Acknowledgment of country

RMIT University acknowledges the Wurundjeri people of the Kulin Nations as the traditional owners of the land on which the University stands. RMIT University respectfully recognises Elders both past and present. We also acknowledge the traditional custodians of lands across Australia where we conduct business, their Elders, Ancestors, cultures and heritage.
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Australian cities are at a critical stage of their development. To overseas visitors, this ‘vast timeless land’ is, surprisingly, one of the most urbanised in the World, with two-thirds of its people living in the five mainland state capitals. And now Australia is becoming even more urbanised as these five cities account for a disproportionate share of population and employment growth and investment. They face the prospect of even more growth in the future and the challenges of how this can be best managed.

These cities are at the coalface of national issues: the radical and rapid restructuring of employment and the economy, the growing economic and social disparities as well as the great environmental challenges of our times. This all calls for great leadership and policies which are based on sound evidence and open debate. To meet these challenges we clearly need to learn from the past and prepare for further change.

The three levels of government, professional associations, industry and the community all contribute to the development of policy. But sometimes they are voices which do not get heard as much as they should.

This publication presents nine essays written by students undertaking the masters of social science (environment and planning) program at RMIT University in 2016. Normally these essays would just disappear into the ether, a lost opportunity for others to learn from their work. This publication gives these students a voice and embellish debates on issues at the core of urban planning.

The social science program integrates theoretical concepts with their application to contemporary issues and professional situations. It is firmly focused on policy and management related to the fields of environment and planning. It is designed for professional development, academic interest and for entry into the rapidly expanding planning and environment fields. The areas of planning and environment are inherently interesting due to their multi-faceted nature and multi-disciplinary approach. They are concerned with solving many contemporary problems confronting urban, regional and rural environments. The program is designed for those motivated by a desire to improve their environment, or move into a more exciting and challenging career.

The essays published here were prepared as part of the course entitled ‘Managing Contemporary Urban Environments’. Although this course looks at urban issues broadly through the lens of Australian and international comparisons, the course’s focus is on the development of Melbourne and the issues it now faces.
In the first sixteen years of this century, Melbourne’s population has grown by as much as it did from its foundation in 1835 until the end of the second World War, 110 years later in 1945. Melbourne’s population is projected to grow to around eight million by 2050 – over three million extra people in the space of one generation.

Melbourne’s urban structure - predominantly low density car-oriented suburbs with scattered employment locations surrounding a core of Victorian era higher density, employment-rich suburbs – has come under pressure in recent years. Richard Overall’s essay looks at the role of planning policies in Melbourne’s evolving urban structure over the latter half of the twentieth century. It is easy to forget that only a generation ago, Melbourne continued to ‘hollow out’ with the flight of people and businesses to the suburbs and beyond. Hayley Presnell examines more recent metropolitan plans, in particular their failure to produce the more polycentric urban structure that Melbourne clearly needs to be sustainable. Despite urban consolidation Australian cities such as Melbourne continue to sprawl outwards, a phenomenon addressed in Liam Mawford’s essay. Like other essays in this publication, Liam identifies the adverse impacts of urban sprawl but acknowledges the constraints that Australia’s underlying penchant for home ownership and consumption poses for urban consolidation.

Melbourne’s urban structure is clearly going to have to develop and adapt given that the amount of development that is expected to occur. Just how will people be able to move around this city in thirty ears time? Melbourne still has a predominantly radial rail and highway structure. Jennifer McIntyre’s essay reviews these issues and recommends the development of cross town railways linking suburbs. Vanessa Stephens critically reviews how well the State Government’s 2014 Plan Melbourne strategy addresses housing, employment and transport issues.

Melbourne’s planners also have to manage the risks and vulnerabilities associated with climate change. Kubra Koch asks how Melbourne’s monocentric urban structure should adapt and draws comparisons with more multi-centric Stockholm. Melbourne not only sprawls but has increasing proportions of impervious surfaces. Mick Kannegiesser examines the issues and actions needed to manage stormwater runoff given the added likelihood of fiercer storms in future. Closely related to this are the parks and green spaces that enhance Melbourne’s liveability. Urban consolidation puts pressure on green spaces. Elissa Gee argues that green spaces are essential for people’s health and suggests Singapore’s open space management practices provide lessons for Melbourne.

2017 is the centenary of the birth of Jane Jacobs, whom Caroline Parkinson credits as one of the founders of the new urbanism movement which seeks to foster liveable and sustainable development. In her essay Caroline addresses the aims, policies and achievement of the new urbanism movement, citing Portland, Oregon and several Canadian towns as examples.

Lastly, Emmalene Gottwald looks at the issues surrounding growing social and economic divisions within cities. It is a wide ranging review, taking in the experiences of cities in China, North America and Europe. Reducing polarisation in cities, she argues, is critically important for the well-functioning of the global economy in the 21st century. Policies are needed to improve urban structure, counter sprawl and involve new models of governance.

Overall, these essays demonstrate the range and complexity of issues facing cities such as Melbourne as they face unprecedented development pressures. These are the voices of people who are in the early stages of their professional careers. Their views are fresh and worthy of your readership.
How can Melbourne accommodate its urban development without the expense of green space?

Elissa Gee

Melbourne has been ranked the world’s most liveable city by The Economist magazine for the last five years running. Arguably, a major reason for this title can be attributed to its pleasant environment, created by ample urban green spaces either within the city or in suburbs. However, the population of Melbourne is expected to grow to 7.7 million by 2050 (Plan Melbourne 2014), causing mounting concerns over how the city will change to accommodate such a sharp increase in population growth. Parks, reserves and green recreation spaces have significant impacts on the liveability aspect of cities, therefore it is important that urban intensification does not come at the expense of these urban green space. With emphasis on the role of green space, this essay will assess the effectiveness of the existing planning system to protect urban green space and ensure its even distribution across the city of Melbourne.

As the population of Melbourne continues to grow, there is an increasing tension regarding the need to increase the housing stock and infrastructure necessary to accommodate these extra people, while also maintaining the city’s liveability. Buxton, Hurley and Phelan (2015) argue that there has been very little national debate surrounding the most appropriate way to effectively achieve this goal. They suggest that no Victorian government has undertaken the necessary spatial and infrastructure planning to ensure both adequate housing and other necessary services and amenities including access to green or open recreational space. In Plan Melbourne (2014), the Victorian government proposes that the established areas of Melbourne must accommodate 960,000 new dwellings in order to house the expected growth in population. This raises the question of where this development will occur and how authorities and planners can also ensure sufficient access to green space and nature.
Green space comes in many forms, whether it is parcels of remnant vegetation, natural waterways, vegetated roadides or designed parkland and it is an incredibly important aspect of a city. Parks and green spaces have long been regarded as the lungs of a city, allowing them to breathe (Astell-Burt et al. 2014). Green spaces across metropolitan areas provide cities with critical ecosystem services, such as filtering the air, removing pollution, reducing noise, sequestering carbon and absorbing water which in turn reduces the risk of flooding (Wolch, Byrne & Newell 2014). Future climate projections suggest that average temperatures across Australia will continue to rise and there will be an increase in the frequency and severity of heatwaves across the country (Alexander & Arblaster 2009). Given that urban environments tend to retain heat more than natural environments, the rising temperatures and increasing heatwaves are of particular concern to cities such as Melbourne. The phenomenon known as the urban heat island effect is due to “the replacement of natural, vegetated landscapes with impervious infrastructures”, which leads to excess heat storage that is slowly released overnight (Coutts et al. 2013, p.3). According to Norton et al. (2015), increasing green space in cities is one way to overcome the heat island effect which affects all urban environments including Melbourne. They suggest that an increase in vegetation cover by only 10% could reduce Melbourne’s overall temperature by 1° C.

However, modelling by the Melbourne City Council found that tree health is declining and many plantings are reaching the end of their lives, resulting in a possible loss of 23 per cent of current trees within a ten year timeframe. This will increase further to 39 per cent within twenty years (City of Melbourne 2014) if no action to plant more is taken. This loss would have a devastating effect on Melbourne’s environment, in terms of both the amenity and its climate. Acknowledged this threat, the City of Melbourne council has developed an Urban Forest Strategy which aims to increase tree canopy from 22 to 40 per cent, as well as increasing the biodiversity of species by 2040 (City of Melbourne 2014). This is seen as a way to mitigate the urban heat island effect and reduce temperatures in the inner city, as well as ensuring the city’s ability to adapt to climate change. While this strategy attempts to address issues associated with a rising population, increasing urbanisation and the need to provide green vegetation and open space, unfortunately, it only applies to the inner city and not all suburbs in Greater Melbourne. Other local governments in Greater Melbourne may not have adequate funds to introduce a strategy like this on a similar scale, therefore one way to address this and ensure that the benefits of green space and vegetation are distributed relatively equally across Greater Melbourne would be to ensure that a similar strategy be put in place which encompasses all local governments within Greater Melbourne.

Some parts of Melbourne, like many cities worldwide, are prone to flooding. This is due in part to the fact that generally, urban environments are made up of many impervious surfaces such as buildings, roads and footpaths which do not allow water to pass through. This causes more runoff to be collected by storm-water pipes and drains, bypassing the natural storage and attenuation systems (Wheater & Evans 2009). Consequently, water piped to the nearest streams and drainage systems increases the likelihood of flooding. As weather patterns change as a result of climate change, Melbourne is anticipated to be more susceptible to storms and in turn experience instances of heavy rainfall (Alexander & Arblaster 2009), which is likely to contribute to more instances of flooding in urban areas. Given that natural surfaces absorb and retain water, increasing green open space particularly in flood prone areas, can reduce the likelihood of floods. Water sensitive urban design is crucial in vulnerable areas of Melbourne to ensure that natural attenuation in the urban landscape occurs, therefore reducing the likelihood of dangerous and damaging flooding.
Green space not only contributes to the amenity of a city and provides it with important ecosystem services, but it is also important for the health and wellbeing of its inhabitants. Many studies have found that individuals who have access to nearby natural settings are generally healthier than those without access to green space (Kaplan & Kaplan 1989). There are a number of reasons for this statement. Firstly, because humans are believed to have evolved in close connection to nature for hundreds of thousands of years, they have a natural affinity with nature. Being close to natural green space has been found to reduce stress and improve mental health (Maller et al. 2005). It is also evident that residents who live close to parks are more likely to use these spaces for exercise, contributing positively to their overall physical health and increasing their social interactions with others (Zhou & Rana 2012). In addition, Ulrich (1984) also found that patients in hospital with a view of nature outside their window recovered faster than those who had a view of a streetscape. These findings have important implications in terms of incorporating the provision of green space as key part in public health strategies (Maller et al. 2005). Therefore, planners within the state and local governments need to seriously consider the public health benefits that green space brings when planning for the predicted population rise.

While Melbourne is well endowed with many beautiful parks, reserves and tree-lined streets, access to these spaces is often very unevenly distributed across its suburbs. As Melbourne's population continues to increase, it is not only important to protect Melbourne’s existing greenery and open spaces, but it will also be important to provide new green spaces for an increasing population and ensure that it is evenly spread across the city. Yencken & Wilkinson (2000) highlight that green space within Melbourne is, in fact, “very unevenly spread, of varying quality and under constant threat of expropriation and development” (p. 124). As the health benefits of green space are becoming more recognized, the correlation between access to green space and income levels of residents is being investigated more thoroughly. While it is a fact that the price of housing is generally cheaper on the fringes of the city where space is more plentiful, green space in lower socio-economic neighbourhoods has been found to be of poorer quality than that in richer neighbourhoods. On the other hand, Astell-Burt et al. (2014) point out that the lack of green space does not always correlate to lower socio-economic groups due to the phenomenon of urban sprawl. It is also clear that access to quality green space tends to drive up the price of housing (Crompton 2005). This can be seen in Melbourne where house prices in leafy suburbs like Toorak and Brighton are much higher than those lacking access to quality parks and recreation facilities. The Victorian Planning Provisions state that local parks should be located within 400m safe walking distance to 95% of all dwellings (Astell-Burt et al. 2014), however these provisions do not provide clear guidelines for the actual quality of green space provided. Given that lower-socio economic households often shoulder the burden of unhealthy lifestyles, they have the most to gain from the provision of green space, therefore it is an issue of environmental justice. Astell-Burt et al. (2014) suggest that in order to address this inequality within cities, affirmative action on green space planning is necessary. For Melbourne, this could mean that more funding and effort be placed into lower socio-economic areas to ensure that not only is there ample access to green open space, but that this space is also well maintained at a useable quality.

An increase in higher density housing, especially in the CBD, can mean an increase in the number of residents without their own backyards, therefore provision of ample open space will become even more important into the future. The assumption is that most people living within these high-rise developments in the city centre are generally leading busy and stressful lives working on a daily basis. The evidence of mounting research confirms that viewing or being
within a natural environment has profoundly positive impacts on stress relief and mental health improvement, therefore it is desirable that these spaces are created to improve the health of these new urban dwellers (Zhou & Rana 2012). However, finding the space for greenery in the form of parks, gardens and sporting areas will be a huge challenge. Ideally, green space needs to be properly factored into development plans in order to maximise its potential, rather than simply being an afterthought. One solution being proposed by the RMIT Centre for Urban Research, which combines the necessary development of housing, infrastructure and nature, is the re-imagining of Fisherman’s Bend to the south of Melbourne CBD (Lucas 2015). Their re-imagining incorporates nature and green space into the fabric of the development in order to maximise the benefits which arise from people being in contact with nature on a daily basis. Not only would this proposal be aesthetically pleasing, but the use of a tidal park would mitigate the risks of flooding in the low lying area while also contributing to the biodiversity of plants and animals. Such a proposal recognises the importance of green space especially in built up urban environments and acknowledges its importance to residents’ health and well-being.

In an environment where the population is growing drastically but there is only a finite amount of land on which to house them, the competition for urban land is harsh. One potential solution to this problem can be the use of green infrastructure on buildings, such as green walls, facades and roofs. Williams, Raynor and Raynor (2010) have advocated the use of green roofs as a means to incorporate green space in built up urban environments. Given that a view of greenery can simply produce so many health and well-being benefits (Maller et al. 2005), green infrastructure could be a solution to harness these qualities. An increase in green infrastructure would not only provide extra green space, but could also improve the local environment by providing biodiversity habitat and reducing storm water flows (Williams, Raynor & Raynor 2010), in turn alleviating the impacts heavy rains might impose on the built environment. While green roofs can add to the amenity of a city, they also contribute to mitigating the effects of climate change and insulate buildings, reducing their energy usage. However, a study by Wilkinson and Reed (2009) found that approximately 75 per cent of the existing building stock surveyed in the CBD was unsuitable for a green roof retrofit. Therefore, while green roofs are possible on the remaining 25 per cent of building stock surveyed, more effort would need to be placed on ensuring that new buildings were designed in ways which incorporated green infrastructure in order to benefit Melbourne.

Another innovative idea which begins to catch on worldwide is the idea of turning roads into pedestrian spaces or parks. This idea is being realized in many cities, especially in Europe, including Madrid, Helsinki, Copenhagen and Hamburg (Peters 2015). Hamburg has plans to build a number of parks on top of the Autobahn, which runs through the city centre, in turn transforming the highway into a tunnel (Zimmer 2015). This aims to reconnect neighbourhoods in the city and to provide its citizens with green open space. The City of Yarra in Melbourne has also begun to transform a number of little-used roadways into green spaces for residents’ use in the form of ‘pocket parks’ (City of Yarra 2014). In addition to providing more green open space for Melbourne’s residents, this strategy will also discourage and reduce car-dependence in areas with adequate access to public transport and bike paths.

