

Drawing the Line

Deliberations on Density



URBAN DESIGN FORUM WA

Infill is the future.

Urban areas are complex,
and communities are complex, too.

Infill builds new communities in our urban areas.

Planning Solutions gets infill.



Meltham Station Precinct



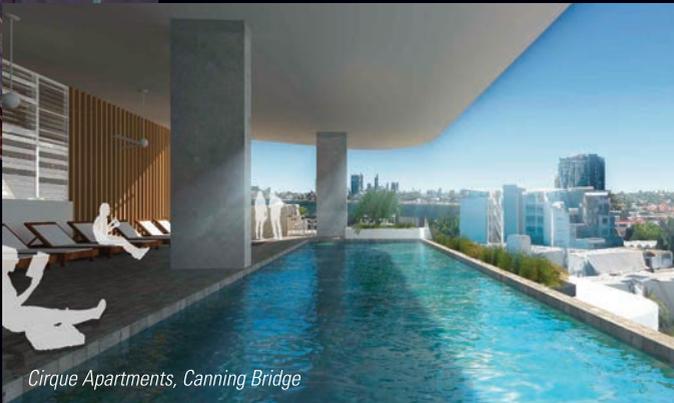
Complex made simple.



Leederville built form, land use and character study



Aria Apartments, Swanbourne



Cirque Apartments, Canning Bridge

ENSITY IS A COMPLEX SUBJECT,

one that ignites opinion and emotion in many. Every individual tends to have a different perception of density, a different image they think of. Some are horrified by that image. Others celebrate it and wish for more. But in truth, density cannot be seized in one image. Because of course density is a gradient, from low to high. Secondly, because every degree of density can be designed in many different forms. And these forms can be deceptive; something that might look like a higher density, might in fact not be that dense at all, and vice versa. Furthermore, there are so many aspects to density that every profession and every interest group will see other issues that need to be addressed, and consequently other problems or opportunities. On top of all that, every form of density, every urban and suburban situation, has its pro's and con's. Some of them are obvious, others not so, some remain even unforeseen. Every person values these pro's and con's in a different way and none of these perceptions are invalid. In density there is no right or wrong, there is no one answer.

In this web of opinions and perceptions, design offers opportunity to give form to various solutions that might overcome or negotiate between differences. Good design means taking each specific situation seriously, including the physical and the social context, and creating the most tailored solution for that location and that community. Good design is made-to-measure, and to deliver made-to-measure, an open, informed discussion about the values, perceptions and all possible solutions is a prerequisite. This is also what the title of this book refers to. Not as in drawing the line 'until here and no further', but rather an emphasis on 'drawing designs', working towards the best solutions. With these deliberations on density, the Urban Design Forum aspires to contribute to open, informed discussion. The better the discussion, the better we can design our cities to include all needs and experiences.

Over the past two years, the Urban Design Forum WA has organised a range of forums around

density. We have had over 30 speakers presenting their experience, research and thoughts on a range of density related topics. They have talked about the densification of existing and new suburbs, about medium density or 'the missing middle', the relevance of high-rise, issues around parking, the importance of character, the role of the public realm, infrastructure and affordable housing. The discussions have been embellished with local, national and international examples and case studies, all presented from first-hand experience, enriching the arguments and perceptions. This book captures 20 of these presentations.

The authors in this Urban Design Forum book are contributing to the density discussion from various backgrounds and professions. However, urban design is a multi-disciplinary field, a form of spatial design operating at the intersection of planning, traffic engineering, architecture and landscape architecture, while other disciplines also contribute their share. Therefore none of the pieces in this book restricts itself to the author's profession. There is a natural overlap with other facets. They all relate in some way to the framework, infrastructure, public realm and built form. Instead of forcefully grouping the articles along these aspects of urban design, they are ordered in a more associative way, with sequential articles talking about overlapping aspects or somehow commenting on each other. This arrangement takes the personal experience as connecting thread; bookended by Peter Newman's personal experience of density at the start, and ending with Philip Stejskal's

team's description of personal experiences living in medium density. The narrative mixes the personal perspectives with a range of other aspects - more scientific analyses of existing situations, examinations of cases to deduce principles and strategies, and experience-based contemplations on rules, regulations and design solutions - all the while touching on human behaviours, transitions through time, sustainability, economics, and other considerations. Together they create a range of reflections and deliberations on density, with hopefully some new insights and thought-provoking observations. To offer the reader an alternative way of navigation, the contents page positions every article in the multi-disciplinary field of framework, infrastructure, public realm and built form.

A WORD OF THANKS

The Urban Design Forum WA consists of a group of people who are passionate about urban design. All the activities are volunteer based and rely on the support of many others. We would like to express our deepest gratitude to:

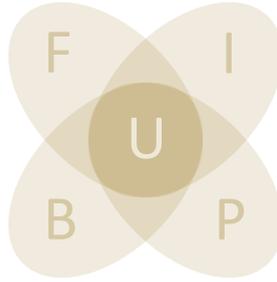
- all authors in this book for contributing their time and knowledge to the presentations and articles;
- all the sponsors of this book for making the publication possible;
- Brickworks Studio, Roberts Day, HASSELL and Urbis for hosting the forums; and
- PIA for their ongoing support of the Urban Design Forum WA.

Hans Oerlemans
Editor



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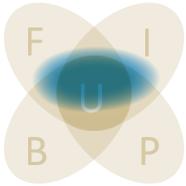
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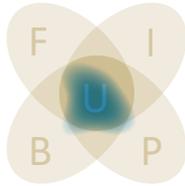
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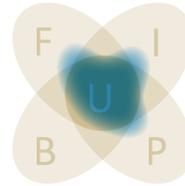
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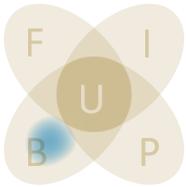
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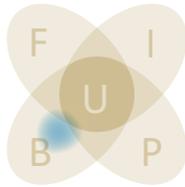
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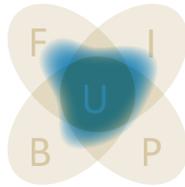
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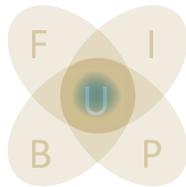
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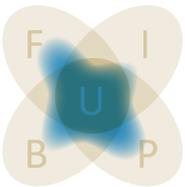
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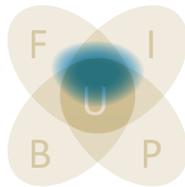
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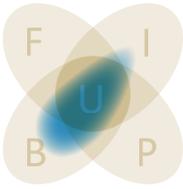
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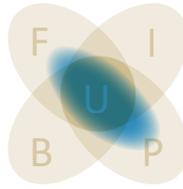


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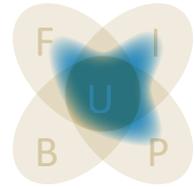
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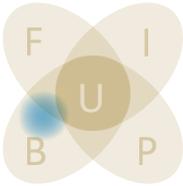
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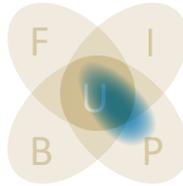
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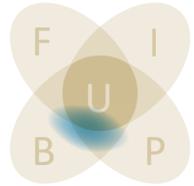
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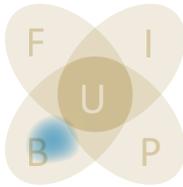
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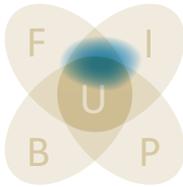
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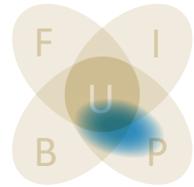
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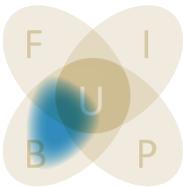
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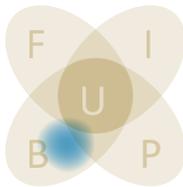
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As Convenor of the Urban Design Forum WA (UDFWA), I am pleased to present this third collection of past presentations to the professions.

Over the last few years I feel that the Urban Design Forum WA has certainly elevated the conversation around medium and higher density in the city as well as in Perth's connected communities.

From championing form based codes and the flexibility they bring to land use planning and design outcomes, to the sustainable design of public open spaces, we have aspired to bring the government's, industry's and public's attention to innovative and sustainable developments in Urban Design.

The Urban Design Forum WA has also been very pro-active in using our fora to allow for a free-flowing dialogue with local, national and international speakers.

As Convenor, I have been blessed with a Committee who are excited, willing, supportive and resourceful – able to leap tall issues in a single bound, single-handedly jumping off into the deep end of place making, and able to juggle work, family and speakers with (surprising) ease. As a self-confessed 'planning cheerleader' I hope that the UDFWA will continue engaging, informing, teaching, communicating and promoting BEST PRACTICE Design outcomes, not only for the Metropolitan Perth region, but the whole of WA as well – **Planning is for People** and all design should be based on this one truth.

I would also like to acknowledge our major supporter, the Planning Institute of Australia WA, without whom many of our fora would not have taken place.

UDFWA CONVENOR
MESSAGE FROM THE





Melanie Bradley
UDFWA Convenor



Image Credit
Melanie Bradley

Forum: Dr Josh Byrne - Density by Design 28 August 2017



Peter Newman
Professor of Sustainability CUSP, Curtin University

Density, Design and **Destiny**

Density is a divisive issue as it is mostly seen as being about aesthetics. Do you like developments being very spacious and set in green 'natural' areas? Or do you like them to be highly urban? The urban design profession jumps in and says it just depends on design. We can make it look good in low density and in high density, just make sure its good design.

Density is surely about design, but to me it is also about **destiny**, about where a city is going. We react to urban design and density because of our past experiences, where we grew up and where we have lived even for small periods.

The majority of long term Australians, with family histories in the Australian suburbs, naturally enough have a preference for low density. Though in Australian history there has always been a parallel dense urban tradition of around 20 per cent. With our migration history many families have come from European and Asian situations that are much more dense and are happy to take up denser options than the average Australian. But this makes density once again seem like its just a choice and is all about our perceptions.



My history and approach to density is that there are deeper issues at stake than personal preferences. It is about **destiny** for a city. It is about the long-term future of the city on a planet, which has some constraints that we should take seriously. Let me explain some of this personal journey.

I was born in Perth ten days after the end of the second world war and grew up in a semi-rural suburb on the outskirts of Melbourne. Our house was part of the subsidized returned soldiers scheme that put in place the family history of many baby boomers. It was a place full of bush experiences, which are now not there anymore as the city has slowly subdivided the area. Suburban developments in Australia have been engulfing semi-rural areas at the cities' fringes ever since. Subdividing bush is part of my density and **destiny** story. At what point does urban encroachment into bush become too much?

The post war baby boomer suburb was predicated on car use. That is how I grew up and how I assumed most people in the world lived. After returning to our family home in Perth during my university days, I lived in an older suburb with more urban density but still predominantly based around a car. Then after ten years of study, my wife and I moved to Europe where I discovered that not everyone lived in a car-based suburb. Not only did we live in an apartment that was spacious, it was within walking distance of all the urban amenities and services that we needed and, most of all, we constantly ran into our friends in the street.



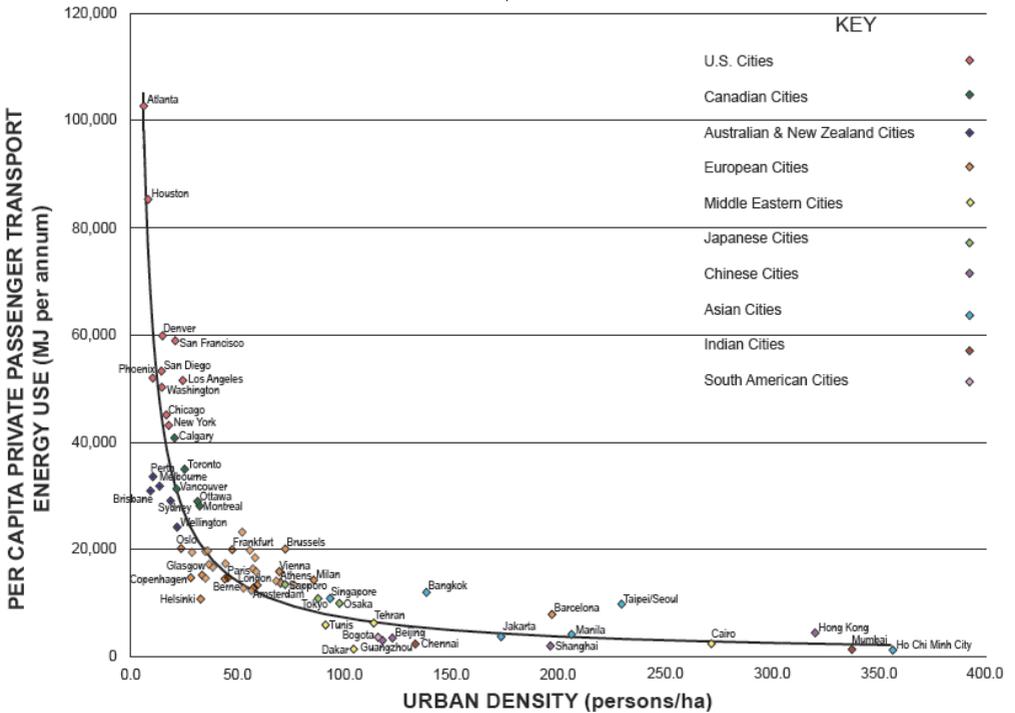
I was a bit slow learning this, but we don't actually need a car in most dense cities and it can be a better way to live. The experience became life changing when in 1973 the first oil crisis hit, while we were living in San Francisco, once again depending on a car. The shortage of gasoline led to severe panic as people were so dependent on cars they lined up for hours to fill up from dwindling supplies and many resorted to violence.

I began to study how cities depended on fuel and what it meant for our future where oil was constrained. At what point does a city's fuel consumption become too much? How does it relate to density?

Returning to Perth and beginning a career as an academic based around trying to understand these issues of urban density and urban **destiny**, we were faced with choices about where we would live. We chose to live in Fremantle which was regarded then as a slum not suitable for a young academic. The price of housing was at give-away levels but it was almost impossible to get a loan to restore an old house because the whole system directed young families to the urban fringe. Banks were and are key players in the density and **destiny** story. I was elected to the Fremantle Council shortly after moving there and for my term in office (and indeed for the next twenty years) we tried desperately to turn around the inner city decline. Its hard to imagine now but dense urban infill was extremely hard to do in older urban areas until recently.

The academic studies I did on cities from the 1980's on have been about how urban density decisions shape so much of our urban **destiny**. The underlying driver in a series of books and papers written with colleagues and students has been about why and how we should stop urban sprawl and car dependence, especially fossil fuel dependence.

The collection of data on cities that Jeff Kenworthy and I started from the 1980's in the Global Cities Database has continuously demonstrated how urban density relates to car use and fuel use. (Graph 1) This relationship shows that density structures in so much of our urban **destiny**. Density means that Perth is fundamentally a city with heavy sprawl and high fuel consumption, no matter what else we do about these issues.





I started writing on density with Trevor Hogan in 1981 with a paper called ***A review of urban density models: Towards a resolution of the conflict between populace and planner.*** Everyone stopped and took notice of that didn't they! The most recent approach is to talk about the opportunities of urban density, as set out in the adjoining **TEN REASONS WHY CITIES SHOULD ENABLE DENSITY.** They are fundamental to understanding 'why' density needs to be increased.



The 'how' of urban density is now all about how we regenerate the city. Clearly there is a need for directing and facilitating urban density in areas where there is market demand and where at the same time we can significantly reduce car dependence. Central and inner city regeneration is now well underway and is strongly market based.

The next frontier is middle suburb regeneration. These areas are the kind of new suburb from the 1950's, similar to when I was growing up, with housing now at the end of their lives and significant opportunities for dense urbanism. There are good examples of urban regeneration. Places like Subiaco and Claremont, both western suburbs of Perth, are developing medium density precincts around their rail stations.

TEN REASONS WHY CITIES SHOULD ENABLE DENSITY

High density housing provides:

01

the opportunity to use population growth as the way to create new and exciting housing options rather than continuing urban sprawl.



architectural diversity opportunities in an urban townscape.

02

03

the opportunity to solve the big problems of oil vulnerability and climate change.



affordable housing opportunities in good locations that enable affordable living.

04

05

opportunities to enable new distributed small-scale green technologies.



opportunities for more community and creativity.

06

07

better economic opportunities through agglomeration economics, local economic benefits, reduced avoidable costs and less external costs.



greening opportunities through biophilic urbanism.

08

09

cultural and economic diversity opportunities in an urban townscape.

the best opportunities to build connected city fabric, without car dependence, especially with urban rail.

10



A big issue though is the general battle-axe infill that has mostly happened so far in the car-based middle suburbs. This is not dense urbanism, nor is it overcoming car dependence. So how do we change this? How can the infill of individual lots be combined up to create better outcomes? Projects on a precinct scale, such as White Gum Valley in East Fremantle, indicate that doubling the density suburban can be done in a positive way. However, this has been achieved because one owner held the land. The problem is how can this be extended into general planning processes to enable it to be mainstreamed. How do you bring multiple owners together to create a precinct-scale urban regeneration design process? This is the density and **destiny** question for me.

A final word about our urban **destiny**. We are now in a world constrained by limits due to climate change. The Paris Agreement produces a strong requirement for eliminating our fossil fuels by 2050 if not earlier. The world has committed to implement Paris and so it is our **destiny** that Australian cities must be part of this. I think we will do this well with solar and batteries replacing coal and gas as sources of power in our homes and offices with considerably improved efficiency in energy through smart buildings. But what about oil? Electric vehicles and electrical public transport are likely to succeed in providing a solar-based replacement for oil but we must also create smarter and more efficient cities that just don't need cars as much. It is hard to imagine being able to easily remove oil unless we also develop denser cities and become much less car dependent. This will require density.



Anna Evangelisti
LandCorp





P

lanning and designing a development, which not only meets the needs for a variety of households but also caters to different housing price points, was always going to be a challenge. When the desire to achieve world standard sustainable outcomes across social, environmental and economic parameters were added to the mix, the enormity of the challenge increased significantly.

LandCorp's development at White Gum Valley, or WGV, set out to do just that. Taking an integrated approach to the planning and design of the 2-hectare site was a key driver from the outset. When the principles of One Planet Living were factored in, it resulted in one of the most innovative and forward thinking residential developments to be delivered in an existing Perth suburb.

Higher densities are accommodated in a sensitive way by building on existing neighbourhood characteristics. At the same time, the project provides additional amenity, character and diversity of housing to meet the needs of a changing demographic. Site conditions are responded to by working with existing levels and ensuring the street network preserving as many existing trees as possible. In addition each lot has been tested to ensure that climate responsive housing can easily be accommodated. A range of lot sizes is incorporated to ensure

a wide variety of housing types and sizes could be delivered. A mixture of sustainability initiatives is also part of the concept design, at the scale of both the whole development and the individual dwelling. These initiatives include energy, water, waste and biodiversity strategies which, in addition to reducing resource use and lowering living costs, also enhance the environment for residents and the local community.

The result is an innovative development, which has demonstrated a high level of sustainability and great variety in housing, providing unique and replicable opportunities for the development of a diverse and sustainable community.

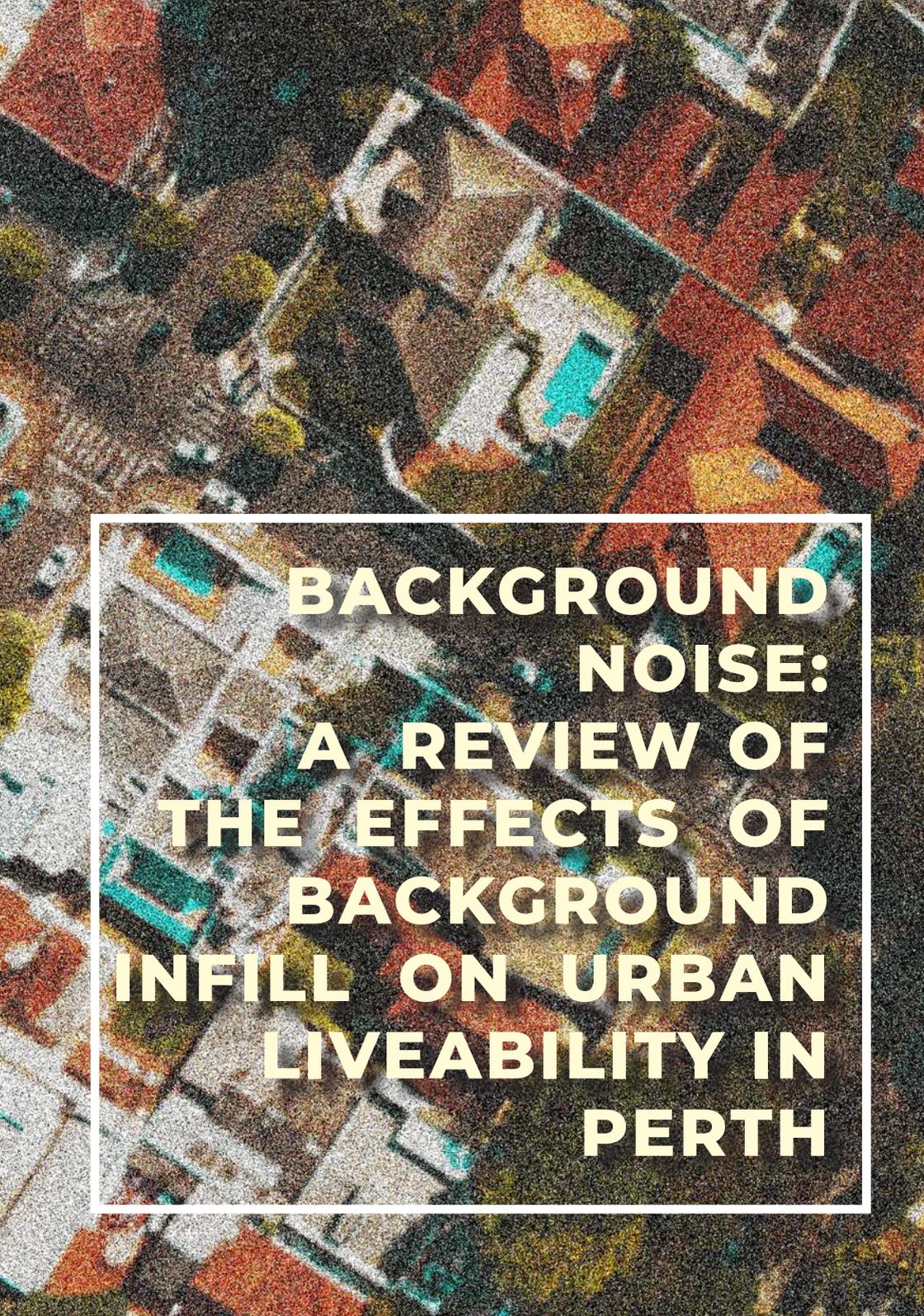
By far the most encouraging aspects of WGV is the strong sense of community which has begun to emerge. This is partly due to the integration of the development into an already established neighbourhood and the design of high quality public spaces, which provide opportunities for residents, new and old, to interact and get to know each other.

It is also reflective of the diversity of households and the common aspirations of the new community, many of whom have bought into the sustainable development philosophy and introduced their own initiatives, going beyond the mandatory requirements of the design guidelines.

Currently WGV functions as a 'Living Laboratory', a four-year research program undertaken by Curtin University, which will ultimately provide data on the sustainability outcomes with the hope that this 'Innovation

through Demonstration' project can pave the way for a different approach to complementing and densifying our suburbs.



An aerial, high-angle photograph of a city street grid, likely Perth, Australia. The image shows a dense network of streets and buildings. A prominent white rectangular box is overlaid on the center of the image, containing the title text in a bold, white, sans-serif font. The background image is a mix of grey, brown, and green tones, with some buildings having red roofs. The overall texture is grainy, suggesting a high-resolution or digital art style.

**BACKGROUND
NOISE:
A REVIEW OF
THE EFFECTS OF
BACKGROUND
INFILL ON URBAN
LIVEABILITY IN
PERTH**



Julian Bolleter

[This article is an excerpt from the following journal paper: Bolleter, J. (2016). Background noise: a review of the effects of background infill on urban liveability in Perth. *Australian Planner*, 10, 1-14.]

Perth's overarching planning document *Perth and Peel at 3.5 million* aims to achieve a city which is liveable, prosperous, accessible, sustainable and responsible⁽¹⁾. Taking these aims at face value this article explores whether the predominate form of infill in Perth, 'background infill' (ad hoc infill development yielding fewer than five dwellings) is delivering the urban liveability that the State Government is aspiring to.

Background infill

While Activity Centres and Activity Corridors are the flagship of the current Western Australian Government infill strategy, a large amount of infill development is occurring through the 'do it yourself' subdivision of backyards. This form of infill development is referred to as ad hoc subdivision or 'background' infill – namely small projects yielding fewer than five group dwellings⁽²⁾

(Figure 1). This background infill is characterised by semi-detached, survey strata group dwellings, organised around a communal driveway leading to private garages adjacent to the dwellings.

The prevalence of background infill development is confirmed by **Perth's Urban Growth Monitor** publication⁽²⁾. Put simply, despite 25 years of TOD



Figure 1

planning in Perth, more infill is being delivered in an ad hoc, 'background' manner than is being delivered through Strategic Activity Centres or Activity Corridors.

The following sections explore the nature of background infill development in Perth in relation to the Western Australian State Government's own goals to create a liveable city.

Access to nature

Contact with nature is regarded as a universal requirement of urban landscapes⁽³⁾. The 2013 study **The Housing We'd Choose** by Curtin University and Hames Sharley indicates that this sentiment is strongly shared by Perth's residents⁽⁴⁾.

Private open space amenity

One criteria of liveability that features in the vast majority of urban liveability matrices is open space. Indeed the Australian lifestyle is famed for the ability to 'live outdoors, in private' – a situation enabled by freestanding houses with front and back gardens, typically set out at a low density⁽⁵⁾. Evidence of a predilection for private open space

is that a separate house set within its own garden is the preferred dwelling type favoured by 78 per cent of Perth's residents⁽⁴⁾. This is for good reason. Syme, Fenton and Coakes show that home gardens have been a major contributor to the quality of life. Among other functions, the residential garden provides for active and passive recreation, as well as for cultivating fruit and vegetables. Furthermore it can provide an *"individually aesthetically pleasing environment and make an important social statement"*. The ongoing psychological benefits of the home garden have also been well documented⁽⁶⁾.

Not surprisingly, background infill development in Perth tends to provide much less garden area per person than an un-subdivided 'classic' quarter acre block, which provided approximately 1000 m² per household⁽⁷⁾. Compounding this situation, much of the open space that is provided in background infill is residual space, generated by the State Government controlled Residential Design Codes (R-codes) that dictate a minimum 1.5m setback between lot lines and building edges⁽⁸⁾. When 'built out', this tends to result in narrow corridors of private open space. A proclivity for private car parking adjoining private dwellings also means that, in many cases 38% of the lot area is dedicated to car parking and movement.

Public open space amenity

The loss of private open space is only partly compensated for in the public realm, despite the fact that 69% of people in Perth think residing near a park is important⁽⁴⁾. While middle ring suburbs provide a substantial 40m² of public open space per person (Figure 2), it tends to be of a poor quality and is often not well utilised.

Evidence of this can be found in data concerning physical inactivity levels in residents (Figure 3). Perhaps this is because across Perth's inner and middle ring suburbs, where most background infill is occurring, parks are poorly designed being typically turfed, sometimes having only scattered remnant trees. Reflecting this, among the parks in this area, 22% have no trees, while only 10% have significant wildlife function, and only 1% have wetlands (despite the fact that Perth was historically a landscape of wetlands). Furthermore, 74% of parks have a pervasive underlay of reticulated turf poorly suited to Perth's drying climate, 54% have no walking paths, merely 16% have picnic tables and only 9% of parks have barbecue facilities⁽⁹⁾.

Despite the significant amount of background infill development that has occurred to date, as the data above attests there has been no systematic upgrade of the public domain to service these higher density residents. The failure of Perth's open spaces to be upgraded to compensate for the loss of private open space is important because research tells us that background infill residents require quite different things from the public space than their suburban counterparts.

The urban forest

Evidence of the importance of the urban forest to urban liveability in Perth is that 77% of respondents to the **The Housing We'd Choose study** considered that the presence of trees is an important dwelling attribute⁽⁴⁾. Analysis of house prices in Perth supports this. A comprehensive exercise to understand the value effects of tree cover, found that the proportion of tree cover on neighbouring parks, reserves or street verges adjacent to the property had a significant and positive impact on property prices⁽¹⁰⁾.

