working theory is that urban levels of service must be planned for and provided within those boundaries, while anything beyond rural levels of service is inappropriate for lands outside these boundaries, because urban services would lead to inappropriate and premature urbanization.

As to public facilities and services, Goal 14 articulates a “demonstrated need” standard for uses such as public facilities as a basis for the establishment and change of urban growth boundaries. The goal also provides that the location of and changes to an urban growth boundary shall be determined by evaluating, inter alia, the “[o]rderly and economic provision of public facilities and services.”

In the most significant case interpreting Goal 14, 1000 Friends of Oregon v. LCDC (Curry County), the Oregon Supreme Court held that any comprehensive plan that converts “rural land” outside of established urban growth boundaries to “urban uses” must either show that its action complies with Goal 14, or take an “exception” to it.

The Court’s conclusion followed from Goal 14’s express purpose “[t]o provide for an orderly and efficient transition from rural to urban land use,” and its provision that “urban growth boundaries be
established to identify and separate urbanizable land from rural land.” In *Curry County*, the county had taken exceptions to Goals 3 and 4, and, relying on those exceptions, had authorized “urban” levels of residential, commercial and industrial development on those “rural” lands without also applying or taking exceptions to Goal 14. The issue in the case was whether Goal 14 must be applied or an exception to Goal 14 must be taken to authorize “urban uses” on “rural land.” The court held that the county was required either to apply Goal 14 or take an exception to it. The court encouraged the LCDC to develop consistent policies for evaluating what “urban uses” meant through either the rules or definitions. However, because the LCDC had yet to define “rural” and “urban” uses (except for unincorporated communities), the delineation between the two terms remained unclear, and such determinations remained subject to LUBA and judicial analysis on a case-by-case basis for the next twenty years.

Goal 14 requires the establishment, change and periodic evaluation of urban growth boundaries, which is a significant means by which these farm and forest land preservation policies as well as provision of urban services and facilities for urban areas are achieved. In this part, we set out the role of Goal 11 considerations in making the distinction between lands within urban growth boundaries, which may be urbanized and provided with urban levels of public services and facilities, and rural lands, which generally must be served by rural levels of those services and facilities. However, the urban growth boundary does not always delineate between urban and rural levels of service, as will be shown below:

1. Areas both inside and outside urban growth boundaries may

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174. 1000 Friends of Or., 724 P.2d at 273.
175. Id.
176. Id. at 289; see also OR. REV. STAT. § 197.732 (2011) (goal exceptions); OR. ADMIN. R. 660-015-0000(2) (2008) (Statewide Planning Goal 2). Goal 2 is the basis for any exception to other Goals. See OR. ADMIN. R. 660-004-0000 to -0040 (Goal 2 implementing rules).
177. 1000 Friends of Or., 724 P.2d at 307–09.
attempt to incorporate, so as to form their own cities and, hence their own urban growth boundaries, as discussed in Section B, below.

2. The legislature has provided for certain uses in so-called “Exclusive Farm Use” (EFU) zones, notwithstanding that they may be urban in nature or that these de facto urban areas already exist, as discussed in Section C, below.

3. Existing cities may annex land to extend services and grow in an orderly way. This process, both before and after acknowledgment of plans and land use regulations, is discussed in Section D, below.

4. Rural areas may require services that might be deemed urban in nature, as discussed in Section E, below.

5. Oregon has attempted to coordinate provision of urban levels of services in the establishment and change of urban growth boundaries by administrative rule, as discussed in Section F, below.

Largely, these issues were not fully anticipated when the Oregon planning program began. Rather, they were a response to circumstances, and sometimes developed simultaneously in efforts to use public services and facilities as a means of enforcing the urban-rural distinction.

B. Incorporation of Cities

Only eight years after the Oregon program began, followers of an Eastern Guru, Bhagwan Shree Rajneesh, settled on a rural ranch in Eastern Oregon and sought to incorporate a portion of that ranch as the City of Rajneeshpuram to build an urban community, spreading controversy and litigation in its wake.180 Ultimately, the Oregon Supreme Court found incorporation itself did not urbanize lands (and did not necessarily require urban levels of public facilities and services)—which limited review of the incorporation decision in that

For reasons unrelated to land use, the City was enjoined and passed into history.\textsuperscript{182} As part of the Rajneeshepuram controversy, LCDC attempted to adopt, and apply retroactively, an administrative rule that would have made all incorporations very difficult. The rule required that prospective municipal incorporators secure an exception to a number of Statewide Planning Goals, including Goals 11 and 14.\textsuperscript{183} The Court of Appeals struck down the rule as inconsistent with the goals the rule was promulgated to implement and, in fact, amended those goals without undertaking the goal amendment process.\textsuperscript{184} Later municipal incorporation cases did not turn on goal issues.\textsuperscript{185}

\begin{itemize}
\item \textsuperscript{181} 1000 Friends of Or. v. Wasco Cnty. Court, 703 P.2d 207, 223–24 (Or. 1985) (reviewing the goal 14 definition of “urban” as requiring the presence of a city). The Court concluded that:

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[\textit{u}nder this definition, the existence of a city is a prerequisite for urban land. LCDC asserts that from this simple statement can be derived the underlying premise in its analysis: that the effect of incorporation by itself is to make available for urbanization land which would otherwise have to be rural, because where a city exists there may be urban land.

LCDC’s theory is seductively simple because, realistically, most incorporated cities will eventually draw urban growth boundaries and thus have some land available for future urbanization. The problem with LCDC’s theory regarding the effect of incorporation is that the analysis fails to distinguish a county’s participation in the incorporation process from the subsequent action of a new city exercising its planning responsibilities in accordance with ORS 197.175. The county court’s decision authorized the voters in the affected area to determine by election whether to create a municipal corporation. That decision neither authorized nor accomplished any change in the classification or use of the land included within the proposed corporate boundaries.
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\textit{Id.} Under Goal 14, it is the establishment of the urban growth boundary, and not the city’s creation, that makes land available for urbanization. OR. ADMIN. R. 660-015-0000(14) (2008). In sum, before establishment of the urban growth boundary, the land within the new city’s corporate boundaries retains its previous classifications. \textit{Id.} Until such time as the new city considers the seven establishment factors and adopts a UGB, pursuant to Goal 14, in cooperation with the affected county or counties, and until LCDC acknowledges the comprehensive plan which includes the proposed UGB, the designations in the county’s comprehensive plan and ordinances will continue to apply to the land within the new city’s corporate boundaries. \textit{See} OR. REV. STAT. § 195.025 (2011); OR. REV. STAT. § 197.251 (2011).
\end{quote}
\end{itemize}

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\item \textsuperscript{182} See State of Or. v. City of Rajneeshepuram, 598 F. Supp. 1208, 1216–17 (D. Or. 1984) (holding that the relationship of the religious group and the City violated the First Amendment).
\item \textsuperscript{183} OR. ADMIN. R. 660-14-000 (1984).
\item \textsuperscript{184} McKnight v. Land Conservation & Dev. Comm’n, 704 P.2d 1153, 1154 (Or. Ct. App. 1985).
\item \textsuperscript{185} Aloha Inc. Advisory Comm. v. Portland Metro. Area Local Gov’t Boundary Comm’n, 695 P.2d 941 (Or. Ct. App. 1985), \textit{rev. den.} 700 P.2d 251 (Or. 1985); Mid-County
C. Permissible Urbanization in Rural Areas

1. Uses Permitted by Statute in Exclusive Farm Zones

A vexed question in the history of the Oregon land use program is whether those uses permitted by statute in an exclusive farm zone are required to operate at a rural level of use or may have urban levels of services and facilities. Since 1963, the legislature has added to this list of uses, so that there are now over fifty, some (farm dwellings, harvesting of forest products, provision of rural fire protection services) compatible with rural uses, while others (major roads, power generation facilities, solid waste disposal sites) serve both urban and rural uses.