Melbourne could learn from many cities around the world which are implementing policies around the provision of green space and nature for their citizens. A city which has effectively done this is Singapore. Singapore has acknowledged the importance of open space and nature since the 1960s and is currently at the centre of their planning (Sustainable Singapore Blueprint 2015). They have managed to address their need to increase housing, transport infrastructure and commercial infrastructure while simultaneously
developing parkland, wetlands and open green space for the sake of their citizens. Singapore has a relatively large population compared to its small land mass, therefore prioritising land use is an important issue. In the recent Sustainable Singapore Blueprint (2015), they have committed to increasing their nature reserves and parkland to 9 per cent of their total land mass by 2030, while also committing to 200 hectares of sky rise greenery in the form of green roofs, walls and facades.

As Melbourne’s population continues to rise, it is faced with the challenge of finding adequate space for development to accommodate this population increase whilst also maintaining the city’s liveability. While development of extra housing is absolutely necessary, it needs to be planned thoughtfully in order to ensure that services and amenities, paying particular attention to green space, are adequate for the increasing population. Given the mounting evidence which highlights the enormous health benefits of green space, its provision in Melbourne’s neighbourhoods should be seen beyond a way of beautifying the city, but also as a strategy to improve public health. While Melbourne is currently quite well endowed with parks, care must be taken to ensure that these green spaces are protected and that access to green space is evenly distributed across the suburbs, with particular attention paid to lower socio-economic neighbourhoods. While this is going to be a huge challenge, Melbourne should look to other cities worldwide, such as Singapore, in order to learn from their strategies which appear to be working well.
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A Divided City: Social and Spatial Implications of Globalisation

Emmalene Gottwald

Population growth presents significant challenges for the strategic planning of cities. In Victoria, net overseas migration has been the strongest driver of recent population change. Melbourne’s population is projected to almost double from 4.4 million in 2014 to 7.8 million by 2051 and net overseas migration will account for about 60 per cent of annual population growth over the projection period (DELWP 2015; ABS 2011).

As cities become more connected to the global economy, population growth and urbanisation are driven by immigration that is essential to meet labour demands (Sanderson et al. 2015; Hugo 2004). Australian cities rank highly in the network of world cities, as significant providers of advanced producer services within the Asia Pacific Region and important links in the global economy (GaWC 2012). The influence of Sydney and Melbourne in the global economy is expected to continue to grow (Kearney 2015).

While economic reforms associated with globalisation provide benefits for cities, impacts include social polarisation and inequality. Mass migration associated with immigrant labour forces adds a new dimension to city composition, which presents huge challenges for urban planning (Smets & Salman 2008; Scott et al. 2001). This paper will discuss how international migration and social polarisation are consequences of the economic restructuring of world cities. It will then consider whether examples of new urban development that respond to population growth in China, North America and Europe contribute to social inequality and segregation. Finally, it will examine these challenges in the context of Melbourne and identify potential policy options to help manage social segregation.

Social impacts of globalisation

World cities are characterised by economic
restructuring, expansion of producer services and geographic diversification and intensification of capital and labour flows. Globalisation may bring economic growth benefits for a city, but social polarisation may result. The labour force becomes divided between highly paid elites and low-skilled workers employed to service the wealthy. The ‘informal’ sector grows, which offers the poor and migrants opportunities to improve their income – but little security. Inequality increases between and within cities and there is a rise in the welfare-dependent urban underclass and working poor (Sanderson et al. 2015; Gaffikin & Morrissey 2011; Smet & Salman 2008; Taylor 2004; Forrest, Poulsen & Johnston 2003; Scott et al. 2001).

A key consequence of globalisation is large-scale migration, which has become embedded into the economic and social structures of high-income countries. Migration increases as the gap between high and low-income countries widens and people seek a better quality of life. Immigration becomes essential to meet labour shortages in high-income countries, as low fertility rates and ageing populations cause the native workforce to shrink. Migrant labour is demanded at both ends of the skills spectrum, both as cheap labour and innovative entrepreneurs. However, segmentation of the labour market results in sectors that native workers reject because they are low-paying, low-status, offer little security or are ‘dirty, dangerous or difficult’. World cities become dependent on migrant workers who move into these sectors and dominate them over time (Sanderson et al. 2015; Hugo 2004; Scott et al. 2001).

Social networks influence the decision of migrants to move. Most move to locations where family or friends are already based, as sharing knowledge about housing, labour markets and local culture reduces uncertainty and risks and aids adjustment to living in the new city (Sanderson et al. 2015; Gaffikin & Morrissey 2011; Hugo 2004). However, migrants often live alongside, rather than among, the native population. Most migrants end up in disadvantaged urban areas where the poorer, native working-class traditionally lived. Traditional inhabitants move out or ethnic enclaves (‘ghettos’, ‘slums’, informal settlements) are created within the area. Informal trade also influences the agglomeration effect within neighbourhoods. At the other end of the spectrum, economic elites retreat into private, exclusive and undemocratic gated communities (Gaffikin & Morrissey 2011; Smet & Salman 2008; Zhang 2008; Forrest, Poulsen & Johnston 2003; Scott et al. 2001).

Immigration and population growth have spatial and structural implications for cities. Global networks of money, goods, people and ideas determine the economic, political, social and cultural dynamics of urban areas (Smet & Salman 2008). Rapid urbanisation and significant rural to urban migration are being experienced, which may increase informal development (Gaffikin & Morrissey 2011). City regions are becoming increasingly polycentric or multi-clustered agglomerations and urbanisation expands to peripheral and rural areas to meet housing demand. Coupled with increased population diversity, complex spatial mismatches occur in the location of jobs, housing, transport, infrastructure and services. Rapid expansion of the urban fringe often creates isolated peripheral areas where lower-income residents are required to travel extended time periods to work. This may impact the quality of life as well as the local environment (Scott et al. 2001).

Social segregation arises as areas are defined by socioeconomic or ethnic diversity. The distinction between disadvantaged and affluent areas creates a divided city, which may be inherently unstable and prone to conflicts (Madrazo & van Kempen 2012; Gaffikin & Morrissey 2011). The organisation and specialisation of land uses can further influence segregation, as urban spaces are zoned for different layers of the socio-economic hierarchy. The most vulnerable groups are often located within the least suitable places, where access to utilities, services and employment is limited.
Stigmatisation of particular neighbourhoods based on ethnicity can impede participation in society, result in exclusion and reinforce poverty, prejudices and inequalities. Support and cohesion within a community of family, friends or similar migrants may help to reduce the negative impacts. Segregation can also diminish over time as migrant workers improve their economic situation and gain access to more housing options (Vermeiren et al. 2016; Madrazo & van Kempen 2012; Smet & Salman 2008; Zhang 2008; Forrest, Poulsen & Johnston 2003).

Increased immigration often means greater competition for housing. The role of government regarding housing distribution is vital in determining patterns of segregation. Governments may prefer to focus on creating conditions for attracting and retaining essential high-income workers in economic sectors that stimulate growth (Musterd 2006). Urban planning and housing policies may perpetuate or change existing spatial patterns by influencing housing supply and location and curbing market forces. Policies that alter the composition or tenure of housing stock and limit the supply of affordable housing can exclude minorities. Market-oriented approaches can contribute to segregation by increasing expensive owner-occupier housing, promoting home ownership among middle and high-income groups and privatising or demolishing affordable housing to develop more expensive alternatives. Affordable housing options become limited to declining public housing or private housing in unattractive and unsatisfactory areas (Madrazo & van Kempen 2012; Nelson, Dawkins & Sanchez 2004).

Growth in immigration means that high-income countries will experience increased ethnic and cultural heterogeneity and cities may comprise some of the most culturally diverse urban agglomerations in history. This can give rise to the risk of explosive conflict, but also new opportunities for social mobility and social justice. Consequently, it becomes important to accommodate expanding migrant populations and develop effective ways of coping with increased diversity. Appropriate measures for social integration, housing and education must be provided to ensure that the productive role of migrant workers is supported and enhanced and potential conflicts are minimised or avoided. Otherwise, economic growth may result in inequality, social polarisation and worsening of living conditions (Gaffikin & Morrissey 2011; Smet & Salman 2008; Hugo 2004; Scott et al. 2001).

Overseas experience

The following section of this paper explores urban planning responses to population growth and diversity in China, North America and Europe.

China

Since the 1980’s, China has transitioned from a centrally planned to market-based system. Economic reform has induced mass rural to urban migration and cities are experiencing new social and spatial divisions (Zhao 2013). Chinese cities were once characterised by identical blocks of low-rise work-unit compounds comprising mixed neighbourhoods and low segregation. However, cities are now starting to demonstrate segregation patterns in a way similar to Western cities. A new urban form is emerging that includes spatial differentiation, concentration and a highly complex tenure mix. New types of small-scale residential areas co-exist in urban areas, but there is clear separation between wealthy and poor neighbourhoods. The introduction of a market-oriented housing system and urban redevelopment has led to significant urban restructuring and displacement of communities. Privatised housing is only accessible to high-income workers and urban villages become concentrated areas of poorer migrants (Madrazo & van Kempen 2012; Zhang 2008).

Guangzhou is one of China’s fastest growing and most open trading cities. This has resulted in significant and diverse foreign immigration to the city. Migrant workers have clustered in specific
neighbourhoods based on nationality and working location. Most of them rent housing from the native population. Ethnic enclaves are in early stages of formation in Guangzhou. Local informal trading practices have influenced formation of an African enclave, where people voluntarily congregate to enhance trading opportunities for their business at minimal cost. The availability of affordable housing and supportive services has supported ethnic clustering (Zhang 2008).

The presence of gated communities in Chinese cities is on the rise (Madrazo & van Kempen 2012). In Beijing, urban sprawl contributes to the division between rich and poor as well as natives and migrants. High-quality, low-density gated communities located in urban centres or suburban areas separate high-income groups from marginalised communities living in peripheral urban villages and inner-city migrant enclaves. Sprawling development leads to an uneven distribution of public services and infrastructure and reduced access for migrant residents of informal housing. Social segregation is the most obvious in Beijing’s highly diverse peri-urban areas.

Figures 1 and 2 show the increase in the proportion of middle and high-income population on Beijing’s urban fringe, particularly due to the rising development of gated communities. Gated communities have resulted in the fortification of suburbia and increased the degree of residential segregation in the city (Zhao 2013).

**Figure 1:** Proportion of low-income population in a local area (Source: Zhao 2013, pp. 580-581)

**Figure 2:** Proportion of middle and high-income population in a local area
North America

Between 2000 and 2008, racial and ethnic minorities constituted around 80 per cent of the population growth in American metropolitan areas. Racial segregation persists despite changes in the distribution of minorities within metropolitan and suburban areas. Recently, urban planning has been designed to include social mobility initiatives and induce mixed-income residents in both affluent areas and ghettos. Pittsburgh, Cleveland and Chicago are examples of where negative processes leading to suburbanisation and segregation have been mitigated through regeneration of real estate markets. However, within America racial and cultural division remains, as people exercise preferences for living in suburban neighbourhoods that offer cultural homogeneity (Gaffikin & Morrissey 2011).

In Los Angeles, urban structure has been influenced by fear of criminality, obsession with security systems and architectural social boundaries. Fortification separates the affluent from the poor in members-only residential enclaves, resulting in the destruction of accessible public space and services. The desires of the middle and high-class for increased spatial and social insulation transform public space into privatised areas within new gated communities (Smet & Salman 2008; Davis 1990).

Canada is also experiencing a rise in gated communities (see Figure 3). Generally, the affluent move to exclusive neighbourhoods that exacerbate segregation by class, interest, household type or age. Most gated communities are located in urban or suburban areas and marketed to upper-class adults or seniors. The gates function to secure homogeneity within a wider context of urban diversity, offering opportunities for people to come together in like-minded communities and allowing them to build social networks in a safe environment. From a planning perspective, they support principles such as compact urban form, amenity and safety, but present challenges for mixed-use development, affordable housing and physical and social connectivity of urban areas. Infill developments in poorer parts of the city become distinguished from existing urban areas by walls, which create unequal landscapes and impede the establishment of inclusive communities. Gated communities are generally not supported by planners, yet they are reluctant to apply policies that prevent them (Grant 2005; Grant 2004).

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<th>Province</th>
<th>Total gated projects</th>
<th>500 units or more</th>
<th>Projects with guards</th>
<th>Projects with video surveillance</th>
<th>‘Adult’ projects</th>
<th>‘Senior’ projects</th>
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Note: ‘Adult’ communities discourage children – some suggest 19+ years, others may say 25+. We have classified those that use the word ‘Seniors’ or have age limits over 40 as ‘Seniors’ projects.

Figure 3: Documented gated projects in Canada as at March 2004. (Source: Grant 2005, p. 293)
Europe

In European cities, levels of segregation and concentration of poverty are considered to be relatively moderate. Evidence suggests that the poor and middle-class are not that detached and they actually share urban space. However, separation does exist in the higher-class social groups – normally in cities regarded as having better quality of life for residents (Musterd 2006).

Sweden is an example of the successful use of social mix policies. The government aims to equalise living and housing conditions for its citizens. Social mix policies have been used to counteract residential segregation. This has impacted housing policy and helped avoid displacement effects and gentrification processes. Tenure mix objectives are used to provide housing opportunities in advantaged areas for disadvantaged residents and vice versa. This results in more even redistribution of the population rather than allowing the concentration of poor households in already resource-poor areas. However, the policy also has weaknesses related to lack of control and inefficient support systems. The transformation of cities can be slow, indirect and sometimes reversible. Ultimately, successful implementation depends on the willingness of communities to be mixed (Bergsten & Holmqvist 2013).

Population growth and diversity in Victoria and Melbourne

Australia is one of the most diverse countries globally (see Figure 4). While net overseas migration has fluctuated with national economic trends or shifts in government policy, it has been a consistently significant driver of population growth and change. This is particularly evident in Melbourne (Figures 5 and 6), which has attracted more overseas migrants than any other Australian city (Essential Economics 2013). Recently, immigration has changed with an increase in the total number of temporary movements associated with workers and students – estimated to be nearly 5 per cent of the population at the end of 2011 (Hugo 2013).

Figure 4: Settler arrivals to Australia by region of last residence, 1947-2011 (Source: Hugo 2013, p. 22)
The majority of Australia’s population live in capital cities. This trend has increased in parallel with increased immigration and population growth (Hugo 2013). In Victoria, population growth has created significant housing demand in interface areas already facing social and infrastructure challenges (Essential Economics 2013). While Figures 7 and 8 demonstrate ethnic clustering, the level of segregation in Melbourne is low compared with other cities in developed countries (Dowling, Atkinson & McGuirk 2010; Forrest, Poulsen & Johnston 2003). Most ethnic enclaves are considered to be temporary in nature and likely to decrease over time as migrant groups build social capital, improve income and access more housing options (Forrest, Poulsen & Johnston 2003, citing Jones 1997).

Master-planned residential estates are being increasingly utilised to meet housing needs of the growing population in Victoria, in a similar way to
Figure 7: Melbourne Language Map: Top non-English language by suburb (2011) (Source: https://craigbutt.cartodb.com/viz/97bd4396-08b5-11e4-9019-0edbca4b5057/public_map)

Figure 8: Where Australia's immigrants were born: Melbourne (2011) (Source: http://www.sbs.com.au/news/map/where-australias-immigrants-were-born-melbourne)
gated communities in North America and China. They range in type and size, but are generally large-scale, integrated housing developments located on the city fringe, constructed by a single developer and include physical and social infrastructure. While they are a cost-efficient way to meet increasing consumer demand, they can adversely impact on the public realm. Depending on design, location and institutional context, they can either foster social networks and contribute to inclusive and diverse communities or create exclusion and inequality (Dowling, Atkinson & McGuirk 2010; McGuirk & Dowling 2007).