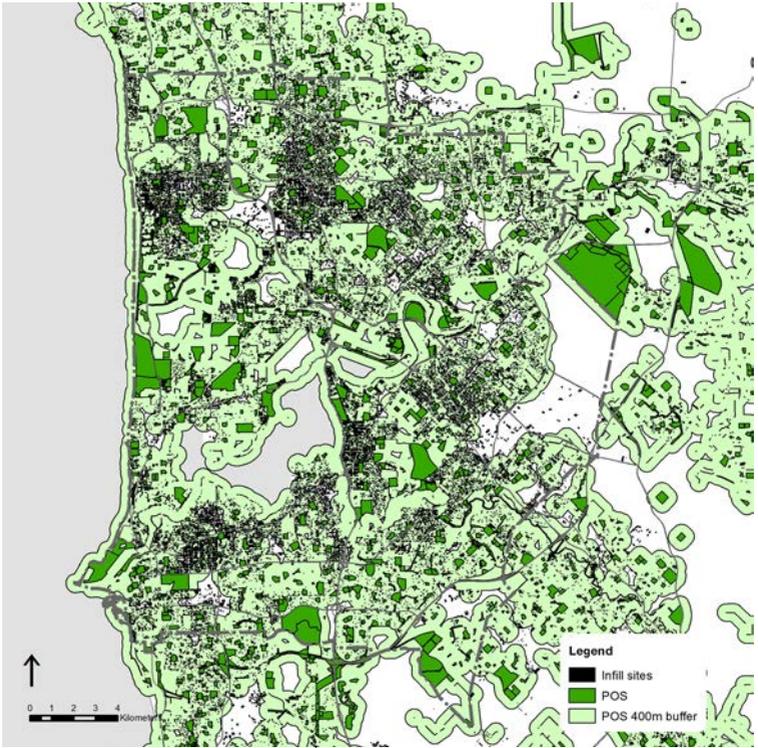


Figure 2

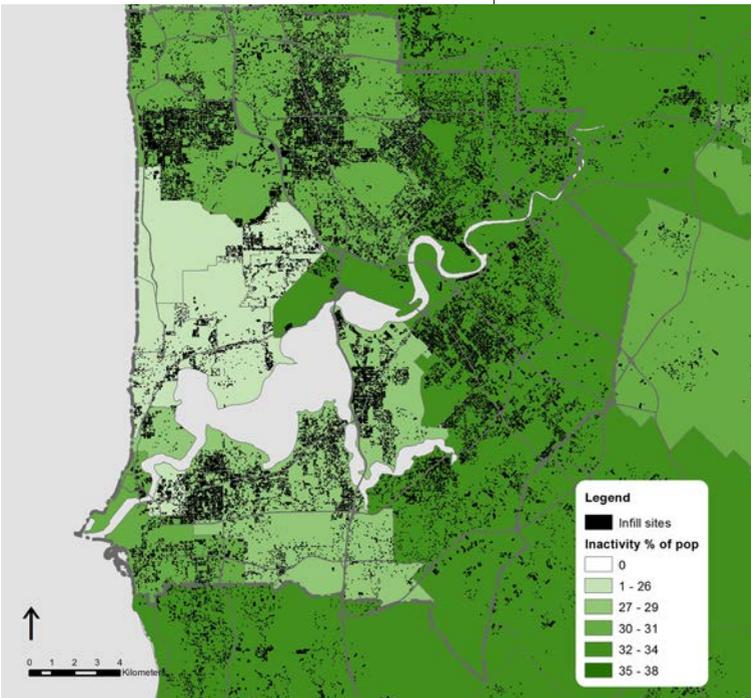


Figure 3

Despite the apparent importance of trees to supporting urban liveability, one effect of background infill has been a decline in urban forest cover in Perth's inner and middle ring suburbs. While there are some exceptions the suburbs with the lowest percentage of urban forest cover tend to be those that have not resisted background infill (Figure 4). Examples of the effects of background infill development on urban forest cover can be found in the inner and middle ring suburbs of South Perth, Bayswater, Stirling and Canning. All four have high infill development targets, with the percentage of total vegetation cleared between 2001-2004 amounting to 13%, 12%, 11% and 11% respectively⁽¹¹⁾.

Access to cultural assets

An important facet of urban liveability is defined by the Economist Intelligence Unit as access to cultural assets⁽¹²⁾. Cultural assets is a vague term. At one end of the scale, it can refer to world-class cultural attractions such as an opera house, and at the other end to a local community centre, café or shop. At the more modest end of this scale, 'easy access' to cultural assets such as local shops, is regarded as a crucial dwelling attribute by Perth's residents. Indeed 73% of respondents to The Housing We'd Choose thought this was an important dwelling attribute⁽⁴⁾.

So to what degree is background infill resulting in this latter form of cultural assets in Perth? Provision of cultural assets can be established in part through the mapping of District Centres, Neighbourhood Centres and Local Centres as defined in Perth's Activity Centre policy⁽¹³⁾. This policy defines District Centres as "*servicing the daily and weekly needs of residents*" and their walkable catchment is considered to be 400m. Typical retail types include discount department stores, supermarkets, convenience goods, small-scale comparison shopping, personal services and

some specialty shops. These are supplemented by smaller scale Neighbourhood Centres, which include a supermarket, personal services and convenience shops. Their walkable catchment is considered to be 200m. Finally Local Centres are defined as any shop/retail with a floor space of less than 1500m² and usually consist of a corner deli and a newsagent.

When these centre types are plotted against areas of background infill, there would appear to be a large proportion of residential areas that are largely devoid of such centres (Figure 5). This can be attributed to the dispersed nature of background infill, which does not result in the densely populated urban precincts required to support significant cultural and commercial assets. As Debra Goostrey, former Chief Executive of the Western Australian Urban Development Industry Association explained:

"When you get to (infill development) precincts, you can suddenly justify a small bar and a restaurant, you have to have enough people in and around that area... density brings with it the coffee effect, that great vibrancy that comes through. [But] when you've got small little bits of density, you don't get the coffee shop effect..."⁽¹⁴⁾.

Accessibility to public transport

Both the Economist Intelligence Unit⁽¹²⁾ and the Western Australian State Government⁽¹⁵⁾ define a vital characteristic of urban liveability as being accessibility to public transport. This sentiment would appear to be shared by Perth's residents, with 71% of respondents to the The Housing We'd Choose survey indicating that a dwelling being near public transport was important⁽⁴⁾. So to what degree is this accessibility to public transport provided in areas of background infill across Perth's inner and middle suburbs?

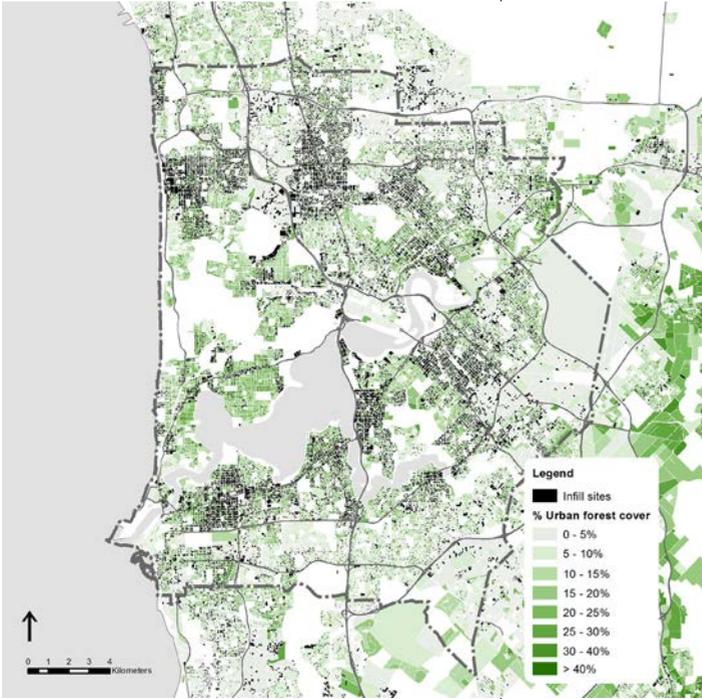


Figure 4

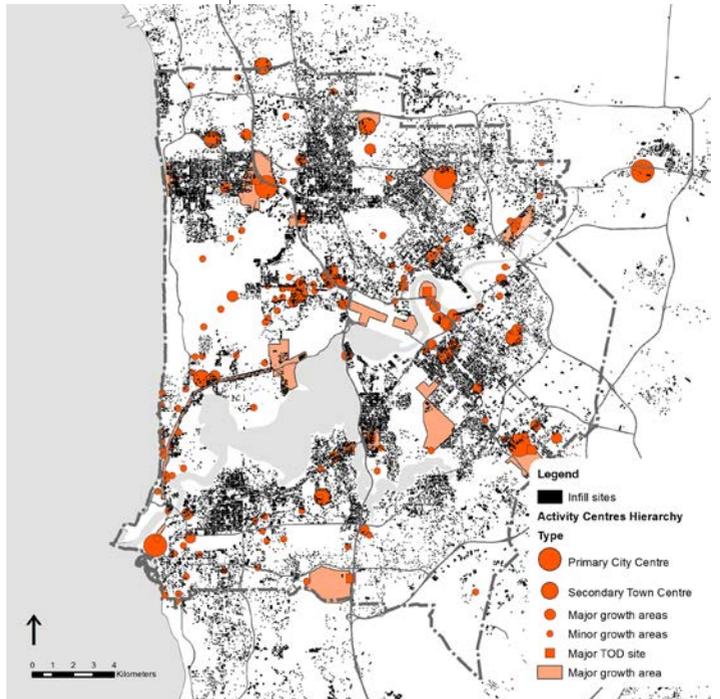


Figure 5

Mapping of Perth's existing train stations, in combination with background infill development that has occurred to date, reveals that little of the background infill is within a short walk of train stations, shown in Figure 6 as an 800m or 10-minute walk. This situation is not unusual. In Sydney and Melbourne the highest concentration of medium- and even high-density housing is often in areas not served by rail services^(16 & 17).

Due to this situation, public transport users in these background infill areas rely on Perth's bus system, which either feeds into the rail system or accesses the city centre directly Figure 7 shows bus stops with a greater frequency than 10 buses an hour during morning peak hour. Significantly more of the areas of background infill are serviced by bus routes than trains. However, the bus system tends to 'emphasise coverage' - i.e. short walking distances and the minimisation of bus transfers - at the cost of the frequency and legibility of the service⁽¹⁸⁾. Perhaps due to such issues, mapping of the proportion of people who drive, or are driven, to work reveals a high vehicular dependency in suburbs with a large amount of background infill, particularly in the northern most section of the middle ring suburbs.

Conclusion

Arguably an 'infill good, sprawl bad' polarity, partly perpetuated in part by State Government planners and academics, has tended to pervade arguments about urban form in Australia⁽¹⁹⁾, and the developed world more generally⁽²⁰⁾. In contradistinction I would argue that infill in the form of background infill is delivering mixed results in respect to urban liveability. Arguably the public open spaces in these densifying urban areas are not well adapted to the needs of people living in background infill.

This situation is compounded by diminished, residual outdoor space and a reduction of urban forest cover associated with much of Perth's background infill development. Furthermore, because of the incremental and ad hoc way background infill is delivered, it is not producing the precincts of denser urban form that can support cultural and commercial assets to any large degree. Finally, much of the background infill is not well connected to public rail transport, which is reflected in stubbornly high levels of car usage for commuting to work.

The implications of this situation are two-fold. Firstly, one of the by-products of some of the negative liveability aspects of background infill has been an increasing resistance by local communities to infill development in general. Secondly, if the State Government is resolute about increasing urban liveability in conjunction with urban densification, then alternative strategies are required, which lessen the emphasis on background infill. Where these strategies are already enshrined in policy (such as Activity Centres and Activity Corridors) then research is required to understand why, from a spatial, governance, and economic point of view, these policies are not delivering infill development dwellings at a higher rate.

Concomitantly, as background infill is likely to continue, research needs to be conducted that explores how dispersed ad hoc infill development can be coordinated to leverage greater liveability outcomes for its residents.

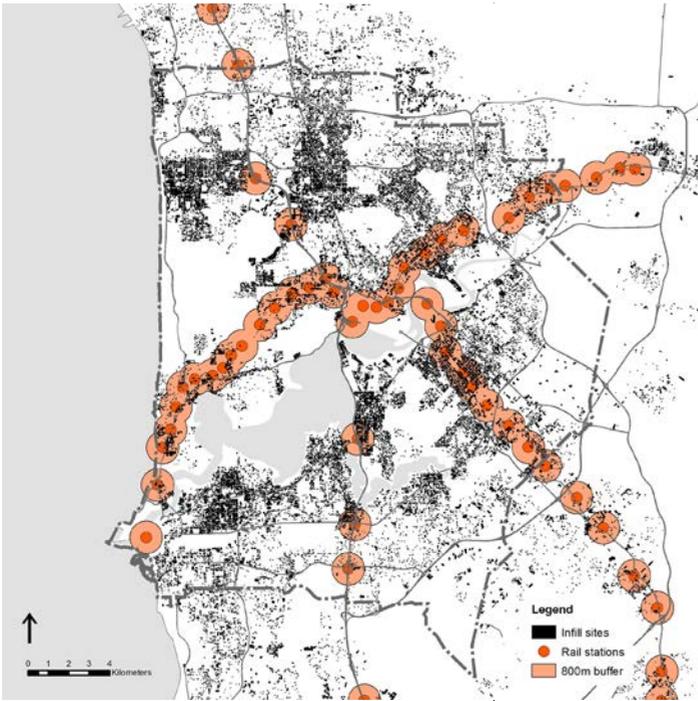


Figure 6

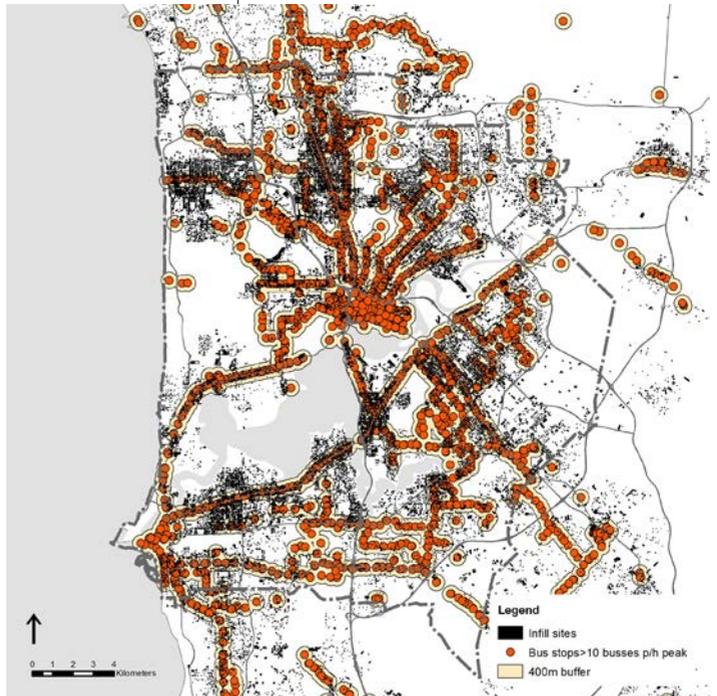


Figure 7

Notes

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David Barr
David Barr Architects

1/2/3/4/5

Cohousing

[Winning Submission of the LandCorp's 2016 'Step Up' affordable housing design competition]

The title of the project *1/2/3/4/5 Cohousing* is chosen to emphasize that affordable housing and thriving communities are the sum of many parts. Be it through construction techniques, community composition, sustainability strategies or design team membership, better outcomes are born through diversity and collaboration.

The key to the project's affordability and performance is its prefabricated 'passive haus' construction system, the first of its kind in Western Australia. The use of prefabricated wall panels, built off-site and craned into place during a rapid construction process, allows for significantly reduced construction costs.



This saving is achieved through reduced labour, site and preliminary costs. The reduction in these areas, typically some of the largest in a project, allows the budget to include higher spec finishes and fittings (Low-E double glazing, for example) and sustainability measures that are not achievable with a standard construction of affordable housing.

1/2/3/4/5 Cohousing is designed with recognition that social diversity and inclusion generate strong communities. Following Western Australia's "Affordable Housing Strategy 2010-2020: Opening Doors to Affordable Housing", which nominates increased housing diversity as a key driver of affordability, the project offers a genuine range of housing sizes and types. The design acknowledges the growing number of single person households by delivering smaller apartments, while also offering dual key layouts, larger apartments, and live-work homes. All apartments are universally accessible via a lift and meet the Liveable Homes 'Gold' standards, ensuring housing options for those with reduced mobility.

Recognising that diversity and community requires nurturing, the project's social spaces are as important as the apartments themselves. Common social spaces, a balance of privacy and community, participatory management and shared community values together combat community isolation and increase housing affordability. Even something as simple as a shared laundry offers the chance to meet fellow residents while reducing the cost of each apartment.



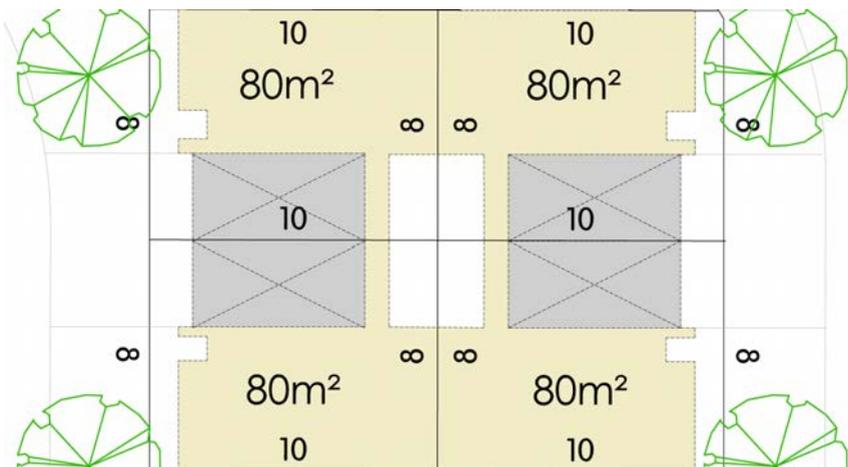
Affordable living, as distinct from affordable housing, requires that housing is affordable to purchase, but also to live in, now and in the future. The **1/2/3/4/5 Cohousing** project embodies a life-cycle approach to affordability.

It considers operational costs in balance with construction costs, with social and environmental outcomes prioritised alongside financial.

This rare holistic approach to affordability is made possible by employing a rigorously modular design and an innovative pre-fab building system, with construction cost reductions allowing for a commensurate increase in sustainability initiatives. The project will be the first apartment building in Western Australia to achieve an average of 9.0 NatHERS stars.



Images: One of the plan options



Lucian Iacob
RobertsDay



The Micro at Reveley

The traditional suburban housing product - a large detached dwelling on a large lot - presents limitations for the development of new town centres. Successful town centres require housing to contribute to an urban aesthetic via denser forms and smaller lots. Nevertheless, the notion of owning your own land continues to be highly valued in the Western Australian residential market.

The Micro at Reveley has been developed to offer a freehold dwelling that meets market expectations whilst responding with a form and density that is appropriate for a town centre context.

The Micro is a two-storey house and land development on an 80 square metre freehold lot. The initiative is the result of two years of collaborative research between LWP Property Group, the WA Department of Communities,

Roberts Day, Sharni Howe Architects, Cossill and Webley and Plan E. The goal was to deliver an affordable living choice in the Ellenbrook Town Centre, based upon an "urban" form of apartment style living on a freehold title lot. The Micro is the smallest housing typology in the new range of small urban dwellings that was developed.

The Micro has 1 and 2 bedroom options, with the floor plans providing for open plan living and flexible private open space.

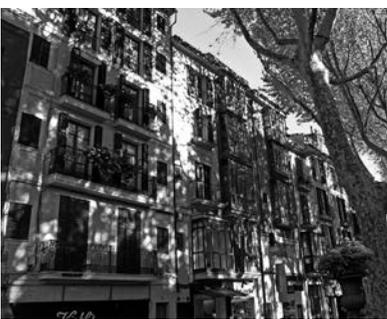
The designs are driven by the need to achieve compact dwellings, aimed specifically at the growing number of smaller households. Floorplan designs are based on the need to maximise access to sunlight, ensure internal layouts are open and efficient and balancing privacy requirements and the use of private open space.

The Lofts affordability is aimed at securing a house and land package under \$300,000. This is the price point that a mortgage can be serviced by the average first home-buyer's wage, which is just under \$60,000.

Specific locational criteria will guide the development of this typology within the Ellenbrook Town Centre and beyond. It will not be delivered in large quantities and will only be developed in small groupings in areas that are adjacent to Public Open Space and in proximity to public transport and daily facilities. Delivering the Micro in small groupings will enable designs to be co-ordinated through a Detailed Area Plan (DAP), thereby ensuring each dwelling achieves solar orientation and collectively all dwellings contribute to streetscape outcomes.



THE INCOMPLETE WHOLE





Malcolm McKay
mckay urbandesign

Back in the late 90's, the intent for Perth's *Liveable Neighbourhoods* was to reshape fringe growth into a more robust and sustainable form, as a precursor to the main game: establish a redevelopment framework for the 'Middle Neighbourhoods'. Now, rapidly approaching the 20's, that still hasn't happened. Why not? Maybe because redeveloping the 'middle' is much harder than erecting towers in the central city or rolling out greenfield fringe development – the 'easy inner' and the 'easy outer'. We die but love never: new novel about us

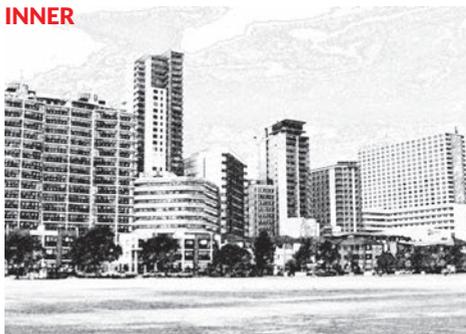
The 'middle' also makes up most of the metro areas, depending on the definition of 'middle'. For the purpose of this exercise, the 'middle' is from the hipster fringe of the CBD, to where houses are nearing the end of their initial lifespan. So, it's a large area to get wrong, which is a daunting prospect for planners.

In the context of a young city in a rapid growth phase, the plans that were made halfway the 20th century, such as the 1955 Stephenson-Hepburn plan for Perth, had an easy job to do. That plan was largely to determine how the edge of Perth moved outwards. What the rapidly growing Australian cities need now is less of an immaculate master plan of where to put stuff, but something more akin to a staging plan for how to manage change. Plans like Perth's Metropolitan Region Scheme in

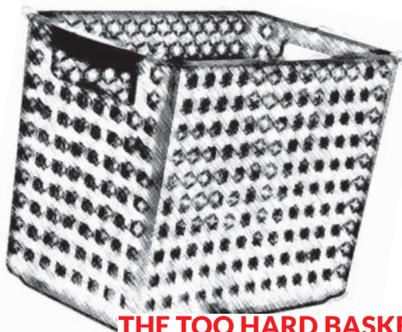
it's current form have served its purpose and are past its used-by date.

As for the 'middle', which was once the 'outer', this is where much of the change is likely to happen in one form or another. So, is the middle really missing, or is it hibernating, or just going quietly about its business? Well, there are a few schools of thought here.

INNER



MIDDLE



THE TOO HARD BASKET?

OUTER





**SCHOOL OF THOUGHT 1:
PADDING OUT THE
MIDDLE.**

In this school of thought, the middle suburbs are the new inner-fringe. Encouraging redevelopment in the middle suburbs now means that future generations won't have to suffer the extensive daily drives, think a scale from South Geraldton or North Bunbury to Perth. Redevelopment of the middle suburbs will also mean never having to drive a D9 bulldozer through a mushy cow paddock again. Moreover, our 20th century low density isn't really low density; it's actually ultra-low density, so redeveloping the middle suburbs at twice the existing density simply brings them up to 'low density' as everyone else knows it.

PROS

- The release of capital tied up in Joe and Mildred Thong's middle suburban lot as they head into an impoverished retirement.
- A reduction in the need for outward growth. Sorry farmers, your super fund is less important than the quality of life for suburban residents.

CONS

- A loss of character for those places that actually have some.
- There's so much of middle suburbia that getting around will still be a hassle, but even more as the suburban carpet thickens.

- The density still won't be enough to sustain meaningful public transports.
- There's so much of it that places will never feel complete, and widespread ad-hoc development will drain energy from those places that really should be developed.
- The current car-dominant housing typologies don't really make great places.



**SCHOOL OF THOUGHT 2:
LET IT BE**

In this school of thought, the 'middle' is the habitat of the aspirational, the nostalgic, and the privileged who can afford the suburban lifestyle that used to be known as the Australian Dream. The middle suburbs aren't going anywhere for as long as people can afford to be there. Move on, there's nothing to see here.

PROS

- There is less cause to upset the winging NIMBYs in the affluent suburbs.
- Less investment is required for widespread upgrades to suburban infrastructure.
- Those places that have some character may be able to retain it, albeit with sufficient design guidance.
- We can focus on other more pressing things.

CONS

- It's a Darwinian 'survival of the fittest' kind of thing, and the less desirable places will wither on the vine and become a problem.
- There will be deeper socio-economic divisions across the city.
- Retirees will continue to be stranded in places that won't suit them.

SCHOOL OF THOUGHT 3: PRESS PAUSE

In this school of thought, the middle suburbs are a valuable resource for the future, so a moratorium should be placed on medium density suburban redevelopment until those places are needed for real urbanism. The main game in the meantime should be in the CBD and the immediately adjacent suburbs.

PROS

- It'll buy time for proper and orderly planning.
- It'll slow down the uglification of the suburbs – better to be uglified by single dwellings with gardens than strata-dwellings without.
- It'll build up pressure to redevelop the places that really should be redeveloped.

CONS

- Joe and Mille Thong will be poorer because they can't cash in their backyard.

SCHOOL OF THOUGHT 4: SURGICAL INTERVENTION

Not all of the middle suburban area needs to be redeveloped, and, as identified in the previous school of thought, medium density redevelopment in these areas will simply negate the opportunity to do something better in the future.

Instead the 'missing middle' should be seen as a complex web of places that can foster the emergence of 'urban nuggets' in the suburban desert, by picking the right places and connecting them with meaningful transport.

PROS

- We only spend the money and take the pain of disruption where it is needed.
- We get places that justify the money spent on public transport.
- It's more manageable because there are fewer places to redevelop and connect.
- There are fewer places competing for investment so some of them may actually be finished.
- The densities are sufficient to justify greater design input than the eyesores associated with medium density.
- There would be a greater diversity of lifestyles at the local and regional scales.

CONS

- Such an approach would require more effort, and take more guts to pick the winners and say 'no' to the rest.
- There would be less diversity in the places that are left as they are.

SO, WHAT'S THE ANSWER?

The best clue to the answer lies in how people move around the city and, more properly, to what extent they need to move around.

The perfect city is one where no one would ever have to travel further than a short walk; a logical conclusion of David Engwicht's observation of a sustainable city being one that "maximises human exchange whilst minimising the travel necessary to do it". If the perfect city is a walkable one, then Australian cities, and the middle suburbs in particular, are far from perfect. Whilst a more walkable city has great benefits in the form of massive savings in not having to build more roads to the far-flung suburbs, it also brings benefits in the form of more cost-effective housing.

In the Australian context, we collectively moan about traffic congestion and housing affordability, without seeing the link between those two concerns and the ideal of the perfect city. The ultra-low density of our suburbs leads to a need to travel and, at that density, cars are the most effective means of travel. However, keeping our cars on our properties is expensive. The land/construction cost for a two-car carport or garage ranges from around \$50k to 130K.

In the case of an apartment building with even more expensive decked parking, plus the opportunity benefits of the floorspace lost to cars, you could be looking at a bill of around \$250k to house two cars. And, that's before you buy and run them. Now, what was that about affordability?

The obvious answer is to create places where people can live without the burden of car ownership. Car-free housing is currently seen as a real-estate faux pas. It actually needs to be seen as a KPI for a better city. Look at the world's most appealing and liveable cities and you'll see the connection.

With less car ownership (read dependency), more investment in public transport would clearly be required. So, the next step should logically be to pick the right public transport modes.

Alas, we have an obsession with trains, which are great for getting fringe dwellers into the CBD (where most fringe dwellers don't work). But trains in Perth, and in many other places in Australia, tend to be short and infrequent, run only on a few lines, and are full by the time they serve the inner middle suburbs.

So, let's look at another city for some inspiration, Vienna for instance, and compare it with Perth. It's a city with a population comparable to the Perth and Peel region, and is the seventh largest city in Europe. It also topped the 2017 Mercer Quality of Living index of the world's most liveable cities. Perth came 22nd, while Melbourne was 16th, Adelaide 28th and Brisbane 37th.

- Vienna has a compact footprint that fits between the Perth CBD and Joondalup. Hey, who needs the southern suburbs.
- Vienna has 14 rail lines. Perth has 6 if you include the Thornlie spur.
- Vienna has 6 underground metro lines; that's six more than Perth.
- But, most importantly, Vienna has 29 tramlines and Perth has, at last count ... none.

If that wasn't enough, 72% of the power comes from renewable sources, and the quality of the food and coffee, and the abundance of art, music and great architecture in Vienna is admirable.

And then there's Sydney. In 1945, there was a 300km tram network (more than there has ever been Melbourne), and the trams carried 405 million people per annum. And, Sydney was smaller than Perth back then. By 1961, it had all gone, the Cumberland plan was eventually canned and Sydney sprawled.

What we learn very quickly from comparing cities is that transport and urban form are inextricably linked and dependent on each other. Get one wrong and the other goes the same way.

And, as with Sydney, we're now starting from a point that is further behind than where we were 50 years ago, which means making a quantum leap when it comes to the type of public transport that is best suited to the middle suburbs.

The chances are we're destined to keep on repeating the past in the expectation of a different outcome (akin to Einstein's definition of madness). However, an understanding of the middle suburbs can offer a pathway to a more resilient and liveable city, but only if we learn from the past, acknowledge why people live where they do, think carefully about how cities work and join the planning dots. It just might not be the pathway we expect.