The Court of Appeals resolved the issue in **Jackson County Citizens League v. Jackson Cnty.**, concluding that uses permitted by statute in an exclusive farm use zone (in this case a golf facility) are not subject to the additional requirement that they be rural or that the local government take a Goal 14 exception.

2. The Conundrum of Providing Public Services and Facilities in Exclusive Farm Zones and Policies for Preservation of Resource Lands

Oregon statutory policy on farmland preservation reinforces the purposes of Goal 14. It states that “the preservation of a maximum amount of the limited supply of agricultural land is necessary to the conservation of the state’s economic resources and the preservation of such land in large blocks is necessary in maintaining the agricultural economy of the state.” The policy further states that “[e]xpansion of urban development into rural areas is a matter of public concern because of the unnecessary increases in costs of community services, conflicts between farm and urban activities and the loss of open space and natural beauty around urban centers occurring as the result of such expansion.”

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188. Id. at 47–49.
preserving forest lands. LUBA and the appellate courts are often called upon to harmonize these preservation policies with the statutory allowance of uses in farm zones.

The most frequent type of case involving provision of public facilities and services in rural areas involves “utility facilities necessary for public service,” a use permitted outright in an exclusive farm use zone.

In *McCaw Communications v. Marion County*, the Oregon Court of Appeals did not determine whether a use was urban or rural, but interpreted the term “necessary” in context with the state policy of preserving farmland. The court wrote:

> We conclude that, for a “utility facility” to be permitted under section 137.020(d), the applicant must establish and the county must find that it is necessary to situate the facility in the agricultural zone in order for the service to be provided.

LCDC codified the *McCaw Communications* interpretation of the phrase “utility facilities necessary for public service.”

In 1995, the legislature amended the statutes permitting non-farm uses in Exclusive Farm Use zones to allow “the placement of utility facilities overhead and in the subsurface of public roads and highways along the public right of way.” Under this legislation, utility facilities so located are not otherwise subject to a “necessity” analysis under the statutes and LCDC rules, nor are they subject to any limitations under various Goal 11 administrative rules such as those applicable to sewer or water line extensions.

However, the 1999 Oregon Legislature provided for a uniform method of determining whether a public utility facility is “necessary” in an Exclusive Farm Use zone to enable facility installation in those cases where non-resource or urban lands were not available to

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194. *Id.*; *see also* Dayton Prairie Water Ass’n v. Yamhill Cnty., 11 P.3d 671, 672 (Or. Ct. App. 2000).
accommodate those utility facilities. 198

The Court of Appeals applied the new statute for the first time in *Sprint PCS v. Washington County,* in which it concluded:

What the statutory phrase “reasonable alternatives” means presents a question of statutory interpretation, and we begin with the text and context of that phrase. As noted, ORS 215.275(1) provides that a utility facility is “necessary for public service” within the meaning of ORS 215.283(1)(d) “if the facility must be sited in an exclusive farm use zone in order to provide the service.”


1. A utility facility established under ORS 215.213 (1)(c) or 215.283 (1)(c) is necessary for public service if the facility must be sited in an exclusive farm use zone in order to provide the service.

2. To demonstrate that a utility facility is necessary, an applicant for approval under ORS 215.213 (1)(c) or 215.283 (1)(c) must show that reasonable alternatives have been considered and that the facility must be sited in an exclusive farm use zone due to one or more of the following factors:
   a. Technical and engineering feasibility;
   b. The proposed facility is locationally dependent. A utility facility is locationally dependent if it must cross land in one or more areas zoned for exclusive farm use in order to achieve a reasonably direct route or to meet unique geographical needs that cannot be satisfied on other lands;
   c. Lack of available urban and nonresource lands;
   d. Availability of existing rights of way;
   e. Public health and safety; and
   f. Other requirements of state or federal agencies.

3. Costs associated with any of the factors listed in subsection (2) of this section may be considered, but cost alone may not be the only consideration in determining that a utility facility is necessary for public service. Land costs shall not be included when considering alternative locations for substantially similar utility facilities. The Land Conservation and Development Commission shall determine by rule how land costs may be considered when evaluating the siting of utility facilities that are not substantially similar.

*Id.*

199. 63 P.3d 1261, 1265–66 (2003). The Court noted that LUBA had dealt with the interpretation matter earlier in *City of Albany v. Linn County,* 40 Or. LUBA 38, 51 (2001), and agreed with LUBA’s interpretation. *Id. at 1265.* In *City of Albany v. Linn County,* the city viewed “necessary for public service” factors as applying only to the proposed Exclusive Farm Use (“EFU”) location, believing that, if the factors were present, the facility could be placed on the EFU site without further analysis. 40 Or. LUBA at 51. However, LUBA explained that the primary focus of those statutory factors will often be on alternative non-EFU locations. *Id. at 51 n.10.* If those factors are present, they would often disqualify potential alternative sites. Therefore, to approve the location of a utility facility on EFU land, the county must first consider any reasonable alternatives on non-EFU lands, then determine that the proposed EFU-zoned site must be used because the non-EFU alternative sites cannot be used based on one or more of the factors articulated in section 215.275(2) of the Oregon Revised Statutes. *Id.*
exclusive farm use zone in order to provide the service.” ORS 215.275(2) sets out what an applicant must demonstrate (and what a local government may consider) in determining whether a “utility facility” is necessary. The applicant must demonstrate that “reasonable alternatives have been considered” and that, despite those possible alternatives, the facility must be sited in an EFU zone “due to one or more of the following [six] factors.” ORS 215.275(2). Put another way, the factors set out in ORS 215.275(2) identify the reasons why potentially reasonable alternatives to siting the facility on EFU land may be rejected. The question, of course, remains what constitutes a “reasonable alternative” that utilities must and counties may consider.200

The 1999 Legislature further amended certain farm zone statutes to allow wetland waste treatment systems, but to disallow commercial facilities built for the purpose of generating electrical power, and transmission towers over 200 feet in height.201 The legislature created the new standards for the provision of other utility facilities in farm zones, such as fire service facilities for rural fire protection, irrigation canals, utility facility service lines, structures, and accessory operation facilities.202

3. Unincorporated Communities

Since 1994, Oregon has recognized the existence of unincorporated communities outside cities and their urban grown boundaries. Goal 14 was revised in that year and provides for the continued existence and possible expansion of those communities outside urban growth boundaries.203 The goal allows counties to approve, on lands outside urban growth boundaries, uses and public facilities and services that are more intensive than would be allowed by Goals 11 and 14. Counties may approve such uses either through the exception process or as provided by certain LCDC rules ensuring the more intensive uses have no adverse effect on agricultural or forest operations, nor interfere with the function of urban growth.

boundaries. This was a practical solution for a difficult problem pitting lawfully existing communities against a system that would not allow further expansion of those communities, thereby endangering their future. The rules allow for limited expansion and development in communities that would not otherwise have been permitted by Goals 11 and 14, and allow those activities in accordance with the classification of the community (e.g., resort, rural, rural center, urban).