Master-planned estates demonstrate a shift towards privatised governance of residential areas. They can be publicly driven, but not completely market-oriented. Local councils endorse master-plans as a way of achieving integrated and holistic development that meets local objectives. An estate’s characteristics will influence its exclusivity and potential for creating social homogeneity. The nature of public-private collaboration to plan and deliver these estates determines their form and connection to broader strategic objectives. The more privatised the development, the more exclusive and distant from the public realm. Location directly impacts on integration with the surrounding urban area and social and economic networks. Smaller developments are likely to target niche markets and increase the likelihood of homogeneous enclaves. Conversely, larger developments accommodating tenure mix are likely to result in greater household, lifestyle and cultural diversity (Dowling, Atkinson & McGuirk 2010; McGuirk & Dowling 2007).

There are concerns that the rise of master-planned estates risks the formation of homogeneous enclaves for high-income households, which would significantly impact urban sociability, social networks and spatial mobility. Marketing draws heavily on notions of community to appeal to exclusive and affluent clients, and this potentially reinforces traditional notions of homogeneous, close-knit neighbourhoods. However, contrary to the experience in North America, evidence that their popularity is driven by desire for security and social exclusion is largely anecdotal. In some cases, estates are occupied by lower-income groups. Residents desire the social distinction, status, aesthetic uniformity, order and control associated with master-planned estates. However, the extent to which these factors are connected to segregation patterns requires further research (Dowling, Atkinson & McGuirk 2010).

Policy options to counter segregation

Growing social inequality is one of the main challenges for the 21st century. As an expanding world city that is becoming more influential in the global economy, Melbourne is at risk of becoming a divided city. While further research is required to establish the existence and extent of social segregation in Melbourne, long-term, proactive and coherent planning options should be adopted to avoid this occurring. Policies that induce gentrification will cause displacement of the urban poor, therefore, are not sustainable. Planners should be prepared to walk the streets to observe communities and ensure that methods developed will work. The utilisation of modelling that simulates urban growth and enables scenario planning can help predict urban transformation and potential segregation impacts (Vermeiren et al. 2016; Gaffikin & Morrissey 2011).

Countering social segregation is about providing equal opportunities and access as well as achieving social cohesion. Urban governance should involve participatory decision-making, co-production and co-management involving actors from government, community, sectors and the media (Smet & Salman 2008). The division needs to be transformed with receptive approaches that increase engagement, empathy and reciprocity across communities (Gaffikin & Morrissey 2011).

Social mix policies can be used to tackle disadvantages by incorporating mixed communities, social balance and tenure-mixed
neighbourhoods. They aim to improve living conditions in disadvantaged neighbourhoods, achieve stability, equal opportunities, access to networks, as well as foster neighbourhood inclusion, participation and empowerment. This is largely achieved by creating a tenure mix, where all housing options are open to both rich and poor. Provision of new housing and area-based regeneration is central to the policy, which may be implemented through affordable housing programs or local planning policies. Ongoing implementation is action-oriented, interactive and multi-purpose, but not without challenges. If poorly applied, policies can simply promote gentrification and displacement effects as well as create new conflicts, stigmatisation and weakening of social networks. Further, it can be difficult to get developers interested in taking on projects in unattractive peri-urban areas (Bricolli & Cucca 2016; Gaffikin & Morrissey 2011; Bergsten & Holmqvist 2013; Smet & Salman 2008).

Design and the urban form of the city will be important. In addition to ethnic and religious diversity, urban design should also consider how creating and accepting difference can foster a sense of belonging to a community. Planners can act as translators and mediators between potential spheres of conflict. Accounting for ethnicity and particular local and cultural characteristics can promote fair and integrated cities (Aharon-Gutman 2014; Smet & Salman 2008). Public spaces are crucial as they provide opportunities for different people to come together to interact and participate in the community. Creative and inclusive planning and design of public spaces will benefit social cohesion (Gaffikin & Morrissey 2011).

Containing urban sprawl may also help reduce segregation by limiting the options for retrofitting to homogeneous neighbourhoods and encouraging mixed-use areas. Urban containment can be achieved through policies designed to limit development outside an urban growth boundary, encourage infill development, stimulate affordable housing, apply mixed-use and high-density zoning, monitor land supply and provide redevelopment incentives (Zhao 2013; Nelson, Dawkins & Sanchez 2004). It is unlikely that gated communities will disappear, but neighbourhoods can be designed to provide safety benefits while maintaining urban connectivity (Grant 2004).

**Conclusion**

World cities have emerged as critically important for the functioning of the global economy. However, the social and spatial implications associated with economic restructuring and consequent urban growth present significant challenges for strategic planning. Traditional planning and policies are insufficient to meet these challenges. New, creative ways of thinking and planning processes are essential to harness benefits and mitigate negative effects. This will be particularly pertinent for adapting to increasing social mobility and embracing cultural diversity in urban areas (Scott et al. 2001).

Cities have experienced urban and social division for decades. Division arises from differences in income, status and power, as well as ethnicity, gender, religion, culture and sexual preference (Gaffikin & Morrissey 2011). However, a city can distinguish itself by how it responds to such differences. Urban development in China and North America, including gated communities, has exacerbated segregation in cities with high numbers of migrants or ethnic minorities. On the other hand, the use of social mix policies in Europe has provided greater balance and equality among rich and poor inhabitants.

Melbourne’s influence in the global economy is increasing. As immigration significantly contributes to population growth, Melbourne is at risk of fostering social polarisation and creating a divided city if focus is solely placed on economic benefits. However, these risks can be reduced if Melbourne embraces the increasing cultural diversity and adopts policies designed to ensure social mix, inclusive and open public spaces and urban containment.
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Examining the stormwater management system in a sustainable Melbourne

Mick Kannegiesser

In this essay I examine the question: what does stormwater management look like in a sustainable Melbourne? After briefly touching upon stormwater and drainage, and sustainable Melbourne, I outline current stormwater management practices as well as how to achieve the sustainability they need to restore the hydrography they disrupt. I outline a solution, a distributed stormwater system that disconnects urban impervious surfaces from the piped stormwater system, delivering multiple benefits including flood reduction and sustainable outcomes, but facing many challenges including retrofitting existing suburbs. I outline a way forward, with different paths open for greenfield and brownfield sites on the one hand, and retrofitting existing houses in established suburbs on the other.

Stormwater is ‘water directly resulting from rainfall’ on the surface of land (Healthy Waterways Strategy 2013), and is drained from impervious surfaces on properties and streets to Melbourne’s stormwater drainage system. This drainage system comprises street drainage and council drains, regional drains owned by Melbourne Water, rivers and streams, and it all ends up in Port Phillip Bay or the ocean (Stormwater Harvesting - Guidelines for Stormwater Harvesting Year unknown). The amount of water drained (500 GL to 600 GL per annum) (Melbourne’s Stormwater Runoff 2016; Stormwater Harvesting - Guidelines for Stormwater Harvesting Year unknown) is more than the 400 GL of potable water Melbourne used in 2014/15 (Water Use Data 2016).

This stormwater drainage system is part of the large, centralised urban water system which follows the paradigm of separate supply, stormwater drainage, and sewerage, and faces the pressures of increasing population, threats to ecological systems, and climate change (Bettini et al. 2012). Increasing population
will lead to increased urbanisation, whether a denser urban form or a larger city, with an increase in impervious surface area and greater demands upon infrastructure. This increased urbanisation threatens Melbourne’s remaining natural ecological systems such as streams and remanent vegetation. Climate change, with an increased frequency of extreme events, will also place greater demands upon stormwater infrastructure.

In the context of Melbourne, what is sustainable? Its ecosystems are sustainable if the use of their resources (renewable, non-renewable and the ability to absorb pollution) can continue indefinitely (Goodland 1995) while maintaining the diversity of the ecosystems themselves (Chapin, Torn & Tateno 1996). The city itself can be viewed as sustainable if all components display intergenerational, intragenerational, geographical, procedural, and interspecies equity in their operation (Haughton 1999). Low, Gleeson, Green and Radovic (2012) argue that any view of city sustainability needs to consider both the threat of carbon pollution in the atmosphere, and biosphere issues such as biodiversity and the biosphere’s continuing existence. I argue that a sustainable Melbourne must address both global sustainability by ceasing carbon pollution, and local sustainability by protecting, if not enhancing the local biosphere.

The global financial crisis and the related recession in much of the world has led to structural changes with the prospect of long-term, stalled growth, if not economic contraction. Priorities are likely to shift from sustainability to growth and development, and funds will not be available for sustainable issues (Raco & Flint 2012). Should this economic situation finally catch up with Australia and Melbourne particularly, it will present big challenges to the concept of sustainability outlined above: short-term economic needs will challenge the more abstract needs of the biosphere and future generations; thoughts may move toward resilient sustainability, trying to maintain current conditions; and the broad definition of sustainability, incorporating equity and global and biosphere issues, may be challenged by a focus on the local and on job creation (Raco & Flint op cit.). This would have implications for any proposed changes to stormwater management in Melbourne.

In common with the rest of the developed world, once water supply is secured, the primary water problem in urban Melbourne has been stormwater runoff and flood prevention. The traditional treatment of this problem has been a ‘drainage-efficiency’ model, aiming to pipe stormwater from impervious surfaces quickly and efficiently (Burns et al. 2012). This practice has resulted in the ecological destruction of Melbourne’s streams (Walsh, CJ, Fletcher & Ladson 2005), with imperviousness levels as low as 5 per cent total imperviousness or 3 per cent effective imperviousness (impervious areas piped to stormwater drainage), resulting in significant degradation (Vietz et al. 2016; Walsh, C, Fletcher & Burns 2012).

As pollutant loads in stormwater were listed as a key threat to Port Phillip Bay (Harris 1996), both Melbourne Water and councils acted to decrease pollutant loads and peak flows in the stormwater drainage system via stormwater control or water sensitive urban design (WSUD) treatments such as constructed wetlands, pollution traps, biofiltration and vegetated swales (Burns et al. op cit.). Adding the goals of reducing pollutants and peak flows to the primary goal of flood prevention saw Melbourne’s stormwater drainage system begin to evolve from the drainage-efficiency model toward a ‘load-protection’ model, that the health of the Yarra River improve from ‘very poor’ to almost ‘fair’, and that Port Phillip Bay improve from barely ‘good’ to regularly ‘very good’ (State Government of Victoria 2014a, 2014b).

However, this work on the stormwater drainage system is mostly large treatments (Healthy Waterways Strategy 2013; Stormwater Strategy 2013; Burns et al. op cit.) located ‘at end-of-pipe’ (Burns et al. op cit.) and technology
based, relying upon wetlands, and biofilters and raingardens on public land (Healthy Waterways Strategy 2013; Stormwater Strategy 2013; Draft Darebin City Council Whole of Water Cycle Management Strategy 2015-2015 2014; Burns et al. op cit.). This approach does little to improve Melbourne’s urban streams and their ecosystems. In Melbourne’s four main catchments, a very low proportion of streams are in good condition: Werribee 10 per cent; Maribyrnong 0 per cent; Yarra 12 per cent and Bunyip 2 per cent (Victoria: State of the environment 2013).

Thus current load-protection model of stormwater management, with the current WSUD measures in place, is not unsustainable. Most urban stream ecosystems cannot cope with the load put upon them, making them unsustainable ecosystems, and renders Melbourne an unsustainable city on intergenerational and interspecies equity grounds.

In order to offer a solution to the question of what a more sustainable stormwater system might look like, it is worth examining the causes and effects of the current practices upon Melbourne’s urban streams.

Piping stormwater from impervious surfaces disrupts the natural movement of water (hydrology). Firstly, the frequency and size of flows into streams has increased (Fletcher, Andrieu & Hamel 2012; Walsh, CJ, Fletcher & Ladson 2005), as a result, even a small rain event generates a sizeable flow for a short time, and annual flows are three times that in a forested (pre-urban) catchment (Burns et al. op cit.). Secondly, the practice starves streams of baseflows by drastically reducing infiltration to groundwater (Burns et al. op cit.; Fletcher et al. op cit.; Walsh et al. 2005 op cit.), reducing baseflows to a fraction of what they would be naturally, and in summer they are reduced to nothing (Burns et al. op cit.). Furthermore, urbanisation creates pollutants, and the more voluminous stormwater runoff transports this pollution (Burns et al. op cit.; Fletcher et al. op cit.; Walsh et al. 2005 op cit.). The common feature of these causes of degradation is excess stormwater runoff (Burns et al. op cit.; Fletcher et al. op cit.; Vietz et al. op cit.; Walsh et al. 2005 op cit.).

The result is that stream ecosystems are severely degraded in many ways. The volume of flows creates the scouring of stream beds, erosion and the incision of channels, dislocating them from their floodplain, resulting in a mutual loss of ecological services. The frequent flows transport pollutants and fine sediment to the streams, and disrupt plant and animal life. The low baseflows create water scarcity. Impervious surfaces and the installation of pipes create a loss of coarse sediment, needed as habitat. In various combinations, these factors lead to: high algae levels and poor quality water; simplified habitat, with low biotic life levels and biodiversity loss and the loss of ecosystem services valued by humans, including mitigation of flood, recreation value and visual amenity. (Burns et al. op cit.; Dhakal & Chevalier 2016; Fletcher et al. op cit.; Vietz et al. op cit.; Walsh et al. 2005 op cit.).

The current WSUD approach is flawed in relation to streams. The major stormwater control measure used, wetlands, does decrease pollutant loads and peak flows, but is otherwise very similar to traditional pipes in terms of total flows to downstream waterways, and the second major stormwater control measure, biofilters (in the test case a biofilter with an with underdrain), provides clean water but even greater flow volumes (Burns et al. op cit.). Wetlands protect nothing upstream and still allow eroding flows downstream; while placing wetlands upstream disrupts stream connectivity and the biosystem; and slowing the exit of water from wetlands to create less erosion would require more storage space than Melbourne has available (Burns et al. op cit.).

Any approach adopted must address the dominant, catchment-wide force that is excess stormwater, by making catchment-wide change (Vietz et al. op cit.; Walsh et al. 2005...
op cit.), lessening the frequency of stormwater flow through the pipe system, providing sufficient baseflow for streams via infiltration to groundwater and stopping most stormwater from reaching the pipes (Burns et al. op cit.). Typical site-scale actions such as the existing WSUD measures or measures to improve stream habitat do not address this excess stormwater, but tackling it at the source, decreasing the amount of impervious area or disconnecting the impervious area from the stormwater drainage system would do so (Vietz et al. op cit.; Walsh et al. 2005 op cit.). Reducing the total impervious area is unlikely in urban Melbourne (Walsh et al. 2005 op cit.), though repaving with porous materials is possible. Instead, disconnecting impervious areas from the stormwater drainage system is likely to be a practical solution (Walsh et al. 2005 op cit.), and is best tackled via small, distributed control measures, with a focus upon restoring the natural hydrology via infiltration to groundwater and harvesting for reuse (Vietz et al. op cit.; Walsh et al. 2005 op cit.). Such an approach would evolve Melbourne’s current stormwater management from somewhere between a flood-protection model and a load-protection model to a ‘flow-regime’ model, aiming for flood mitigation and minimum peak and pollutant flows to the Yarra River and Port Phillip Bay, achieving these ends better by stopping most stormwater at its source, and introducing sustainability into stormwater management (Burns et al.; Vietz et al. op cit.).

A good starting point for tackling excess stormwater and the sustainability of urban streams is to see what a sustainable suburb might be. Such a suburb should: 

Minimise the use of resources: … (including) … water … All housing should seek to become self-sufficient … whether the “self” is the house, the neighbourhood or the whole city district. The era of the … grid is passing. (Radovic et al. 2012 p.70)

Despite the reference to the electricity grid, the statement also applies to the water supply system and the stormwater system, becoming self-sufficient in both, and applies equally to new neighbourhoods, or refurbishing or refitting the old.