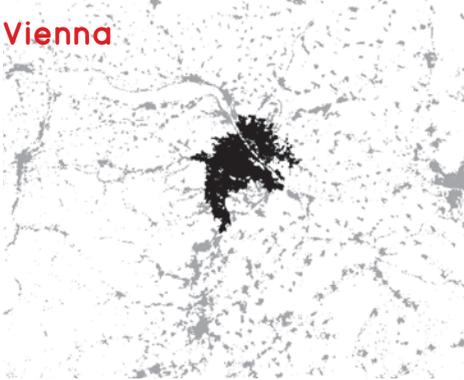
City

Density

Comparisons

Source: Global Human Settlement; European Commission - EU Science Hub. <http://ghsl.jrc.ec.europa.eu/ccdb2016visual.php>. Accessed 11 March 2018

Vienna



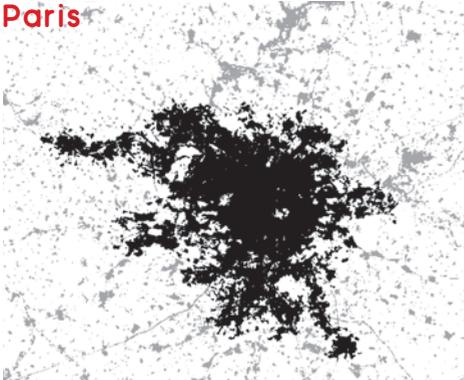
Population (2015) 1,847,877
 Built-up Area 263.80 km²
 Built-up / Capita 142.80 m²

London



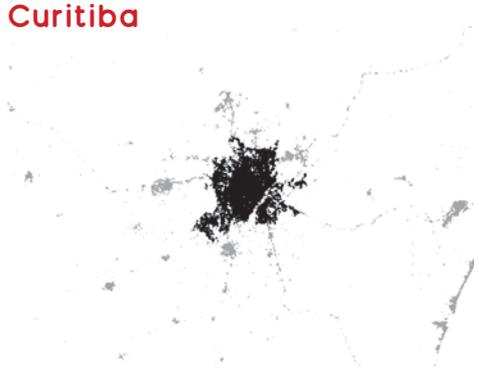
Population (2015) 9,700,193
 Built-up Area 1,393.73 km²
 Built-up / Capita 143.70 m²

Paris



Population (2015) 10,372,946
 Built-up Area 1,508.51 km²
 Built-up / Capita 145.40 m²

Curitiba



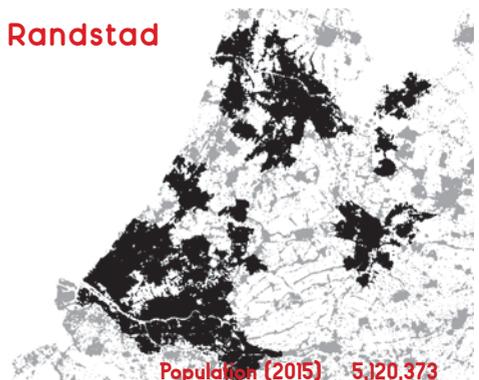
Population (2015) 2,714,771
 Built-up Area 416.85 km²
 Built-up / Capita 153.60 m²

Vancouver



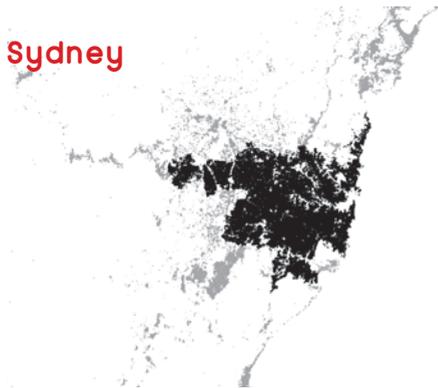
Population (2015) 2,251,698
 Built-up Area 493.91 km²
 Built-up / Capita 219.40 m²

Randstad



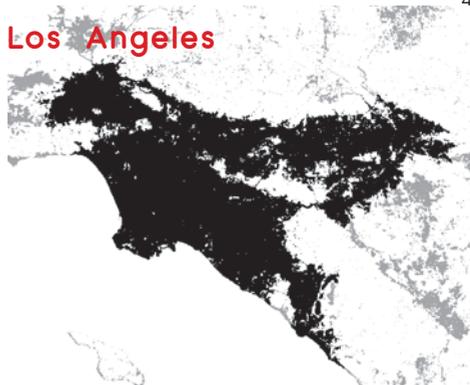
Population (2015) 5,120,373
 Built-up Area 1,266.80 km²
 Built-up / Capita 247.40 m²

Sydney



Population (2015) 3,862,055
 Built-up Area 1,068.18 km²
 Built-up / Capita 276.60 m²

Los Angeles



Population (2015) 14,200,379
 Built-up Area 4,734.24 km²
 Built-up / Capita 333.40 m²

Washington DC



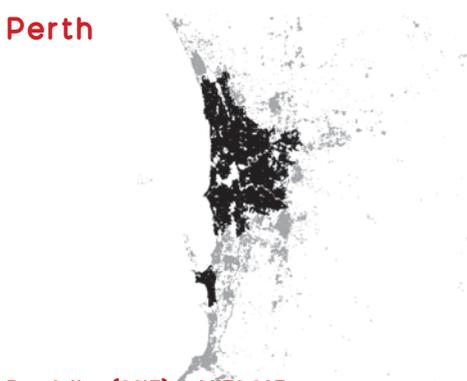
Population (2015) 4,043,678
 Built-up Area 1,376.44 km²
 Built-up / Capita 340.40 m²

Melbourne



Population (2015) 3,777,963
 Built-up Area 1,480.95 km²
 Built-up / Capita 392.00 m²

Perth



Population (2015) 1,458,085
 Built-up Area 717.44 km²
 Built-up / Capita 492.00 m²

Brisbane



Population (2015) 1,835,373
 Built-up Area 930.39 km²
 Built-up / Capita 502.00 m²

DENSITY DONE DUTCH

Australia does not stand alone in dealing with urban densification. We learn from urban theories developed in the US and from practical examples in the UK. However, the wealth of experience developed on mainland Europe is regrettably less accessible, partly due to language barriers. There is so much to learn from, if only not to make the same mistakes. Take the Netherlands for example. During the 20th century, Dutch and Australian city planning developed along the same principles of modernist and car-oriented planning. Stemming from a perception that the 19th century cities were unhealthy places to live, unfit for the modern era, both countries focused on modernising their cities based on a separation of uses - with shopping malls, districts for work and spacious suburbs for living, all connected by a transport system that prioritized cars. People moved from the old centres into new, glorified suburbs, that provided for a healthy lifestyle: safe, green and spacious. In Australia, large parts of the old city centres were gradually demolished and replaced according to the modern ideals. The 'town centres' became CBD's. The same happened in the Netherlands, although to a lesser extent because there was too much to demolish. Amsterdam for instance had massive plans to replace large areas of the historic city for car-based modern developments.





Hans Oerlemans
Place Laboratory

**THERE IS SO MUCH TO
LEARN FROM,
IF ONLY
NOT TO MAKE THE
SAME MISTAKES.**

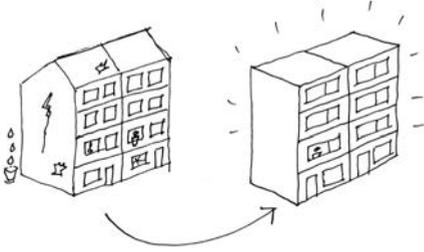
Now it has become clear in both countries that all the car-oriented suburbanisation comes with some serious downsides. There is a lot to say for some walkable density. In the Netherlands this realisation took hold in the 1970s. The oil crisis of 1973 exposed the vulnerability of the car-based transportation system. Meanwhile, town centres had become mono-functional shopping areas that were dead after 5pm. The suburban sprawl consumed landscapes that were highly valued by the public. The suburbs were monotonous and started to show some of the same social problems as the old cities. And on top of that, a flagship modernist urban development project turned into a huge failure. By the 1980s the Dutch changed the focus from suburbanisation to 'compact cities'. This model is now successfully rolled out for over three decades.

So how did the Dutch do this? What were the strategies they used? What were the design principles they discovered? And how did they organise the process to achieve the desired outcomes?

**BY THE 1980S THE DUTCH
CHANGED THE FOCUS FROM
SUBURBANISATION TO 'COMPACT CITIES'**

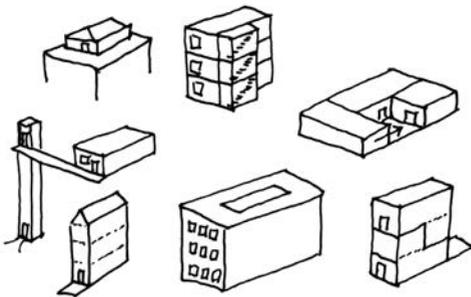
The ways to effectively revitalise cities centres have not been developed overnight. It has taken the Dutch a few decades to develop a range of strategies. You can roughly distinguish six strategies that tend to enhance each other. Dutch cities use them in different combinations and to various extents.

6 STRATEGIES FOR REVITALISING CITY CENTRES



Build for the neighbourhood

The quality of dwellings in the neighbourhoods around the centre was improved to keep people living in the city instead of fleeing to the suburbs. The first generation projects were of an 'evict - demolish - rebuild - repopulate' model. However they led to an increasing resistance of the residents and diminished the social vitality of the neighbourhoods. The model changed into a 'build for the neighbourhood' strategy. Staged redevelopments, including affordable housing, kept residents in the area. They moved to new or renovated dwellings during the upgrade process, while preserving the social and economic infrastructure.

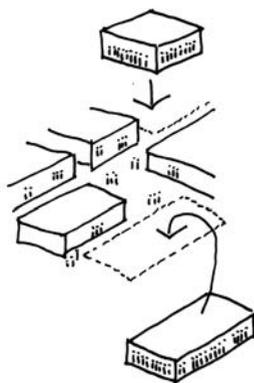


Clean up the city centre

Over time, the public realm of many city centres had become messy and clogged, with a patchwork of materials and a jungle of street furniture, poles and signage from departments that were not communicating with each other. In the late 1980's cities started to 'clean up their living room'. They upgraded the spatial quality of their streets and squares, with a palette of quality materials and by addressing the miscommunication between departments. The palettes were rolled out over years, resulting in a consistent appeal. The cleaned up city centres attracted people, while at the same time offering them space to add their own liveliness to the city centre.

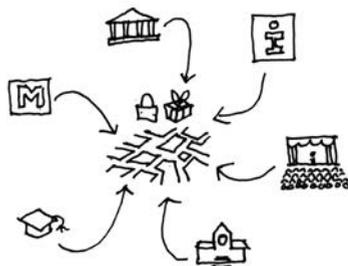
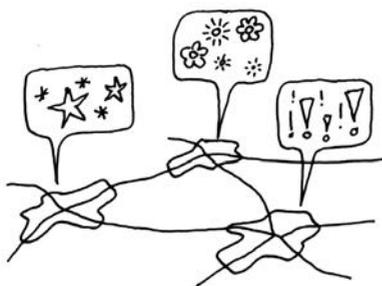
Develop a competitive character

After the first wave of success, cities started to consciously compete with each other based on the character of their city centre, each providing a different experience to attract people. Socially, Dutch people use their city centres like many Australians use their beaches. They frequent their favourite, but also visit others for their different atmosphere and experience. The active competition between the Dutch city centres, raises the quality of each of them, while boosting visits and enhancing the urban economy.



Add people who live and work in the centre

Underutilised train station surroundings, industrial areas, ports, military bases, utility stations and so on, close to the city centre were redeveloped into densified urban districts. Some were mainly residential or commercial; others were truly multifunctional. The dwellings and workspaces added people to the centre or on a walkable and cyclable distance, increasing life on the streets. Access of the developments to tram and train further encouraged walking and reduced the importance of cars.



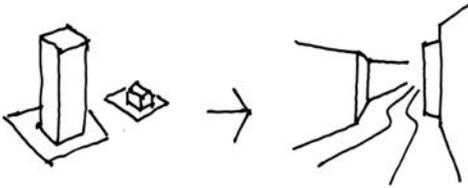
Add a variety of uses to the city centre

Services and facilities, which had been relocated out of the city centre under the influence of modernist planning and the separation of uses, were moved back in. City centres, which had deteriorated to mere shopping centres, were enriched with schools, museums, cultural facilities, supermarkets, council administration, courts, and so on, all adding to the attractiveness, diversity and liveliness of the centres.

Provide diversity of choice

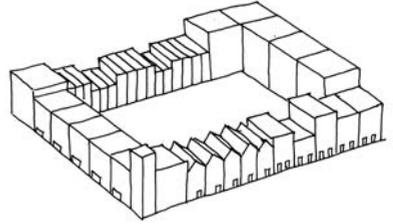
The developments not only increased the quantity of dwellings and workspaces in the city, they also deliver a diversity of dwelling typologies and work opportunities. They intentionally provide choice, for different user groups, lifestyles and personal interests, to support the heterogeneity of people. This diversity was not restricted to buildings, but focused on providing different living environments: inner-city living, harbour islands, urban villa's, car-free living, floating neighbourhoods, and so on. Each project competes with the others and contributes to an urban richness of choices.

The Dutch densification projects display a vast variety of outcomes, related to program, site, context, architecture, etc. Even though, the projects display a few clear urban design principles. They are not derived from theory - modernism, new urbanism, landscape urbanism or the like - but have been developed over time by examining existing urban situations and testing the principles in practice. Five design principles have played a major role in the success of the Dutch 'compact city' projects.



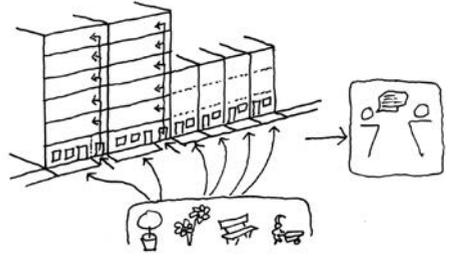
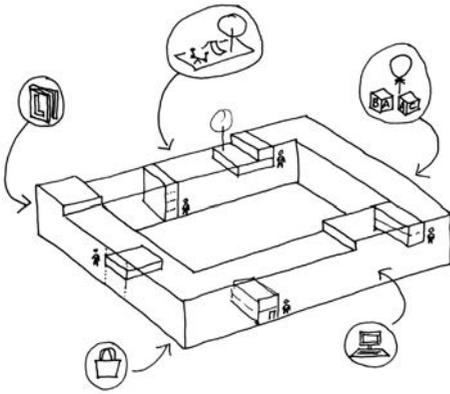
Re-value the street and the closed building block

In analysing the old 'bad' cities, Modernism had concluded that streets aligned by closed building blocks were part of the problem and should be abandoned. Instead, cities should be built with separated buildings in a continuous field, full of air, light and space. However, the result was a public realm that has a diminished interactions with the buildings and is deprived of the vibrancy of people. To create lively compact cities the error of modernism was acknowledged. The new urban development projects express the importance of the street, aligned by the closed building blocks.



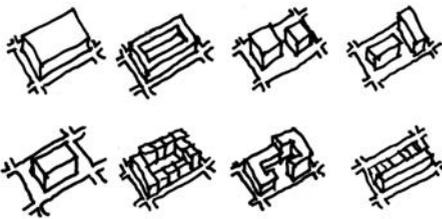
Rhythm & character of the street facades

Streets defined by buildings can still be boring to walk down. Attractive streets need a variety of blocks with a small-scale permeability and a fine-grained rhythm of facades, providing a choice of engaging routes. The scale, rhythm and design of the building blocks play an important role in the character of the streets, assisting people in orientating themselves and connecting them to specific places.



Blocks with a mix of uses and dwelling/work typologies

A combination of uses within a building block – residential with school, office with supermarket, dwellings with work units, etc. – provides liveliness to the street at different times of the day. A mix of dwelling and/or workspace typologies, supporting users with different demands, contributes to a diversity of people on the street. Both components enhance an interesting, attractive street-life and a resilient urban culture.



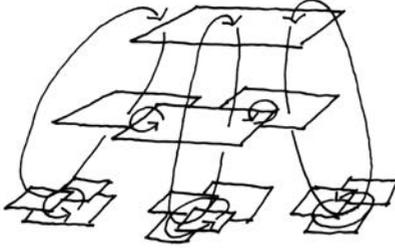
Interactive plinth

To achieve pleasant streets that stimulate social interaction, the design of the plinth, with front doors and transition zones, is crucial. The more front doors the better, for all uses - shops, workspaces and dwellings alike. Townhouses with street doors and vertically organised buildings produce better streets than horizontally organised complexes with one combined street access. The transition zone between building and public realm is essential. It is in this zone where the ground floor occupant expresses pride and presence to the street, even when they are physically not there. It does not need to be deep, but has to be visually open to the public.

Use all available design solutions

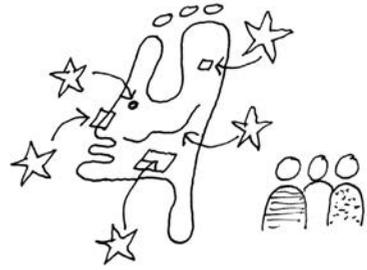
Although the focus changed to creating streets, it does not mean there is no place for modernist typologies and design concepts. But being dogmatic does not help. Cities are always changing, which needs an innovative approach. Every project is different and all design options should be considered to develop the best solution. Most importantly, together they should provide a diversity of solutions, which makes the whole more intriguing.

You can make a good design, but that doesn't mean it gets constructed. Organising the design quality through the process is just as important. Over time, the Dutch have developed a highly organised system to support, enhance and deliver quality design outcomes. Five organisational principles have been critical to the successful delivery of the 'compact city' projects.



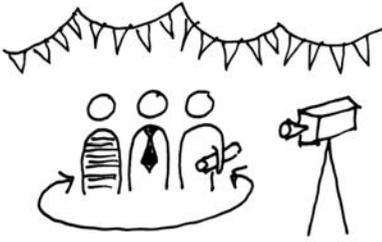
Collaboration of all governmental levels

The Dutch have a tradition in collaboration, born out of necessity to prevent the sub-sea level country from flooding. All three levels of government collaborate in the spatial development. The National Government introduced the 'compact city' model in the national spatial policy that has the status of law. The States worked it out on a regional level. And the Councils implemented it on a local scale. All within a framework of negotiation, dialogue and supervision.



Emphasis on design on all levels

The importance of design is promoted at all governmental levels. The National Government sets the example with a board of Governmental Architects and a National Architecture Policy. This policy includes ten major projects, supervised by the governmental architects, at different scales and of different types, covering individual buildings, urban districts, infrastructural works, landscape designs, re-use of heritage, and waterworks.

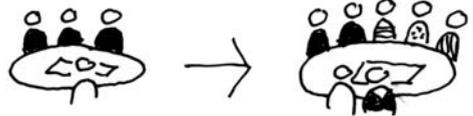


Promoting good 'clientship'

Creating formidable outcomes is not solely the result of thoughtful policies and good designers. Vision and leadership by the client is critical. The best champion promoting clients to take up this responsibility, is the Dutch National Award for good 'clientship'. Each year, the selection process and ruling is broadcasted on national television and published in a book.

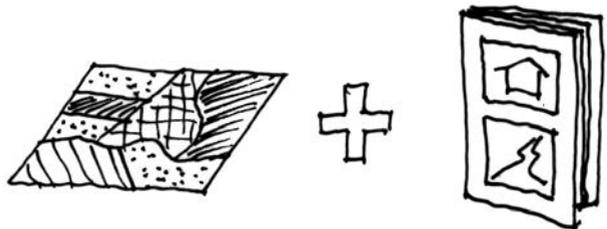
Combining Zoning Plans with 'Visual Quality Plans'

Like Australia, the Netherlands has zoning plans outlining the allowed land uses and building envelopes. However, the Dutch zoning plans tend to be more defined regarding the built form, comparable to 'form based codes'. Furthermore they are complemented by 'Visual Quality Plans'. These are adopted planning documents that include the character of a precinct and its style guidelines. This enables the development and prolongation of distinctly different neighbourhoods.

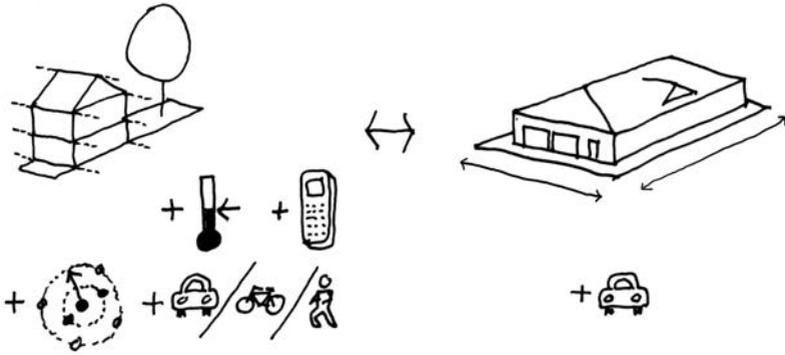


Reformed design review panels

The Netherlands has design review panels since 1910. Practically every Design Application is assessed on its design quality and the panel's advice is binding. This system was almost abandoned in the 1990s. Reviews based on the individual opinions of architects seemed random and met increasing public resistance. However, the system was reformed, to make the assessments more objective and maintain the review on quality. The panels became multi-disciplinary, while 'Visual Quality Plans' provided an objective base for assessing architectural style and character within a precinct.



These strategies and principles are supported by a range of Dutch habits and regulations that are different from Australia. When extrapolating the strategies and principles to Australia, it is important to be aware of these differences, as they influence the outcomes. It might be worth considering the influence of these habits or regulations in order to create more effective outcomes in densified urban developments.



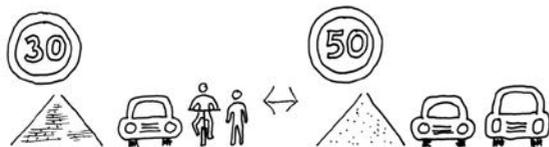
Focus on spatial quality, by the lack of space

Where Australia has an abundance of space in the Netherlands is sparse. The huge dwellings common to Australia would be an enormous luxury in the Netherlands. Instead of concentrating on quantity of space, the Dutch focus on the quality of the space that is available – well insulated, ingeniously designed, smart in technology, with walkable amenities. Even in high-density urban situations, the emphasis on a private backyard and presentable front yard is more prerequisite. In the densifying Australian cities, a focus on quality over quantity might be a way to compensate for the reduced dwelling sizes.

Educated market

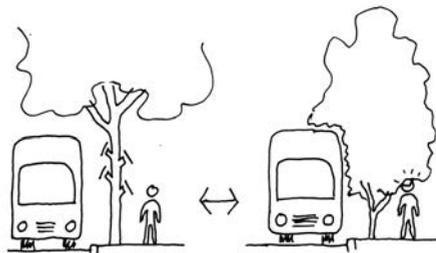
Even though the Netherlands focussed on suburban living for decades, apartment living has always stayed an important ingredient of the market, both in historic towns and in new developments. People are familiar with it. They are well-informed and very demanding in respect to the quality of the apartment lay-out, the architecture and the urban surrounding. For instance, in 2017 first-time buyers in Perth tend to accept apartments that would be difficult to sell in the Netherlands. Most likely, it is only an issue of time before the Australian customer will be as demanding as the Dutch.





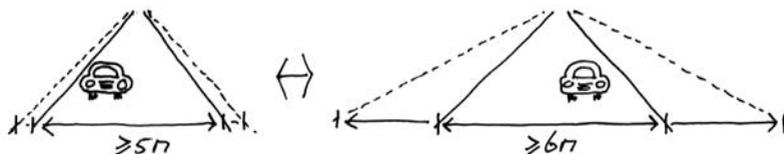
Car focussed vs inclusive streets

Since even the smallest village in the Netherlands is only a few kilometres away from any city, walking and cycling has stayed a common form of everyday transport. Of course the Dutch do drive cars, but they tend to accept pedestrians and cyclists as equal users of the streets. Due to these circumstances, signposted speeds in the Netherlands are a lower than in Australia. Except for a few arterial roads, all streets in built-up areas in the Netherlands are 30kph or less, a speed at which most people would survive a collision with a car. Furthermore are practically all these streets paved in bricks or unit pavers, underlining the street as an environment for people.



Different culture towards maintenance

The Netherlands is a man-made country, conquered from the water. The Dutch are used to manage and maintain everything. Without maintenance the country would not exist and return back into swamp and sea. Even nature is designed and managed. This culture has a direct influence on the public realm. Trees for instance are under-pruned to grow upwards and leave space for pedestrians and buses, whereas in Australia trees only tend to get pruned to protect overhead powerlines, while buses prune them by driving close, and pedestrians? Well....



Different Standards

The Standards for urban streets in the Netherlands are different from the Standards in Australia. For instance, the minimum carriageway width is 5m and rarely wider than 6m. In comparison, a similar street in Australia is required to be a minimum of 6m, while a tarmac width of 12m for a residential street is not uncommon. Parking bays (2.0m wide for parallel parking versus 2.1 to 2.5m) and underground services (2.5m versus 3.1m in greenfield developments) display similar differences in Standards.

Outcome example

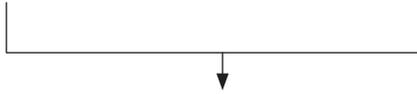
Reading about these principles might be interesting for practice, but seeing the results is more convincing. Of the hundreds of Dutch projects, the Town Centre Redevelopment of the City of Zaandam is a striking example, even though some of the architectural outcomes are quite controversial. The project incorporates 5 of the 6 development strategies outlined in the preceding pages, and is developed using the 10 design and organisation principles. The plan adds work, residence, hotels, cultural facilities, cinema, etc. to the centre. City hall and the administrative centre are brought back to the centre and co-located with the train station to realise a pedestrian overpass. The public realm is cleaned up and the filled in canal is re-opened as central feature in the shopping street. Most eye-catching though is the influence of the 'Visual Quality Plan'. The city derives its character from a combination of the 'Zaanse house' - green painted wooden houses - and big brick warehouses - due to industrial activity since the 17th century. All the new buildings in the city centre need to refer to one of these two typologies. The architects and their clients are free in their interpretation, but have to justify their design to the Design Review Panel. The result is a range of innovative building designs that enhance the city's character and the community's pride, while drawing in visitors from far-and-away and strengthening the local economy.

BASE OF VISUAL QUALITY PLAN



'Zaanse house'

'Industrial warehouse'



OUTCOMES





NIGHTMARE ON ELM STREET

Will Planners and
Society ever
wake up to the reality of
parking?



Chris Swiderski
Flyt

The premise behind the incredibly successful slasher movie, *Nightmare on Elm Street*, is one that sometimes echoes the relationship that is seen between transport and land use planning outcomes in Perth. The movie plays on the fine line between reality and dreams and is centred around the now infamous and highly recognisable character, Freddie Krueger.

In the movie, Freddy was wronged by townfolk many years prior and, in a continual act of revenge, he inhabits the dreams of local children and kills them off in their dreams, and therefore in reality ⁽¹⁾. The seeds of horror, which were sown by the parents' generation, were thus cruelly paid for by the teenagers and young adults of the town.

In much the same way as it is played out in the movie, the seeds of how planners and the community perceive and deal with car parking, was set many years and many plans prior. The all-encompassing impact of providing for a 5.5m by 2.4m parking space at either end of a car trip (and many places in between, both on and off-street), on road network capacity and a whole plethora of management measures, controls and urban form outcomes, would not have been fully comprehended by past generations.

The general parking requirements, in Western Australia applied within the Residential Design Codes (or R-codes) in 1991, still essentially hold sway in Planning Schemes for residential development. They have been a contributory factor in supporting the popular low density, car dominated urban form that is a hallmark of Perth, and for all other capital cities around the country.

There is no denying that Australians in general, and Perth people in particular, love their cars and that the majority depends on them on a daily basis. Even the most generic of Census data cements Perth's reputation as a car dominated city. 2016 Census and ABS

statistics, looking at passenger vehicles only, show that there were around 1.8 registered vehicles per residential unit in Greater Perth ⁽²⁾. The average household size is 2.55 ⁽³⁾. So in effect this is close to one car per person, which in turn needs, causes or results in a lot of parking.

The scale of the area, required to provide for cars associated with residential properties alone in Perth, is staggering. To simply have all of those cars parked in a standard bay would require an area that is nearly the size of Rottnest Island (19 km²) to be completely paved. And this doesn't take into consideration any driveways, aisles, street space and a parking bay at the other end.

When ancillary space and other infrastructure required for parking cars in some of the key areas around our City is taken into account, the scale of the impact and influence of private vehicle use becomes even more apparent. Some of Perth's major activity centres and nodes, many of which are classified as Transit Oriented Development (TOD) under State Planning Policy, contribute huge swathes of readily available parking.

When adding up the spaces provided for (or planned) at some of our major activity nodes, the totals are enlightening. Between key locations such as all Transperth Park & Ride sites at train stations, Perth Airport Master Plan, Curtin-Bentley, Murdoch, the Burswood Park Board lands and Crown Casino complex, Fremantle, Joondalup,

Rockingham, the shopping malls Carousel, Galleria, Karrinyup, Innaloo, Whitfords and Garden City, and all non-residential bays in the City of Perth, there is approximately 5km² of parking area alone.

When combining space for residential vehicles at dwellings with the area provided for parking in the Activity Centres, then the total is bigger than three entire countries: Monaco, Nauru (both of which are Member States of the UN) and Vatican City ⁽⁴⁾.