D. Annexations to Cities

Annexation is the process of changing municipal boundaries to bring in adjacent unincorporated areas into an existing city, typically to provide urban services not presently available. Either a city or property owner may initiate such action. Annexations are frequently controversial and often deal with land use criteria.

In an early case involving an annexation to the City of Klamath Falls, the Court of Appeals found that annexations of land, occurring before a local government was acknowledged to be in compliance with the Statewide Planning Goals, are a significant land use action justifying review against those goals. The Court of Appeals later required that the goals be applicable to annexation proceedings and that governmental approval of annexations before acknowledgment must be shown by adequate findings. From that point forward, it was clear that the goals must be applied to annexations, either directly or through acknowledged comprehensive plans.

204. OR. ADMIN. R. 660-022-0000 to -0070.
207. Id.
209. Norvell v. Portland Metro. Area Local Gov’t. Boundary Comm’n, 604 P.2d 896 (Or. Ct. App. 1979); see also Stewart v. City of Corvallis, 617 P.2d 921 (Or. Ct. App. 1980) (determining that, even if a proposed annexation were consistent with a local comprehensive plan, there was no basis to require that annexation occur if the City required voter approval of annexations, at least in the absence of a plan requirement to that effect).
210. OR. REV. STAT. § 197.251 (2011). After acknowledgment, the goals, as independent criteria, “drop out” of the review process. Id. The theory is that the goals have been incorporated in the local plan and land use regulations and it would be superfluous to review them under those standards. In a decision issued shortly after the Supreme Court decided the Petersen case, the Oregon Court of Appeals affirmed LCDC dismissal of
That point was revisited in *Perkins v. City of Rajneeshpuram*, where it was undisputed that the city’s challenged action would indeed convert rural agricultural land to “urban uses.” The city annexed and zoned land to “permit urban development,” relying on the fact that the land was within an urban growth boundary that the city had adopted, but that LCDC had not yet acknowledged. The Supreme Court held that “the city was required to comply with Goal 14 either by (1) meeting its requirements, or (2) following the exceptions procedure and adopting an exception to the goal.” The court noted the Goal 14 provision that once an urban growth boundary is “established,” the land included within it is “urbanizable” and “available over time for urban uses.” It rejected the argument that the city’s urban growth boundary became “established” when the city adopted it, and held that no urban growth boundary is established until LCDC has acknowledged it.

Since state law requires local governments to “make land use decisions... in compliance with the goals” until LCDC acknowledges their comprehensive plans, the city was required either to comply with each pertinent goal (including, of course, Goal 11) or adopt an exception to that goal. Guided by the Goal 14 policy to provide for an orderly and efficient transition from rural to urban use, the court found that the establishment of the urban growth boundary achieves this purpose. Urbanization may occur within an adopted urban growth boundary only after the local government gives consideration to the factors for establishment of that boundary set forth in Goal 14, and, subsequently, after the plan has been acknowledged by LCDC. It also appears that Goal 11 directly applies before acknowledgment, and may be read as prohibiting installation or extension of urban levels of public facilities and objections to an annexation because the goals were not specifically addressed, finding that the applicable goals were “properly considered” in an annexation proceeding. *Rivergate Residents Ass’n v. Land Conservation & Dev. Comm’n*, 590 P.2d 1233, 1238 (Or. Ct. App. 1979).

211. 706 P.2d 949 (Or. 1985).
212.  *Id.* at 955.
213.  *Id.* at 950–52.
214.  *Id.* at 956.
215.  *Id.* at 953.
216.  *Id.* at 953.
219.  *Id.* at 955.
220.  *Id.* at 955–56.
services before LCDC acknowledges the local plan and regulations.\textsuperscript{221} Following acknowledgment of all cities and counties by 1986, the focus on land use review of annexations largely shifted to applicable local planning and zoning criteria.\textsuperscript{222} That shift is illustrated by a spate of cases challenging annexations, plan amendments, and rezoning in Lebanon, Oregon.\textsuperscript{223} While the goals were applicable to any plan amendment and zone changes, these cases were contested and decided on non-goal grounds, such as the interpretation of applicable plan policies. The principal case, \textit{Just v. City of Lebanon},\textsuperscript{224} concerned the City of Lebanon’s decision to annex several parcels of property and to apply particular zoning designations to those properties. Neither Goal 11 nor Goal 14, which were applicable, was discussed.\textsuperscript{225} Rather, LUBA remanded the city’s annexation and rezoning decisions for failure to comply with its plan policies.\textsuperscript{226} Because annexations are usually based on fidelity to plans that must have housing inventories\textsuperscript{227} or inventories of available

\begin{flushright}
222. Following the \textit{Petersen} decision, 566 P.2d 1193, the Oregon legislature amended section 197.175 to include annexation as a specific "planning and zoning" responsibility to which the Goals applied, either directly or through acknowledged comprehensive plans and land use regulations. See Act of July 1, 1977, ch. 664, 1977 Or. Laws 598 § 12.
\begin{center}
This judicial review is one of five concerning the City of Lebanon’s decisions to annex several pieces of property and to apply particular zoning designations to those properties. James Just appealed four of the annexation and zoning decisions to the Land Use Board of Appeals (LUBA), and Friends of Linn County appealed the fifth. [the \textit{Barton} case, above.] In each of the five cases, LUBA remanded the annexation and zoning designation because it concluded that the city had failed to meet certain annexation criteria in its comprehensive plan. Although each of the city’s decisions concerned a different piece of property, the challenges to LUBA’s remand in each of the five review proceedings is [sic] similar.
\end{center}
\textit{Just I}, 88 P.3d at 308.
225. \textit{Id.}
commercial and industrial lands,\textsuperscript{228} it is more likely that case law relating to public services and facilities issues will develop from litigation over general amendments to the local comprehensive plan, rather than over individual annexations.

A final word on annexations involves limitations on the power of cities to annex land within urban growth boundaries in the face of determined opposition of residents. Thirty-one Oregon cities (about one-eighth of the total number) have adopted requirements that citizens in areas to be annexed be able to vote on that action.\textsuperscript{229} The legislature has also intervened to impede the annexation of two urban

\textsuperscript{228} OR.A DMIN. R. 660-015-0000(9) (2008).
areas to their nearest cities.\textsuperscript{230} The inability of cities to annex lands within their urban growth boundaries may significantly affect provision of services to those areas and to other areas which depend on the revenues which result from annexation.

\textit{E. Extending or Otherwise Providing Urban Services to Rural Areas}

\textbf{1. Formation and Operation of Service Districts}

The nature and intensity of facilities and services provided by special districts is often a driving factor in determining whether the level of development in a given area is urban or rural in nature. Because the formation and operation of those districts have a direct impact on land use, these actions often will be the focus of controversy and litigation, including litigation related to competing entities providing the same service or whether service provision outside an urban growth boundary is urban in nature.