One approach is to incorporate natural hydrology into the design of the city’s urban landscape. The City of Hanover has done so with their ‘city as garden’ approach, making water ecology a key component of urban form, believing that an ecologically sound and socially inclusive neighbourhood generates the stability and security necessary for neighbourhood economic wellbeing. They also view the landscape as an educator, stating that citizens value water more by seeing the water cycle, water’s role, and the beauty water creates; and that technicians and bureaucrats from elsewhere can be educated. (Radovic et al. op cit.).

A combination of the philosophy of the sustainable suburb and the ‘city as garden’ approach is proposed by Adams (2009). As part of a proposal to accommodate extra housing by building high-density mixed-use accommodation along tram and bus corridors, Melbourne’s suburbs would become ‘green’ and productive wedges to enhance the city and introduce sustainability, collecting and purifying stormwater, and reusing it (in part) for backyard food production. Neighbourhood parks and gardens would have regional sewer mines to treat and reuse waste. This regional approach could also be applied to stormwater, with regional aquifers under parks and gardens, especially in areas where infiltration might be difficult. This proposal introduces sustainability on several levels, not just regarding stormwater. Less potable water would be consumed and a new water source would be created. There would be sustainable production of some food. There would be less carbon pollution as less energy would be used in transporting food and water to residents. Such an approach also frees up existing infrastructure, possibly removing the need for new infrastructure as a denser city develops. A regional aquifer has been implemented in Västra Hamnen (Sweden), where an underground aquifer supplies the suburb with both water and heat for energy.
production (Radovic et al. 2012, p. 60).

At a smaller scale, greenfield development and brownfield urban renewal standards can be set (Vietz, GJ et al. op cit.). Currently clause 56:07-4 of the Victorian Planning Provisions requires new residential subdivisions to keep stormwater discharge equal to that before development, though developers can instead contribute an ‘additional treatment’ offset (Darebin Planning Scheme 2016; Roy et al. 2008). Also, developers are expected to include WSUD in public places and streets, and slow runoff (Darebin Planning Scheme 2016). This regulation partially addresses the problem of excess stormwater, but retains a load-reduction focus and allows offset payments. A more complete addressing of the problem would couch the regulation in terms of restoring natural hydrology (allowing flexible solutions) and allowing no offsets.

Every dwelling could install water tanks (2,500l of tank for every 100m² of roof) and use them for regular needs such as toilet flushing, irrigation, clothes and car washing, and perhaps showering and other non-eating and non-drinking needs. Any overflow could go to a biofiltration system (such as a vegetated infiltration pit) that would process the water via infiltration to groundwater and some evapotranspiration, with overflow from the biofiltration system to the stormwater drainage system in only the heaviest rain falls. This system would work for detached housing, and has even greater potential (per person) in suburban multi-storey residential. (Burns et al. op cit.).

Without demand to export water, large industrial and commercial sites have less potential (Burns et al. op cit.). If established suburbs were retrofitted with a second water supply line for recycled water (alongside the potted water supply pipe), the second pipe could be treated like the electricity system deals with distributed electricity generation: recycled water could enter the second pipe from various sources, such as industrial and commercial sites, neighbourhood or regional aquifers, and any system-scale sources of recycled water.

Even without regional aquifers or a second, recycled water pipe, focussing on individual residences across a catchment and disconnecting impervious surfaces and dealing with stormwater on site, would still change the practice of stormwater discharge to a flow-regime model. Excess stormwater flows would greatly reduce, and the natural hydrology would be restored, returning baseflows to streams, reducing flood risk and pollution, and providing harvested water for reuse. The reduction in the use of the stormwater system means that there would be no need for extra capacity as the population increased. The distributed nature of the new system and the lesser burden upon the piped system would make the whole stormwater management system more adaptable and more resilient if more frequent extreme weather events occurred due to climate change.

Two challenges limiting progress to date have been a misapplication of effort and maintenance issues. Major work has been undertaken by Melbourne Water on their own projects and encouraging councils to implement WSUD measures, and Melbourne Water has made an immense effort at capacity building (such as the Clearwater program) and research partnerships, trying to raise skills and resources in councils and the industry (Healthy Waterways Strategy 2013; Stormwater Strategy 2013; Waterways Local Update 2014-15 Darebin 2015; Burns et al. op cit.). However, most of the projects are end-of-pipe (Roy et al. op cit.) focussing on load-protection for Port Phillip Bay and the Yarra River. Even a council with the environmental reputation of the Maribyrnong City Council believes that they still lack capacity and will not undertake any new WSUD projects due to issues with maintenance and related costs (Submission to the EPA Inquiry - 30 October 2015 2015; Open space management in local government 2016).

Further challenges include (Healthy Waterways Strategy 2013; Stormwater Strategy 2013; Submission to the EPA Inquiry - 30
October 2015; Morison & Brown 2011; Roy et al. op cit.; Vietz et al. op cit.): 

- fragmented responsibility, with individual landowners, councils and Melbourne Water all responsible for different stages of the stormwater system and a resultant lack of integration (vertically, functionally and spatially);
- a lack of political engagement on the part of both politicians and the public;
- institutions suffering from inertia, internal fragmentation, a lack of capacity (funding, skills and a lack of experience facilitating integration), and internal power issues (technical knowledge needs and decision-making/policy-making, and the knowledge/power relationship);
- institutional frameworks favoring the status quo and viewing the new as a ‘risk’, along with the question of who bears risk?;
- a top-down, technocratic relationship model, technocrats lacking connection with the community, a general lack of community involvement, and a lack of experience facilitating community involvement;
- perceptions of cost, uncertainty regarding performance, ongoing maintenance costs, and the opportunity costs of land used for stormwater measures;
- the ownership of groundwater;
- funding based upon location and the size of funds tends to suit site-scale rather than catchment-scale, and a lack of market incentives;
- if landowners become contributors to a distributed stormwater system, they will want more say, so governance will become an issue.

The final challenge is that the uptake of WSUD features in existing suburbs is very low. If the survey of 136 dwellings is a fair portrayal of the suburb of Reservoir, then 12.5 per cent have a water tank, and 0.7 per cent have any other WSUD measure (one infiltration strip) (Kannegiesser 2016). Using two years data, 1.1 per cent per year undertook a sub-division or rebuild or major renovation, so any program of change relying upon the natural rate of renewal would take about 88 years, given a 3 per cent effective imperviousness will still degrade streams.

In the face of such extensive challenges, achieving a sustainable distributed stormwater system that returns water to groundwater and minimises flows through the piped stormwater system, is a battle fought on many fronts.

The proposed system addresses the misapplication of effort by focussing on the real source of the problem, excess stormwater. Maintenance and ongoing cost issues can be addressed by more work like the recent collaborative research into a water sensitive urban design system with negligible ongoing maintenance implications (Manningham City Council 2015).

Greenfield and brownfield developments can be dealt with via revised regulation as discussed.

The biggest issue is retrofitting existing housing in established suburbs, and solving the problem will require a multi-pronged strategy. A first step would be to harness a landowner response similar to that which has driven the rise of distributed power generation (primarily via solar photovoltaic panels). An important step would be to introduce market incentives to induce landowners to disconnect from the stormwater system. A stormwater discharge fee based upon volume discharged, set high enough to largely fund a rebate scheme for defined WSUD measures, acts as both a penalty and incentive, and disabuses the notion that stormwater discharge is ‘free’.

The building of solar-photovoltaic-panel-like mass momentum would be encouraged by social marketing tackling issues of maintenance and cost, and conveying new meanings about
stormwater, pitching it as saving the environment, saving money, creating new water supplies, and meeting needs (toilets, laundry, etc.).

Such a campaign would focus upon simple, low- or no-maintenance measures such as a water tank with a properly designed biofiltration overflow pit and final overflow to the piped system.

All the above would aim to change cultural expectation of disposing stormwater ‘cheap and easy’ into public responsibility, to an expectation of: collective responsibility for sustainability with a personal contribution by infiltrating stormwater to groundwater and utilising harvested water; and doing so with a reliable, low-cost, low-maintenance setup.

Another key aim would be better integration from local landowners up through councils and Melbourne Water to the State Government and its instrumentalities. This integration would be enhanced by facilitating genuine community participation in planning and implementation, and would involve searching for solutions with multiple benefits, with re-establishing natural hydrology and flood mitigation always the key. Other solutions to aim for include: harvesting and using water, creating a more liveable urban environment, visual amenity, creating habitat, creating recreation space, and reducing pollution.

The slow rate of renewal in the suburbs limits the value of regulation. But introducing catchment-scale issues and WSUD responsibilities to planning decisions or building regulations would provide a background justification for the other measures.

Cost is always an issue, and may explain much of the council-level institutional paralysis (Submission to the EPA Inquiry - 30 October 2015). A distributed system would see landowners carrying most of the cost, and the market incentives and campaigns would encourage them to do so, as they have done with in-home solar electricity generation. There would not need to be a massive sourcing of funds, particularly relevant if economic conditions do turn downward. And inaccurate perceptions about cost could be addressed by more studies of cost and benefit.

Capacity building would focus upon organisations using multi-disciplinary teams to broaden their view and achieve better results, changing their own culture and overcoming resistance to change, and adjusting to a new relationship with landowners. Evolving processes that give landowners more say in decisions would also contribute to increasing landowner participation.

If tougher economic times did result in a focus on economic needs, maintaining current conditions, or the ‘local’ and job creation, the program outlined can adapt. It could campaign for continuation on the grounds that: it was stimulating the economy and providing jobs; it was addressing local sustainability as current ecological conditions are very poor; addressing the problem will also improve aspects humans value such as flood mitigation, amenity and recreation.

In conclusion, despite good intentions, Melbourne’s stormwater management is not sustainable, as excess stormwater is destroying urban streams. Something close to the natural hydrology needs to be restored, disconnecting impervious surfaces from the piped stormwater system and infiltrating water to groundwater to restore baseflows to streams, and harvesting water for reuse. The biggest task in this project is retrofitting existing housing in established suburbs, but this could be done with a co-ordinated program.
Internationally, cities are facing unparalleled levels of evolving risk and vulnerability stemming from the forces of climate change (Jabareen 2015). The convergence of climate change and urbanisation threatens to impose unprecedented negative impacts upon the quality of life as well as economic and social stability (UN Habitat 2011). In 2007, the Intergovernmental Panel on Climate Change (IPCC) stated that the world’s climate was changing, and “that due to the inertia in the global climate system, it will not be possible to avoid all impacts even with the most drastic greenhouse gas emissions reductions” (Funfgeld et al. 2013). It was therefore suggested that we adapt.

This essay argues that Melbourne’s current urban form does not hold within its capacity the ability to adapt to climate change, and consequently must increase its adaptive capacity. The essay will be divided into four parts, using theoretical and conceptual positions to analyse Melbourne’s urban form and the city’s adaptive capacity.

The essay starts with a discussion of climate change, adaptive capacity and sustainability, followed by an introduction of the Extended Metabolism Model. The third section examines the concept of urban forms and liveability, creating a platform to apply the aforementioned conceptual framework to examine Melbourne’s urban form. This will be achieved through a comparative analysis of Melbourne and Stockholm.

**Climate Change, Adaptive Capacity and Sustainability**

Urbanisation, and subsequently, the urban form, has become the dominant geographical context for life on earth (Worldwatch Institute 2007). Cities have become an ecological phenomenon of the 21st century, given that the
The majority of the global population now resides in cities (While et al. 2013). The emergence of climate change presents a legitimate threat to the socio-ecological sustainability of the planet and consequently, to cities (While et al. 2013). While cities significantly contribute to the devastation of climate change, they simultaneously are heavily vulnerable to the effects of climate change (UN Habitat 2011). Therefore, cities play a pivotal role in terms of adapting and mitigating climate change (Otto Zimmermann & Balbo 2011).

Climate change adaptation has been defined as the “adjustments in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. It refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change” (Smit & Pilifosova 2013). Climate change adaptation involves the minimisation of vulnerability. The importance of adaptation is twofold. Firstly, it allows for the assessment of climate change impacts, and secondly, it allows for the development of necessary responses (Smit & Pilifosova 2013). Within this context, the adaptive capacity is the “potential or the ability of a system, region, or community to adapt to the effects or impacts of climate change” (Smit & Pilifosova 2013).

Regional and local efforts are needed for the necessary management of climate change responses (Hoffmann 2011). The smaller scale efforts can be specifically tailored to the local conditions of a city to produce effective progress towards adaptation, thus reducing vulnerability (Hoffmann 2011). The OECD Cities and Climate Change report (2014) argues that longterm strategic planning is needed to achieve such endeavours; however, these adaptation efforts are undermined by the fact that adaptation costs initially accrue an upfront cost whilst the outcomes cannot be felt immediately. This negatively affects a city’s capacity to undertake adaptive measures. Notwithstanding, conceptual frameworks have emerged as a blueprint for cities to undertake sustainability measures. These discourses are portrayed as a guide for adaptation planning processes in order to assist local government planners in addressing the impacts of climate change (Otto Zimmermann & Balbo 2011).

Extended Metabolism Model

The Extended Metabolism Model is the framework established to help in the climate change adaptation and sustainability discourse for cities. Within this model, cities are “conceived as a dynamic and complex ecosystem...the social, economic and cultural systems cannot escape the rules of abiotic and biotic nature. Guidelines will have to be geared to these rules” (Tjallingii 1995). Within this context, cities are alive. The city is conceptualised as an ecosystem with inputs, processes and outputs. Environmental problems are related to the increasing growth of ‘inputs’ and consequently, the unavoidable increase of ‘outputs’. Newman & Kenworthy (1999) argue that:

“By looking at the city as a whole and by analysing the pathways along which energy, materials and pollution move, it is possible to begin to conceive the management of systems and technologies that allow for the integration of natural processes, increasing the efficiency of resource use, the recycling of wastes as valuable materials and [even] the conservation of energy” (pg. 7)

Each city has individual traits that reflect its cultural and socioeconomic contexts. These contexts, in conjunction with city infrastructure, expose the city’s relationship with nature, specifically how the city consumes and exchanges inputs, outputs and energy (Ferrao & Fernandez 2013). This is considered to be the city’s metabolism (Kennedy et al. 2007). Cities are characterised as linear reactors: city metabolism consists of exhausting materials and goods (Ferrao & Fernandez 2013). These materials and goods are used for the construction of buildings, technical infrastructures, communications, mobilities, and wastes. According to Kennedy...
(2007), the metabolism of a city can be measured by the flow of water, materials, energy and nutrients. Different cities have different metabolisms, thus planners must understand the metabolism of their city to instigate change. Understanding the metabolism of a city can facilitate sustainability measures and adaptive capacities to be increased and intensified. The Extended Metabolism model can be applied to a city’s urban form in order to enhance its resilience.

Urban Forms and Liveability

The concept of urban form typically refers to the physical layout and design of a city (Dempsey et al. 2010). Urban form is an amalgamation of urban elements, inclusive of built environment, building architecture, population densities, subdivision patterns, public and private spaces, land use types, transport infrastructures and land use mixes (Dempsey et al. 2010).

Urban forms are individual and unique, much like the aforementioned city metabolisms, as they become relative to function, locality, climate and social identity (Basiago 1996). The urban form evolves in response to different stressors such as the progression of planning and housing policies; transport policies; environmental and social developments (Basiago 1996). Likewise, the physical form of a city can also expose a city’s consumption (Anderson 1996). The form can reflect energy demands, greenhouse gas emissions and efficiency of a city (Pisarski 1991). Urban forms can be manipulated to modify a city’s functionality (Jenks & Jones 2010). The manipulation of land (by land uses and forms) can impact upon social, economic and environmental developments (Jenks & Jones 2010). A city’s urban form can insure its prosperity or render it into completely devastating circumstances (Galster 2012). Urban form is conceived not only as the spatial organisation of a city, but it is also recognised for the way it influences everyday life. Urban forms create urban flows, which are constantly evolving. Sorensen and Okata (2011) argue that because “urban forms shape urban flows” and its subsequent processes, it becomes “a powerful determinant of urban quality of life, efficiency, health and liveability” (pg. 398).