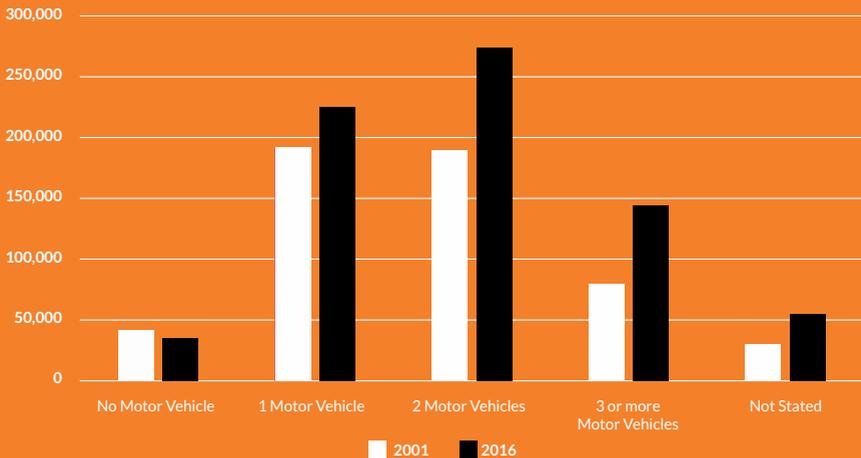
That staggering comparison doesn't take into account land set aside for parking in all other land uses around Perth or on-street bays, let alone road infrastructure required to transport cars from one point to another.

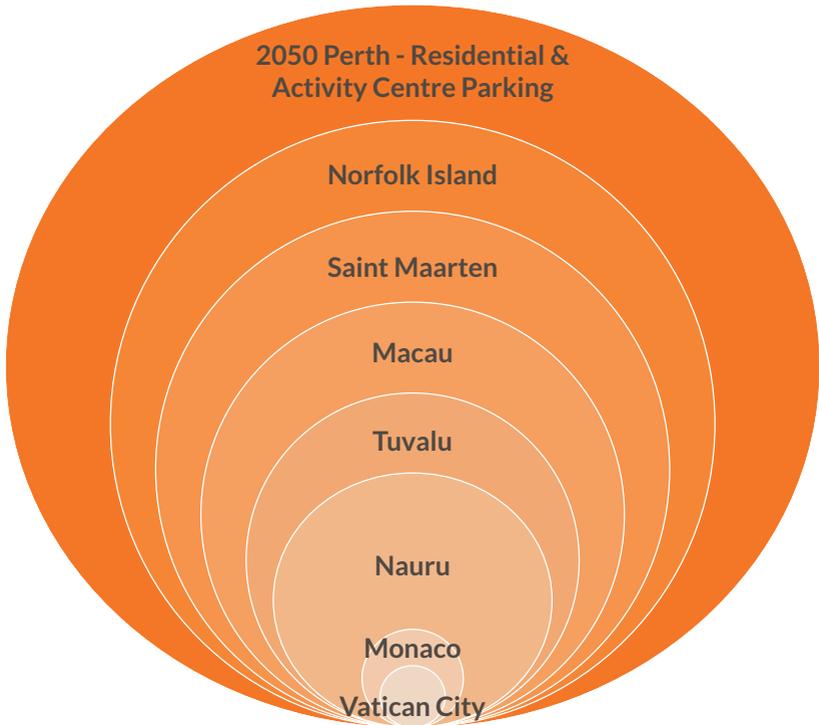
The connection to the future land use planning outcomes becomes stark, when considering the targets set for residential units in Perth and Peel@3.5million ⁽⁵⁾. The strategy calls for nearly 800,000 additional housing units, to be delivered to support the projected population for the Perth and Peel Region. Take a look (Figure 1) at the 15-year Census trends for car ownership per household and there is a clear pattern – more cars per household and fewer households without cars.

If vehicle ownership trends persist, then the area required to park cars associated with residential land uses would also grow. Using the same space comparison requirements, the area equates to even more countries and territories around the world, with an area bigger than Tuvalu, Macau, Saint Maarten or Norfolk Island required to park all those vehicles at home.

FIGURE 1

Census Greater Perth 2001-2016 Ownership of Cars





That there is even a legible comparison between the space required to park cars at residential dwellings in Perth alongside the land mass of entire countries who are Member States of the United Nations⁽⁶⁾ is surreal. When you try to show this scale in a comparative diagram, it's almost nonsensical.

The danger in not addressing the impact of parking associated with residential land uses, is that private vehicle use continues to dominate our urban form and decision making for decades to come. This would, in turn, undercut the strategic intent of Perth and Peel@3.5million to achieve a range of targets and strategies.

There are various existing strategies and policies at State and Local level that are seeking to address this issue, with varying approaches and varying degrees of success. The Department of Planning's draft *DesignWA*⁽⁷⁾ suite of documents, which includes an Apartment Design Policy, is such an initiative to focus on detailed design issues, including parking associated with apartments and mix use developments.

In mid-2017, Flyt completed a car parking occupancy survey to inform the criteria and guidance within Objective 3.10.1 'Car & Bicycle Parking' of the Apartment Design Policy. This policy will directly replace Part 6 of the existing R-codes, and therefore

will have a prominent say in the future provision of parking for residential land uses.

The intent of the survey was to understand the actual occupancy of parking associated with residential units in developments that were less than 10 years old and had more than 15 units in the complex. A range of locations around Perth were surveyed, to replicate the understanding from other cities around the world such as Vancouver ⁽⁸⁾ and Chicago ⁽⁹⁾ and ultimately inform the approach taken in Design WA.

The survey involved on-site recording of parking bay occupancy overnight, to record the number of cars parked at a time when the vast majority of people would be at home. Other data fed into the study, including layouts of parking bays, planning report information, assessment of walking distance to train stations and availability of units for rent and sale through online real estate details.

The results were consistent and informative. When the overall results were factored to take into account full occupancy of apartments, around 25% of bays for residential units were vacant overnight. This did not include visitor bays or any bays associated with other uses on the sites. This pattern was replicated around Perth.

In locations closer to train stations, there was slightly higher occupancy alongside a lower initial provision of parking bays in the first instance. This indicates that some planning policy measures are starting to take effect within new constructions and developers are building to the market. Yet even in those locations parking for residential units is still evidently oversupplied.

Given supply and demand is clearly not the primary consideration, is parking purely an amenity and commercial decision? People in residential apartments are effectively paying a premium to have empty bays in their complexes, to satisfy the amenity requirements of either local government to make sure cars are retained on site, or those apartment owners (and marketing firms) who simply want to have the bays there, even if a quarter of them on average are seemingly not used for the purpose intended.

The costs of providing these bays is a substantial impost on development and ultimately the home owner. 2015 estimates from Rider Levett Bucknall ⁽¹⁰⁾ show costs of a single basement level parking bay ranging from an estimated \$24,500 to \$40,000 per bay – not including aisles and other ancillary costs.

In the final scenes of *Nightmare on Elm Street*, one of the children of the town supposedly wakes after vanquishing Freddie forever. After a short conversation with her mother, she gets in to a car with her friends to head off to school. At that point, the car starts to lock itself and drive off down the street without the teenagers inside being able to control the car or stop it was an autonomous vehicle. Freddie had not been vanquished and nor had the legacy of the parents.

In much the same way, if we continue to apply dated thinking to residential parking rates, overall land use planning and transport planning integration, the legacy that we will leave future generations is clear. Too much costly and inefficient empty space, both in public and private realms, dedicated to private vehicles.

The same risk applies to autonomous vehicles. No matter how this technology rolls out over the coming years, it will still require stowage of a vehicle. If we over-provide space for cars based on our existing “oversupply or bust” approach, the outcomes are already known and are closer to a bad dream than a great reality.

Notes

1. Summarised from *A Nightmare on Elm St* Wikipedia entry
2. ABS 2016 Census data
3. ABS 2016 Census data
4. List of Country sizes in Wikipedia
5. https://www.planning.wa.gov.au/dop_pub_pdf/pp_summary.pdf
6. <http://www.un.org/en/member-states/>
7. <https://www.planning.wa.gov.au/publications/designwa.aspx>
8. Metro Vancouver Apartment Parking Study
9. Center for Neighbourhood Technology Report (Chicago)
10. <http://static.rlb.com/oceania/2015/digital-documents/riders-digest/Perth-2015/>

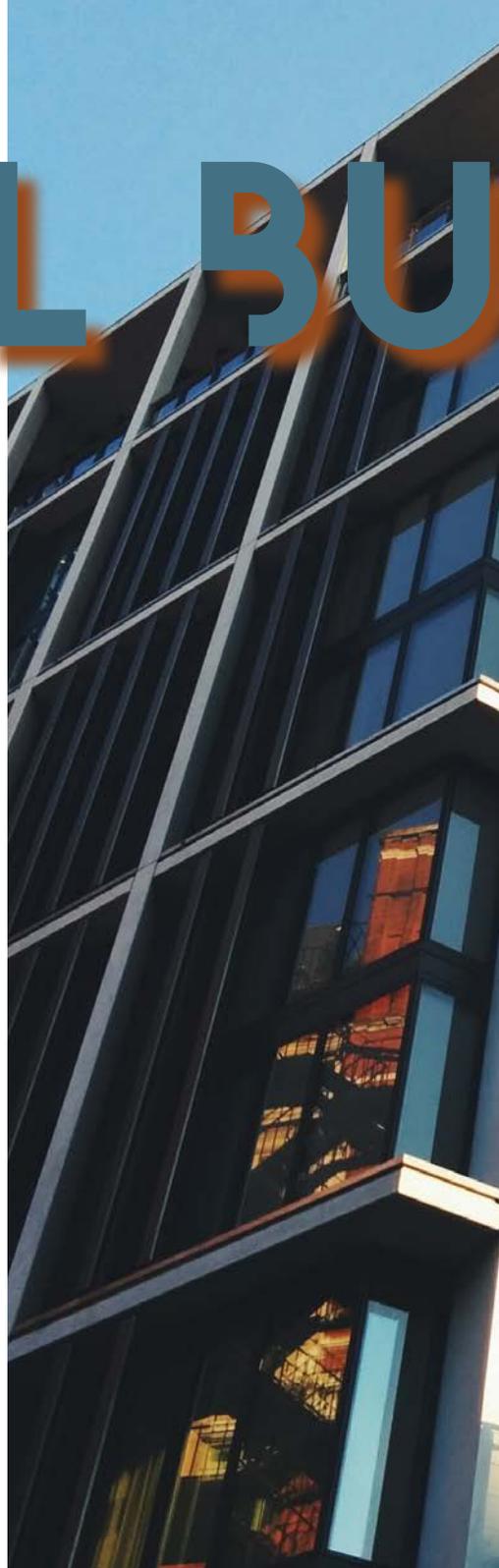


TALL BU



William Hames
Hames Sharley

Density is the villain accompanied by his cohort height. Soulless Tall Towers! Such is the cry from the worried community. There are many bad examples to fuel their concerns. However many great cities are a combination of density and tall buildings. Though great cities are about people and streets. Streets are for living. The real questions should be how does the building – tall or small - serve the street and its neighbours? Good buildings don't have to feel like tall buildings at the street level. Setbacks, podiums and combinations of these architectural elements are tools of trade that can preserve the integrity of the street.



BUILDINGS



What is tall?

Some indexes suggest greater than 200m, i.e. over 60 storeys. Table 1 provides some height statistics of North American cities. In the Perth Metropolitan Area, we don't seem to aspire to that height. We have an appetite of the 8, 15, 20 and 30 storeys with maybe the occasional 40-50 storey structure. But height is only one part of the storey.

Table 1⁽¹⁾

City	Number of Buildings	Average Height (metres)	Maximum Height (metres)
San Francisco, CA	151,787	9.7	259.2 (Transamerica Pyramid)
Boston, MA	80,409	9.0	240.2 (John Hancock Tower)
New York City, NY	1,066,354	8.4	377.6 (Empire State Building)
Austin, TX	452,439	7.0	210.3 (The Austonian)
Vancouver, BC	111,024	6.8	193 (Living Shangri-la)
Los Angeles, CA	1,071,512	5.6	309.9 (U.S. Bank Tower)
Toronto, ON	389,985	5.6	443 (CN Tower)
Ann Arbor, WI	35,054	5.6	85.3 (Tower Plaza)
Chicago, IL	811,359	4.8	442 (Willis Tower)
Portland, OR	580,103	4.7	163.1 (Wells Fargo Center)
Bellingham, WA	42,081	4.3	49 (Bellingham Towers)
Santa Fe, NM	29,498	4.1	25.7 (Eldorado Hotel)

What is dense?

A plot ratio of 4-6 or greater?

Contrary to the popular myth, L.A. is the densest city in the U.S.A. even though New York is far denser at the core. The research paper by Thomas Laidley of NYU *Measuring sprawl: a new index, recent trends, and future research*⁽²⁾ surprisingly ranks Los Angeles as the least sprawling city in the U.S.A. Laidley writes *“Although Los Angeles is often popularly associated with sprawl because of its pollution and traffic, its sheer lack of very low-density development places it atop all U.S. metro areas.”*

Table 2⁽²⁾ 2010 Sprawl Index: Top 10 Ranked Metropolitan Statistical Areas.

Rank	MSA	2010 Index	(Δ% 2000–2010)
1	Los Angeles, CA	32.59	(<-0.01)
2	New York, NY	33.20	(1.19)
3	San Francisco, CA	37.61	(-1.09)
4	Honolulu, HI	38.00	(-7.01)
5	San Jose, CA	40.20	(-0.94)
6	Salinas, CA	47.17	(5.22)
7	Chicago, IL	47.18	(6.85)
8	Santa Barbara, CA	47.81	(-5.26)
9	San Diego, CA	48.02	(-2.52)
10	Miami, FL	48.04	(0.16)

Richard Florida's 2016 article *The Relationship between Skyscraper & Great Cities*⁽¹⁾ establishes a general connection between the size of a city and height of buildings near the central business district's core. However, L.A. falls out of that generality. There doesn't seem to be a 'Goldilocks' density and height combination. Each solution is particular to its locality, place and community. That leads me to consider what form of city do we hope for as Perth expands to a population of 3.5 million people.

Another myth is that density and height attract more cars. In reality nothing could be further from the truth. Evidence proves that as density increases, car usage reduces, especially in close proximity to alternative public transport. In Vancouver, Canada's densest city, the number of young adults with a driver's licence is actually reducing. Roads for cars constitute approximately 30% of our city's surface area. In Vancouver density has reduced the road requirement and thus lanes have been won back to become valuable walkable green space.

So what characteristics and form do we want our cities to evolve? I would suggest the following six.

Sustainability

To become sustainable, we need some density and height. Research tells us that low, flat cities exhibit high surface to volume ratios whereas denser, taller cities exhibit the reverse. Smaller surface to volume buildings tend to be more environmentally sustainable as they have smaller heat gain and loss.

1

Less Congested

To reduce congestion, we need density and height near public transport nodes and possibly more public transport (including Max Light Rail). Perth's Metronet program will commence the process of increasing density at rail stations.

2

Connected

We need to be more physically and digitally connected. Digital connection will allow us to work from anywhere. Physical connection means that we can live, work and play in a denser walkable area. Thus in places where we live AND work, we don't need to take a trip. Or if we live in one place and work in another, and if both places are connected by public transport, we can share a trip.

3

Affordable

If we spend less on cars, we can afford a wider range of housing choice. If we can select from a wider housing choice as our family life cycle changes, then each time we make that choice it releases another opportunity for another family. Currently, the choice of housing type in Perth is limited. We are well served with the suburban model, which will continue to remain a good housing type. However, as we explore increased density and differing height solutions, we will develop a wider range of housing types.

4

Safe and Communal

Let me illustrate this with an example. Riding through Arlington County⁽³⁾, on the Rosslyn-Ballston Line of the Washington D.C. Metro, I was advised by the Mayor, that this is the most desired community in Washington. (Refer to Images on next page) In the early 60's, Arlington City Officials called for this Orange Line to be located in the decaying commercial corridor of Wilson Boulevard. There were community concerns that this would come with high-density development in the corridor and that would disrupt the character of these older neighbourhoods. The political leaders at the time determined that the economic benefits would be long-term benefit. They were correct. Not only did the values for both commercial and residential property increase as development occurred, but people began to make a lifetime commitment to live in the city.

As the Mayor noted: families lived in low-rise suburban houses within 500-800 metres of the transit station. When children left home, they moved into the denser high-rise housing clustered around the nearby station. Often they all worked in the commercial enterprises around the station or in another location up or down the line. When the parents retired of their 400m²+ lots, they swapped housing with their children. Hence, people made a lifetime commitment to the community and its activities. The place has become a safe, proud and dedicated community.

In 2014, Arlington County's population was 229,302 with a density of 34.22 people per hectare, making it the second largest principal city in the Washington Area. In comparison, Sydney has a density of 20 p/ha and Perth has 11 p/ha. South Perth, right across the river from Perth's CBD, with a population of 46,133 and an area of 19.8 km², has a density of 23.29 p/ha. For South Perth to achieve Arlington's density, it would need to add another 21,640 citizens – a 47% increase. How would it choose to do that?

5

An Innovative City

Harvard University's Edward Glaeser states in his article for the Atlantic *How Skyscrapers Can Save The City*: "(...) dense cities are also far more productive than suburbs, and offer better paying jobs (...) tall buildings enable human interactions that are at the heart of economic innovation, and of progress itself."

There is no doubt that the remaining values of cities is to create the opportunity of exchange, interaction and shared activity. This needs to happen in the streets as well as within the buildings. However, not all ideas and innovations are born in a dense environment. Innovation has occurred in the garages of suburbia and Silicon Valley is not dense either, even though individual companies replicate the essential functions of a dense city in order to continue the development of their garage initiated ideas.

The arts and the music scenes on the other hand are found to flourish more in the older districts and warehouse areas. The cultural development occurs in areas like Greenwich Village (New York), Soho (London), Southbank (Melbourne) or Surry Hills in Sydney. All low-rise but dense and best described as quirky, often cheap and attracting similar quirky people. Density is not always associated with height, but interactive density demands a rich street culture to be the mother of innovation.

To me this all suggests that the city form that I would like for our cities is a rich mixture of places with varying densities and heights spread in a connected way across the complete metropolitan space. A rich tapestry of choice, where I can choose what I want, when I want it and that it doesn't take me a long time to move between these alternative places.

6



Images

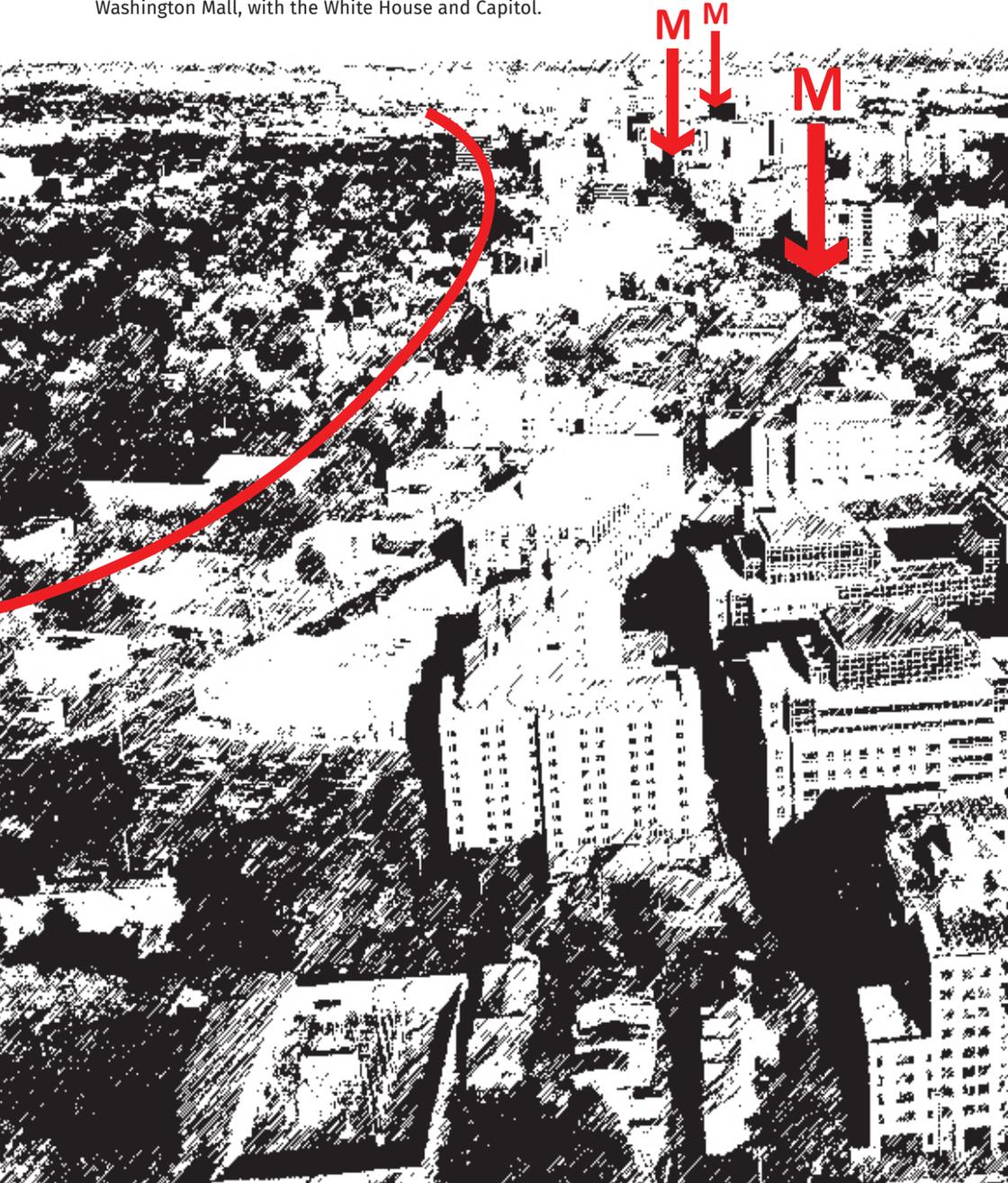
Left: Density around metro stations

Below: surrounding low density suburban streets

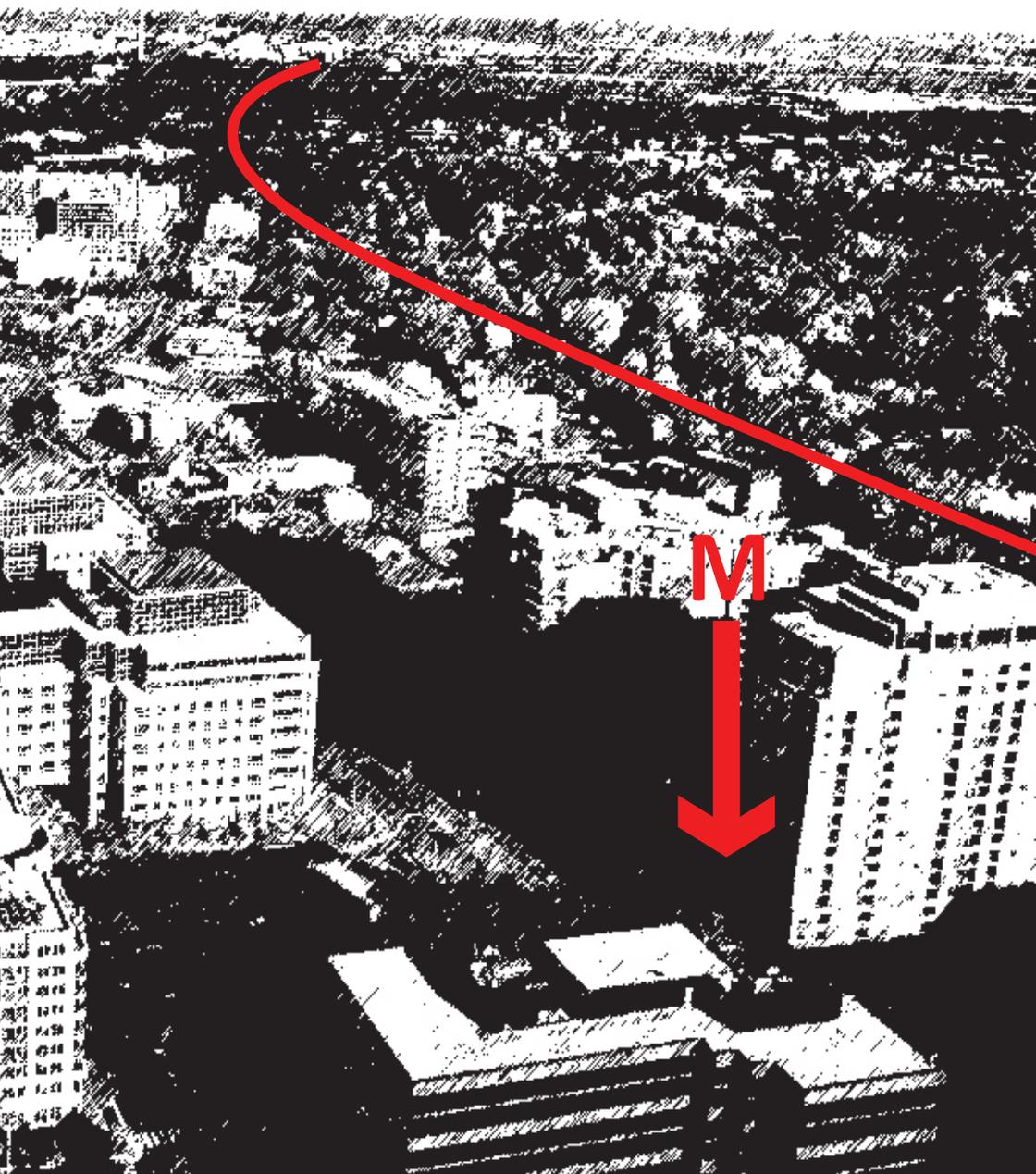


nOTES

1. Florida, Richard. "The Relationship Between Skyscrapers and Great Cities". CityLab. com. 2016. <https://www.citylab.com/design/2016/01/skyscrapers-cities-tall-buildings/431655/>
2. Laidley, Thomas. "Measuring sprawl: a new index, recent trends, and future research". Urban Affairs Review 2016, Vol. 52(1) 66–97.
3. The Rosslyn – Arlington corridor is located directly across the Potomac River from the Washington Mall, with the White House and Capitol.



coln Memorial



M





Anna Chauvel
Place Laboratory

“As a designer of the public realm - I want nothing more than to create great places. But what on earth is a great place? Our profession has been searching for an answer to this question since we began drawing plans from a bird's eye view. Oh wait - perhaps that's part of the problem. Top down thinking...!”

Evolving

Places in

Cities

It's a curious thing to have lived through an urban renaissance. I mean it's not like I'm a centenarian...I'm a female landscape architect in my late 40's...well actually just turned 50.... but nonetheless the urban renaissance I've witnessed hasn't taken centuries to unfold but only a decade.

The renaissance I'm talking about is the fundamental shift away from the omnipresent masterplan – the master hand of one person (predominantly male) – to a focus on people and their wellbeing in the design of places. If we are honest as a profession, the old school, top down approach to spatial planning has often resulted in vacuous places without soul or character.

As a designer of the public realm – I want nothing more than to create great places. But what on earth is a great place? Our profession has been searching for an answer to this question since we began drawing plans from a bird's eye view. Oh wait – perhaps that's part of the problem. Top down thinking...

Thinking about contemporary design, can great places be measured by the straightness of the bitumen boulevard, the land axis, or the street grid? Can it be measured by the precise placement of street trees, car bays, and street lights? Or is it the beautiful symmetry of the radial kerb designed to suit the perfect garbage truck?

The answer of course will be different depending on the context – but generally my personal measure of a great place is based on how much the place is loved and enjoyed.

Loved and enjoyed...strong terms for inanimate objects! But when we consider the implications of creating great places based on emotions and

experience, it is not difficult to draw comparison to other industries that place a great deal of emphasis on the emotive aspect of design. Consider the desirability of mobile phones, tablets, cars and watches. All of these are loved, valued and enjoyed by millions of people throughout the world.

For urban designers like myself, the idea of creating desirable places has lead our studio to think about 'experience' in the public realm. We began our place making journey over 10 years ago. Since then place making, place activation, place programming and place planning have become common terms in our vocabulary. It's all about place!

But wait a minute – is there a risk that PLACE is becoming the planner's panacea? Take for example the proliferation of 10–point plans, 5 steps to Place(ness), the idea that creating loved places can be codified and simplified.

The notion of codifying place making is nothing more than another version of top-down planning. While place making is a positive design tool, it's end goal is to ultimately create meaningful experience for people in public spaces. Human experience defines whether a place is great or not. Our perception of how good a place is formed from our personal memories, moments and stories. It is intrinsically linked to emotion.

But why is experience important? Over the last decade 'experience' has out stripped 'ownership of belongings' as the perceived source of happiness and life satisfaction. This is particularly true for millennials who seek to make, capture and share their daily experiences with friends as a status symbol of happiness. Their best memories are from those events or

activities that allow them to feel connected to people and community. Both real and digital.

Many businesses have cottoned onto the desirability factor of experience over ownership. This is impacting the way we relate to our environment and the real world in which we live. Take for example the way in which product designers describe themselves. They often refer to themselves as 'designers of experience'. Their design process is focused on improving user interaction and enjoyment, usability, access, and engagement with the senses. Typically, the deeper the emotional connection created between a person and a product, the greater it will be remembered and valued. It is also built upon a deep understanding of the customer, their behaviours, values, needs and motivation in life.