Following adoption of the Statewide Planning Goals, the formation of districts providing urban services to areas outside urban growth boundaries is effectively prohibited, absent an exception or compliance with the unincorporated communities rule, as described above. However, the formation of a new service district to serve lands already built or committed to non-resource uses under an acknowledged comprehensive plan would be permitted under the goals.\textsuperscript{231} Thus, agreements with nearby municipalities to undertake disposal of sewage waste are similarly permitted.\textsuperscript{232} However, these situations require exceptions and are thus not the rule for land use policy in Oregon.

\textbf{2. Health Hazard Annexations or District Formations}

If it be found that a danger to public health exists because of conditions on land outside an urban growth boundary that is otherwise eligible for annexation, and further that such conditions can be removed or alleviated by sanitary, water or other facilities ordinarily


\textsuperscript{231} Dep’t of Land Conservation & Dev. v. Marion Cnty., 23 Or. LUBA 619 (1992).

provided by incorporated cities, that territory may be annexed by passage of an ordinance without any vote in such territory, or any consent by the owners of land therein.233

West Side Sanitary District. v. LCDC;234 addresses the issue of compulsory annexation of a territory to remove a danger to public health. The Oregon Supreme Court held that the determination by the Health Division on the annexation proposal was made with regard to “a fundamental concern for public safety and public health”235 mandated by state law and, therefore, was not an action “with respect to programs affecting land use” to which Goal 11 was applicable. In short, Goal 11 does not apply to annexations that the Health Division orders for purposes of alleviating a danger to public health. The Court concluded that the legislature did not intend that the Health Division consider planning goals when it determines whether a health hazard exists.236

3. Legislation Requiring Financial Report for Incorporation of Cities or Formation of Special Districts

Oregon statutory law contains requirements generally applicable to all special district boundary changes.237 A “boundary change” includes the formation, annexation, or withdrawal of territory to or from a special district, or the merger or consolidation of such territory. To form a special district, an economic feasibility statement must be completed.238 Similarly, in the formation of a new city an economic feasibility statement is required.239 Presumably that statement will provide decision-makers and voters with sufficient information to determine whether the city should be incorporated or the district should be formed.

235. Id. at 1151; see also W. Side Sanitary Dist. v. Land Conservation Dev. Comm’n, 614 P.2d 1141 (Or. 1980) [hereinafter W. Side Sanitary II].
238. OR. REV. STAT. § 198.749 (2011); see also OR. REV. STAT. §§ 199.476, .522 (2011).
4. Extensions of Services to Rural Areas

Goal 11 and its implementing administrative rule generally prohibit extending sewer lines from within urban growth boundaries to serve land outside those boundaries. A sewer system may be extended outside the urban growth boundary when the local government approves a “reasons” exception to Goal 11, subject to land use regulations that “prohibit the sewer system from serving any uses or areas other than those justified in the exception.” The rule also provides an example of one reason that might justify an exception to Goal 11, which is to “avoid an imminent and significant public health hazard.” From its earliest decisions interpreting the scope of a lawful “reasons” exception, LUBA has made it clear that such a health hazard exception is a rarely recognized means by which a local government can approve an extension of sewer facilities outside an urban growth boundary.

_Todd v. City of Florence_ involved an appeal of a municipal ordinance amending a comprehensive plan and adopting a Goal 11 exception in order to extend municipal sewer services outside the urban growth boundary onto tribal trust land. Petitioner asserted that the city erred in considering the “proposed use” to be the sewer extension itself, rather than the casino, hotel, and other development that the sewer system would serve. Petitioner’s argument was that

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240. _OR.ADM. R. 660-015-0000(11) (2008)_(implementing the goal of prohibiting the extension of a sewer system outside an urban growth boundary except in limited circumstances).

Local Governments shall not allow the establishment or extension of sewer systems outside urban growth boundaries or unincorporated community boundaries, or allow extensions of sewer lines from within urban growth boundaries or unincorporated community boundaries to serve land outside those boundaries, except where the new or extended system is the only practicable alternative to mitigate a public health hazard and will not adversely affect farm or forest land.

_Id._


244. _Todd v. City of Florence, 52 Or. LUBA 445 (2006)._

245. _See OR.ADM. R. 660-004-0020 (2004)._

246. _Todd, 52 Or. LUBA at 445._
the statutory requirements for a goal exception directed the city to evaluate whether the development that would be served by the extended sewer system could be accommodated within the urban growth boundary or other areas not requiring an exception. The city’s response was that, for purposes of a Goal 11 exception, the “proposed use” is the public facility itself, rather than any development that the facility might serve, i.e., the casino, which was on tribal land and not subject to the state’s planning regime.

In remanding the city’s decision, LUBA found that the city was required by statute to evaluate both the “proposed use” and any public facilities planned to serve that use. The city’s analysis should have included the sewer system extension and the casino, hotel, and other development to be served by that extension. LUBA reasoned that an evaluation considering only the compatibility of public facilities with adjacent uses, rather than also considering the uses to be served by those facilities, made little sense “because typically it is the land use that impacts adjacent uses, not the public facilities that may serve those uses.” The “proposed use” and the public facilities established or extended pursuant to a Goal 11 exception must be evaluated separately; thus, the city erred in its analysis by treating the proposed facility extension as the “proposed use.”

_Todd_ also addresses the sufficiency of the city’s Goal 11 “reasons” exceptions for extending the municipal sewer system. Petitioner challenged the city’s findings that there was a “demonstrated need for the proposed use or activity,” and that the “proposed use or activity has special features or qualities that necessitate its location on or near the proposed exception site.” Among the reasons set out in the city’s findings were the expense of upgrading the existing sewer system and the potential for “health hazards” resulting from having two independent sewer systems. LUBA agreed with Petitioner that cost-effectiveness alone was insufficient to justify a Goal 11 exception. Indeed, LUBA stated its belief that, while the “imminent health hazard” reason set out in the

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248. _Todd_, 52 Or. LUBA at 455; see also OR. ADMIN. R. 660-004-0020(2)(b)(iv) (2004).
249. _Todd_, 52 Or. LUBA at 452–57.
250. _Id._ at 458; see also OR. ADMIN. R. 660-004-0022(1)(a), (c) (2004).
251. _Todd_, 52 Or. LUBA at 463.
statute is non-exclusive, LCDC intended that other “reasons” exceptions to Goal 11 be similarly dire.

LUBA found that the city’s findings for the necessity of an extension of its sewer system to reduce health hazards were not supported by substantial evidence; however, other unique factors present in the case, specifically the property owners’ legal right and practical ability to develop the tribal lands with urban uses served by urban-level facilities without obtaining local land use approval, constituted a sufficient “reason” under the rule to justify a Goal 11 exception. LUBA found that Goal 11’s underlying policy was not compromised by the city allowing a single sewer system to serve two adjoining areas where both areas had the right and ability to develop urban-level uses and services, notwithstanding that one area was within an urban growth boundary and the other was outside it. Because the property owners had those rights and abilities (and, in fact, had already done so), “the evil that the Goal 11 prohibition is intended to prevent—proliferation of urban uses in rural areas caused by the availability of urban-level services extended from urban growth boundaries—is not implicated.”