The liveability aspect of a city is strongly connected to its urban form. Urban forms shape the values held by the populous, which extend to the shape and amenities within a region (Marans & Stimson 2011). Mulligan et al (2004) argue that the liveability of a city strongly correlates to the satisfaction received from surrounding physical conditions. Within this context, conditions are determined by the built environment and can affect the behaviour of individuals, groups and businesses. As such, there can be a set of criteria for assessing the liveability of a city (Marans & Stimson 2011). These criteria usually involve transportation infrastructure, building performance and infrastructure, urban forms (i.e. high rises, medium density buildings), urban densities, green spaces and access to amenities (Marans & Stimson 2011). Furthermore, it can be argued that a change in the conditions of a city can trigger a change in the behaviour of its residents, therefore, transforming the built environment into one that is adaptive and sustainable and one that can generate sustainable behaviours from its population (Smith 1998). As previously mentioned, the extended metabolism model complements this notion by providing a framework needed to understand where sustainability measures can be incorporated within the urban form of a city. As such, change in the sustainability of a city increases its adaptive capacity.

Melbourne and Stockholm a comparative analysis in urban form

By looking at the urban form of a city, it is possible to locate its lack of adaptive measures to tackle climate change. The Rio Declaration of 1992 provides an exceptional insight into the development of these urban forms. Following the Rio Summit and the installation of Agenda 21, Sweden had a marked stance that “a good
environment is a prerequisite for economic growth", and as such pursued effective measures for sustainable development (Low et al. 2000). During the Rio Summit, Australia presented itself as one of the more progressive advocates of sustainable development. However, the country had completely regressed on its stance during the Third Conference of the Parties in 1997. Australia refused to accept the binding greenhouse gas emission reduction targets and instead contended for an increase in emissions by 18 per cent. The integration of sustainability measures became a stance of “not [being] in the national interest”, thus perpetuating the government’s brown agenda (Low et al. 2000; Christoff 1998). The following section of the essay will analyse Melbourne and Stockholm’s urban forms in a comparative analysis. This section focuses mainly on the physical form of the cities due to a lack of available resources.

**Melbourne**

Melbourne is essentially a decentralised city. Melbourne’s urban form is defined by its dense inner suburbs and sparse outer suburbs (Davidson 2006; Buxton et al. 2007). Inner and middle ring suburbs are shaped by conventional consolidation and multinodal developments, whilst the outer suburbs are shaped by a dispersed sprawl (Buxton and Scheurer 2005). Melbourne’s dispersal of housing is typical of Australian urban settlements (O’Connor 2004). The urban forms of inner and outer suburbs also differ significantly (Buxton et al. 2007).

The inner suburbs of Melbourne were formed in the 19th century. They are characterized by attached housing at gross residential densities of between 21 and 42 dwellings per hectare. The inner suburbs feature mixed land uses, access to public transport and large numbers of multiunit dwellings (Buxton et al. 2007). In contrast, a combination of readily available land, state funded train and tram networks and policy objectives to support detached house ownership shaped Melbourne’s low density outer suburbs (Dingle 1984; Sandercock 1975; Paris 1993). The outer suburbs of Melbourne are distinguished by average gross residential densities of between 7 and 10 dwellings per hectare. These suburbs feature detached housing, single use land segregation, low street connectivity and high car use (Buxton et al. 2007).

Furthermore, it is argued that Melbourne’s urban form increases social exclusion. Housing affordability is reduced in the inner and middle rings, pushing lower income holders to move to the outer fringe of the city where there is less access to amenities, services and employment opportunities (Berry & Dalton 2004). Likewise, the push to the outer suburbs is also seen as a cause of increased car dependency, as the majority of residents must commute to the inner and middle rings to work (Profile.ID 2013).

Forster (2004) argues that the physical development of Melbourne was associated with the development of transport infrastructure. The 19th century saw relatively densely populated “walking cities” which was followed by an extension of rail and tram networks into a “public transport city” in the 20th century. Postwar developments saw the boom cars and homogeneous suburban sprawls which now dominate the 21st century (Newman & Kenworthy 1999). Melbourne’s linear development is seen as the foundation for the city’s car dependency, as travel flows are also linear given that they follow train lines. The movement of public transport is limited to the radial corridors.

**Stockholm**

Stockholm is characterised by a monocentric urban form, with a fragmented settlement structure (Nordregio 2010). The city consists of a dense inner core area with “fingers” of sub-centres spreading outwards, much like “pearls on a necklace” (Newman & Kenworthy 1999). Stockholm’s regions are divided evenly between urban areas, water basins and green space. The city is spread over 14 islands, with 57 bridges
connecting to the city. The city has a high residential density at 24,900 pp/km².

The subcentres surrounding the inner core show mixed residential uses. They have been planned in a way for workplaces to be located close to houses in order to minimise the distance of residential dwellings from retail centres, amenities to be concentrated in easily accessible areas and bus rail interchanges to be highly available in all communities (Newman & Kenworthy 1999; City of Stockholm 2012). Furthermore, the subcentres are linked by foot and cycling networks that are separate from roads. They also feature multiple forms of housing, ranging from multiunit dwellings to single and multifamily housing (Newman & Kenworthy 1999).

Stockholm was also originally formed as a “walking city”, but as growth intensified, the city had to incorporate expanded transit and car infrastructures (Söderström et al 2015). Recent growth has been incorporated into the inner city with the regeneration of dock areas, such as Hammarby Sjöstad. Orrskog (1993) argues that the nodal sprawl of Stockholm has presented the city with a framework for sustainability.

Melbourne and Stockholm were chosen for this comparative analysis because they are vastly different yet also share distinct similarities. Both cities feature highly urbanised populations, high car dependencies and a central hub with extending corridors. Likewise, both cities were developed along transit lines. However, Stockholm is hailed as one of the great “green cities”, whereas Melbourne remains firmly seated within Australia’s “brown” agenda (Metzger et al. 2013; Low et al. 2000).

Stockholm’s multinodal urban form allows for increased density, mixed multiunit dwellings and encourages alternative modes of transport outside of car use. The city also features a high proportion of green corridors throughout. Conversely, Melbourne’s outer suburbs have become the focus for residential growth and have generated an urban sprawl with little mixed land use and a high dependency on automobile transport.

Satterthwaite (1999) argues that a high concentration of inhabitants in conjunction with commercial activity can lead to an accumulation of “economies of scale”, meaning that the increased proximity of residential dwellings and economic firms can encourage alternative transport uses such as cycling, walking and public transportation as opposed to cars. Furthermore, it has been stipulated that the consumption of gasoline use per capita decreases alongside with increased density (Newman & Kenworthy 1989). Gottdiener and Budd (2005) contend that by doubling residential density, a decrease in residential vehicle uses of up to 20 to 40% can be seen. These views on consolidation would also fit into the extended metabolism model, whereby increasing residential densities would decrease greenhouse gas emission outputs.

Woodcock et al (2010) maintains that an increased density could be incorporated into Melbourne’s cityscape; however, urban consolidation in Melbourne has been difficult to achieve. This is mainly due to concerns about increasing density that consumes “neighbourhood character” and poorly implemented consolidation processes (Woodcock et al. 2010). He argues that Melbourne could potentially be a part of the “civilised club of low carbon cities”, much like Stockholm (Woodcock et al. 2010).

Brown and Southworth (2008) express that “by the middle of the century, the combination of green buildings and smart growth could deliver the deeper reductions that many believe are needed to mitigate climate change” (pg. 653). Melbourne’s urban form currently does not have within its capacity to adapt to climate change, instead the city’s urban form has encouraged and generated further participation into unsustainable practices.
Conclusion

The purpose of this essay is to assess Melbourne's adaptive capacity to climate change. The essay has created a conceptual framework through the introduction of cities and climate change, the extended metabolism model as well as the importance of urban form in combating climate change. Through a comparative analysis of Melbourne and Stockholm, it has been found that Melbourne's urban form does not have the capacity to adapt to climate change. This was due to a lack of consolidation within the city. It is speculated that a consolidated city is less impacting on climate change than one that is particularly decentralised. Consolidation of residential density can lead to a decrease in greenhouse gas emissions, which is seen as a factor needed for climate change adaptation in cities.

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Fringes with benefits? Dark secrets of peri-urban development within Australian cities

Liam Mawford

In 1993, at the Royal Australian Planning Institute Conference, it was stated that any peri-urban agricultural land is simply land awaiting further development (Mok et al. 2014). The dispositions towards peri-urban development have been different throughout planning and government circles throughout the last few decades. Responding to this, this essay will present the socio-cultural enablers and effects of continuous peri-urban development within Australia. To develop this discussion, it will revise the nature of suburbia and urban sprawl within Australian cities, critique the values of homeownership within mainstream Australian social capital, and link this knowledge with current issues in peri-urban development. The cities of Melbourne, Victoria and Adelaide, South Australia will be used as examples to illustrate the nature of unbridled peri-urban development with Australia. The essay will conclude with a support for urban consolidation within Australian capital urban growth boundaries, a greater policy emphasis on surrounding regional centres as foci for possible future policy making, and a decentralised/polycentric urban form to foster development and jobs within the outer suburbs.

Peri-urban development can be summarised as urbanisation and activity that occurs within the dynamic borders between urban and rural areas (Ives & Kendal 2013). As cities within developing and developed nations continue to expand through the process of urban sprawl, surrounding agricultural and rural lands become developed with little regulation of land use. For a variety of personal and practical reasons, the affluent suburbanites of Australia are engaging in counter-urbanisation. This form of urbanisation is described by Vallance (2014) as ‘post-suburbanisation’, where people have ‘leapfrogged’ away from the urban growth boundary to seek the comforts of semi-rural areas. Nilsson & Sick Nielsen (2011) add to this discussion by stating that counter-urbanisation
is inevitable in many urban areas due to a lack of improvement of amenity within suburbia.

**Suburbs and Urban Sprawl**

Suburbia is now accepted by the majority of people as ‘where people live’. In monocentric Australian cities, this translates to higher urban densities closer to the Central Business District (CBD) while becoming less dense as one travels further away from the centre and into the suburbs. Post World War II booms allowed for suburbia to become a sign of prosperity and economic growth (Chhetri et al. 2013; Brunner & Glasson 2015). The expansive growth of low-density, single-family homes was made prominent in the Australian urban landscape through the decline of the manufacturing industry and the rise of the services industry in the late 1900s (Brunner & Glasson 2015; Forster 2006). As house prices fall within some middle suburbs due to the decay of amenities and intra-city migration, some suburbs experience urban decay. Inner suburb renewal, otherwise known as gentrification, has occurred across all Australian and many European cities due to the proximity to jobs and services within the CBD (Forster 2009). The opposite has occurred among cities in the US, due to the fostered dependence of residents on the automobile (Glaeser 2011). An increase in suburban planning and development results in the increased dependency on personal and public transport systems – particularly within monocentric models of city development (Ambarwati et al. 2014). Both scenarios have developed their own social, environmental and economic challenges for planners and governments to grapple with - some of which will be discussed later within this essay.

The designs of master-planning suburbia are within the history of social utopianism and tyrannical philanthropy. Throughout the 1800s, the rejection of the suffocating industrial life within European and American cities allowed for thinkers, such as Ebenezer Howard, to present concrete examples of master-planned suburbia through the Garden Cities movement. The Garden Cities movement promoted decentralised living with vast amounts of open space (Myers 2010; Forster 2009) to oppose the cramped urban conditions of early Victorian England (Reade 1913). While this history may seem arbitrary, it is clear that planning dispositions such as New Urbanism and master-planned estates are close relatives of the Garden Cities movement in Australia. Hutchings & Garnaut (2007) believe that these new methods of planning are simply a re-working of the Garden Cities ethos, with accommodations for developments in technology. Australia’s glut of middle-class citizens and values of home and car ownership lend well to the central values of the Garden Cities movement.

Aesthetic quality of natural and urban landscapes, along with proximity to water, has a direct effect on urban form (Chhetri et al. 2013), with more affluent development occurring in areas where these amenities are maximised. However Beilin et al. (2015) counter this knowledge by commenting on the changing nature of Australian residency, stating that people are moving away from coasts in favour of inland areas. This cultural shift is quite remarkable, given the changes in relationships that have occurred between people and the nature in Australia since the Industrial Revolution. What was once viewed as a barren interior by colonisers, is now a sought-after commodity.

Quirkily described by Glaeser (2011), “ … [urban] sprawl began when people began to use something other than their own feet for travel”. Previously, people would live close to their work and most frequently visited places. With the commercialisation of the household automobile, people were given the luxury of travelling great distances in a fraction of the average walking time. This allowed people to have a greater freedom of choice of where they could live. Public transport networks have also facilitated progress by allowing commuters and those unable to drive to have greater accessibility throughout the urban landscape.
Urban sprawl now presents numerous challenges for Australian governments. A lack of necessary public infrastructure now exists across all Australian urban fringes (Forster 2009). As development across the urban fringes climbs to exponential rates, government services, public transport networks and postal services struggle to accommodate. Within developed nations, urban consolidation, referred to as ‘compactness’ by Chhetri et al. (2013), is both a product of and a response to monocentric methods of city planning. While it is addressed through wide-reaching policies of urban consolidation by planners and state governments, sprawl is rarely acknowledged at the local levels of government unless an issue is identified (Grochoski et al. 2011).

Values of Homeownership

Australian social and economic capital is built upon the assumption of homeownership for all people (Ong et al. 2015). Homeownership is a rite of passage and has been common practice among the Baby-Boomer and Generation X groups. The process of home acquisition throughout one’s life is referred to as the ‘homeownership ladder’ (as described by Forster 2009), with the goal of outright homeownership before retirement. Given the current discourse of economic crises, climbing the ladder has become more volatile for people at all stages of homeownership (Ong et al. 2015).

Fisher (2003) summarises the demographics of homeownership by stating that ‘suburbanites’ tend to be young couples, possibly with dependent children and that ‘counter-urbanites’ are most likely to be pre/retirement couples. The foundations of homeownership and ‘strong’ Australian social capital are linked with the counter-urbanisation, which has originated from the Anglo-Saxon values and romanticism of the country (Jackson & Mcdonald 2005). Cavailhes & Selod (2003) link the nature of peri-urban development as the epitome of homeownership values and suburbia. While this generalised theory may be somewhat applicable to many people engaging in a ‘green-change’, the values and attitudes of residents towards homeownership and peri-urban development require further study (Ives & Kendal 2013).

The cost of shelter will determine how young people may be initiated into homeownership. According to Bourassa et al. (1993), the removal of subsidies by previous Australian governments has dramatically affected the rate of homeownership among people under 30 years old. The rates remain significantly higher, though, when compared to other countries. From this evidence, it is clear that young people are finding it harder to enter the housing market, even while residing with their parents/carers or renting.

Some academics claim that innately being a homeowner increases one’s positive perceptions and interests towards neighbourhood and community. There is also an idea that once people become owners of property, they become invested in developing their property to seek maximum benefit – be it wellbeing or economic (Roskruge et al. 2013). A greater scepticism of these claims should be applied. As master-planned and gated communities symbolise, not only residential capitalism is in its highest form. Neither is the pinnacle of prestige and homeownership. Many authors have found a greater privacy and lack of community engagement within these areas (Cheshire, Walters & Wickes 2010; Goodman et al. 2008; Maller & Nicholls 2013). In addition, many homeowners that have been surveyed about their community engagement often exclude their renting neighbours (Cheshire et al. 2010). Homeownership has become a rite of passage, an exclusive club, and a silver bullet of social capital growth within Australia.