What if we started applying this philosophy to the design of our cities?

The primary focus switches from a birds eye view and the usual town planning criteria of traffic planning, parking, yields and density, to the design based on the experiential qualities of the built environment. Just like product design, urban experience needs to be built upon a deep understanding of users, their behaviours, what they need and value, and what motivates them.

In a similar vein to product design, this process can be supported with data to identify their personas, quantify sentiment and emotion, identify patterns, and forecast future trends.

As I walk around the city I am often reminded of the town planner's devotion to the macro-scale. Big city blocks, long continuous inhumane frontages and endless windowless facades at street level, wide hot pavements. How people experience a place seems to be a total oversight at this macro-level. As a result, our cities are often filled with generic streets devoid of interest, comfort and vibrancy, and any compelling reason to linger. Why have we forgotten the human scale in city design?

The disconnect however is best highlighted when we compare the processes of other design industries that map 'user experience' to create rich personalised experiences. Why has planning and design theory become so disengaged from community reality? Why have we become laggards in respect to the creation of rich human experiences?

A counterpoint to the current paradigm of macro-scale, top down planning would be to design our cities based purely on experience - what would people see (visual) , feel (emotional + comfort) and do (activity), and how would they behave and interact with other people if they had enriched personal experiences?

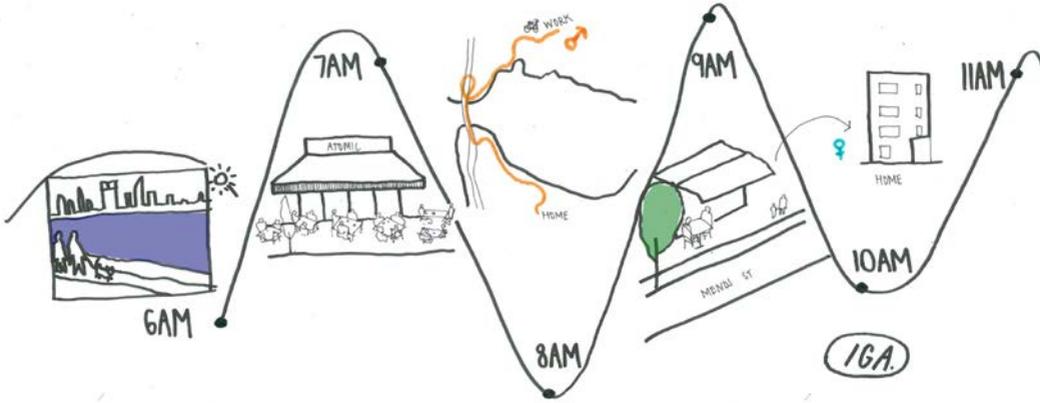
How would that change planning and architecture, the scale, identity, street layout, and land use? How might we then conceive of a better community connected to place and culture? And how might it be valued in the development of next generation cities?

The contemporary answer today perhaps sits in the nexus between subjective design theory and the use of data mining to determine real-time societal trends using technology to feel the pulse of a generation. The use of data to see trends,

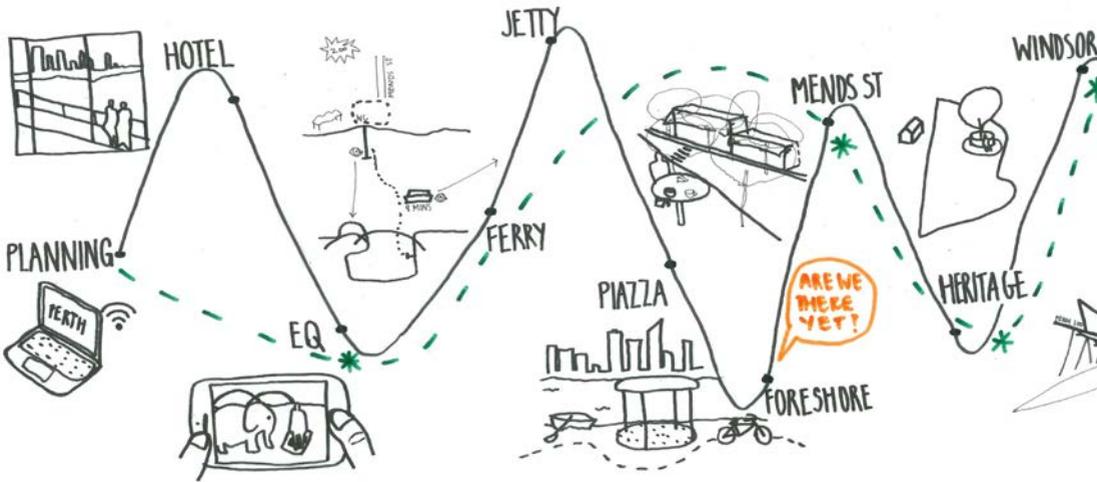
hear the issues of the moment and to translate these into city making objectives will transcend current top-down planning techniques in the long run. Localised data-rich stories about ourselves and what we believe in will result in cities that are spatially relevant, locally enticing to our individual beliefs and add personal value to the experiential enjoyment of cities.

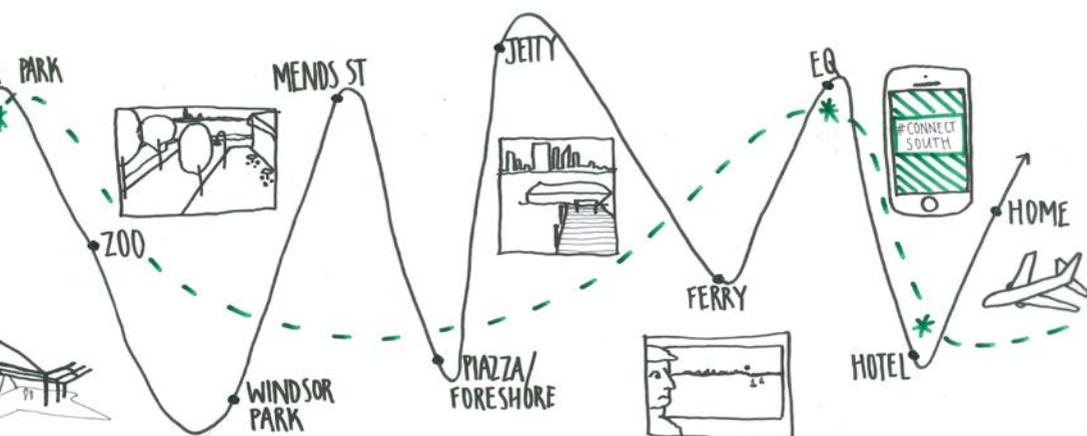
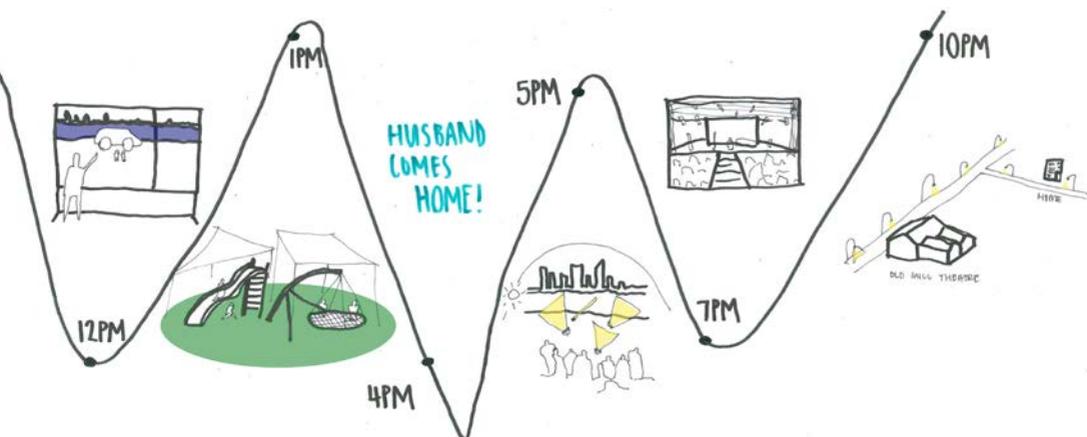
Sophisticated data analytics are already playing a role in product design, tailoring products to personal profiles. There is little reason to doubt that cities and their structure, layout and design intent will also succumb to the evolution of cities as places based on individual experiences. Place making for this generation is less likely to be top-down imposed spatial decisions but rather data driven analytics that captures the desires of a generation and creates places that are responsive, immediate and humanely connected.

DAY OF A LOCAL



DAY OF A TOURIST

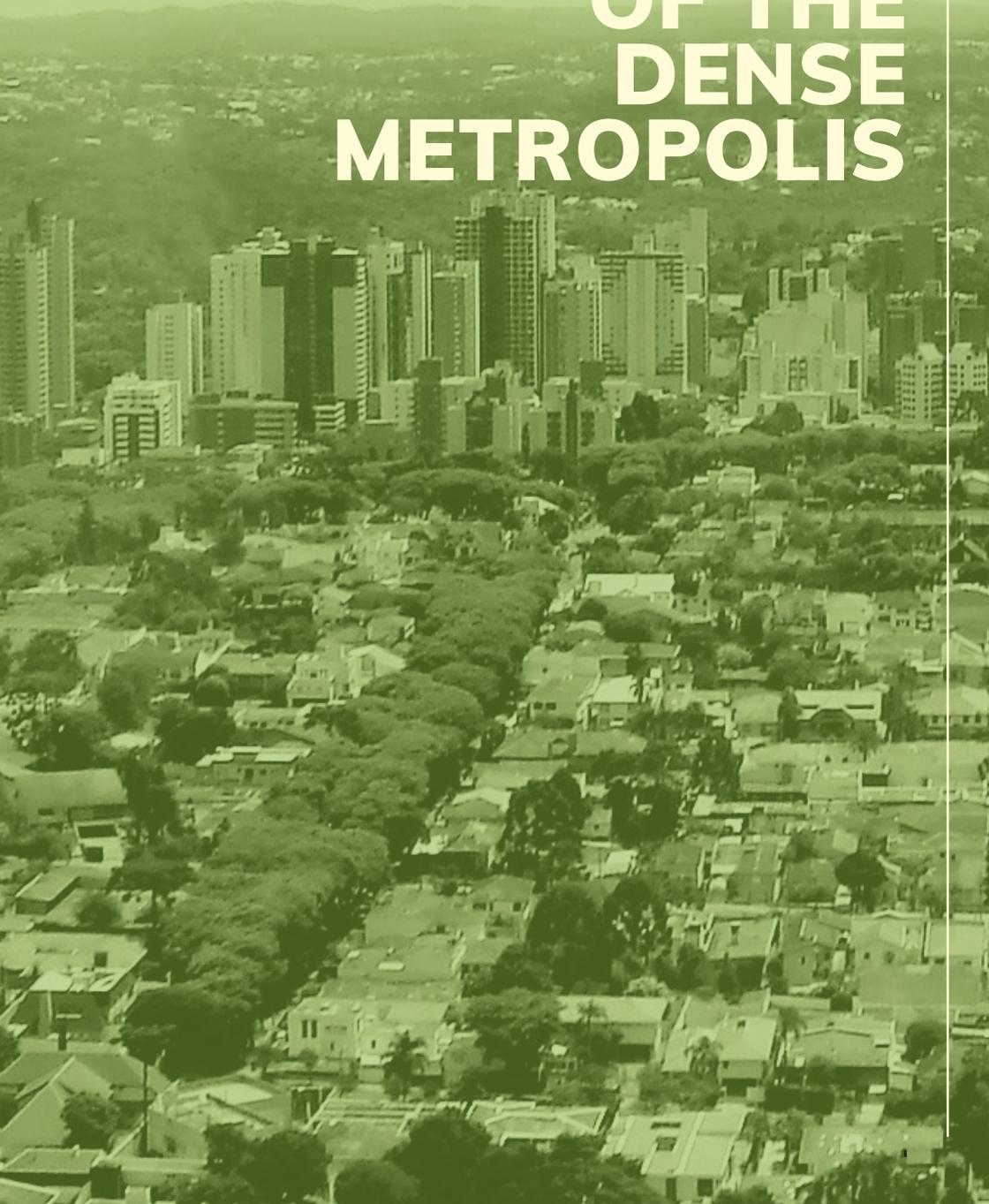




Illustrations:

Mapping Experiences, by PLACE Laboratory, Developed as part of the 'Connect South' project

THE ECOLOGY OF THE DENSE METROPOLIS





Professor Joseli Macedo
Curtin University

Rapid and intense urbanization, and more recently the phenomenon of metropolitanization, has brought extreme changes to our planetary environment and, one could argue, irreversible destruction. Yet, the urbanization trend is also irreversible. In 2008, we crossed the 50% threshold and, by 2050, 60% of the world's population will be living in cities. Nonetheless, there is evidence that compact cities have an overall lower impact on our planet than other urban environments. (Table 1).

It has been argued that dense cities are the most sustainable form of urbanization. Density can help cities achieve optimal rates of development with more viable urban systems, from service infrastructure to transportation to open space. However, density itself does not create sustainability.

Ecology tells us that all living organisms interact. The spatial scale of these interactions can vary widely, increasing or decreasing the complexity of ecological systems. In cities, the interaction (or lack of) between natural and built environments at different spatial scales determines the balance in the system and the quality of life for all organisms living within its environments. The equilibrium paradigm, proposed by George Perkins Marsh in his seminal 19th century book *Man and Nature*, has led ecologists in their pursuit of environmental balance. Looking at the impact of human activities on natural environments, Marsh argued that once nature has been impacted by man, it can never be restored to its original state, even if its occupants were to leave. Adopting this equilibrium paradigm and seeking to build cities within natural environments, rather than replacing them, may be the smartest way forward. Well-conceived spatial development schemes, that create compact forms and combine density with nature, have a better chance to engender more liveable and sustainable cities.

Table 1: Density can bring benefits, but it also has costs associated with it. This table outlines some of the advantages and disadvantages of densification.

	High Density	Low Density
Advantages	<ul style="list-style-type: none"> Economies of Scale Urban Vitality Infrastructure Efficiencies Income Generation Job Access Access to Consumers Social Interaction 	<ul style="list-style-type: none"> Peace and Quiet Low Impact Sanitation Infrastructure Clean Air
Disadvantages	<ul style="list-style-type: none"> Overburdened Infrastructure Environmental Degradation Crime and Violence Congestion and Overcrowding Pollution 	<ul style="list-style-type: none"> Deficient Access to Services Costly Services Social Isolation Transportation Costs Inefficient Land Use Underutilized Infrastructure



CURITIBA AS CASE

Curitiba, the capital of the State of Paraná, is the 7th largest city in Brazil, a country where 82% of the population lived in cities by 2010. The city had tremendous growth between 1970 and 1990 as a result of rural-to-urban migration. In this period, Curitiba was the state capital with the highest growth and urbanization rates in Brazil, while the State of Paraná itself, had the lowest growth rate of all Brazilian states. Curitiba concentrated 17% of the state's total population and 20% of its urban population. Between 2000 and 2010, Curitiba's population increased by another 11%.



By 2010, the city had almost 1.8 million people, while its Metropolitan Region, comprising 26 municipalities, had 3.1 of the 10.4 million inhabitants of the State of Paraná. This growth was absorbed through a densification of the urban areas, rather than sprawling development. Data from the Brazilian Census Bureau indicate that Curitiba's density increased from 3,632 inhabitants per square kilometre in 2000, to 4,016 inhabitants per square kilometre in 2010.





CURITIBA WAS ONE OF THE FIRST CITIES IN BRAZIL TO IMPLEMENT POLICIES TO FACILITATE ENVIRONMENTAL CONSERVATION AND HISTORIC PRESERVATION THROUGH THE USE OF URBAN TOOLS, SUCH AS TRANSFER OF DEVELOPMENT RIGHTS.



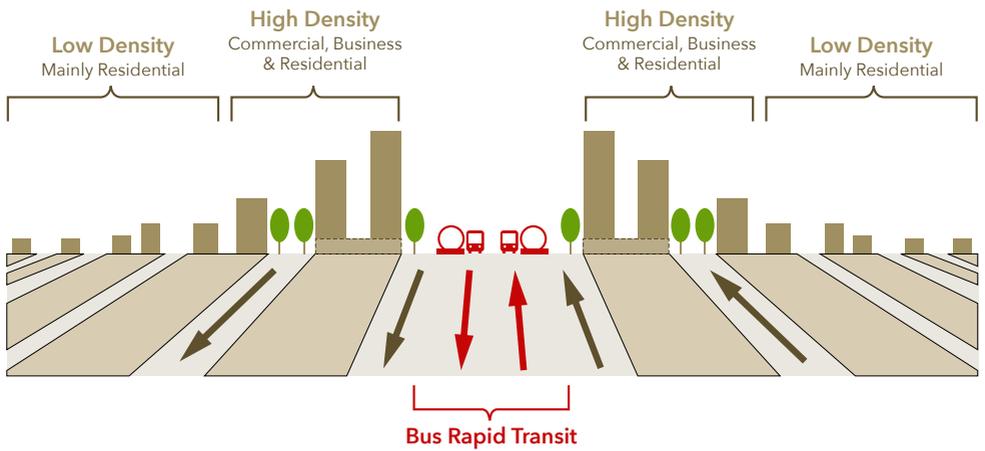
Most of the progress towards a more balanced urban ecology in the city of Curitiba was made in the latter part of the 20th century. The innovative planning practices adopted in this period have been internationally recognized earning the city the United Nations Environment Award in 1990 and the Globe Sustainable City Award in 2010, among others. Densification of specific areas within Curitiba have made it possible for the city to have one of the most touted public transit systems in the world. The nexus of mass transit and land use in Curitiba resulted in a hierarchical spatial scale, allowing the city to balance the use of its natural and built environments through the conservation of natural areas and creation of open green space.

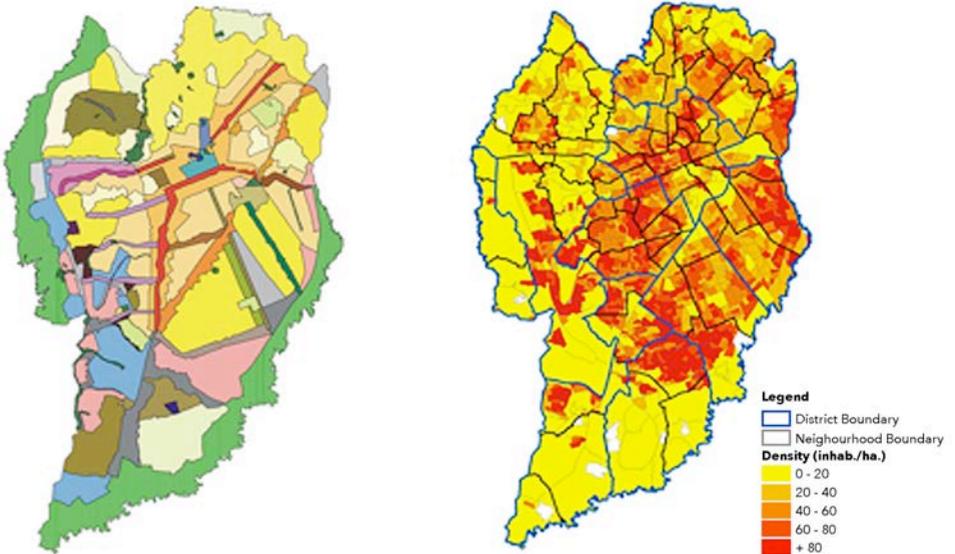
URBAN STRUCTURE

The metropolitanization of Curitiba was supported by the Integrated Transit System (Rede Integrada de Transporte—RIT), which serves abutting municipalities at the same level of service offered in the city core. The RIT comprises a variety of buses that match demand in the different areas of the city, from feeder minibuses that connect areas of low ridership to main terminals to bi-articulated buses that mimic a surface subway system fitting up to 270 passengers in one bus.



To create liveable environments, Curitiba chose to allow higher densities along the linear mass transit corridors. This made the transportation system economically viable, with a ridership rate of 45%. In addition, the city chose to combine the clustering of development and diversifying of uses with the preservation of open space whilst allowing lower densities in other parts of the city. As a result, the density map for the city became a reflection of the land use & zoning map, which prescribes intensive residential and commercial development along public mass transit axes integrated through terminals. The densification of land use along transportation corridors allowed the city to accommodate population growth whilst conserving natural areas; about 18% of Curitiba's urban area is green space.





Images: Zoning & Landuse (Left) and Population Density by Census Tract (Right)

Density varies with the hierarchy of land uses in Curitiba. Along mass transit axes, where both higher densities and mixed use are encouraged, the average density is 600 inhabitants per hectare. In residential areas, multi-family zones have 180 inhabitants per hectare, while single-family zones have 70 inhabitants per hectare on average. Still, mobility is high as access to mass transit is facilitated by the location of low-density, single-family neighbourhoods, which ordinarily would not allow for an economically feasible mass transit system, in close proximity to transportation corridors.

Curitiba's urban structure was not conceived nor implemented overnight; rather it is the result of concerted efforts and long-term planning. The city's first Master Plan was implemented in the 1940s, although its first urbanization plans date back to the mid-1800s. A complementary plan—Plano Massa—prescribes the use of arcades for all high-rise buildings along structural corridors to maintain human scale. Similar to what had been implemented in the 1970s along the first pedestrian mall in Curitiba, the Rua das Flores or Rua XV, arcades create the perception of a wide sidewalk by visually incorporating the mandatory setback into the public realm. The overlapping of public

and private space encourages pedestrian traffic, benefitting retail and services that share their private property.

The aim to achieve a balance between natural and built environments also led to the Implementation of a bike path network that links virtually every green space in Curitiba. There is very little intersection between the bike path network and public mass transit, thus Curitiba cannot claim having a multi-modal transportation system. However, the bike paths serve the parks well, improving population access to these natural recreation areas.

GREEN STRUCTURE

Densification in a hierarchical and balanced manner is not the only reason for Curitiba's success. Whilst many problems can be created by urbanization, especially dense urbanization, many can be solved. In urban areas, ecosystems services help us evaluate ecological balance.

Curitiba was one of the first cities in Brazil to implement policies to facilitate environmental conservation and historic preservation through the use of urban tools, such as transfer of development rights. Legislation enacted in the 1990s, not only permitted but also encouraged conservation of green open space. The impact of these policies was measurable: 17 of the 43 public green space areas in Curitiba were created during the 1990s. Today, Curitiba has 27 parks and 16 wooded areas, totalling about 23 square kilometres in an urban area of 432 square kilometres.

Riparian areas in need of restoration or conservation, flood-prone and low-lying areas, and swampy terrain, which should be off-limits for development anyway, were the preferred choice for the creation of parks in Curitiba. In Brazilian cities, and Curitiba is no exception, there is great potential for illegal occupation of land by informal settlements. Creating parks in these areas not only helped conserve riparian vegetation, but also prevented illegal occupation.

The green spaces of Curitiba play an important role in the city's water and drainage system. The first urban park in Curitiba, Passeio Público, with its 7 hectares still the largest green area in the city centre, was created in 1886 in a swampy area close to a fledgling central business district. Several parks originated as flood mitigation projects to address the intensification of flood events, which were caused by the sudden increase in impervious surfaces due to the rapid and intense growth of the 1970s and 1980s. Green open space interspersed throughout the urban fabric allows for better drainage. Additionally, each park features man-made lakes, used as retention ponds for flood mitigation purposes.

Many of the green areas in the city are located on the northern part of the city, where elevations are higher and slopes steeper. These areas were also more difficult to develop and had the most natural beauty. Some parks were created in "recycled" spaces, abandoned quarries for the most part, as a way to reuse sites that did not offer feasible development opportunities. They are examples of how undesirable areas can be incorporated into the green infrastructure of the city and turned into ecological assets.

Interweaving green infrastructure throughout the city, especially in close proximity to high-density areas brings the added bonus of higher property values. Proximity to these ecological assets appreciates property values, which in turn increase tax revenues. Investments made by cities to create ecological urban amenities is returned many fold.

ECOLOGY AND DENSITY

Higher densities optimize land use. Dense places, if made walkable and bikeable, help reduce air pollution, increase levels of physical activity, and improve access to ecosystem services in close proximity. Recognising that dense metropolises can be healthy places, infused with nature and providing citizens with multiple ecosystem services is fundamental for a viable urban future on this planet. Higher densities make smart use of limited space, lower the cost of public infrastructure (a cost we all share), encourage social interaction, promote physical activity, and most importantly, allow us to urbanize whilst conserving the natural areas and farmlands that are critical to our survival. To prevent the destruction of all natural environments and to allow mankind to inhabit the planet without destroying it, but using it while conserving it for future generations, is what will allow us to thrive.

Notes

1. Macedo, J. (2004). City Profile: Curitiba, Brazil. *Cities, The International Journal of Urban Policy and Planning*, 21(6), 537-549.
2. Macedo, J. (2008). Urban land policy and new land tenure paradigms: Legitimacy vs. legality in Brazilian cities. *Land Use Policy*, 25(2), 259-270.
3. Macedo, J. (2013). Planning a Sustainable City: The Making of Curitiba, Brazil. *Journal of Planning History*, 12(4), 333-352.
4. Macedo, J. and M. A. Haddad (2016). Equitable distribution of open space: using spatial analysis to evaluate urban parks in Curitiba, Brazil. *Environment & Planning B: Planning and Design* 43 (6):1096-1117.

DIRTY WORD



Jimmy Thompson
MJA Studio

[Finalist of the LandCorp's 2016 'Step Up' affordable housing design competition]

Our submission *"Dirty Word"* for the Step Up Affordable Housing Competition was a joint venture between architect, builder and developer and involved significant consultant input over the three competition stages.

We called it *"Dirty Word"* because there is a perception issue with affordable housing. Too often when we are involved in community consultation, the idea of affordable housing is met with horror and concern by local residents. And when we are receiving a brief for affordable housing from the developer it reads *"do what you do best.....but cut the guts out of it and make it cheap and cheerful"*.

But what if we didn't have to cut the guts out of our typical approach? When dual aspect schemes can maximise cross ventilation, access to light and provide engaging, contextual built form outcomes?

That is all well and good, but how the f*#k do you do that when you are dealing with an equation like this?

$$LC + BC \times 1.5 = (x)/\text{APTS} = \text{REQUIRED AVERAGE SALES PRICE}$$

(LC = Land Cost; BC = Building Cost; APTS = apartments)

.....And then you're trying to reduce end user costs by 20% and keep everything under \$500k:

$$LC + BC \times 1.5 = (x)/\text{APTS} = \$428,300 \text{ (RANGE } \$319\text{-}489\text{k)}$$

(With price point: 25% <350k, 50% <430k, 100% <490k)

.....And the Land Content is fixed by LandCorp:

$$\$855\text{k} + BC \times 1.5 = (x)/\text{APTS} = \$428,300$$

So the first thing you can do, is maximising the yield to reduce Land Content per apartment.

$$\$855\text{k} + BC \times 1.5 = (x)/20 \text{ APTS} = \$428,300$$

You can then work through an ECI process to reduce build cost through standardisation and modularity. But if you are going to maintain design quality, you need to go after something more..... which is *Development Cost and Margins*.

So we are advocating **Incentivised Fixed Margin Development**, where government land agencies reward developers delivering Affordable Housing at fixed margins by prioritising them into significantly reduced tender pools for future land releases.

The result being our proposal, including:

- direct street access to apartments, encouraging community interaction and work from home scenarios;
- dual aspect apartments with full-height glazing, maximising light and ventilation;
- transformer apartments allowing you to buy portions of your neighbour's apartment through separate strata entitlements;
- ground floor transformer apartments, letting you upsize or downsize your home depending on where you're at in life;
- upper level maisonette designs that allow north light into south facing apartments;
- long term maintenance costs that are reduced by using raw materials and no paint finishes; and
- a wind protected communal courtyard and edible garden, facilitating sense of community and light access to the undercroft parking.

Incentivise Fixed Margin Development and we don't have to cut the guts out of affordable housing anymore. End user amenity is maintained and maximised! Whilst the needs of the developer and aspirations of the local authority and community are met with satisfying results. Affordability: a Dirty Word no more.





Belinda Foster
Urbis

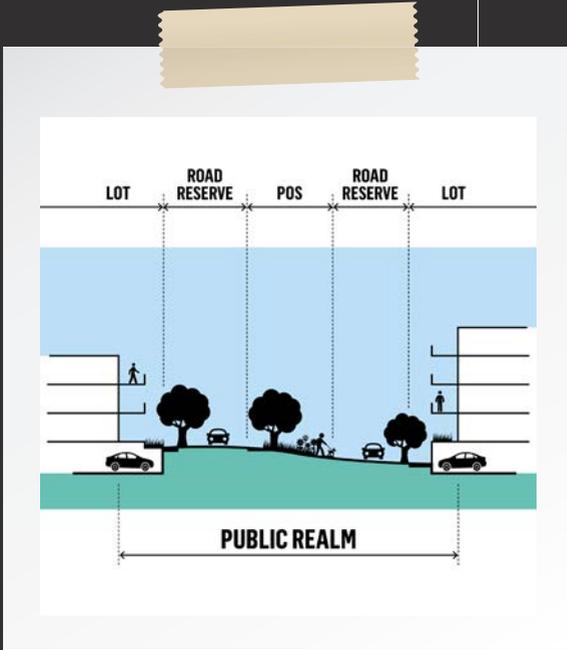
Public Realm Design Guidelines

We visit and choose to stay in a place primarily because of the experiences we have in the public realm. Streets and spaces are the backbone of these positive experiences and yet, too often they are considered more as the residue between buildings, dictated by infrastructure requirements, rather than the essential structure enabling successful communities.