In 2003, LUBA again addressed the sufficiency of findings to support a “reasons” exception to Goals 11 (and 14), this time in the context of a proposed destination speedway use in Eastern Oregon. LUBA first determined that the applicable administrative rules are

252. Id. at 563; see also OR. ADMIN. R. 660-011-0060(9)(a) (2005).
253. Todd, 52 Or. LUBA at 466–67.
254. Id. at 467.
255. Id.
257. Id. at 153; see also OR. ADMIN. R. 660-014-0040(2), (3) (2005) (current), available at http://arcweb.sos.state.or.us/pages/rules/ours_600/ours_660/660_014.html. The rule provides, in part:

(2) A county can justify an exception to Goal 14 to allow establishment of new urban development on undeveloped rural land. Reasons that can justify why the policies in Goals 3, 4, 11 and 14 should not apply can include but are not limited to findings that an urban population and urban levels of facilities and services are necessary to support an economic activity that is dependent upon an adjacent or nearby natural resource.

(3) To approve an exception under section (2) of this rule, a county must also show:

(a) That Goal 2, Part II (c)(1) and (c)(2) are met by showing that the proposed urban development cannot be reasonably accommodated in or through expansion of existing urban growth boundaries or by intensification of development in existing rural communities;

(b) That Goal 2, Part II (c)(3) is met by showing that the long-term
essentially the relevant criteria for a Goal 11 exception to allow urban-level uses and public facilities on rural agricultural lands.\textsuperscript{258} LUBA then noted that, by providing only one non-exclusive example of a justifiable exception (i.e., “findings that an urban population and urban levels of facilities and services are necessary to support an economic activity that is dependent upon an adjacent or nearby natural resource”), the rule did not place any clear limits on the scope of other reasons that a local government may rely on to justify the exception.\textsuperscript{259} Indeed, all of the reasons cited by the county in its decision to justify the goal exceptions, then, were at least potentially valid under the rule.\textsuperscript{260}

LUBA held that findings establishing that the proposed speedway must be located centrally in its market area, that it would create significant economic benefits for the area, and that the speedway has characteristics that make locating it within the urban growth boundary an unreasonable alternative are sufficient reasons to environmental, economic, social and energy consequences resulting from urban development at the proposed site with measures designed to reduce adverse impacts are not significantly more adverse than would typically result from the same proposal being located on other undeveloped rural lands, considering:

\begin{itemize}
\item[(A)] Whether the amount of land included within the boundaries of the proposed urban development is appropriate, and
\item[(B)] Whether urban development is limited by the air, water, energy and land resources at or available to the proposed site, and whether urban development at the proposed site will adversely affect the air, water, energy and land resources of the surrounding area.
\end{itemize}

\textsuperscript{(c)} That Goal 2, Part II (c)(4) is met by showing that the proposed urban uses are compatible with adjacent uses or will be so rendered through measures designed to reduce adverse impacts considering:

\begin{itemize}
\item[(A)] Whether urban development at the proposed site detracts from the ability of existing cities and service districts to provide services; and
\item[(B)] Whether the potential for continued resource management of land at present levels surrounding and nearby the site proposed for urban development is assured.
\end{itemize}

\textsuperscript{(d)} That an appropriate level of public facilities and services are likely to be provided in a timely and efficient manner; and

\textsuperscript{(e)} That establishment of an urban growth boundary for a newly incorporated city or establishment of new urban development on undeveloped rural land is coordinated with comprehensive plans of affected jurisdictions and consistent with plans that control the area proposed for new urban development.

\textsuperscript{258} Doherty, 44 Or. LUBA at 153.
\textsuperscript{259} Id. at 154.
\textsuperscript{260} Id.
allow a Goal 11 exception. However, the county conceded error on its failure to provide findings adequate to justify siting the speedway lodgings on the property, and the case was remanded for further proceedings. Because the legislature intervened and enacted special legislation to provide for the speedway, the Goal 11 issues were never fully explored.

When a local government adopts a Goal 11 exception to extend a sewer system outside an urban growth boundary, LCDC requires that it also adopt land use regulations that prohibit the proposed sewer system from serving other uses or areas outside those justified in the exception. To meet this requirement, DLCD recommends that the exception statement: (1) “be tied to a map that is referenced in the plan,” (2) “be clear as to the types of uses or activities that will be served by urban services,” and (3) be clear about how these services will be limited. Furthermore, the exception statement “could be linked to a land use or master plan” that identifies uses to be served by the city’s services. In Todd, petitioner argued that the city’s plan amendment did not limit the uses or types of uses on the property only to those justified in exception. Nor was it linked to a land use or master plan, as DLCD recommended. Petitioner contended (and LUBA agreed) that, regardless of whether the city was able to impose land use regulations over the tribal property, the rule required the city to adopt necessary measures to prohibit the extended sewer system from serving uses or areas that were not justified in the exception.

In addition to rules governing extensions of sewer systems, there is a specific administrative rule to govern extensions of water lines to rural lands. Despite an extension of water service to rural lands, a Goal 11 challenge will not be sustained under the rule if the extension does not allow for more increased density than would otherwise exist. In Holloway v. Clatsop County, LUBA considered whether a county decision to change its comprehensive plan and zoning map designations for an unincorporated area outside an urban growth

261. Id. at 170.
262. Id. at 171.
265. Todd, 52 Or. LUBA at 467.
266. Id. (internal quotations omitted).
267. Id. at 468–69.
269. 52 Or. LUBA 644 (2006), aff’d without opinion 151 P.3d 960 (Or. Ct. App. 2007).
boundary to allow residential development with a two-acre minimum lot size violated Goal 11’s prohibition against local governments allowing increased residential development density outside an urban growth boundary on the basis that a community water system is present. LUBA held that the goal was not violated because the lot size change was not the result of a community water system being available, and the same number of lots would be available whether those lots were served by the community water system or individual wells.\textsuperscript{270} The water system selected to serve those properties would have no impact on the density of the development—the same number of lots would be permitted in either case.

Similarly, the Court of Appeals in \textit{DLCD v. Lincoln County}\textsuperscript{271} held that local governments may approve development projects that allow greater density so long as the increased density is not the result of the establishment or extension of a water system, and, instead, is based on already existing water systems or connections to those systems.\textsuperscript{272} In \textit{Lincoln County}, DLCD challenged the county’s approval of a 113-lot Planned Unit Development on land in a rural residential zone, contending that the approval violated Goal 11’s prohibition on higher residential densities resulting from new or extended water systems.\textsuperscript{273} In its decision to approve the development, the county concluded that the greater densities under the ordinance, which were required by the proposed development, were permissible because the subject property was located in, and could be served by, the existing water district’s system.\textsuperscript{274}

The court in \textit{Lincoln County} evaluated the meaning of the terms “establishment” and “extension” as those terms are used in the goal. DLCD argued that “establishment” includes already existing water systems, while the county asserted that the term refers only to the creation of new systems.\textsuperscript{275} Additionally, the parties disagreed over the meaning of the term “extension.” DLCD contended that the term “extension” includes connections to individual lots within the existing service area.\textsuperscript{276} However, the county asserted that the term refers only
to physical expansions of the service areas or major facilities of existing systems. The court agreed with the county’s interpretation of both terms. Thus, because the density of the proposed development did not result from the “establishment or extension of a water system,” the county’s decision did not violate the 1994 amendment to Goal 11 regarding extension of sewer and water facilities outside urban growth boundaries.