The Issues of Peri-Urban Development

With Australia’s well-known metropolitan primacy, urban-centric values that support urban development and expansion further the view that rural areas and townships exist to serve urban
demands (Buxton 2011). Peri-urban developers, whether single entities or corporations, innately urbanise rural areas through redevelopment, consolidation and selling of property (Buxton 2011). Through the expansion of suburbia and of regional centres, these areas continue to grow and accommodate natural and migrant population growth in a variety of different methods.

Peri-urban development coincides with the purchasing and development of surrounding agricultural land. With fertile agricultural lands being consumed at an ‘alarming’ rate (Malano et al. 2014), some developed cities may lose up to 100% of their local access to various fruit and vegetable crops (Mok et al. 2014). This creates some very interesting futures for Australian grocery consumers. This reiterates Hughes’ (2009) summary of human-induced change: humans were subject to nature, humans have changed nature, and now humans are subjected to the changes in nature that have resulted from their actions. Given the inspiration of individualisation developed by neoliberalist social frameworks (Maniates 2001), identifying core values and fostering the behaviour change of consumers will be a difficult task (Moloney & Strengers 2014). Food security is usually discussed alongside developing nations, but what does this mean for Australia?

The majority of peri-urban literature concerns itself with the urbanisation of developing nations. Peri-urban development within these spaces paints a dramatically different picture for urban futures – inadequate infrastructure and sanitation, poor education and health outcomes and low job prospects for peri-urban residents (Cohen 1989). This is also linked with unstable government and low-quality, ineffective governance procedures commonly associated with the challenges of developing nations. It is important for Australian state and commonwealth governments to identify that even though Australia rarely experiences these problems, the volatile nature of economic and natural disasters may bring with them problems concerning our expansive peri-urban development.

Many critics of peri-urban development have commented on the negative social effects and future prospects of young people living with these areas. Jackson & Mcdonald (2005) summarise these issues through their ethnographic study, concluding that there is a significant lack of recreational and wellbeing resources within the urban growth boundary for young people. This is coupled with the negative dispositions towards young people by their elders and, with a lack of identity within their public spaces, young people are marginalised and can become disenfranchised within their communities (Malone 1999). As peri-urban areas in Australia continue to morph and multiply, this area warrants further study currently and into the future (Vallance 2014; Jackson & Mcdonald 2005; Fisher 2003).

**Peri-Urban Development in Melbourne and Adelaide**

Rahmin Rahnam et al. (2015) classify the city of Melbourne in Victoria as Australia’s leader in urban sprawl. Melbourne’s linear growth corridors outlined in successive strategic planning documents, have provided the skeleton structure for transport and metropolitan development (Chhetri et al. 2013). While these have allowed for the conservation of the ‘green wedge’ strategy, these have also been instrumental in sprawling suburbia toward the hinterlands and extending Melbourne’s hinterlands up to 160km away from its CBD (Buxton 2015).

Chhetri et al. (2013) state that a ‘hollowing’ of urban demographics is occurring within Melbourne’s inner suburbs, as people are favouring the peri-urban areas. Established in 2002, Melbourne’s Urban Growth Boundary has been revised and loosened to accommodate for higher corporate investment (Brunner & Glasson 2015).

While Adelaide is notorious for being one of the slowest Australian cities in regards to population growth, the majority of the city’s
population growth since the 1970s, has occurred within its expansive peri-urban residential areas (Fisher 2003). This unprecedented sprawl has been shaped by the surrounding topography and natural landscape, pushing the development north and south towards Gawler and Victor Harbor respectively (Bunker 1990). Similarly to Melbourne, corporate ‘big-box’ retail shopping centres in Adelaide intensify activity around inner-suburb centres, but these do little to support local businesses (Allan 1998).

Both Adelaide and Melbourne house expansive master-planned estate developments. While the links between these developments and other facets of this essay are beyond this essay’s current scope, it is pertinent to note that master-planned estates do not contribute positively towards reducing urban sprawl due to the housing stock created (Costley 2006). As this residential planning canon continues to dominate the creation of suburbia, peri-urban areas are soon to transform from Australian bush into a paved tundra (Newton 1999).

Melbourne and Adelaide have both suffered from bushfire devastation within the last 10 years. It is important to note that in the last 30 years, 353 people have died due to bushfires in southern Australian regions (Bardsley et al. 2015). Peri-urban development has spread from the inner suburbs and throughout the hinterlands of both cities, posing a serious risk to life and economic development. Butt et al. (2009) and Buxton (2011) implore that urban and regional development must consider changes in climate and natural disaster frequency, as there are many gaps within planning legislation in regards to bushfire protection (Bardsley et al. 2015).

**Conclusion**

Peri-urban development and expansion is one of Australia’s largest urban challenges. This essay has highlighted some of the possible negative outcomes of continuous peri-urban growth, which are across the social, environmental and economic spectra. Unbridled peri-urban development births a vast disjointed suburbia that fosters elitism, alienates young people, and increases automobile dependency. Given the volatility of unpredictable natural and economic futures, Australian governments and planners should develop stronger legislation surrounding the restrictions of peri-urban development in favour of urban consolidation development. The values of homeownership within Australia play a key role within this discussion. These values are firmly within our Anglo-Saxon social fabric and will be difficult to change or reframe. As planners endeavour to safeguard from unknown futures, it is clear that these forms of development should be carefully regulated.

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Melbourne’s public transport: What can be done to improve urban isolation and access to public transport in Melbourne?

Jennifer McIntyre

Melbourne is a city of growth. Population growth, economic growth, job growth, real estate growth, in fact the estimates put Melbourne’s population in 2050 at around eight million, with over 75% of Victorians already living within the metropolitan area (Jefferson, 2016). Rated as one of the world’s most liveable cities many times over, Melbourne’s infrastructure and living conditions have been compared with the likes of London, Paris, Hong Kong and San Francisco, making it a magnet for those seeking work, entertainment and security. With this growth and attraction of people, however, comes a responsibility for government planners to ensure that residents are not left without the essential services that one would expect in such an urban wonderland. One of the key services that helps to bind a city together is public transport, and Melbourne has been plagued with public transport issues for decades, including overcrowding, lack of services, and ill-functioning ticketing systems. The focus of this paper is to explore and understand the shortcomings in Melbourne’s public transport system, which includes a vast network of trains, trams and buses, and how these issues can be addressed and overcome through better planning for the future.

Melbourne’s Public Transport Network

Melbourne has a dispersed system of public transport comprised of buses, trams and trains, with the train network made up of 16 lines that all converge in the CBD. Some lines branch from others at stations such as Clifton Hill in the north and South Yarra in the south, but apart from these starting points, the lines do not intersect otherwise. Trams mostly run on the road networks in the same space as cars, resulting in
delayed travel times for commuters choosing this mode of transport due to congestion.

Melbourne's public transport only accounts for 7% of all trips within the greater metropolitan area. Approximately 9% of the population are within a 30 minute trip of anywhere else in the greater metropolitan area, meaning most people in Melbourne who rely on public transport are not covered by an appropriate level of public transport (Scheurer et al., 2008). Melbourne's ticketing system for public transport uses Myki, a card that charges in 2 hour or daily amounts, and can only be topped up at select convenience stores or train stations. As this paper focuses on train networks, buses and trams will not be covered here in any more detail.

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Figure 1: Melbourne’s metropolitan train network (Melbourne, 2014)

Key issues for transport users:

To understand what makes public transport so essential to the general functionality of a city, we need to identify the key issues that impact those without access to these services. The following list is not exhaustive, but provides an insight into the type of issues faced by the diverse groups of people living in urban areas without adequate public transport, as well as the impacts on the community as a whole. It is important to note that many of the issues outlined relate to those who already face financial hardship, as housing affordability forces many low-income residents to the urban fringe where public transport is inadequate.
Elderly isolation and access to essential services:

Personal mobility is an important aspect of the elderly being able to live independently for as long as possible. Access to essential services including supermarkets, health centres and recreational facilities are hindered when these are mostly accessible only by motor vehicle transport, especially as many elderly people opt to, or are instructed to no longer drive. For those living on pensions, often the cheapest accommodation is available on the urban fringes, where access to reliable public transport is inadequate (Liu and Engels, 2012).

Lack of access to a variety of educational institutions:

In particular for tertiary students, the cost of public transport combined with long commuting times to access university campuses can act as a barrier to further study, or increase the likelihood of ceasing study before completion. For students who can only study part time as a result of other commitments, including family and work, not being able to access a concession card can cause further financial stress. Another example of this is the difficulty faced by some mothers in accessing childcare or playgroups for their young children as a result of social isolation caused by a lack of public transport (McDonald and Rosier, 2011).

Lack of access to health services and emergency care:

People without motor transport, and in particular, those living in lower socio-economic areas of the city, are more likely to have limited access to health services in general, and especially in times of emergency. A study in the Australian Journal of Primary Health (Rocher, 2015) identified a strong link between socio-economic factors and dental disease, and as many people on the lower socio-economic end of the spectrum live in outer suburbs, there is a strong case for public transport improving health. As private practice often exceeds the price that the urban poor can afford for emergency treatment, travel is required to the city to access free emergency care in larger hospitals, and without efficient public transport, this can be a massive barrier to treatment.

Inequality for women, children and minority groups:

As well as all of the issues already mentioned that have the capacity to largely impact marginalised and minority groups, there are also other issues experienced by these users that makes inefficient public transport even more taxing on their wellbeing. An example is when parents have to use poorly connected services, which can be made even more difficult when travelling with children, prams and shopping bags (for example). Walking distances between train and bus connections, as an example, can be too difficult while juggling multiple items and caring for young children. Disabled passengers also experience difficulty when having to transfer from one service to another, though in recent years more provision has been made to ensure better accessibility for those with mobility issues, including tram stops that are raised, and buses that lower when passenger alight (McDonald and Rosier, 2011).

Safety – social issues – all night transport, limited transport hours

Public transport operating hours can lead to spikes in social harm as a result of users being stranded in both urban and regional areas at unhospitable hours. During the night, when bars and clubs are closing simultaneously, forcing large numbers of patrons into the street at the same time, long wait times for taxis and a lack of access to 24 hour public transport, combined with excess alcohol consumption, can lead to disputes and violence between members of the public as well as those providing transport services, such as taxi drivers (Scott et al., 2016). High fares for taxis can also lead to young patrons choosing to wait for cheaper
public transport options, often for many hours, increasing their chances of having their safety compromised. Recently, Public Transport Victoria has extended its service times on weekends, but users can still feel intimidated using such transport, as well as the Night Rider bus service, due to poor coverage and connectivity to many places. In recent years Victoria Police has also tried to address the concerns over safety on public transport by implementing Protective Services Officers (PSOs) at train stations after 5pm, but they are also limited in their capacity to ensure safe travel between stations and a persons home address.

**Unemployment or lack of access to jobs:**

For people struggling to find employment, a lack of public transport can be a further barrier to finding work. One study from the US noted that in Boston, only 14% of employers in an area with many entry-level jobs could be reached by public transport in under an hour from a suburb with high unemployment concentrations (Koretz, 1998).

Effective job density (EJD) is a measure of the number of jobs and available relative to the time taken to reach employment. In Melbourne, the greatest EJD is closest to the CBD where there are many modes of transport making travel times lower (SGSEP, 2015). Once again, it is the lower socio-economic groups living near the fringe that are most impacted by a lack of transport, as it decreases their ability to reach employment, narrowing the field of potential jobs. This is also a disadvantage to employers, who have their field of potential employees narrowed significantly. Longer commute times also lead to lower productivity in the workplace. A study done in the UK revealed that employees are more likely to be late, and leave early if they have a higher than average commute time, and they tend to be more stressed and fatigued leading to lost productivity. This was calculated to be approximately £2.24 billion in lost profits (Adecco, 2016).

**High costs associated with reliance on private vehicles/transport:**

As already mentioned, it is often those who are forced to live on the urban fringe due to economic disadvantage that have the least access to efficient public transport. Unfortunately, these people can be forced to spend a large proportion of their income (up to 50%) on maintaining private transportation such as cars, further compounding financial issues (Currie et al., 2009, p. 99).

**Key issues for transport planners:**

Melbourne policy makers have recognised the need for a shift from monocentric planning to polycentric planning, as outlined by the Plan Melbourne document and the inclusion of Activity Centres for decreased reliance on private transport (State Government of Victoria, 2014). But what is missing from this vision is the inclusion of better public transport, especially rail. The only changes to rail transport are extensions of already existing rail lines, and the development of a metro under the CBD, a zone which already has the best public transport links in the metropolitan area. History has also shown that public transport is factored in after the development of residential zones, rather than developing land around planned routes, such as the South Morang extension of the Epping train line in Melbourne's north. By the time the extension (a mere one station) was complete, the demand was so great that on the first day of the station opening, car parking at the station was already full by 6.30am (Carey, 2014). This is a perfect demonstration of the lack of foresight and planning around public transport infrastructure. Foreign cities are now using the approach that instead of determining where trains are located based on residents, the train lines determine where residential zones will develop. To gain a better understanding of what good and bad public transport looks like, the following cities were chosen as case studies based one's reputations as having one of the best train networks in the world and the other being fraught with issues: Hong Kong and Manila.
**Hong Kong:** The Hong Kong rail system, known as the Mass Transit Railway (MTR), is known for its punctuality, cleanliness and efficiency. Opened in 1979, the MTR was built in response to increasing congestion problems as a result of the growing economy. Since then, there have been many extensions to the system, with new stations and lines being built through land acquisition, as well as a shift to privatisation of the rail network. Despite the fact that different lines has different operators, the ticketing system works in such a way that passengers can use the same card (Octopus) on all of the lines. Stations are often surrounded by shopping centres (a feature common in Japan, which also has some of the world’s best train networks), making commuting a multifaceted trip that can include grocery shopping, banking and other needs, and feeder buses run from selected stations to residential areas, to further connect passengers (MTR 2016). The network also includes several interconnecting stations, so it is easy to change from one line to another. Within 12 years of operation, areas surrounding the Hong Kong MTR had increased in employment density by 500% (Wang, 1997). That translates to 38,000 new jobs each year.

**Metro Manila:** In Manila, the use of public transport such as trains has gradually been declining as passengers become increasingly dissatisfied with the service provided, as well as the natural shift as incomes increase to private transport ownership and use. The government provides subsidies to keep fare prices low, but the fares are then unable to cover the cost of maintaining the system. This presents a dilemma, as people refuse to pay more in fares to use the deteriorating system, but the government can’t upgrade the system without raising fare prices. In Manila, advocates for the urban poor also shunned fare price increases in the wake of other increases for services such as gas and utilities. However, keeping fares low also means that the government has to subsidise the costs, and this results in an overall burden on taxes for all socio-economic groups (Mijares et al. 2014).

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**Figure 1:** Melbourne’s metropolitan train network (Melbourne, 2014)
Both Hong Kong and Manila are cities that date back far further than Melbourne (pre-1000 and 1100 respectively), as well as being cities that have far higher population densities. Based on this fact, it is interesting that both cities have been able to develop new and complex rail networks despite such urban density, compared with Melbourne, which has extremely low urban population densities and much more open space. A barrier to Melbourne increasing its train network is the compulsory acquisition of land that is so readily protested against by urban dwellers, such was the case with the development of the East-West Link, and residents in the inner suburbs of Collingwood, Clifton Hill and Parkville. Governments face political backlash and risk if they are not seen to have compassion for residents whose homes lay in the path of new infrastructure developments.