Andres Duany once said *"Higher density housing offers an inferior lifestyle only when it is without a community as it's setting."*

Creating a strong sense of place increases the likelihood of positive interaction and engagement. Precincts and places being considered as part of a wider ecosystem of destinations and being distinctive is critical in creating harmonious, socially inclusive communities.

Public Realm Design Guidelines are a tool that can facilitate a more nuanced and place-based approach to planning and design than is currently available under operational state and local government policies. They shift the focus of public realm delivery away from administrative boundaries and facilitate the design and delivery of the public realm as a holistic process.



What is the public realm?

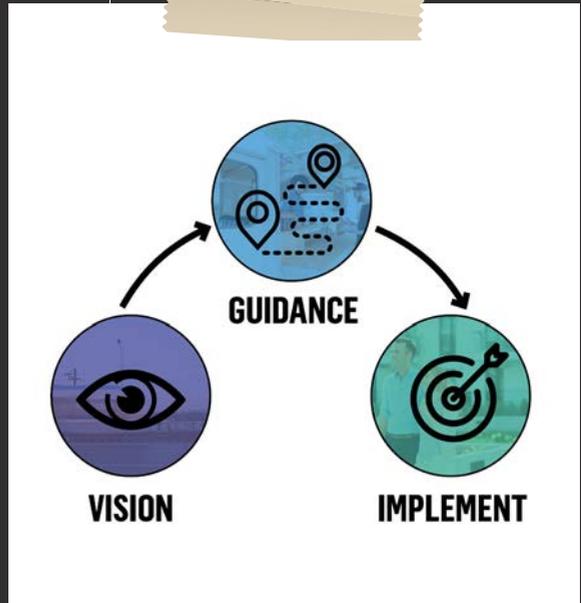
The public realm is defined by three factors:

1. the buildings that enclose and define the space;
2. the space itself; and
3. the people that inhabit the public realm and the way they use the space.

Public realm should not be seen in isolation but in the context of its adjacent buildings, their uses and its location in a wider network of public and private space.

Where do Public Realm Design Guidelines fit?

These Guidelines offer a set of principles and aspirations that help guide and support appropriate development of current and future public land in growth and infill areas. They form a link between the Vision and Implementation, providing a 'road map' that ensures the aspirations, commitments and values of the project and the community are realised.





What should the Guidelines achieve?

At a minimum, they should achieve the following:

- set design standards across a precinct or subject area and identify influences, drivers and considerations for the public realm;
- ensure shared agreement on public realm design, delivery and maintenance;
- define an accountable and transparent process for public realm design and decision making for partners and stakeholders; and
- deliver a framework upon which more detailed design and delivery processes can be built.



Who Benefits from Public Realm Design Guidelines?

- Land Owners – a Public Realm Design Guideline gives certainty of surrounding development quality and can create tangible fiscal benefits.
- Developers – the Guideline can define Development Control Policy arrangements, provide defined roles and responsibilities and streamline approvals.
- Designers – the Guideline defines the functional and thematic framework that underpins a robust design brief for the public realm.
- Approval Authorities – a Guideline offers the ability to set the design principles that are relevant to their local community. A Guideline also provides clear directions for assessment, approval and management.
- Community – a Guideline enhances the development of successful places of high quality that are authentic, timeless and valued.

By re-focusing on the space between buildings, on the areas that we inhabit as a community rather than as private individuals, we can guide and shape our public realm. Utilising a Public Realm Design Guideline process ensures that the public realm is not an afterthought or a forgotten space. If done well, the Guideline can capture and represent community values in a way that is meaningful and that allows residents and visitors to connect to the place, to establish a sense of authenticity, belonging and timelessness.

Should height be feared?



David Hillam
Hillam Architects

High Rise in the Perth Context

Higher density and urban infill has become a critical discussion in the local context of Australian cities, and in particular in Perth. Tall buildings take up a special position in this debate. State government, local authorities, planners, urban designers and architects are all working to identify urban pockets where tall developments could be included as part of a larger strategy to reduce urban sprawl across Perth's metropolitan area. The question becomes what is the best outcome? Where to focus the discussion?

To contribute to the discussion, Hillam Architects carefully looked at different cities around the world to identify and compare the different contexts of tall buildings. Cities such as New York and Los Angeles, but also our own Melbourne and Sydney, provide different scales and complexities, which can inform the success and failures of developing the skyline. Overall there is a clear trend towards more tall buildings.

Interesting is National Geographic's report in 2015 regarding New York, stating *"Manhattan is the in midst of an unprecedented boom in tall buildings. Before 2004, Manhattan was home to 28 skyscrapers [200m+]. Since then, an additional 13 have been built, 15 are under construction, and 19 are proposal - 47 more in all. These additions are rapidly - and radically - changing the skyline"*.¹

Until recently, most 'high-rise' development in Australia has focussed on the East Coast. So far Perth had limited exposure to this type of height. However, with Perth's population expected to grow to around 4.2M by 2056, it is vital we adopt the increased height and densification of our established and connected suburbs, to reduce urban sprawl.

'The Great Aussie Dream' of owning a quarter-acre block with a pool is no longer sustainable, both economically and environmentally.

/WHILE SKYLINES ARE IMPORTANT INDICATORS OF THE CHARACTER AND IDENTITY OF A CITY, THEY DO TAKE AWAY FROM THE DESIGN OF THE BASE CONDITION. IT IS HERE WHERE A BUILDING CAN EITHER ENHANCE OR DIMINISH THE VITALITY OF LIFE.

Nevertheless, where the influence on the skyline might be the most evident, it is not necessarily the most important.

“It’s not all about the skyline, it’s more so about the base condition”, as Prof.

Terri Meyer Boake of the University of Waterloo, Canada, emphasises in her research paper with the same title.

The base condition of the skyscraper is essential to ensuring the building activates the pedestrian precinct.

Over recent years, Hillam Architects has been involved in several multi-residential developments within the City of South Perth. Most notably is the ‘Lumiere’, located at 74 Mill Point Road. The development envisions a 34 storey, mixed-use tower consisting of just over 100 residential apartments.

With its close proximity to the CBD and public transport, Lumiere is envisioned to positively contribute to the neighbourhood and the greater Perth context. In keeping with Professor Boake’s philosophy, the base of the building is pedestrian friendly. Fine-grained architectural elements, landscaping, bicycle storage and a large café space, will all contribute to the activation of Mill Point Road.

“Porosity and a fine-grained commercial fabric is key.” She states that *“while skylines are important indicators of the character and identity of a city, they do take away from the design of the base condition. It is here where a building can either enhance or diminish the vitality of life.”*

In line with Jane Jacobs, Jan Gehl and Christopher Alexander, she argues that *“the nature of interstitial urban spaces formed between tall buildings is additionally critical to urban vibrancy.”*² A porous, active and pedestrian orientated ‘base condition’ is critical to the success of the built environment as well as delivering a vibrant ground floor interface.

The architecture has been carefully considered to reduce its perceived bulk and scale, reduce overshadowing and permit generous view corridors from the streets and other buildings towards the river, CBD and surrounds. In these aspects, it is clear that height is not the issue. Taller and thinner towers have less impact than short, bulky developments, as is also highlighted in the South Perth Peninsula Place + Design Report by Roberts Day.³

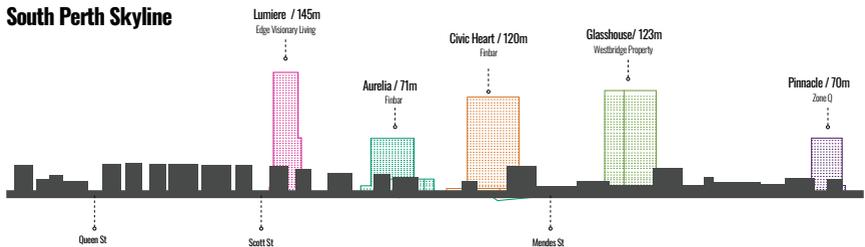
Recent amendments to South Perth's Town Planning Schemes have challenged developers to 'think creatively' and have possibly confused the community even more.

If we are to achieve outcomes that help the city absorbing the population growth, as set out in Directions 2031 AND positively contribute to the city's skyline AND enhance the urban vibrancy between the buildings, proper planning is vital. A consistent review by Development Assessment Panels will further contribute, but only if that is supported by developers, architects and the general public and embedded in accountable and professional decision-making by the local authorities.

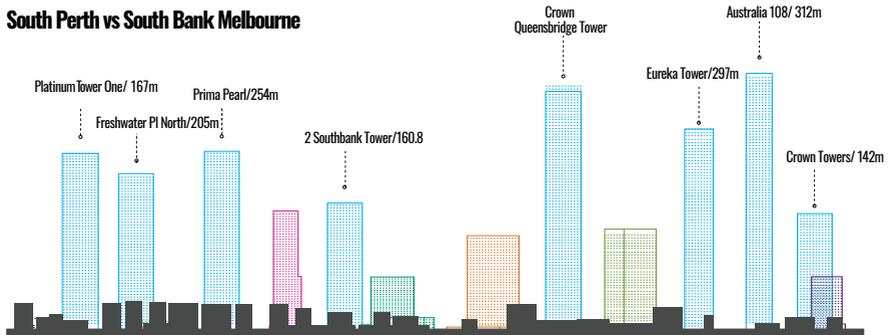




South Perth Skyline



South Perth vs South Bank Melbourne



Notes

1. National Geographic website. <https://www.nationalgeographic.com/new-york-city-skyline-tallest-midtown-manchattan/>
2. Boake, Terri Meyer. It's Not About the Skyline, It's About the Base Condition. Council on Tall Buildings and Urban Habitat (CTBUH) Research Paper. 2015. <http://global.ctbuh.org/resources/papers/download/2503-its-not-about-the-skyline-its-about-the-base-condition.pdf>
3. RobertsDay. South Perth Peninsula Place + Design report. Commissioned by City of South Perth May 2017 (Revision B 170517). <https://southperth.wa.gov.au/about-us/news-and-publications/news-and-public-notice/news-detail/2017/05/20/place-design-report-finalised>

OFF THE SECTION

RETHINKING MEDIUM DENSITY HOUSING



Felipe Soto
Hillam Architects

When purchasing an affordable dwelling, home-buyers are typically confronted with one of two options:

1. purchase a home in a location which is not desirable; OR
2. compromise on home size and livability (typically number of bedrooms and sustainability).

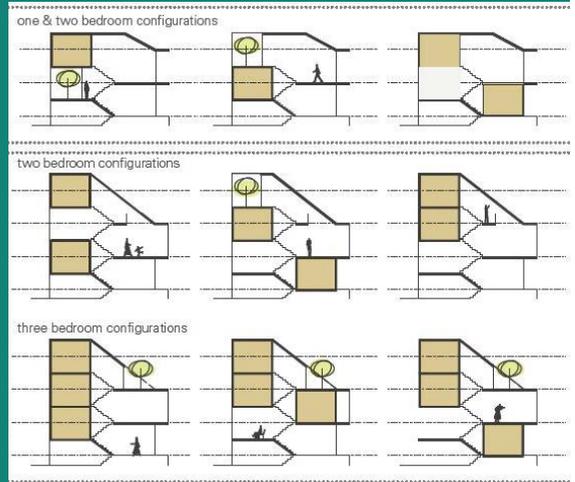
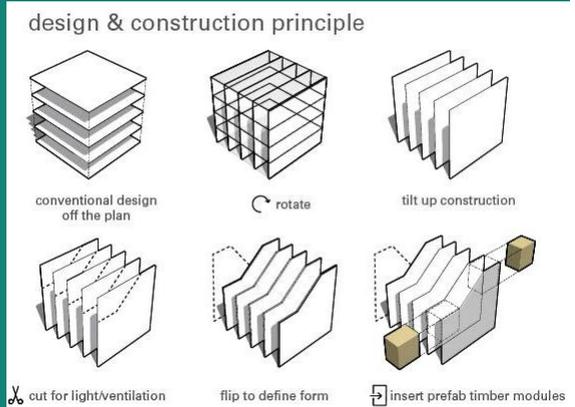
To address this compromise the project challenges the typical 'off the plan' model, using innovative cost effective construction methods and rethinking communal amenity.

[Finalist of the LandCorp's 2016 'Step Up' affordable housing design competition]

OFF THE SECTION

The 'Buying Off the Plan' model has been refined over decades to maximize yields for profitability, with a disregard for natural light, ventilation and spatial quality, and with little room for customization. This project suggests that the higher yield of this medium density design should instead be used to reduce the land, strata and construction costs for the purchaser, whilst maintaining the livability, flexibility and sustainability. By literally rotating the 'Off the Plan' model by 90 degrees, a new 'Off the Section' model is proposed, that offers purchasers significantly more spatial flexibility within the same volume of space.

Narrow maisonettes/townhouses are designed to be customized by the buyer to suit their particular spatial requirements. Instead of a predetermined and prescriptive mix, the design provides two types of volume or 'shells', allowing for twelve dwellings in total plus one communal dwelling. Purchasers can adapt these shells to suit their specific needs.



INNOVATIVE CONSTRUCTION

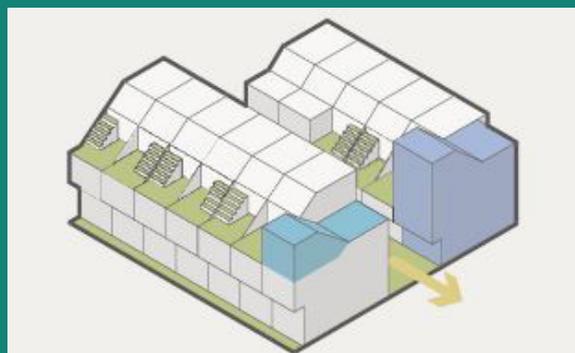
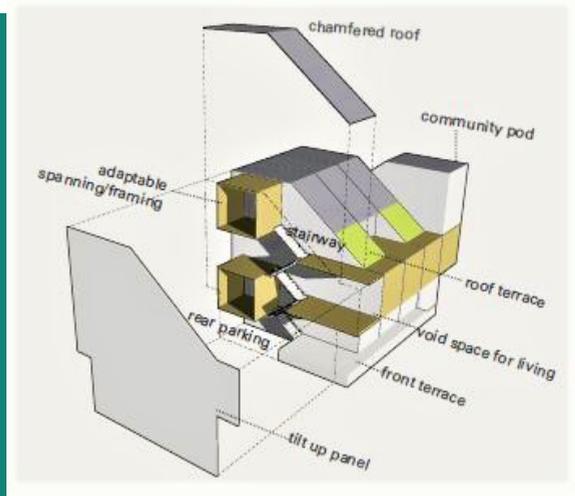
To provide for flexibility, without compromising construction costs, an innovative combination of tilt up concrete partition-walls and prefabricated timber modules is proposed. (Diagram 3) These construction methods are generally very low cost due to their inherent speed, replicability and economies of scale. At present, they are even more economic in Perth due to the reduced demand of the mining industry in Western Australia. The prefabricated modules are inserted at split-levels and connected by a lightweight stair. This construction method allows for optimum light and full cross ventilation into all spaces, while also reducing circulation space typically associated with multi-story dwellings.

RETHINKING COMMUNAL AMENITY

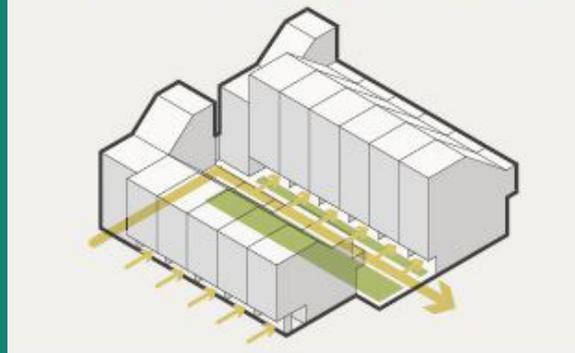
In the typical 'Off the Plan' model, more amenities usually equates to higher costs at both purchase price and ongoing costs via strata fees. Instead this design uses communal amenity to improve affordability.

COMMUNAL LAUNDRY

Communal laundries have proven highly successful in both Australia and internationally to generate a sense of community and enhance contacts between neighbours without taking away from comfort of living. In addition, including the communal laundry in the project will reduce plumbing construction costs and save space in each dwelling, thus making living areas more generous at a more affordable price point.



Arrangement of roof terraces, laundry and active communal



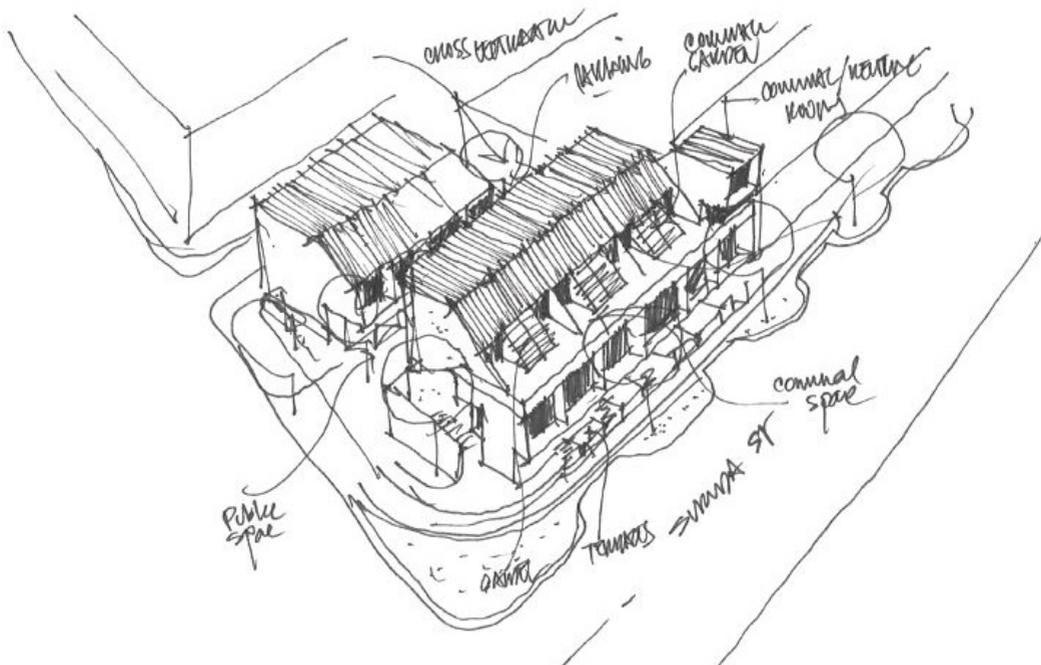
Arrangement of garden driveway and vehicular circulation

COMMUNAL SLEEPING

Communal living spaces are very common. This project proposes a variation: 'communal sleeping'. There are often times where buyers may want the ability to have guests or relatives stay, but cannot afford a dwelling with additional bedrooms without compromising location. The communal sleeping addresses this dilemma. Two communal living areas double as short stay bedrooms and each dwelling has the opportunity to use these for guests or loved ones. When not in use by residents, these beds could be rented out and the earnings can be put into a sinking fund for the complex or used to subsidize strata fees. Effectively purchasers gain extra bedrooms without the additional cost, the opportunity to subsidize strata fees and spaces that instill a sense of community and neighbour contact.

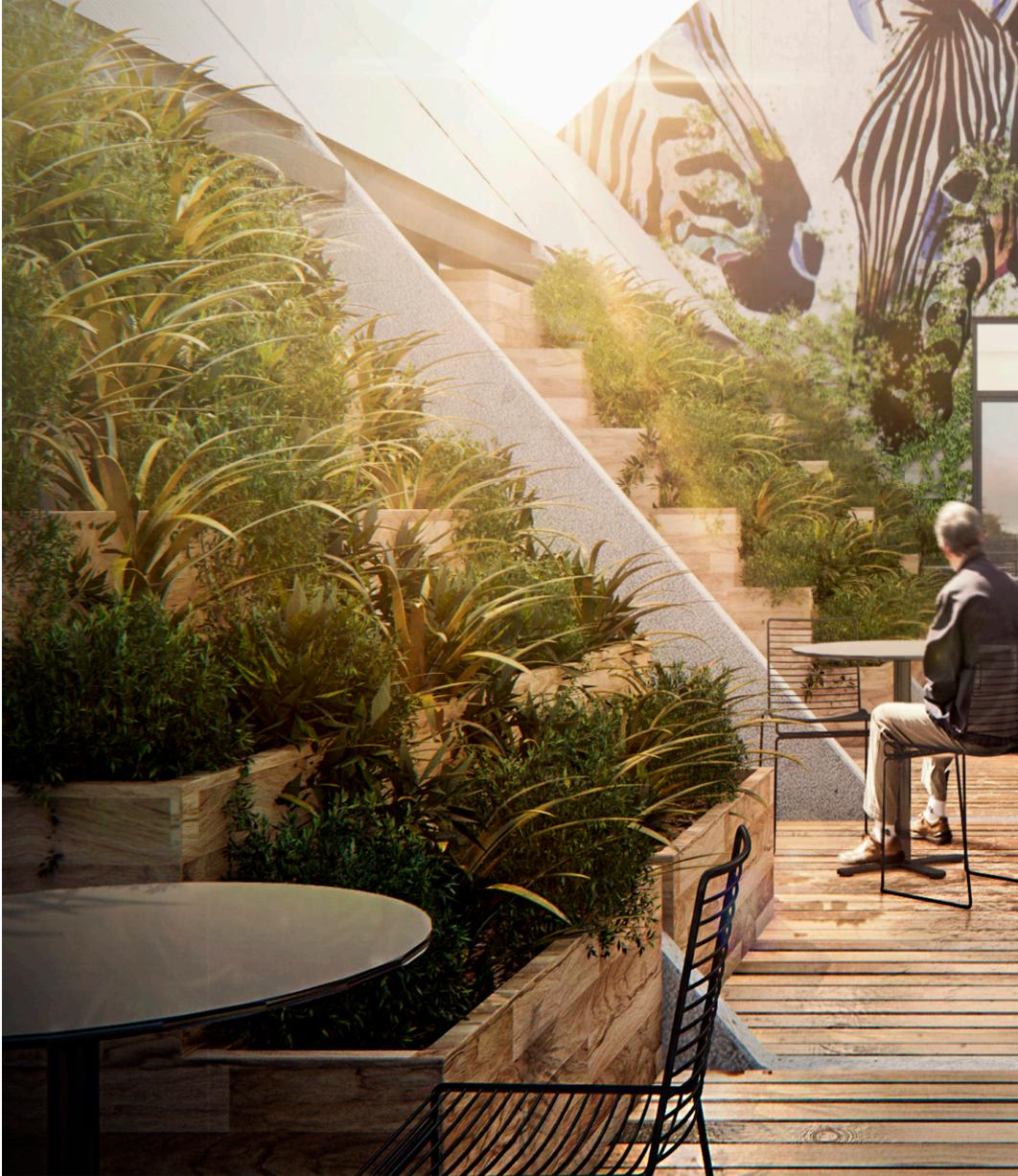
COMMUNAL OPEN SPACE

On compact sites, offering outdoor amenities usually means sacrificing yield and therefore increases the purchase prices of the remaining dwellings. However, for communities to thrive these types of spaces are essential. This project proposes to use the open space that already exists on every site – the roof and driveway – to include communal amenities. Parking and vehicular circulation spaces are landscaped using porous pavers to create a 'green driveway', while an open roof deck with simple, cost-effective planter troughs doubles as a herb/vegetable garden.











TEN PARKING MYTHS BUSTED!



Dean Cracknell and David Doy

THE MYTHBUSTERS GUYS ON TV MAKE IT LOOK EASY. THEY FIND A WEIRD URBAN MYTH, AND THEN ENTERTAIN US WITH SOME CRAZY EXPERIMENTS TO TEST WHETHER THE MYTH COULD ACTUALLY BE TRUE OR IS BUSTED!

WE THOUGHT WE'D USE THIS APPROACH TO TEST SOME OF THE COMMON IDEAS AROUND CAR PARKING. IT TURNED OUT WE DIDN'T NEED TO DO ANY COSTLY TESTS. WE JUST DID A BIT OF DIGGING AROUND. READ ON AND DECIDE FOR YOURSELF ARE THESE PARKING MYTHS ACTUALLY CORRECT OR ARE THEY BUSTED?

MYTH 1: CAR PARKING IS FREE

Parking guru Donald Shoup busted this myth in his 2005 book *The High Cost of Free Parking*. He summarised how 'free' parking distorts the whole economy:

“When we shop in a store, eat in a restaurant, or see a movie, we pay for parking indirectly because its cost is included in the prices of merchandise, meals, and theatre tickets ... We don't pay for parking in our role as motorists, but in all our other roles - as consumers, investors, workers, residents, and taxpayers - we pay a high price.”

Each car bay is estimated to occupy an average of 35m², which includes aisles, ramps, manoeuvring areas, (pathetic) landscaping, etc. If land in the centre of a town or city averages \$2,000 per square metre, the cost of the land alone for one surface car bay would be \$70,000. Someone has to pay this high price. And that someone is you and me. Parking is never free - the costs are just cleverly hidden.



MYTH 2: WE NEED MORE PARKING

Do you want more parking for your business? Or do you really want more customers and dollars in your till?

Business owners have a special interest in car parking. They don't typically want to solve parking problems per se. They want more customers and increasing sales. They assume more parking will lead to an increase in sales. But they're sometimes making their own parking problems worse. Just think of a business whose staff park all day in the bays right out front, instead of leaving them free for their own customers. There is an easier solution: reserve the most convenient bays for potential customers.

A more effective question to ask is 'How can we increase business profit?' Asking the right question can lead to more creative ideas and effective solutions.



MYTH 3: PARKING 'PROBLEMS' ARE BAD

There is an assumption that more car parking will solve perceived 'parking problems'. Unfortunately, it is not that easy in real life. Parking problems are frequently caused by inefficient parking management, inadequate enforcement, lack of information or a lack of viable alternate options, including walking, cycling and public transport. Parking issues can't be 'solved', but they can be better managed.

All popular and successful urban places have 'parking problems', according to somebody. So a parking problem could be a sign of success.



MYTH 4: ABUNDANT PARKING IS ALWAYS GOOD

Parking is good, right? So, more parking must be better, right? Unfortunately, it's not that simple. Parking can negatively affect the amenity of a place and the feasibility and sustainability of development.

Car parking is usually considered separately from the wider transport system. In fact, they are directly connected. Numerous studies have

found that abundant free parking influences travel choices, makes driving more attractive, helps exacerbate traffic congestion and undermines the walkability and attractiveness of places.

High minimum parking requirements also affect the feasibility of development. If a parking policy applies a common minimum parking standard of 10 bays per 100m² of restaurant floorspace, the development outcome being enforced is 350m² of car parking for every 100m² of restaurant. Parking is the major land use, while the restaurant is just an ancillary use. Is that the outcome you want?

Minimum parking standards force developers to build wider and larger buildings to accommodate all the parking required. This can compromise the 'grain' of places, with long blank facades and oversized ground floor tenancies.



MYTH 5. WE KNOW HOW MUCH IS REQUIRED

Parking is very important to the way our cities work. It's natural to assume that there is evidence and justification for how much parking should be provided.

Unfortunately, this is not true. Car parking ratios seem to be scientific, but they aren't based on relevant evidence or local research. There has never been a detailed parking study conducted across metropolitan Perth for instance. Parking ratios have been assumed, made-up and copied from other states and countries for decades. There is no local evidence supporting the car parking ratios employed in parking policies. And why would we want to satisfy the insatiable demand for free parking anyway? Let's stop pretending parking ratios are scientific – they aren't.

Transport planner Todd Litman says that:

"The optimal parking supply is the amount that a motorist would purchase if they pay the full cost directly and had good parking and transport options."



MYTH 6: PARKING MUST COMPLY WITH RATIOS

The Institute of Transport Engineers states that car parking is a policy choice, not a technical assessment. The Institute declares "*it does not simply drop out of a formula or equation*".

However, the current paradigm applies parking ratios rigidly, without exception. It assumes there is a clear link between floorspace and parking demand. **Austroads Part 11: Parking** observes that there is a questionable relationship between floorspace and parking demand. Austroads recommends that parking ratios be treated as guidelines, which may be varied and applied flexibly based on circumstances. This is a reasonable and sensible approach.



MYTH 7: PARKING ENCOURAGES VISITATION

People do not visit a place because it has fantastic parking, unless you want to do doughnuts in a deserted carpark...

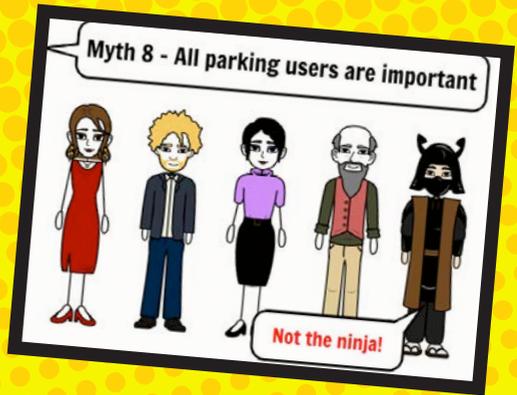
Central Perth experienced a surge of visitors from 2009 onwards. Was it because there was an increase in free parking? No, it was the attractions offered, such as Fringe World, Perth Festival, Elizabeth Quay and an explosion of bars and restaurants that enticed visitors.

It's the value of the destination and what it offers that attracts people, not fantastic parking. Provided there is good information available, people can make their own choices on how to get there.