In 1998, DLCD promulgated two rules implementing the specific goal provisions concerning sewer and water systems. With regard to sewer systems, the text of the goal and the first rule prohibit the establishment or extension of a sewer system to serve land outside of an urban growth boundary, unless there is an exception to Goal 11. With regard to water systems, the 1994 revisions to the goal and the pertinent rule do not categorically prohibit the

277. Id.
278. Id. at 139; see also DeShazer v. Columbia Cnty., 34 Or. LUBA 416, 421–22 (1998).
279. OR. ADMIN. R. 660-011-0060 (2008). As relevant, subsection (2) of this rule provides:

Except as provided in sections (3), (4), (8), and (9) of this rule, and consistent with Goal 11, a local government shall not allow:

(a) The establishment of new sewer systems outside urban growth boundaries or unincorporated community boundaries;
(b) The extension of sewer lines from within urban growth boundaries or unincorporated community boundaries in order to serve uses on land outside those boundaries;
(c) The extension of sewer systems that currently serve land outside urban growth boundaries and unincorporated community boundaries in order to serve uses that are outside such boundaries and are not served by the system on July 28, 1998.

280. OR. ADMIN. R. 660-015-0000(11) (1994). The 1994 amendment, among other things, added the following paragraph and definition to the goal: “For land that is outside urban growth boundaries and unincorporated community boundaries, county land use regulations shall not rely upon the establishment or extension of a water system to authorize a higher residential density than would be authorized without a water system.” Id.; see also OR. ADMIN. R. 660-011-0065(2) (1998) (current). Subsection (2) of that rule provides, in relevant part:

Consistent with Goal 11, local land use regulations applicable to lands that are outside urban growth boundaries and unincorporated community boundaries shall not:

(a) Allow an increase in a base density in a residential zone due to the availability of service from a water system;
(b) Allow a higher density for residential development served by a water system than would be authorized without such service; or
(c) Allow an increase in the allowable density of residential development due to the presence, establishment, or extension of a water system.
establishment or extension of water systems to serve land outside of an urban growth boundary.\textsuperscript{281}

In \textit{Foland v. Jackson County},\textsuperscript{282} the Court of Appeals held that Goal 11’s prohibition on the extension of city water services to serve an urban use on rural land without an exception required ODOT to obtain an exception before extending water services to an interstate highway rest area on land that was zoned for Exclusive Farm Use.\textsuperscript{283} In its discussion of the policies and provisions of Goal 11, the court distinguished between “sewer system” and “water system.” The court saw Goal 11 as expressly contemplating the regulation of two distinct types of public facilities and services: sewer systems and water systems. In this case an exception to both Goals 11 and 14 was necessary to extend the water line to a highway rest stop.\textsuperscript{284}

As opposed to annexations, extensions of service issues more often arise with individual land use actions than in policy amendments to public facility or comprehensive plans. As such, they will come before LUBA more frequently. Decisions in these higher visibility cases will assist planners and practitioners in providing guidance to policy makers.

\textbf{F. The Goal 14 Administrative Rule and Provision of Public Services and Facilities}

In 2006, LCDC adopted administrative rules to deal with establishment and change of urban growth boundaries.\textsuperscript{285} The rules resolved some outstanding issues as to the role of public facilities and services in amending urban growth boundaries (in that all such

\begin{itemize}
\item \textsuperscript{281} See Lincoln Cnty., 925 P.2d at 139–40. The Court of Appeals relied on that goal amendment and new rule language to determine the outcome of \textit{Lincoln County}.
\item \textsuperscript{282} 243 P.3d 830 (Or. Ct. App. 2010).
\item \textsuperscript{283} Id. at 830–31.
\item \textsuperscript{284} Id. The Court concluded by quoting favorably from LUBA’s decision: [W]here an exception to Goal 14 is required in order to site an urban use on rural land, a corresponding exception to Goal 11 will be required where the intensity of urban use of land requires the provision of public sewage facilities and services for health and safety reasons. In that circumstance, it may well be that the same factors that justify an exception for extending the city’s sewer system onto the subject property, or the same factors that justify the Goal 14 exception to site the urban use on rural land, could serve as justification for extending water service onto the property. However, an exception to Goal 11 to extend water service is still required. Id. at 835–36.
\item \textsuperscript{285} OR. ADMIN. R. 660-014-0000 (2006) (current).
\end{itemize}
boundaries have been established since at least 1986\textsuperscript{286}) to assure that those changes are consistent with Goal 11,\textsuperscript{287} and the adequacy of new and existing facilities is required in justifying those amendments. The rules thus assure adequate consideration of public facility and service issues in dealing with urbanization.

Thus, if a rural development were not pre-existing and, thus, eligible for a “developed” or “committed” lands exception,\textsuperscript{288} or not a designated urban unincorporated community,\textsuperscript{289} the only alternative for a local government is to adopt a “reasons” exception to a goal requirement or prohibition. Based on the consideration of four standards, the local government must identify reasons that “justify why the state policy embodied in the applicable goals should not apply.”\textsuperscript{290}

In this context, the exceptions process deals not only with prohibiting most urban uses on rural lands implemented through an administrative rule that also prohibits allowing “public facilities or services not allowed by the applicable goal” unless a valid exception be taken.\textsuperscript{291} The administrative rule also sets out the four factors that

\begin{itemize}
  \item \textsuperscript{286} DLCD SCOREBOARD, supra note 11. No new cities outside of existing urban growth boundaries have been established since that time.
  \item \textsuperscript{287} OR. ADMIN. R. 660-024-0040(1), (7), (10) (2012) (current). The last subsection sets out a “safe harbor” by which 25% of residential land needs are presumed to be used for public facilities and services.
  \item \textsuperscript{288} See OR. REV. STAT. §§ 197.732(2)(a), (b) (2011); OR. ADMIN. R. 660-004-0018 (2011) (current).
  \item \textsuperscript{289} OR. ADMIN. R. 660-024-0000 (2009) (current).
  \item \textsuperscript{290} See Goal 2, Part II(c), available at www.oregon.gov/LCD/docs/goals/goal2.pdf; OR. REV. STAT. § 197.732(2)(c) (2011). The four standards provided in the statute are:
    \begin{itemize}
      \item (A) Reasons justify why the state policy embodied in the applicable goals should not apply;
      \item (B) Areas that do not require a new exception cannot reasonably accommodate the use;
      \item (C) The long term environmental, economic, social and energy consequences resulting from the use at the proposed site with measures designed to reduce adverse impacts are not significantly more adverse than would typically result from the same proposal being located in areas requiring a goal exception other than the proposed site; and
      \item (D) The proposed uses are compatible with other adjacent uses or will be so rendered through measures designed to reduce adverse impacts.
    \end{itemize}
  \item \textsuperscript{291} OR. ADMIN. R. 660-004-0020(1) (2011) (current) (referencing Oregon Administrative Rule 660-004-0022(1)) (2011) (current), which provides a catch-all provision that applies to uses not specifically provided for in subsequent sections of the rule, Oregon Administrative Rule 660-012-0070 (2006) (current) and Oregon Administrative Rule 660-014-0000 (2006)). This provision includes a non-exhaustive list of reasons why the applicable
must be addressed, each one requiring analysis of the use or proposed use. Among the questions that arise in showing why the proposed use could not reasonably be accommodated in other areas is whether the proposed use can be reasonably accommodated without the provision of a proposed public facility or service. The very posing of such questions underscores the role of infrastructure in land use planning.