Funding is also often seen as a barrier to improved public transport networks, despite the impacts a better system would have on the economy overall. Public private partnerships are often used as a way to allow developments to proceed without the government having to commit to large budget allocations where it can be seen as taking money away from other uses, or other important user groups. However, opening up public transport to private developers could also prove to be a challenge due to Melbourne’s beleaguered ticketing system. Competing network operators might argue over pricing of trips, and it could cause confusion for passengers if there were multiple ticketing prices and systems in place. Allowing a private company to fix tickets at a particular price could still disadvantage commuters in the lower socio-economic groups that the public transport aims to assist. Much like in Manila, there is also potential for backlash over fare increases due to the seemingly decreasing quality of the service in Melbourne. Privatisation of the ticketing system can result in a lack of accountability for the service provided.

Recommendations:

Taking into consideration the negative issues associated with Melbourne’s ageing train network, the Victorian Government needs to look at ways of increasing the network and making it more interconnected, not just through
the provision of buses and trams, but through a more complex system of train lines. This could be achieved through the development of an improved rail network that incorporates the following:

a) Two key ‘ring’ routes, effectively intersecting the current radial network at key stations in the middle and outer suburbs of Melbourne’s metropolitan area (see Figure 3 and 4). The new rail lines should be elevated to decrease the amount of voluntary and compulsory acquisition required, and where possible, follow existing road infrastructure to encourage motor vehicle users to switch mode.

b) Station plazas developed at key stations that link existing and planned rail lines, in the same style as the Hong Kong and Tokyo stations. These should contain a mix of retail and office space to encourage employment and local shopping en route. This further enhances the development of 20-minute neighbourhoods and decentralized activity centres.

Plan Melbourne has already earmarked the following areas as Key Activity Centres, and these would be key linking stations in the new concentric train lines:

- Broadmeadows
- Ringwood
- Dandenong
- Frankston
- Sunshine

The following would also be linking stations and in Plan Melbourne are noted as new Employment Clusters:

- Werribee
- Sunshine
- Bell
- Heidelberg
- Dandenong

By creating station plazas and interconnecting routes at the above locations, accessibility will be increased significantly, bringing labour to those areas, as well as opening up access to jobs for those located in urban fringes by decreasing the average travel time to reach these areas. The linking stations would also all be within 5 kilometres of Plan Melbourne’s Employment Clusters, further increasing accessibility and

Figure 3: Transit view Middle and Outer Rail Links

Figure 4: Map view Middle and Outer Rail Links (Both works of the author 2016)
Effective job density for those suburbs.

One of the challenges identified to implementing better public transport infrastructure was the funding and ongoing maintenance of new rail networks. The development of the suggested ‘ring’ rail routes could be funded through public-private partnership, inviting private companies to bid through a tender process. The successful bidder would also have the rights to develop the station plazas, adding another incentive and opportunity for recouped costs through the lease of office and retail space.

The following table outlines some of the benefits that would address the issues identified earlier:

<table>
<thead>
<tr>
<th>Issues</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elderly isolation and lack of access</td>
<td>Decreased travel time for commuters and increased access to a wider range of services.</td>
</tr>
<tr>
<td>Access to educational institutions and health services</td>
<td>As above, but with better access to a wider range of educational institutions and health services, with shorter commute times.</td>
</tr>
<tr>
<td>Inequality</td>
<td>Better connecting stations where commuters don’t have to leave the station makes it easier for disadvantaged groups to travel longer distances.</td>
</tr>
<tr>
<td></td>
<td>Added ease of shopping in the same location that the transport arrives and departs.</td>
</tr>
<tr>
<td>Safety/social issues</td>
<td>Office space and retail outlets located in key linking stations would mean more people and less risk of isolation</td>
</tr>
<tr>
<td>Access to employment</td>
<td>Increased access to employment through an integrated public transport network</td>
</tr>
<tr>
<td></td>
<td>Increased employment in station plazas and rail link zones</td>
</tr>
<tr>
<td>Private vehicle use</td>
<td>Less spent on road infrastructure maintenance Decreased emissions</td>
</tr>
<tr>
<td></td>
<td>Less car parking facilities needed in employment clusters as accessibility via public transport will be improved</td>
</tr>
<tr>
<td></td>
<td>Decreased congestion on roads</td>
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</tbody>
</table>

Conclusion

To improve isolation of people living on urban fringes, better transport connections are imperative. Melbourne has a history of planning transport infrastructure in response to urban growth and urban sprawl, rather than in preparation of it, and this needs to be rectified. The development of two urban ring rail lines, connecting pre-existing rail infrastructure is one way to ensure that people who are disadvantaged due to their location have the best opportunities to access all of the essential services required to minimize urban poverty and increase wellbeing. The model of using stations as retail and commercial plazas has been effective in both Tokyo and Hong Kong, cities with much higher populations than Melbourne, so forward planning of similar features in Melbourne’s train network could see vast improvements for travel times, access to employment and services, and a general improvement in social wellbeing.
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A review of Melbourne’s planning strategies from 1945 to 2004: How Melbourne revived into “the most fully rehabilitated donut city in the world”

Richard Overall

The 1970s can be seen as a turning point in Australian economic history. Growing competition from industrialising countries in Asia, combined with tariff cuts initiated by the Whitlam Labor government in 1973 ushered in a period of rapid change to the domestic economy. The subsequent collapse of many conventional Fordist manufacturing industries had a particularly strong impact on Melbourne, the traditional heart of Australian manufacturing (Dingle & O’Hanlon 2009, p. 53). By 1977, Melbourne’s inner city area appeared to be in serious danger of following in the footsteps of many comparable cities in North America, where inner cities were becoming “… hollow shells peopled largely by non-whites” (Lucayo 1992, p. 31). In many of these cities, inner urban populations were being steadily eroded by a shift in economic activity from the centre to the suburbs.

While Australian cities were lucky to avoid much of the racial tension that characterised American cities, similar population movements were evident in the decades after the Second World War. In Melbourne, the inner urban population began to decline in 1947 (Maher 1978, p. 114). By 1977, a report by Melbourne’s then metropolitan planning authority, the Melbourne and Metropolitan Board of Works (MMBW) described its fear of the CBD becoming “emptied of people and activities after business hours… a sort of twilight zone, while the suburbs prospered” (Howe 2009, p. 244). However, over the next three decades, the opposite trend occurred. Instead of decaying, the inner city transformed into a vibrant hub of white-collar professional services with a growing population and flourishing recreation, tourism and entertainment sectors. When the 2004 Places for People report was published, the
number of residential dwellings in the central city had increased from 736 in 1992 to 9,900 in 2002 (Hayter 2006, p. 29). While broad demographic and economic trends played a part in this turnaround, this paper will focus on the impact that local and state government planning strategies had on the city's revival over the period from 1945 to 2004, beginning in the 1980s.

Melbourne 1945 to 1977

In the decades after the Second World War, Melbourne seemed to be following a similar pattern to many comparable large cities in North America. The increasing affordability and popularity of the automobile in the United States provided people with unprecedented personal mobility, and allowed more affluent families to move away from the traditional central city residential areas into newer and bigger homes in the suburbs (Leach 1960, p. 789). Writing in the early twentieth century, the urban sociologist Ernest Burgess had described the ethnic and class composition of different urban areas within a city as a series of concentric zones. Burgess was a member of the ‘Chicago School’ of urban sociology, which studied the role of the city in the reception and gathering of immigrants (Howe 1994, p. 142). According to Burgess, a city was split into five different concentric zones, and its inhabitants gradually moved outwards as they raised their financial and social status. Thus, the most desirable places to live were zones four and five, the residential and commuter zones. In these zones inhabited “great middle class” with “ideals still akin to those of rural American society” (1928, p. 107). In contrast, the inner urban areas in zone two, known as the “zone in transition,” were “the port of first entry” for new racial and immigrant groups. These areas were characterised by mixed business, industry and residential uses (1928, p. 106). The concentric zone theory was later modified by the urban historian Samuel Hays, who described the city as a “giant escalator,” which moved people from the inner city to the suburbs as they advanced in social status (Howe 1994, p. 142).

In the American context, middle class’s flight to the suburbs in the post war period was soon followed by industrial and commercial businesses. This shift in people and economic activity away from the centre removed a significant portion of city’s traditional tax base and left behind increasingly poor inner urban neighbourhoods, largely inhabited by non-white inhabitants who could not afford to leave (Leach 1960, p. 789). This trend tended to reinforce itself as the remaining inner city middle class residents faced the choice to either “desert the central city and join the exodus to the suburbs, or to continue to live in deteriorating houses in deteriorating neighbourhoods” (Leach 1960, p. 787). As a result, the formation of inner city slums was both a cause of, and consequence of, middle class flight to the suburbs (Collins & Shester 2013, p. 243).

In Melbourne, parts of the inner city had been viewed as “slums” since the 1870s. The word “slum” in this context represented “overcrowded urban areas, unhealthy environments, disorderly behaviour [and] moral and physical pollution (Howe 1994, p. 145). In particular, Melbourne’s slums in this period were focused in the CBD, particularly around the eastern ends of Little Bourke and Little Lonsdale streets, the original red-light district and home to many of the city’s Chinese immigrants. By the 1890s, “the poorer majority of its people were clustered within a three-mile inner ring, the affluent minority dispersed through a wide arc of semi-rural south-eastern suburbs” (Davison 1978, p. 152). The dominant perception of inner areas as slums encouraged slum clearance and urban renewal projects by local planning authorities in the 1960s and early 1970s (Howe 1994, p. 157), similar to the 1949-1974 urban renewal program in the United States (Grigsby 1964, p. 109). However, while Melbourne still contained pockets of inner city slums by the 1970s, they were relatively small. The inner city had retained a sizeable middle class population, and the early stages of gentrification could already be seen at this point (Maher 1985, p. 11). Although Melbourne's
inner city avoided the worst of the urban decay experienced by many American cities, its population still declined in the post-war period (Maher 1978, p. 113).

Like in the United States, the rapid uptake of automobile-based suburbanisation in Melbourne began drawing people away from the traditional tram-and-terrace inner suburbs in the late 1940s towards new “modern” homes in the suburbs (Alexander 2000, p. 99). In 1978, Christopher Maher published a study of population change within Melbourne’s inner city areas in the post-war period. He defined the inner city as made up of the suburbs of Melbourne, Port Melbourne, South Melbourne, Collingwood, Fitzroy, Richmond, St Kilda and Prahran. According to Maher, the inner city’s population grew during the 1930s and early 1940s, before peaking in 1947. Since then, the inner urban population had been declining. While this depopulation trend slowed over the 1960s as a series of high-rise public housing projects were built throughout the inner suburbs, the significant fall in apartment construction after 1971 meant that the largest drop in inner city population occurred in the five-year period from 1971 to 1976 (p. 114) The shift in population away from the inner city areas also indirectly hastened their economic decline over this period, as activities and services followed people to the suburbs. This trend was particularly prominent in retailing, with traditional inner urban retail centres such as Smith Street in Collingwood/Fitzroy being eclipsed by new suburban shopping centres, such as Chadstone in 1961 (Dingle & O’Hanlon 2009, p. 59). Furthermore, the share of inner city workers employed in blue-collar manufacturing jobs had dropped from 64.7% of the workforce in 1961, to 59.2% in 1971. This was concerning as manufacturing had historically played a key role in the development of Melbourne’s inner suburbs. Since the 1920s, Victoria’s policy of encouraging local manufacturing through the erection of protective tariffs meant that Melbourne’s inner areas were heavily influenced by the types of manufacturers they attracted, such as tanneries in Collingwood and clothing factories in the CBD, Fitzroy and Richmond (Howe 1994, p. 145-147).

After World War II, local manufacturing had boomed as consumer goods such as refrigerators, cars and televisions, for the first time, became affordable to working class shoppers. Import competition was dampened by a quotas system and tariffs were regularly increased to offset competition from cheap manufacturers in Asia and other developing regions. Beginning in the 1950s, many manufacturing firms took advantage of new city zoning laws to leapfrog existing suburban developments and build new factories on greenfield sites on the city’s fringes, where land was cheaper. New technologies, such as the forklift, required expansive, single-story buildings that were not cost-effective to build in the inner suburbs, where space was at a premium (Dingle & O’Hanlon 2009, p. 59). Manufacturing peaked as a share of Australia’s GDP in the early 1960s, and protective tariffs on imported clothing and footwear reached nearly 100 per cent by the end of the decade (Dingle & O’Hanlon 2009, p. 52, 57).

The economic recession of the early 1970s convinced the federal government that maintaining a protectionist economy was unsustainable. In 1973, the Whitlam Labor Government initiated a 25 per cent across-the-board cut to tariffs. The subsequent fall in manufacturing employment in Melbourne, particularly in textiles, clothing and footwear manufacturing, hastened the economic and residential decline of the inner suburbs (Dingle & O’Hanlon 2009, p. 57). By the late 1970s, the effects of Australia’s economic restructuring on Melbourne were becoming obvious. As old manufacturing industries closed their doors in the face of growing competition from overseas manufacturers, there was a sense that Melbourne was in structural decline. Commercially, Sydney had become the main gateway for international tourists and appeared to be attracting more of the emerging financial services, media and technology firms (Sandercock & Dovey 2002,
This perception of decline in Melbourne was most noticeable in and around the inner city, as many former industrial sites and retail stores lay vacant or abandoned (O’Hanlon 2009, p. 2).

### Doughnut city or cafe society? Melbourne 1977 to 2004

In 1977, the MMBW issued two reports on Melbourne’s inner city, outlining the “crisis” in manufacturing, which was leading to a rapid fall in blue-collar manufacturing employment. The reports warned of the potential for chronic unemployment, economic stagnation, urban decay and social disorder along American lines if these trends were left uncontrolled (O’Hanlon 2009, p. 1). In the same year, Alan Croxford, the chairman of the MMBW, wrote an editorial describing the possible emergence of a “doughnut” city in Melbourne, in which suburban development was taking place at the expense of the inner urban core.

Melbourne’s trend towards a “doughnut” type of development is revealing the first signs of serious problems experienced in other cities of the world. The marked decline in population levels in Melbourne’s inner and intermediate suburbs in recent times, the overall drop in job opportunity for the workforce in inner areas, the outward migration of people – often the most skilled – and the relative decline of inner areas, give rise to the need for action to prevent our city from developing a blighted central area (p. 3).

Thus, when the Cain state Labour government was elected in 1982 after twenty-seven years in opposition, it recognised a need for Melbourne to diversify its economy away from manufacturing. It highlighted Melbourne’s “national role... as a major trading, cultural and sports centre” and aimed to use government initiatives to develop new jobs in the tourism, leisure and spectacle industries, particularly in the CBD and surrounding suburbs (O’Hanlon 2009, p. 4).

Subsequent state government initiatives in the 1980s to boost the role of Melbourne as a major sports centre included renovations to improve existing sporting infrastructure, such as Flemington Racecourse and the Melbourne Cricket Ground (MCG). Legislation was passed to declare the Australian football grand finale a “major sporting event,” and ensure that it would continue to be held at the MCG rather than at the newly constructed suburban VFL Park (later known as Waverly Park) stadium in Glen Waverly (Department of Infrastructure 1998, p. 1). The government also constructed the National Tennis Centre at Flinders Park (now known as the Rod Laver Arena) to be a permanent home for the Australian Open (O’Hanlon 2009, p. 3).