MYTH 8: ALL PARKING USERS ARE IMPORTANT

Even when everybody would be able to find a parking spot, not everybody can park at the front door. Parking should be actively managed to favour higher priority users. So, who do you want to prioritise? Short-term parkers, such as customers, visitors and delivery? Or long-term parkers, such as staff and commuters? Parking management prioritises parking users to achieve the desired objectives. It's not a free-for-all.



MYTH 9: DRIVING IS THE ONLY OPTION

Travel Plans can make a big difference to the way people get to and from a business or place. Todd Litman compares the 'old' and 'new' parking paradigms in his **Parking Management: Comprehensive Implementation Guide**:

"The old paradigm assumes that transportation means driving, that parking lots should almost never fill, that parking costs should be borne indirectly by governments and businesses, and that every destination should satisfy its own parking needs. It assumes that the planning goal is to maximize parking supply and minimize prices.

The new paradigm strives to provide optimal parking supply and price. It assumes that transportation can include multiple modes and not everybody drives. It considers too much supply as harmful as too little, and prices that are too low as harmful as those that are too high. The new paradigm strives to use parking facilities efficiently ... It favors charging parking facility costs directly to users and providing financial rewards to people who reduce their parking demand".



MYTH 10: WE ARE CREATING GOOD OUTCOMES

Buildings and places are usually designed around parking. However, cities designed for cars fail everyone. There is very strong evidence that our current approach to parking encourages more people to drive, increases traffic congestion, increases development costs, makes it more difficult to walk or cycle and has significant environmental consequences. It produces poor outcomes that do not align with our strategic planning objectives.

We reckon these 10 myths are busted! What do you think? It seems clear that we need to change the way we think about and manage car parking.

FOR MORE INFORMATION, CHECK OUT:

- Parking Guidelines for Activity Centres (DoT)
- Parking Management: Comprehensive Implementation Guide, by Todd Litman
- Guide to Traffic Management Part 11: Parking

15

Principles for Designing Great Civic Places



Peter Ciemitis FPIA
RobertsDay

Urban infill has begun to figure highly in the minds of planners, developers and the community. Many of the emerging debates revolve around questions of the height and density of infill development, and not necessarily the resulting broader changes to the City and neighbourhoods (both bad and good).

We are familiar with the adverse effects of density and height through the extensive coverage in traditional and social media that they garner.

However, if harnessed intelligently, density and height can introduce many benefits. In neighbourhoods experiencing transition from low-density residential, to a medium or high density character, the change has the potential to bring:

- improvements to streets, streetscapes and sidewalks,
- an increase in local services, businesses and activity due to increased catchment population,
- an greater capacity of Local Government Authorities to maintain and improve the neighbourhood to a higher standard (if the increased rates are hypothecated, rather than used to subsidise other neighbourhoods), and
- the creation of more public open space.

But is all Public Open Space the same? Many operational POS policies deal with open space in terms of scale or function; - 'what is the size of the park?', 'what is its function?'. Unfortunately, its design and execution is much less the focus of planners' attention.

Clearly, not all Public Open Space (POS) **IS** equal. If we consider the differences in POS character from a City's edge to the City's centre, it becomes apparent that most of our attention is usually given to the suburban parkland typologies

of the 'middle areas', but not the characteristics of civic spaces and squares that populate an urban or central neighbourhood (namely, the areas of intensification).

Well designed civic spaces have many distinct attributes that need to be realised in order to create successful and meaningful spaces for the community. The work of acknowledged experts such as Suzanne and Henry Crowhurst-Lennard, Camillo Sitte, Léon Krier and Jan Gehl, has laid a framework for understanding the parameters that make a great space in dense urban areas; or more particularly, squares, plazas and civic places. These are the places that (according to Crowhurst-Lennard) are the 'genius invention' of the European city, for the socialising, civilising, educational, democratic and commercial function they bring to cities. This paper distils some of these qualities into fifteen key principles below. For convenience, the paper refers to urban spaces as 'squares' or 'town squares' but the term used here encompasses a multitude of public spaces in dense urban areas (whether they be an agora, forum, piazza, plaza, Platz, platea, piata, námesi, rynek, trg or market place).

But a cautionary note (especially to fellow planners); these are by no means 'check-box' criteria for the design of great squares, after all, almost all of such spaces vary widely from one another and enjoy different conditions and contexts. The 15 principles below are merely some organised thoughts that the astute designer and placemaker will give consideration to when conceiving, designing, building, repairing or activating public spaces.



PUT THE SQUARE AT PEDESTRIAL CROSSWAYS

The worst designed square will still have some life if people are walking through it.

Before all else, the location of squares should be at the confluence of many walking routes. This means that as many people from as wide an area as possible will happen to be walking through the space, even if they are going to other locations. The intersection of multiple pedestrian routes will generate more opportunities for chance engagement with people and activities in the square as well as encourage more movement through the space generally.



MAXIMISE THE NUMBER OF ENTRY POINTS

Great civic spaces encourage socialization.

They provide as many opportunities as possible to bump into friends and acquaintances or enable casual exchange between passes by. The more chances for informal contact the most social a great place can be.

It follows that the abundance of entry points into a Civic space disperses and multiplies walking routes. The space becomes host to a magnified level of desire lines and intersections, and in time, fosters possibilities for social exchange, busy corners and eddies in the flow.

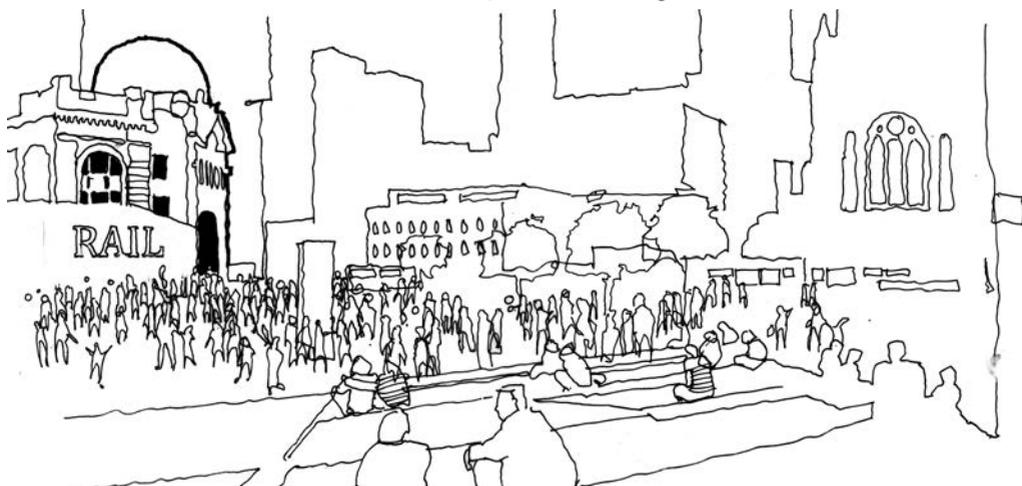
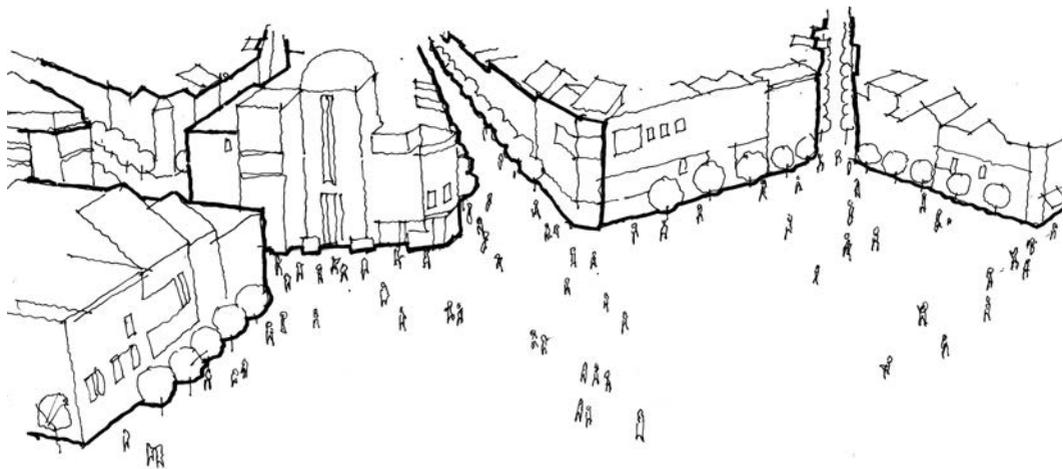


CO-LOCATE THE SQUARE WITH MAJOR ATTRACTIONS

What do the Trevi Fountain, Flinders Street Rail Station or the Perth CBD Myer Store have in common?

Whether they are cultural, transport or commercial hotspots, they are all major generators of activity that help to bring and spill people into their adjacent public spaces. Co-locating squares with such attractors amplifies the activity of the spaces themselves and in so doing improves their vibrancy, social capital, and commerciality.

Of course, it follows that they must correctly confront the space. They should have entries directly to the square to enable a flow of people between them and preferably be permeable (allow people to flow in and out of buildings).

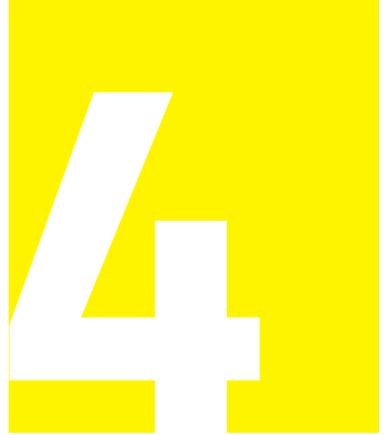




ESTABLISH A DAYTIME AND NIGHT-TIME PRESENCE

Out of trading hours, squares can become dangerous places. Shops and offices may have closed, and no activity or presence may remain active to make it safe to be there. They can become available for "territorial" claim by potentially anti-social groups.

The most successful squares exhibit a mixture of uses; residences, cafes, perhaps theatres to compliment retail, institutional and office activities, which all extend the hours of presence and surveillance within the square throughout the evening. (Naturally, the careful management and arrangement of some of these uses may be essential in order to preserve amenity and avoid conflicts.)



CREATE ACTIVE EDGES AND ROBUSTNESS

If civic spaces are the social lungs of a city, then their edges are the permeable membrane that allows them to breathe.

The life of a square is often determined by the activity around its edges. It should have people going in and out of shops, cafes, apartments and offices. It should enable positive lingering; seats outside apartments, tables outside restaurants, perhaps trade displays outside shops. There should be the capacity to see into and out of buildings in the manner most fitting to their use. Non-trading land uses such as residential or offices may require some modest setback from the flow of pedestrians, and may appreciate smaller ground-floor windows to manage privacy. Trading uses such as retail, food and beverage on the other hand frequently prefer a highly transparent 'edge treatment' to support essential commercial exposure.

Importantly, the capacity to change or adapt uses over time is essential. Today's residential uses may need to transition towards commercial uses tomorrow.





THINK ABOUT SERIAL IMAGE

Cities are not experienced in a static way; we perceive them as a part of a continual sequence. Even when we pause in a place, our reading of it is shaped by the progressive 'scenes' that culminated in our arrival and those that follow our departure. So an invaluable tool of the urban designer is the same as that of a film-maker; the storyboard.

Great civic spaces often show consideration for the conscious mapping of the sequence of scenes (or their 'serial image' as described by 1960's urbanist, Gordon Cullen) as our experience unfolds as we move through streets, corners and lanes towards them. As with great film-making, great urban design might favour an intriguing and progressive 'reveal' as one approaches a square (... perhaps even an unexpected twist). Or if the space is to be heroic, then perhaps the long, slow 'zoom-shot' of a boulevard to a landmark best conveys its importance.

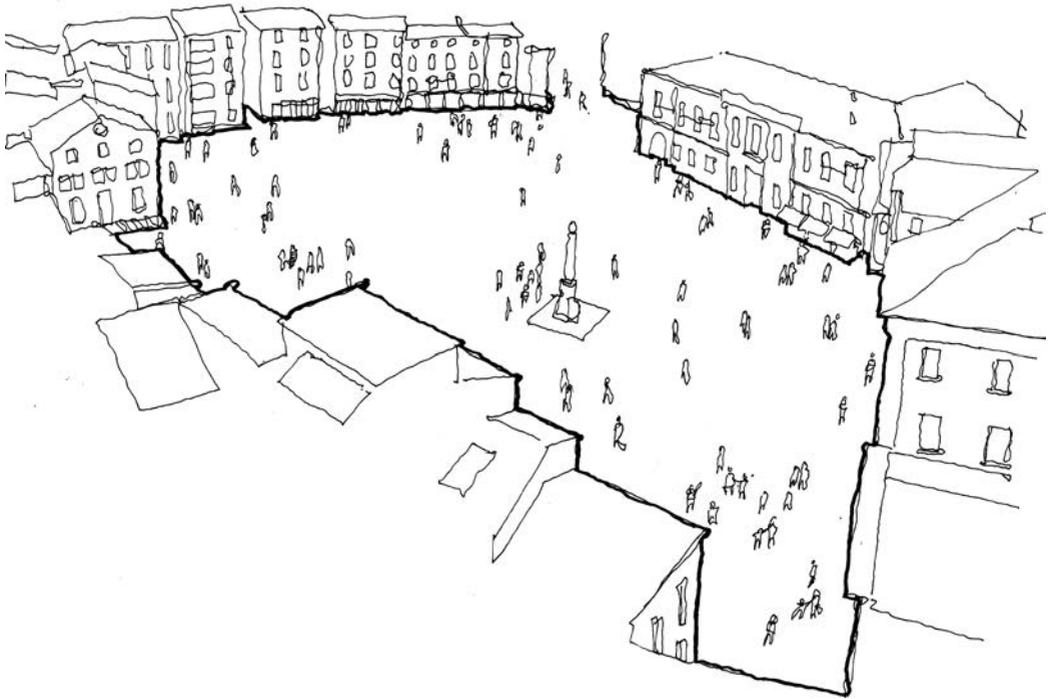
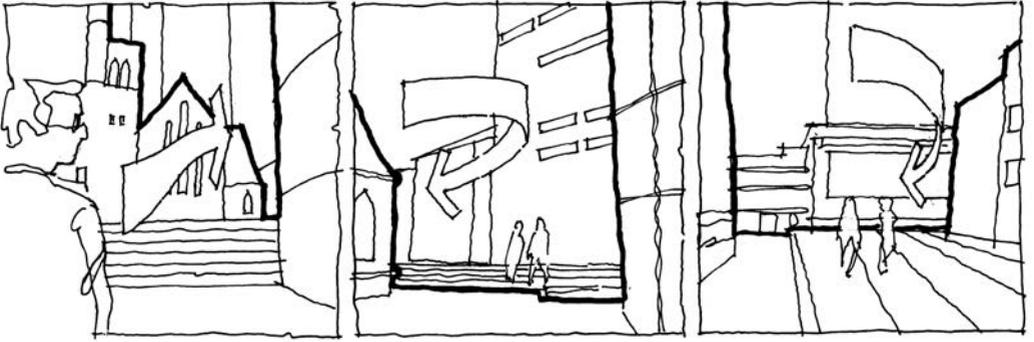


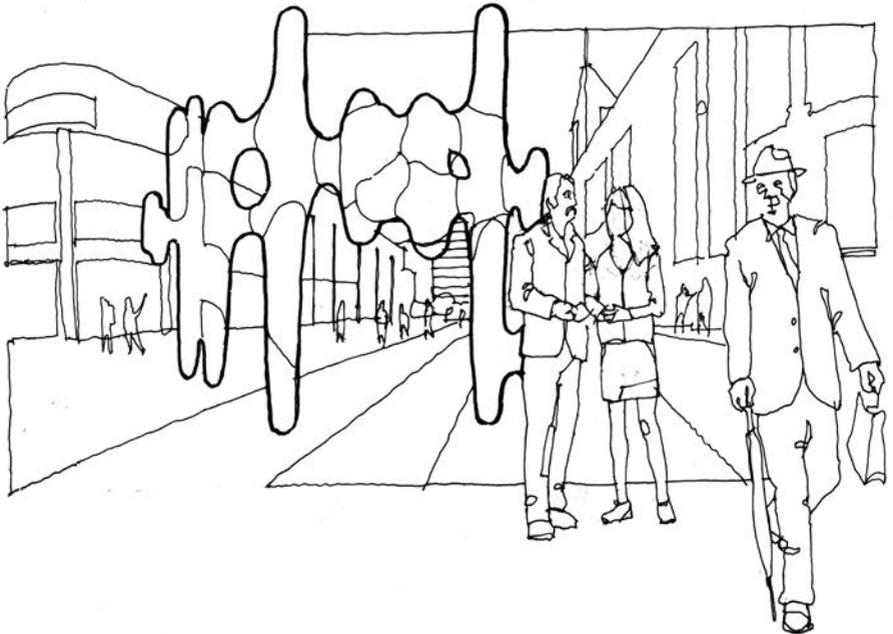
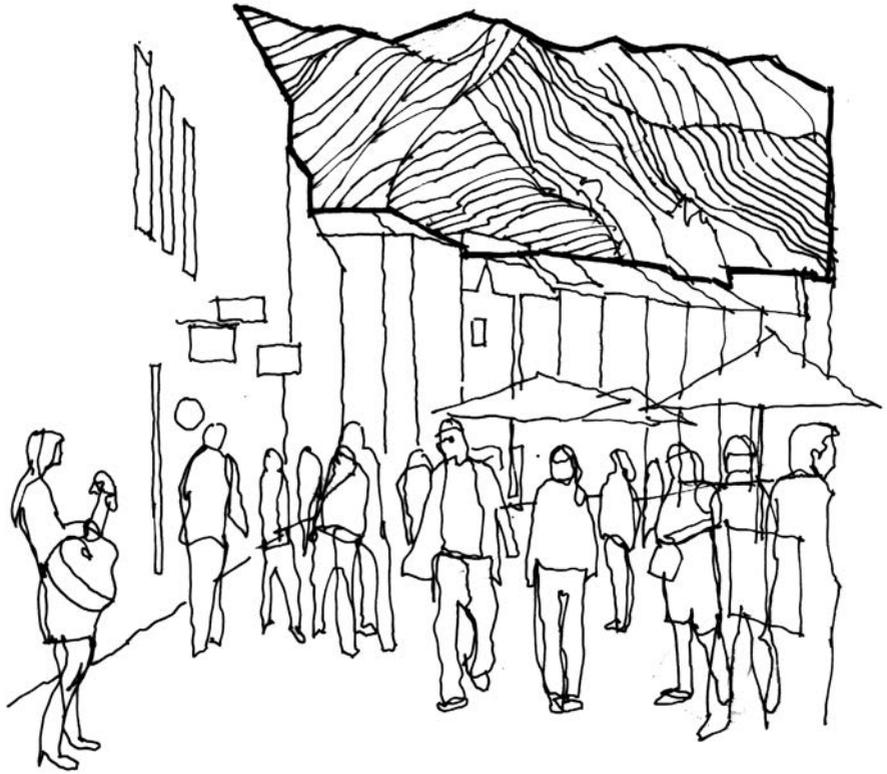
DESIGN FOR VISUAL ENCLOSURE

Of all different types of public open space, one naturally thinks of town squares as being enclosed by buildings, or some other well defined edge.

The 'correct ratio' of height to width is hotly contended in design circles, and ranges from 2:1 (or greater), 1:1 or 0.5:1. The ideal proportioning of space to built-form largely depends on its context; it will naturally be different (wider and lower) for a suburban centre than for a central CBD plaza (smaller and taller).

Irrespective of the proportions of the enclosed space, the principle of enclosure remains fundamental to a great square. By default, enclosure helps to affirm many other crucial attributes required for the space, such as overlooking/ surveillance, edge activation, weather protection, etc. Enclosure also helps to immediately identify the nature and hierarchy of the space; any visitor will immediately understand an enclosed square to signify they are in a central location or high activity area.





CAPTURE A SENSE OF PLACE/CULTURE

How many places have you visited that seem the same as the one you left behind? Same architecture. Same franchised retail. Same landscaping.

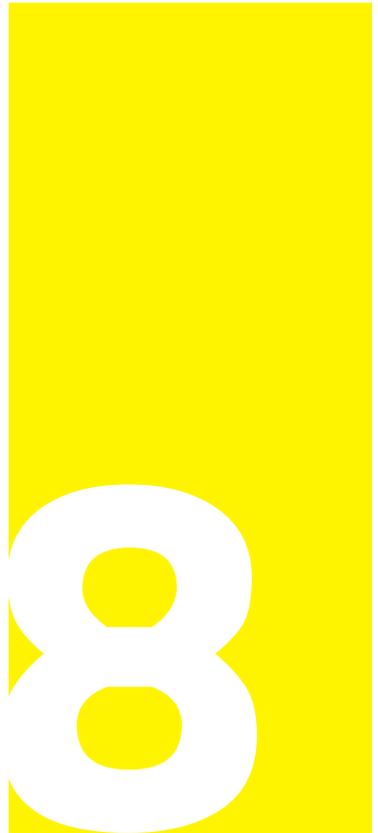
A key to a successful place which is both meaningful to visitors and residents alike is preserving or capturing a unique sense of place. The term sense of place itself is often somewhat meaningless until we pick apart some of its attributes or give some examples. Hobart has it for example. Present in the city it is almost impossible to not be aware of the presence of its hilly setting, especially towering Mount Wellington. This is the presence of nature, deliberately made a feature by the city's layout; not concealed. But wander down to Constitution Dock, and note the Mawson sculptures, and one is reminded of a narrative of place that is otherwise not immediately evident; that of the city's unique relationship with Antarctica. Equally, an authentically evolved architecture equally grounds us in a unique place. Think of the Japanese/Chinese influences and austere corrugated tin buildings that make up Broome's CBD; a visual language uniquely of Broome Western Australia.

An audit of the environmental, visual and cultural DNA of place, and its recognition in the physical shaping of a civic place is a crucial step towards building authenticity and meaning.

MAKE GREAT PLACES LEGIBLE

"I'll meet you at the cactus". To anyone outside of Perth, this term is meaningless (except perhaps in Nevada). In Perth Western Australia, of course, it refers to James Angus's tribute to the pulse of the city, his green, succulent-like sculpture "Grow Your Own" ("the cactus" to locals) situated in the city's main square, Forrest Place.

In essence, this reminds us of the need to ensure that civic spaces contain unique and instantly recognisable reference points which help to anchor them, but also to help in orientation around the city. Equally, orientation and movement ('way-finding') around the square itself should be self-evident through the use of a coherent visual language. Corners should be clear. Entrances should be evident. Pathways should be perspicuous.



DESIGN TO A HUMAN SCALE

If the purpose of squares is partly to encourage people to gather and interact, then it follows that such spaces must feel comfortable for habitation; they must be designed to human dimensions and as if people mattered.

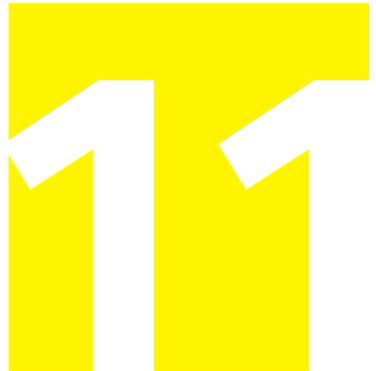
Of course, in many cases this may mean that the height of buildings should relate to a human scale. More importantly however, it means that the design of buildings at their street level (as well as the design of the square itself) should be 'fine grained' ... their ground floor should contain meaningful detailing. Unsurprisingly, traditional architecture frequently contained the detail and richness of elements that could attract and hold the gaze of a passerby, and create a sense of comfort. The challenge in contemporary design is to reinterpret these principles within a modern vernacular.



ENABLE EYE CONTACT

Today when the gaze of pedestrians is downward towards their mobile devices, it is ever more important to make sure that civic spaces don't throw up barriers to visibility and enabling eye contact. Seeing the 'whites of the eyes' of fellow citizens not only help provide safety and surveillance, but is the first step towards enabling recognition of friends, acquaintances and reinforcing social bonds.

Avoiding huge level differences is a good starting point (unless well designed of course), as is maintaining a line of sight across the public space at natural eye level.

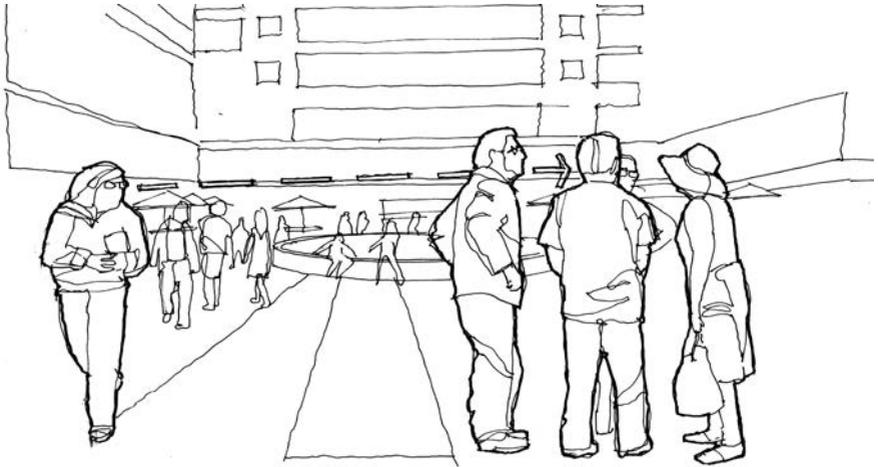
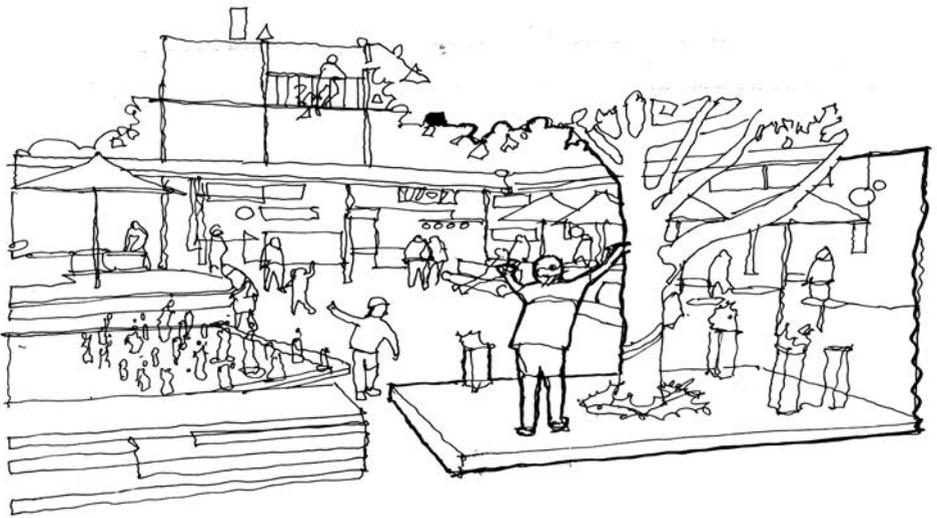


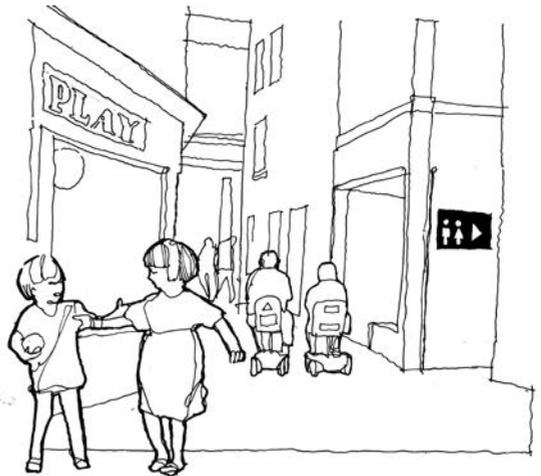
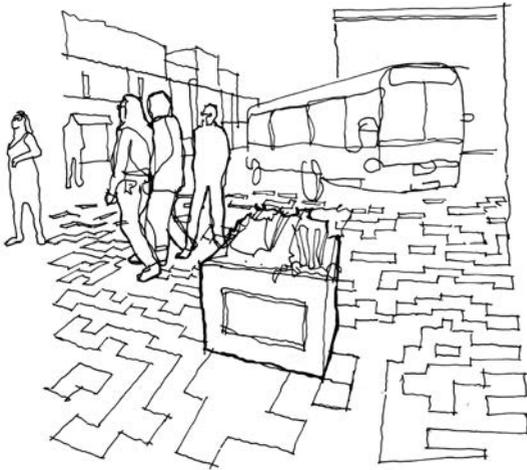
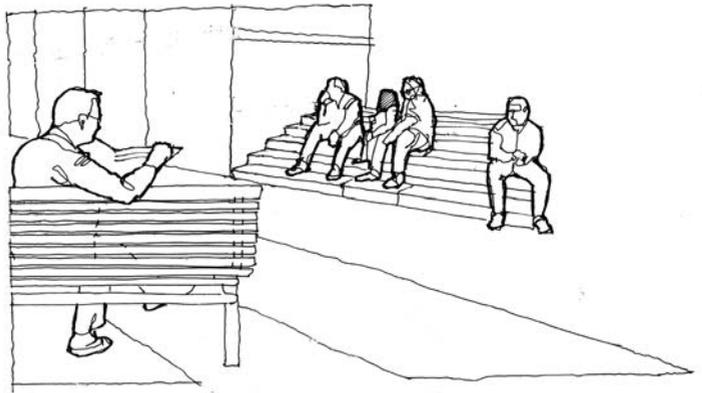
PROVIDE WEATHER SHELTER

Unsurprisingly, more citizens (especially older Australians) visit air conditioned shopping malls rather than main streets and Town squares. A big factor in this lies in the climatic predictability of internal malls; there is little chance being drenched in rain, or roasted in the summer sun.