IV. INFRASTRUCTURE FINANCING IN OREGON

A. Introduction—Oregon State and Local Government Finance

The State of Oregon does not have a sales tax and relies primarily on personal income taxes (ranging from 5–11% of adjusted gross income), corporate income taxes (ranging from 6.6 –7.9% of taxable business income), property taxes and gasoline taxes. The principal source of revenue for local governments is the property tax. In 2011–12, 1300 public school entities, cities, counties and special districts collected $5.1 billion in property taxes to finance local construction, maintenance, and program operations. In this Part, we limit our discussion to local government financing of infrastructure that, in the frequent absence of federal or state participation, is the chief means of providing infrastructure funding in Oregon. Omitted as well is a discussion of other methods of raising revenue at the local level that are not related specifically to infrastructure. Local governments may fund infrastructure from non-monetary real property exactions which are limited by Nollan v. California Coastal Commission, 483 U.S. 825 (1987), and Dolan v. City of Danner, 434 U.S. 326 (1978).
local property taxes; however, demands for other governmental services and state constitutional limits on property taxes\textsuperscript{298} frequently require these governments to look for other sources for such funding.

\section*{B. Other Methods of Financing Local Infrastructure}

In the absence of an adequate revenue stream from the property tax to finance infrastructure capital costs, local governments have turned to other financing alternatives.

\subsection*{1. Bonds}

As with most states, Oregon allows local governments to use their borrowing power to raise revenue for capital projects. Cities and counties may issue general obligation bonds (i.e., backed by the full faith and credit of the issuing local government) to fund projects, if the voters approve the bond.\textsuperscript{299} Assuming compliance with statutes and a willing electorate, general obligation bonds provide a viable basis for infrastructure funding.

A related alternative is the revenue bond, where repayment comes from a dedicated revenue stream from the facility financed\textsuperscript{300} (and is thus dependent on the continuation of that stream, which may involve some amount of risk and uncertainty reflected in the cost of those bonds to local governments).\textsuperscript{301} Unless required by a local charter, revenue bonds are not subject to voter approval.

\subsection*{2. Local Improvement Districts}

Public improvements may also be financed by those benefitting from those improvements in a specific area, often called a ‘local

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\textsuperscript{298} A Brief History of Oregon Property Taxation, OREGON DEPARTMENT OF REVENUE 2–4 (2009), www.oregon.gov/dor/stats/docs/303-405-1.pdf. Under Measure 5 (passed in 1990) and Measure 50 (passed in 1997), continuing levies of property taxes were reduced and thereafter limited to $15 per thousand dollars of assessed valuation. \textit{Id.} Growth in assessments was ordinarily limited to 3\% per year. \textit{Id.} For many local governments, these revenues were insufficient to maintain public services.

\textsuperscript{299} OR. REV. STAT. §§ 287A.050–.140 (2008). These statutes limit the amount of such funding to 3\% of the value of real property in cities and 2\% for counties. \textit{Id.}

\textsuperscript{300} OR. REV. STAT. §§ 287A.150 (2008).

improvement district.”302 These districts, and the improvements to be financed, may be initiated by petition of property owners or by resolution the local governing body to call for a hearing at which the improvements are specified, an estimate provided, and a proposed assessment against each of the benefitted properties provided.303 Upon completion of the improvement and transmittal of a second notice, the final costs are assessed against each benefitted property and become a lien on that property.304 Assuming the governing body meets the procedural standards and has the political will to make the improvement and impose the assessment, the local improvement district is an effective means for providing infrastructure.

3. Systems Development Charges

Another source of infrastructure funding is the statutorily authorized systems development charge (“SDC”)305 to recover some of the capital costs of certain new infrastructure, viz. water supply, treatment and distribution, wastewater collection, transmission, treatment and disposal, drainage and flood control, transportation, and parks and recreation.306 The statutes set parameters for a public process to adopt those charges, including credits for infrastructure provided in excess of that required307 and prohibit expenditures of the revenues for unauthorized infrastructure or maintenance of authorized

304. OR. REV. STAT. §§ 223.391, .393 (2003); OR REV. STAT. §§ 34.010–.100 (authorizing appeal by writ of review). However, there is a presumption of correctness in favor of the local government, which the petitioner must overcome. See Chrysler Corp. v. City of Beaverton, 549 P.2d 678, 680–81 (Or. Ct. App. 1976) (citing W. Amusement v. City of Springfield, 545 P.2d 692 (Or. 1976)).
305. OR. REV. STAT. §§ 223.297–.314 (2003) (allowing SDCs to be charged at whatever amount can be justified by a methodology in a study or report which can support it). The 2012 Portland, Oregon charges are eye-watering. See System Development Charges, CITY OF PORTLAND OREGON DEVELOPMENT SERVICES CENTER, http://www.portlandonline.com/bds/index.cfm?c=36542&a=166412. However, methodologies based on the number of workers are prohibited. OR. REV. STAT. § 223.301 (2003).
307. OR. REV. STAT. § 223.304 (2003). However, that statute also limits to 60 days the opportunity to challenge a SDC methodology. Rogers Machinery, Inc. v. City of Tigard, 45 P.3d 966, 971 (Or. Ct. App. 2002).
infrastructure. Moreover, the Oregon Supreme Court has determined that legislatively set fees and charges that involve only money are not subject to the heightened scrutiny given exactions of land under Dolan v. City of Tigard but given deference by the courts.

Oregon has made it more difficult to challenge systems development charges because their establishment is excluded from the category of “land use decisions” that may more easily be challenged at LUBA. Unless the charge is not part of a previously adopted schedule of charges, it will likely be challengeable only by a circuit court action.

4. Construction Excise Taxes for Schools

In 2007, the Oregon legislature authorized local governments to collect an excise tax on construction to provide funds for school districts. Under the legislation, the tax is not to exceed $1.00 per square foot of residential construction and $.50 per square foot of nonresidential construction (but not more than $25,000 per permit or structure, whichever is less). The net revenues to the school districts are to be used only for specified “capital costs” and must

310. Rogers Machinery, 45 P.3d at 978–82.
311. OR. REV. STAT. §§ 223.314 (2003). The Oregon Court of Appeals had previously determined that such actions were “fiscal decisions,” exempt from LUBA review; however, the Oregon Supreme Court took review and dismissed, declining to give its views in light of a changed appellate system. State Hous. Council v. City of Lake Oswego, 617 P.2d 655 (Or. Ct. App. 1980), pet. for rev. den. 635 P.2d 647 (Or. 1981).
313. OR. REV. STAT. §§ 320.176(1), (2) (2007). Subsection (3) allows for increase in the rates in accordance with a construction price index.
314. OR. REV. STAT. § 320.176(1) (2007). “Capital improvements” do not include routine maintenance costs, but may include:
(A) The acquisition of land;
(B) The construction, reconstruction or improvement of school facilities;
(C) The acquisition or installation of equipment, furnishings or other tangible property;
(D) The expenditure of funds for architectural, engineering, legal or similar costs related to capital improvements and any other expenditures for assets that have a useful life of more than one year; or
(E) The payment of obligations and related costs of issuance that are issued to finance or refinance capital improvements.