Great civic spaces should aim to provide as much weather protection as possible, trees for shade, effective awnings or colonnades for year-round shelter, lest risk discouraging visitors from returning, except in the finest of weather.









INCLUDE PLACES FOR PAUSING

The ability to pause in a civic space is the difference between it being a 'walk-through' space, and a vibrant social/commercial/gathering place. Squares need to allow people to meet friends, enjoy lunch, socialise with family, relax independently or (especially for elderly citizens) pause for a breath. Sitting places provide people a stopping point, whether they be 'formal' (eg, seats, benches or 'paid' café seats), or informal (eg, planters, low walls, steps or even shaded grass). All of these contribute to increasing the presence of people in a great public places, and in turn enhancing their vibrancy and liveliness.



PAVING FOR PEOPLE

The paving of great squares is often an instant signifier that the space is meant form people. In fact, the unique paving design of many Squares becomes as much the 'brand' of the location, as the functional purposes it satisfies (think of Tess Jaray's Centenary Square in Birmingham, or ARM's 'Ripple Wave Pattern' in Elizabeth Quay, Perth).

However, paving should help to inform that the pedestrian reigns supreme in these locations (even where shared usage with motor vehicles occurs). Its design might also help to subtly guide the use of the space; demarcation of trading areas or of parking spaces for instance. Having said that, it doesn't necessarily follow that paving ought to be flamboyant, expensive, or 'over-spec'd'. Simple, durable material serves just as well ... even loose crushed stone as found in Paris' Place des Vosges.



DESIGN FOR ALL

Finally, one of the unique aspects of a great public place when compared with privately owned or managed spaces, is its accessibility to all social groups; the aged, the young, the elite, the disenfranchised. A great square might contain play areas for children, breakout spaces for adolescents, resting and ablution facilities for the elderly or have given thought for sleeping or feeding the homeless. After all, these are the spaces in which we can tangibly witness the calibre and quality of the community as a whole.



Bowden 2
_Image: Corey Roberts

Density



by

Design



Dr Josh Byrne is an environmental scientist, Research Fellow at Curtin University and the Cooperative Research Centre for Low Carbon Living, and Adjunct Associate Professor with the School of Civil and Environmental Engineering at the University of New South Wales. He is also Director of Josh Byrne & Associates – a design practice integrating landscape architecture, built environment sustainability, media and communications.

Image: Rob Firth

Our sprawling cities are reaching their limits. We find ourselves at a cultural crossroads as the 'Great Australian Dream' of owning a home adapts to a new era of a rapidly growing population. There is a movement away from big houses on big blocks, and an increased demand for multi-residential developments near our city hubs. But are we getting the outcome we want?

Density by Design seeks out the leading minds and groundbreaking ideas on sustainable higher density residential projects around Australia that are providing inspiration through demonstration. My journey as environmental scientist and Curtin University Research Fellow in this project is captured through a factual web series, as part of a broader research project on low-carbon residential precincts, undertaken by the Curtin University Sustainability Policy Institute and the Cooperative Research Centre for Low Carbon Living. This article profiles the projects documented in the series, which includes interviews with key participants and leading commentators. These pages can only provide a snapshot of the research. A wealth of information, including the documentaries and interview transcripts, is available on the **Density by Design** website.

Christie Walk

Christie Walk is a multi-residential infill development on the edge of the Adelaide CBD, accommodating 27 dwellings and approximately 40 residents on a 2,000m² lot. Dwelling types include apartments, town house and detached cottages.

Kicking off in 1999, Christie Walk is a pioneering project that reflects the 'eco village' aspirations of the environmental movement of the day. This is expressed in the built form vernacular and community driven process underpinning the development. The project began as a development cooperative led by Urban Ecology Australia. Completed in 2006, the development is home to a mix of original and newer residents, but retains a strong focus on the importance of community.

In addition to solar passive design considerations across the project, buildings have been arranged to create green spaces for people, wildlife habitat and food growing. Car parking is located on the perimeter of the site. Shared facilities including bike storage, workshop, laundry and common room provide meeting opportunities and promote effective use of resources. Rainwater and stormwater are captured for landscape irrigation and solar energy systems contribute to power and hot water needs.



Christie Walk
Image: Iain Bond



Christie Walk
Image: Iain Bond

Christie Walk is about creating a community, and helping generate the culture needed in the community to drive ecological or sustainable development into the future, because it isn't going to be done by bits and pieces of technology, it's going to happen once there's a culture that says we want to do this. And I like to think that's beginning to happen now.

Paul Downton - Christie Walk
Architect, Urban Ecology Australia



The Commons

Perched on the rail line in Brunswick, Melbourne, The Commons is a project that is sending ripples throughout the urban development industry. The five storey, 24 unit apartment building not only demonstrates design excellence and exceptional sustainability credentials, it's challenging the very core of how conventional multi-residential housing is being delivered.



The Commons' raw, stripped-back style speaks to its authenticity. The reductionist approach saves materials, maintenance and money. Absent ceilings create greater internal volume, and shared facilities mean more generous living areas. The design-led process translates to quality, simplicity and detail.

There is no car parking provided on account of the proximity to the train station, saving development costs. Space is allocated to a shared bike storage. The ground floor includes a café and a wine bar, while the roof top with stunning views is a communal area with a laundry, shaded deck and vegetable garden.

Led by Melbourne-based Breathe Architecture, and completed in 2013, The Commons is the prototype of the Nightingale model, which promotes design-led, rather than profit-led housing. The Nightingale model continues to draw attention from industry and the market, with a number of new projects in the pipeline and a growing list of future residents signing up to be part of it.



In the years leading up to The Commons, from 2000 through to 2007, I'd been working on a series of multi-residential projects. They were developer driven projects, designed to investor specifications, to be sold to investors and to rented back to my fellow citizens at the highest possible rent. At no point through that process did anyone care about the outcome of the people living in those apartments. So, when we started to talk to our developer clients about why aren't you delivering owner-occupier apartments, there was no appetite for them to do that. So we thought that we would build a precedent, Australia's flagship sustainable apartment building, that was simultaneously affordable, liveable, and sustainable.

Jeremy McLeod – Director, Breathe Architecture



The Commons
Images: Dianna Snape



Bowden

Located 2.5km from the Adelaide CBD on former industrial land, Bowden is one of the South Australian Government's development agency Renewal SA's most ambitious development projects. The 16ha mixed-use project commenced in 2008 and is forecast to be completed by 2026, targeting 2,500 residential dwellings, 10-12,000 square metres of retail space, and approximately 15-20,000 square metres of commercial office space.

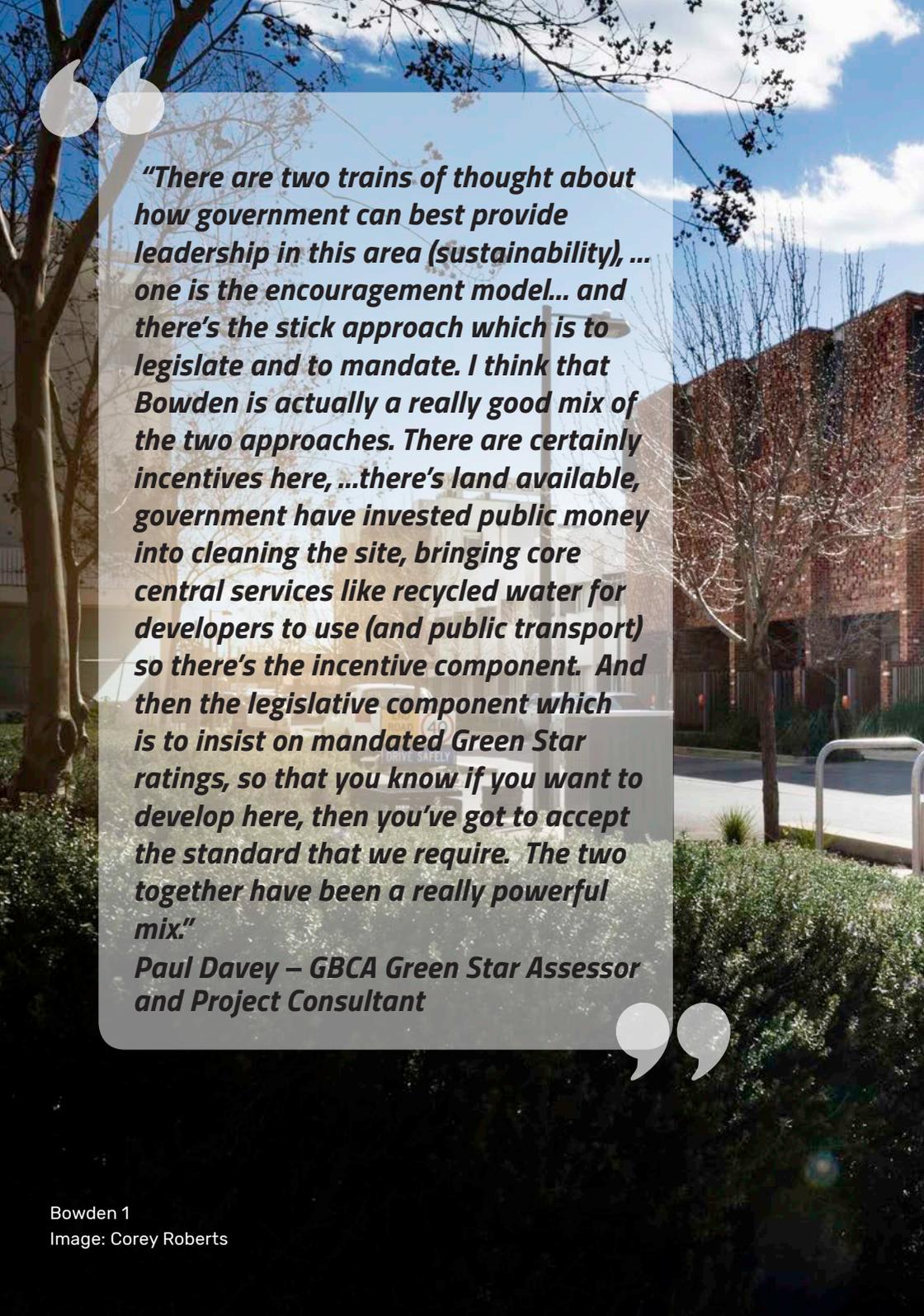
Bowden demonstrates significant leadership in urban planning, with carefully considered design guidance and review processes. All buildings are required to achieve a 5 Star GBCA Green Star rating and must be assessed by an architectural review panel. The project has also been rated at a precinct level using the Green Star Communities tool.

As a project that is mid-way through development, it provides a good opportunity to see how considered planning and good design transfer into reality along a continuum spanning from planners, to developers, to architects and consultants, to builders, through to early residents.



Bowden
Image: Corey Roberts





“There are two trains of thought about how government can best provide leadership in this area (sustainability), ... one is the encouragement model... and there’s the stick approach which is to legislate and to mandate. I think that Bowden is actually a really good mix of the two approaches. There are certainly incentives here, ...there’s land available, government have invested public money into cleaning the site, bringing core central services like recycled water for developers to use (and public transport) so there’s the incentive component. And then the legislative component which is to insist on mandated Green Star ratings, so that you know if you want to develop here, then you’ve got to accept the standard that we require. The two together have been a really powerful mix.”

Paul Davey – GBCA Green Star Assessor and Project Consultant



Central Park

Central Park in Sydney's CBD is a 5.8ha mixed-use precinct that gives us a glimpse of the 'city of the future'. One where exciting architecture and biophillic design justifiably earn their place in the heart of our cities. Once complete, the former industrial site will yield around 2,400 apartments, 400 hotel rooms, 1,000 student accommodation beds, 6,000 square metres of commercial space and 20,000 square metres of retail. One third of the 5.8 hectare site has been devoted to public open spaces.

The project incorporates the flagship One Central Park Tower, designed by French Architectural Firm Ateliers Jean Nouvel (with PTW Architects), featuring an iconic heliostat and extensive green walls. There is also cutting-edge precinct-scale utility infrastructure including a tri-generation plant which provides power, heating and cooling energy, and a wastewater treatment plant that processes sewerage and stormwater into high quality recycled water for local reuse.

Central Park blends modern high density development with adaptive use of historic buildings and provision of quality public amenity. It has opened an otherwise inaccessible part of the city and triggered the activation of the surrounding area.



Central Park
Images: Katherine Lu



Water and wastewater was (one of our) key initiatives here. We have established a private water utility on this site. It takes potable water from Sydney water... and collects the stormwater and sewerage that's generated on the project. The sewerage treatment plant (1,00 000 litres per day) distributes the recycled water and the potable water (separately) to all the residential and commercial tenants on this site. It's actually a private utility as a business in a major urban mixed-use environment, which is unique.

Mick Caddey - Project Director, Central Park, Frasers Property Australia

White Gum Valley

White Gum Valley (WGV) is a 2.2ha medium density, 80 dwelling residential infill development located in the City of Fremantle. Led by the Western Australian Government's land development agency LandCorp, WGV demonstrates design excellence on many levels by incorporating diverse building typologies (detached houses, town houses and apartments), climate sensitive considerations, solar energy generation and storage, innovative water management and creative urban greening strategies. The project has received international certification as a One Planet Living community.

As a LandCorp 'innovation through demonstration' project, WGV is being used as the basis for several concurrent research programs designed to explore novel approaches to urban densification, affordable housing and sustainable development in 'middle suburb' areas. These include a four year 'Living Lab' research project funded by the CRC for Low Carbon Living, an ARENA funded study into the application of strata-body operated solar energy storage, and an industry-led initiative that will showcase urban water initiatives. WGV will also be home to Australia's first Baugruppen project, which itself is being run as an applied research project to test this model of affordable housing delivery under Australian conditions.





WGV is targeting 'net zero energy' status, meaning the precinct will generate as much energy as is used, balanced over the year. This will be achieved through a combination of energy efficient building design, coupled with rooftop solar energy generation. A number of the group housing and apartment sites are incorporating solar energy storage which will see grid energy reliance reduced by up to 80%.

Household mains water use is expected to be 70% less than the local average as the result of a suite of water efficiency and alternate water supply initiatives, including plumbed rainwater tanks and a community bore. Smart metering will capture water use data in real time to inform responsible water-use, supported by resident engagement programs.

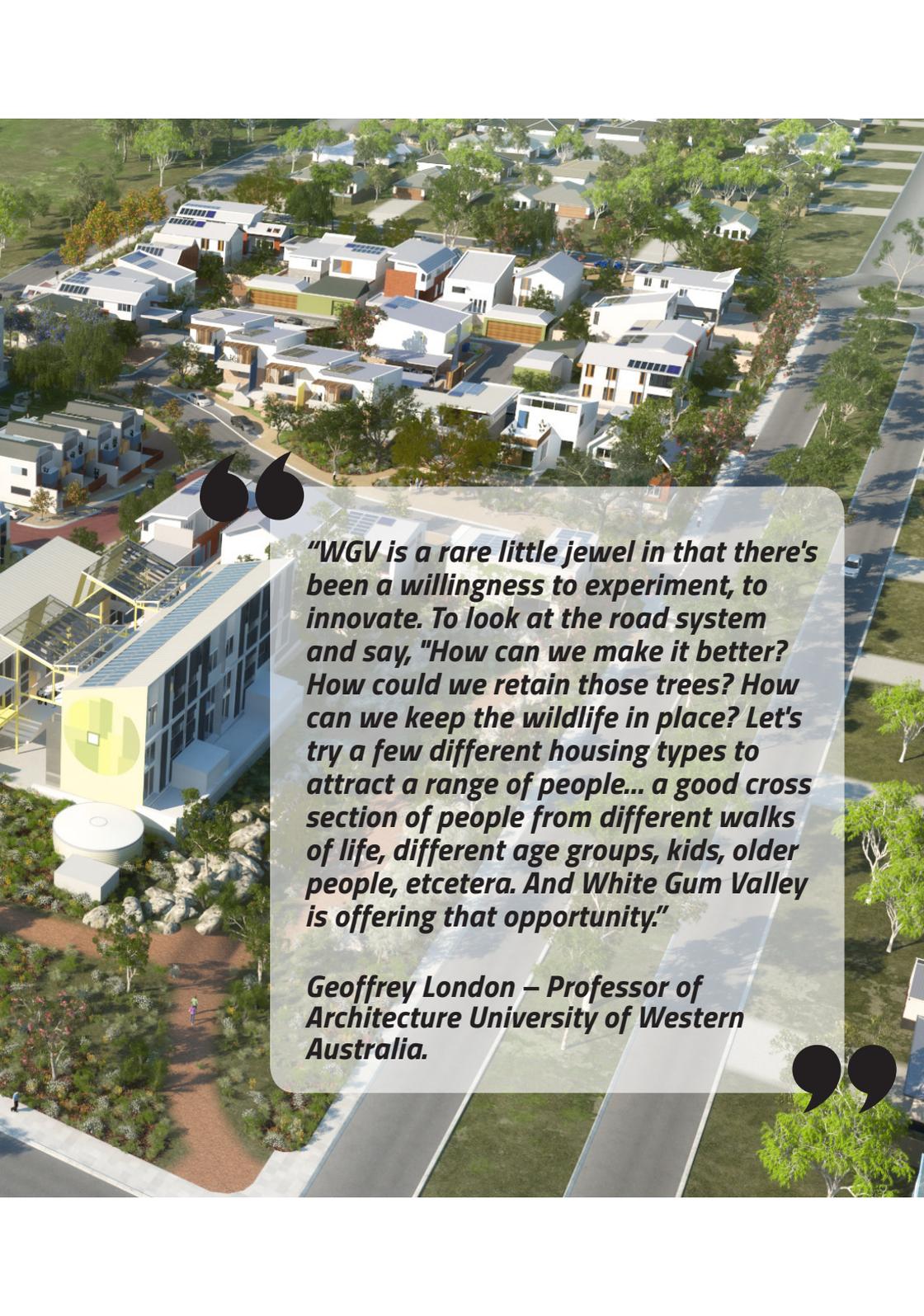
More Information

Density by Design is produced by VAM Media in partnership with Josh Byrne & Associates, and funded by the Cooperative Research Centre for Low Carbon Living, an Australian Government Initiative. Watch the episodes and access the research materials at www.densitybydesign.com.au

WGV
Images: JBA



White Gum Valley
Image: Last Pixel



“WGV is a rare little jewel in that there’s been a willingness to experiment, to innovate. To look at the road system and say, “How can we make it better? How could we retain those trees? How can we keep the wildlife in place? Let’s try a few different housing types to attract a range of people... a good cross section of people from different walks of life, different age groups, kids, older people, etcetera. And White Gum Valley is offering that opportunity.”

Geoffrey London – Professor of Architecture University of Western Australia.



Philip Stejskal Architecture
Image: Louise Allen



Small space, large amenity - catalyst by gentle confrontation

SMALL

densification + apartment footprint + cost

LARGE

spatial quality + building performance + future possibility



Our project is all about proposing a medium density living situation that would initially attract / be suitable for a wide range of people and demographics, by offering a range of dwelling types. Yet more than this, the project allows this mixed cohort to continue living there and growing as a community for decades rather than years. So, as singles become couples, have children, who grow up and eventually leave home...we wanted to offer a place where all of these stages of life can be accommodate without having to uproot and relocate. The entire spatial and technical resolution of the project is in service of this idea.



The Young Couple by Claire Holmes

For the newlyweds, what is attractive about this community is the ability to lay down roots with the opportunity to expand as the family grows. With first home affordability at the forefront of young West Australians' minds and many moving to the tips of the freeway to achieve this, the modest one-bedroom studio is an attainable option. What separates this residential typology is the curated chance to build up, or build in.

The studio starts its life for the couple as a place to sleep, hang out with friends, even socialise with neighbours if they wish and work from home. They enjoy having a barbeque with neighbours on the weekend and have become attached to their veggie patch that continues to yield year by year. When it comes time to think about growing their family, they don't want to move from the amenity of the suburb they are now used to. So instead of moving, they expand. First, they fill in the mezzanine, allowing them to create privacy between the sleeping area and the living. A good stop-gap with a newborn offering them supervision and connection, and the opportunity to save for the big extension!

A new level is added above creating a second and third bedroom with a terrace. The young family move upstairs for privacy and the new views they've created, finding themselves with a spare room they once slept in. She's been wanting to quit her 9-5 and pursue her photography business full time for a while and their old bedroom provides the perfect space for this. Private from the rest of the house and with good proximity to the public street she can close off the shutters for focus or open up to both clients and those intrigued.

For the couple, a time comes when they no longer require the ground floor level. With the simple addition of a kitchenette, a student moves in, they barely notice him as he comes and goes via the street.



The Bachelor by Yang Yang Lee

For the bachelor, this residential typology offers opportunity of a workspace to pursue his personal enterprise and simultaneously create an intimate sense of home. A studio in the full sense of the word; a place to work and study and also to live and sleep - neither

getting in the way of each other thanks to a double height volume that offers spatial separation yet also connection. The pivoting façade screens diffuse light or shut down the entire space whenever he wishes. Or if occasion calls, by opening up to the courtyard, he holds social gatherings that spill out of his space into the communal greenery and sky above. By throwing open the same screens toward the street, he creates an interface with customers of his trade –an impromptu shopfront –the high internal walls allowing him to display his works proudly.

During winter he enjoys a flood of northern light entering his space. In summer, he positions the façade screens to deflect the searing sun yet admit cooling breezes. It may be argued, but the space empowers his life's passion of creativity and social fulfilment.



The Family by Philip Stejskal

For the family of 5, the dream to live near the beach is made possible not only by the price point of the 3 bedroom apartment they recently bought in the complex, but also by the way this feels nothing like an apartment!

They now live across three floors. The kids chase each other up and down the stairs and throw paper planes between levels.

At other times, the eldest is able to focus on his studies in a discreet study mezzanine, while another reads books with mum on the adjacent daybed.

Dad is cooking dinner, but gets talking to one of the neighbours while collecting herbs from the communal garden. The youngest follows him out, spade in hand, ready to dig something up.

His friend from number 4 comes out too. It starts raining – summer rain –everyone has their windows open and the noises of life filter through the complex.

Five years on, the eldest has moved into the room at street level. He studies and volunteers.

Comes and goes often with friends. Has his own bathroom, life is good. An upward extension means they now live over 4 floors, dedicated play space for the boys who were starting to take over the house.

Mum has turned 40. A big party is planned by the community in the courtyard, open fire, long table, party lights. The kids run between apartments well past bedtime.



The Retired Woman by Louise Allen

For the single retired woman, the space begins as a compact container, easy to manage and dense with amenity. She is on a pension and has invested her life savings into this home; its here she will age in place.

Her life here is enriched by a multitude of moments that enhance her daily experience. They are the northern light that spills across the floor, dictated by the positioning of the pivoting screens and ever changing. The cool breeze that floats up from the street and into the courtyard. Watching the communal garden as it changes from season to season.

Dog-sitting for the neighbours while they escape Down South. Watching the weather roll over the courtyard.

Teaching the young ones to play Bridge in the common room while doing her laundry. Marvelling about the absence of power bills thanks to the communal battery storage facility. Washing down in the outdoor shower following a swim at the beach. Enjoying the fact that she can stay put even when her mobility decreases.



The Neighbourhood Friend by unknown

For the passer-by who lives in the area, this complex holds no end of intrigue. He knows many of the residents, and has known them for years. He himself has moved three times over the past 15 years as his family grew and then contracted again. Yet his friends who live in the complex, of similar age, have managed to stay put despite similar changes in their lives. At one point they built an extension on top of their apartment – most curious. In fact, the entire building has continued to evolve as various residents have done the same.

They all seem to want to stay there. And he understands why – he has been there many times, invited for dinner, or to toast marshmallows on the open fire. He knows many of the people there, even gets his weekly massage at number 6 – accessed via the street front, this friend has set up a shop in the ground floor of her apartment.

When the complex first opened, he was mildly confronted by the lifestyle that was being proposed by the building. It seemed to require something of him even though he



was merely a passer-by. He initially avoided walking past it, but found himself drawn to the vivacity of life it seemed to exude. It didn't take long before he found himself chatting with a resident, next dining with a whole group of them. His gaze still fixates on the building whenever he walks by.

However, it no longer haunts him –he now understands it means well.

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The logo consists of the letters 'NS' in a large, bold, white sans-serif font, positioned above the word 'group' in a smaller, lowercase, white sans-serif font. Both are contained within a white square frame with a thin border. A small white diagonal slash is located at the bottom center of the frame.

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SUCCEEDING TOGETHER

A nighttime photograph of a modern architectural complex. In the foreground, a large, slender bronze statue of a man stands on a stone base. To the left, a wide set of stairs leads up to a building with a red and grey facade. A blue glass walkway spans across the scene. People are seen walking and sitting on the ground, some blurred due to motion. The sky is dark blue, and the building's lights are illuminated.

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is growing, with the introduction of Green Star ratings resulting in the approval of nearly 1,000 sustainable apartments since 2015



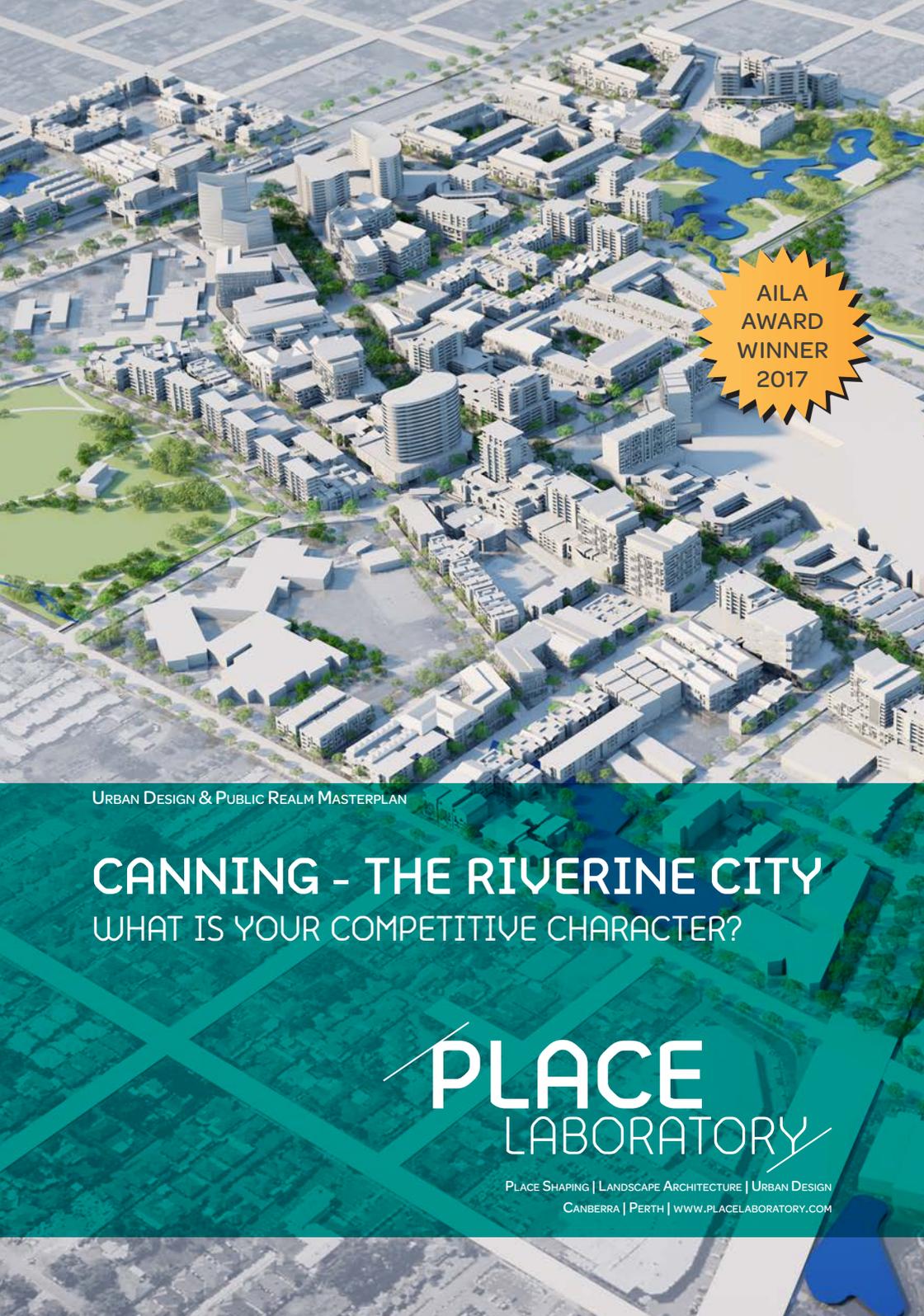
Murdoch Specialised Activity Centre

is expanding and developing as a unique health and knowledge-based major city centre outside the CBD



Melville City Centre

is set to grow, including a major expansion of Garden City

An aerial architectural rendering of a city development, showing a dense cluster of modern buildings, courtyards, and green spaces. A prominent blue water feature is visible on the right side. A yellow starburst badge in the upper right corner contains the text 'AILA AWARD WINNER 2017'.

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