be based on a capital improvements plan.\textsuperscript{315}

5. Urban Renewal Funding

Subject to its own statutory peculiarities, urban renewal funding in Oregon works as it would in other states. An urban renewal agency may be authorized by the governing body of a city or county to meet the problems of “blighted areas.”\textsuperscript{316} Once created, Oregon requires these agencies to undertake planning for the area, including land acquisitions, infrastructure provision and project development.\textsuperscript{317} The discussion of urban renewal in this context is limited to that involving “tax increment financing,” a process which allows for urban renewal bonds to be issued for agency obligations and repaid through a division of property taxes.\textsuperscript{318}

Under the “tax increment financing” system, property taxes do not increase with respect to increases in property value presumably caused by the urban renewal improvements; instead the increment over the values as existed when the plan was adopted and bonds were authorized “freezes” for purposes of inclusion in all property taxes, so that other taxable properties must make a higher contribution.\textsuperscript{319} But those properties within the urban renewal area do pay property taxes based on their increased value—it’s just that the increment of property taxes reflecting that increase are placed in a special fund to pay off the bonds.\textsuperscript{320} Given a long period for the urban renewal plan to be realized and the value of improvements to increase, the amounts available for infrastructure are significant.\textsuperscript{321}

\textsuperscript{315} OR. REV. STAT. § 320.176(2) (2007). Payment of the tax is due when the construction is authorized. OR. REV. STAT. § 320.189 (2009).
\textsuperscript{317} OR. REV. STAT. §§ 457.085–.170 (2011).
\textsuperscript{319} Id.
\textsuperscript{320} Id.
\textsuperscript{321} Adopted Budget: FY2012–2013, PORTLAND DEVELOPMENT COMMISSION, http://www.pdc.us/Libraries/Budget/PDC_-_Adopted_Budget_-_FY_2012-13_pdf.sflb.ashx. In 2012 for example, the Portland Development Commission, the urban renewal agency for the City of Portland, is projected to raise over $85 million in tax increment, 39% of its budget. $27 million of those funds are allocated to infrastructure. Id.
6. Infrastructure-Related Conditions of Approval

Most legal professionals involved in development know that there are constitutional limitations on ad hoc conditions of approval in a quasi-judicial setting. *Dolan v. City of Tigard*\(^{322}\) requires that those conditions involving real property must be related and “roughly proportional” to the anticipated impacts of the development.\(^{323}\) As of early 2013, *Dolan* has not been extended to fees or improvement requirements;\(^{324}\) however, the prospect of such extension is certainly possible.\(^{325}\) Oregon has also provided a method for challenging any condition of approval on statutory or constitutional grounds, and allows for a successful claimant to receive an award of attorney fees.\(^{326}\) Even if most applicants do not formally challenge ad hoc conditions, *Dolan* counsels caution in their imposition.

V. CONCLUSION

For forty years, Oregon has combined land use planning with the provision of infrastructure, through the adoption of Statewide Planning Goal 11 and its implementing rules, and through a host of other statutes, goals and rules all tending to assure that the land uses desired by citizens of the state are supported by necessary infrastructure. That relationship is important—development does not follow from public improvement decisions; instead, public improvements follow from, and reinforce, the decisions to plan for land uses. The types and levels of infrastructure also reinforce the division between urban and rural areas, so that public dollars may be spent more wisely. Moreover, the coordination of the plans and actions of those public agencies responsible for supplying infrastructure allow the state to be more competitive in attracting commerce, industry and employment.

Nevertheless, there are a number of troubling aspects regarding the manner in which Oregon handles infrastructure needs:

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323. *Id.* at 375.
324. West Linn Corporate Park v. City of West Linn, 240 P.3d 29 (Or. 2010).
326. OR. REV. STAT. §197.796 (1999). The statute requires that a local government announce the right of a developer to challenge the condition and requires the developer to raise the issue at all levels of a local proceeding.
1. The principal utility of a public facilities plan would normally be in providing for funding and timing of capital improvement projects, both of which are expressly exempt from challenge as “land use decisions,” even though these aspects are critical to realization of any plan, especially in providing services and facilities to urban areas. This lack of review allows state and local decision-makers to avoid responsibility for infrastructure funding decisions.

2. Notwithstanding the financing tools available to local governments, their use may be frustrated in particular circumstances—voters may decline to authorize bonds, landowners may not want a local improvement district, funds may be dedicated to specific uses, a developer may contest infrastructure-related conditions of approval, the electorate may enact local provisions to require a vote before financing is authorized, and the like. This uncertainty is what led to the legislature and LCDC not requiring binding financial commitments for capital improvements; however, the ability to realize the public policy objectives stated in plans is significantly impeded.

3. In most cases, LCDC does not require periodic review of local plans and regulations, despite its stated policy to the contrary. Neither the funding nor the stomach for such review exists, so

327. See, e.g., Home Builders Ass’n v City of Springfield, 129 P.3d 713 (Or. Ct. App. 2006). The public facilities plan can get some respect, however, if it is the predicate for one or more systems development charges under section 223.309 of the Oregon Revised Statutes. However, a capital improvement or “other comparable plan” may also serve that purpose. Nevertheless, the extensive statements of what is required in a capital facility plan in Oregon Administrative Rule 660-011-0010(1) (1984) are belied by the exemption given in section 197.712(2)(e) of the Oregon Revised Statutes, which provides that “Project timing and financing provisions of public facility plans shall not be considered land use decisions.” Or. Rev. Stat. § 197.712(2)(e) (2011).

328. Or. Rev. Stat. §197.628(1) (2005). This statute provides:
It is the policy of the State of Oregon to require the periodic review of comprehensive plans and land use regulations in order to respond to changes in local, regional and state conditions to ensure that the plans and regulations remain in compliance with the Statewide Planning Goals adopted pursuant to ORS 197.230, and to ensure that the plans and regulations make adequate provision for economic development, needed housing, transportation, public facilities and services and urbanization.

Id.
that most plans outside the Willamette Valley are outdated and not responsive to infrastructure analysis or provision. Ad hoc legislative measures, including those set out in Part II.D.3–5 above, are no substitute for real infrastructure plans and responsiveness of local governments to commercial and industrial employment concerns.

4. Coordination among state agencies, “coordinators” (i.e., Metro or counties), and those public entities purportedly coordinated leaves a lot to be desired. For the most part, LCDC has not done much to review state agency plans and programs after their initial certification and lacks the will to make or enforce coordination requirements at the local levels. Cities bridle against county supervision of their land use plans and activities. Elected special district governing bodies are reluctant to see their functions (or their corporate lives) superseded by cities. Thus, very little coordination actually occurs.

5. Annexation of urban areas to cities should be encouraged, as cities are the preferred providers of urban services. While it is more convenient to turn a blind eye to the problem as Oregon has done, urban growth boundaries exist to provide urban services in a cost-efficient manner for the annexed areas and those dependent on those annexations to fund infrastructure plans.

Both planning and infrastructure provision in Oregon is still done mostly at the local level, with the state providing policy guidance and, occasionally, funding. In working with a state economic development strategy, local governments must be focused on their plans and regulations so as to be ready to attract economic opportunities and make use of limited local public funds to that end. By taking to heart the words of Goal 11 in the provision of a “timely, orderly and efficient arrangement” of public services and facilities, Oregon can meet its economic development objectives and achieve prosperity in a changing world.