Melbourne’s arts and cultural sectors were also recognised as competitive strengths and the state government moved to boost their role in the new post-industrial economy it was cultivating. Government initiatives included the foundation of the annual Melbourne International Arts Festival, which has subsequently become a staple in the Australian arts scene, attracting thousands of festivalgoers each year (O’Hanlon 2002, p. 6). The government also fast tracked the completion of the Victorian Arts Centre in Southbank (now known as the Arts Centre Melbourne), with the Theatres building finished in 1984. Construction of the Arts Centre and its accompanying art gallery, the National Gallery of Victoria (NGV) had begun in the 1960s. The completion of the Arts Centre marked the beginning of the government’s plan to redevelop the entire Southbank precinct as an “arts and tourism zone” to improve the “image” of the city (O’Hanlon 2009, p. 4).

In 1986, the state government released plans for the redevelopment of Southbank, the stretch of the Yarra river along the southern bank of the CBD grid, which included the Arts Centre and NGV. The Yarra river had a somewhat sordid reputation at the time, as it had been historically used as an industrial sewer by many factories. Such was the negative perception of the river that the architects of the Arts Centre and NGV had purposefully designed the buildings to face onto St Kilda road and away from the river. Furthermore, access to the river was cut off to pedestrians from the CBD grid on the north...
shore by Flinders Street station and railway lines, and by various industrial developments on the southern bank (Sandercock & Dovey 2002, p. 154).

The original state government planning strategy for the Southbank development incorporated a string of potential developments along more than a kilometre of river and included several key policy and design principles. The development was meant to be complementary to the CBD and build on the existing attraction of the Arts Centre and NGV. Furthermore, it was meant to be mixed use and fully accessible to public. While the government would facilitate the process through amalgamating and reparingelating land, it wouldn’t act as a developer for the majority of the land. The development was originally designed to have two “anchors,” the Arts Centre and NGV at the east end, and a new public museum at the west end. However, the development process lasted well into the 1990s, and when the state Labour government was defeated at the polls in 1992 by the Kennett Liberal-National Coalition government, the plan was modified. The museum was replaced with an exhibition centre and casino complex, which opened in 1996 and 1997 respectively. Although these late changes to the plan meant the western end of the project took on a distinctly “entrepreneurial rather than cultural orientation,” Southbank was successful in creating a popular, economically viable attraction complementary to the CBD (Sandercock and Dovey 2002, p. 154-158).

The 1990s also marked the turning point for the inner city’s population, with the number of residents increasing for the first time since 1947 (Dingle & O’Hanlon 2009, p. 59). The growth in population was largely attributable to the increase in multi-unit apartment building construction, particularly in the CBD. Although numerous high-rise apartment buildings had been built in the 1960s and 1970s throughout the inner suburbs, their association with public housing projects had given them a negative reputation. They were seen by many people then to be fostering “an unhealthy environment for families” and “creating generations of ghetto dwellers” (Costello 2005, p. 50). However, by the 1990s, a series of converging factors, including vacant office space being converted to apartments, changing lifestyle preferences, globalisation, new migrant populations (particularly overseas students) and the availability of housing stock and vacant land were all boosting the appeal of high-rise living once again. Recognising the economic
stimulus that population growth could bring, the City of Melbourne implemented the Postcode 3000 program in 1992 to facilitate and support residential development in central Melbourne (Baird 1994, p. 153).

Some of the key initiatives of the Postcode 3000 program included offering financial incentives, technical support and street level support to developers and publishing promotional material and holding media briefings to raise awareness of the program. In particular, the city’s financial incentives were designed to minimise pre-development costs for residential development and conversion. These incentives included waiving public open space fees and offering rebates on planning, building and site services permit fees. Technical support was introduced to streamline the assessment process and aid residential developments through the regulatory approvals process. The City also undertook street level work to enhance the amenity of residential projects, through infrastructure improvements such as tree planting, installing public furniture and improving pavements (Baird 1994, p. 153-155). These street level improvements were also linked with another program initiated by the City of Melbourne Council, the 1994 Places for People program.

In 1993, the Copenhagen architect Jan Gehl was invited to Melbourne to study the central city’s public spaces. His original 1994 report, entitled Places for People, documented the character of central Melbourne’s streets, parks and other public spaces and offered four broad recommendations to improve the amenity and accessibility of the central city:

- Improve the pedestrian network
- Make gathering spaces of excellent quality
- Strengthen street activity by physical changes
- Encourage more people to use the city

Over the next ten years, the City of Melbourne implemented many of the changes recommended within the Places for People report, the most famous of which being the transformation of Melbourne’s laneways. When Gehl conducted his original study, just 8 per cent of the city’s 3.7 kilometres of laneways were considered “accessible and active.” By 2004, this figure had grown to 92 per cent as a result of the city’s efforts to ensure that new buildings offered active frontages in laneways and that enough incentives were offered to existing buildings to open their laneways to retail activity (Turner 2012, p. 33). Another notable achievement was the completion of Federation Square in 2002 to address the city’s lack of ‘100% spaces,’ defined as public spaces on a major pedestrian route, with interesting views and comfortable places to sit, located close to places to shop and eat (Places for People 1994).

By 2004, Melbourne’s inner city had successfully reinvented itself as a post-industrial hub of white-collar service work, tourism and leisure (Holden & Scerri 2013, p. 444). While broad demographic and economic trends helped the inner city’s revival over this period, it was the planning strategies implemented by local and state governments beginning in the 1980s that played the biggest role in this transformation. Having recognized the need to diversify Melbourne’s economy away from manufacturing, the 1982 state Labour government implemented various planning initiatives to boost the city’s leisure, recreation and tourism sectors. Furthermore, local government programs such as the City of Melbourne’s Postcode 3000 and Places for People initiatives helped boost the appeal of inner city living and aided the resumption of residential development and population growth. Jan Gehl, the Danish architect behind the Places for People program called it the ‘Melbourne Miracle’ (Turner 2012, p. 33).

Many of these urban revitalisation initiatives focused on fostering social interaction and ‘place-making.’ These kinds of initiatives have been advocated by academics such as Richard...
Florida (2002), whose creative capital theory argued that modern economic growth stems from the creative class, individuals who work in knowledge-based occupations, such as financial services and health-care professions (p. 8). According to Florida, these kinds of individuals are more likely to move to communities with vibrant arts, food and cultural scenes. The revitalisation of Melbourne’s inner city seems to support this theory. In 2003, 25 years after The Age had labelled the city centre as “empty” and “useless,” Melbourne was described as “… [what] might be the most fully rehabilitated donut city in the world” (Turner 2012, p. 32).

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In what way does New Urbanism encourage Sustainable Development and is it a useful model for land use planning?

Caroline Parkinson

Sustainable Development is a defining paradigm in the planning and development discourse of our modern times. To manage our resources while continuing to experience growth, our cities must become sustainable. They must encourage better environmental outcomes, while promoting equity and developing the economy. Land use planning is a key component in the strategy to pursue sustainable development as it shapes our towns and cities and directly influences the way we live our lives. However, the question is how best to promote this agenda. What models can the planning profession use to pursue the goal of sustainable development? To even begin to answer these questions would take us well out of the scope of this report; however, they are a useful reference point for the following exploration. This report will focus on New Urbanism, a movement which has arisen in response to concerns about the state of the modern city. It will explore how New Urbanism theory encapsulates the sustainable development paradigm and, through examination of several examples of the built models, how effective it has been in implementing this on the ground. It will then follow with a brief discussion on some ways in which the challenges of New Urbanism can be addressed in the future.

Sustainable Development

Sustainable Development derives from an understanding of the finite nature of the earth and the need to preserve our resources to ensure future prosperity. This idea, first expressed by Malthus, was re-popularised and brought to global attention by the Club of Rome report The Limits to Growth (Basiago 1998). Using
computerised modelling systems, the MIT research team forecast a collapse of the global system if current growth trends continued and advocated a zero-growth approach to forestall the coming disaster (Meadows et al. 1972). While this recommendation created a backlash against the findings of the report, the need for moderated growth - or sustainable development - which could meet the ‘needs of the present without compromising the ability of future generations to meet their own needs’ was eventually legitimised by the UN report Our Common Future in 1987 (Brundtland et al. 1987). Sustainable development is now recognised as the balancing of the three streams of environment, economy and equity to achieve responsible growth (Godschalk 2004).

New Urbanism

The New Urbanism movement, originally influenced by the writings of Jane Jacobs, can be traced back to the 1980s and the development of Seaside, Florida by original practitioners Andres Duany and Elizabeth Plater-Zyberk (Grant 2009). In what is also known as Neotraditional Towns or Neotraditional Development, Duany and Plater-Zyberk reject common characteristics of suburbs in favour of those of the town, focusing on connected streets with mixed use, walkable communities (Duany & Plater-Zyberk 1992). Zoning practices are theoretically rejected, as uses should be integrated. Soon joined by other proponents, New Urbanism grew into a movement with its principles given form in the New Urbanism Charter. These principles, divided into Region, Neighbourhood and Block are designed to achieve the following ends:

‘neighborhoods should be diverse in use and population; communities should be designed for the pedestrian and transit as well as the car; cities and towns should be shaped by physically defined and universally accessible public spaces and community institutions; urban places should be framed by architecture and landscape design that celebrate local history, climate, ecology, and building practice’ (Congress for the New Urbanism 2015).

While the charter separates its principles into these three categories, it is generally accepted that the movement concentrates primarily on the small scale. The defining characteristic of New Urbanism is that it aims to influence behaviour through urban design at the neighbourhood scale. The movement itself represents a return to design-based planning, originally popularised through the influence of utopian planners such as Ebenezer Howard and Le Corbusier. It has ‘resurrected the core roots of the planning practice—land use planning and physical design’ (Berke 2002). This is in contrast to the more policy-based, procedural style of planning which has been in vogue since the 1970s. Design features such as ‘front porches, along with narrow streets, back-alley garages, shallow setbacks, and street trees may promote small town neighbourliness’ (Jabareen 2006). Through primarily small scale design techniques and principles, New Urbanism aims to bring back traditional style neighbourhood blocks and create more liveable communities.

Liveability and Sustainable Development

New Urbanism falls under the umbrella of liveability, a concept which is closely linked to sustainable development in terms of land use planning. Liveability is primarily concerned with the ‘everyday physical environment’ and combines ‘both the two-dimensional conceptual aspects emphasised by sustainable development (economy, ecology and equity) and the three-dimensional aspects of public space, movement systems, and building design’ (Godschalk 2004). Liveability gives substance to sustainable development by embodying its principles in urban form, creating sustainable urban forms. According to Jabareen (2006), there are seven elements of sustainable urban form: compactness, sustainable transport, density, mixed land uses, diversity, passive solar design and greening. Of these, he suggests that Neotraditional Development encompasses...
three, which are sustainable transport, density and mixed land uses. These three elements are results of the particular design principles of New Urbanism and reflect another of its key aims - to reduce car dependency.

Urban Form and Car Dependency

Car dependency is seen as one of the most important issues to address when discussing sustainable development. High car dependency leads to issues of air pollution, high greenhouse gas emissions, smog, traffic congestion and accidents, as well as a host of other issues that affect environmental, social and economic well-being (Newman & Kenworthy 1996). The link between urban form and car dependency has been well established with urban sprawl and low-density development contributing considerably, although it is not considered the only factor (Mees 2000). Addressing land use and transport issues is seen as one of the most important ways progress can be made in sustainable development (Curtis 2008). The New Urbanism charter expresses this in its principle:

*Many activities of daily living should occur within walking distance, allowing independence to those who do not drive, especially the elderly and the young. Interconnected networks of streets should be designed to encourage walking, reduce the number and length of automobile trips, and conserve energy* (CNU 2015).

However, does New Urbanism provide a viable model for land use planning where these outcomes are achieved? The following section explores several examples of communities built on New Urbanism principles with a view to identifying the successes and challenges in implementing these ideals in a real world context.

Case Study: New Urbanism practices in Portland

The following discussion on Portland has been drawn from the Song and Knaap study Measuring urban form: Is Portland winning the war on sprawl? (2004). In 1991 the city began working on its 50 year plan 2040 Growth Concept, which following New Urbanism principles aimed for 'the transformation of the metropolitan area into a multi-nucleated urban form, the development of a multi-modal transportation system, and the designation of mixed-use regional and town centres' (p. 211). This was followed by the Urban Growth Management Functional Plan in 1996 which aimed to assist local counties in implementing the Concept and was taken up by Washington County in their comprehensive plans in a variety of ways. In their research paper, Song and Knaap compare two Washington County suburbs; Forrest Glen, a traditional suburb, and Orenco Station, a suburb which has been held up as an exemplar of New Urbanism success. Using a comprehensive set of indicators they measure automobile dependency. The two are interrelated and both speak to an ideal of cohesive dynamic neighbourhoods.

The principles and images used by new urbanists have been influential in instigating public imagination, awareness, and a better understanding of alternative ways of community building and to improve the quality of life. Their boldness in initiating a powerful critique of the dominate pattern of development—suburban sprawl—that is embodied in physical form and persuasive graphic renderings of that form has gained public support and has inspired a social movement (Berke 2002).

New Urbanism and Sustainable Development

In its theory and principles, New Urbanism encourages sustainable development in its desire for more liveable communities and less
the suburbs in aspects such as accessibility, density, land use mix and pedestrian access before applying the indicators across a wider suburb sample. For the first two examples, they found that Orenco Station had ‘better internal street connectivity; more mixing of land uses within the neighbourhood; better pedestrian access to parks, commercial areas, and bus stops; but lower external connectivity than Forest Glen’ (p.215). This pattern was similar across the region with results improving the longer the policy had been in place, suggesting that the Concept and Functional Plan were being successfully implemented at the suburb level. However, land uses were still relatively homogeneous and external connectivity is poor, resulting in generally very little impact on urban sprawl. This points to problems in implementation at the regional scale, where progress ‘is constrained by economies of scale in commercial uses and transportation infrastructure’ (p.223).

This finding reflects a key criticism of New Urbanism which is reflected in both the critical literature and other empirical studies. While primarily concerned with the neighbourhood scale, New Urbanism are not able to address the issues that arise at a larger regional scale. However, the neighbourhood and block scale principles are not consistent with regional principles. The former principles are considerably narrower in scope and thus do not cover a breadth of topics that appear at the regional level. An examination of the principles for neighbourhoods and blocks reveals a strong emphasis on liveable built environments, but virtually no attention to other issues (Berke 2002).

In the Smart Growth Manual, Duany et al. (2011) discuss the need to ‘think globally, act locally, but plan regionally’ but admit that ‘effective regional planning is rare, because few municipalities are organised to coordinate administratively at a scale encompassing the entire metropolitan area’ (quoted in Hoffman 2011). This is supported in a study on the Denver area which found that of the plans implemented at the regional, city level and small scale, based on a mix of sustainable development, New Urbanism and Smart Growth principles, the regional level implementation was the weakest (Godschalk 2004).

**Case Study: New Urbanism in Canadian towns - Surrey, Calgary and Markham**

The following section is based on the study by Grant (2011) Theory and Practice in Planning the Suburbs: Challenges to Implementing New Urbanism, Smart Growth, and Sustainability Principles. This paper examined the implementation process of three New Urbanism towns in Canada, which are Surrey, Calgary and Markham, based on interviews involving planning professionals, developers and councillors. As those towns have different socio-cultural circumstances, their experiences are also different. However, several themes emerged across the three towns. Firstly, issues of funding for infrastructure was a common theme, with the municipalities constrained in the services that they can offer to developers and residents to promote the New Urbanism principles. The following is a quote from a Markham planner:

*The other problem is the funding. The funding to put the transit in place really isn’t there. We talk about this development being “transit supportive” . . . and they say, “Yeah, yeah, yeah. We’ve heard it all before, but everybody out here drives and that bus is not going to be the difference . . . It’s not really urban. So this is just going to get more people sitting on the road with me.” I think if there is a greater commitment—and it can’t be at the municipal level, it has to be at the provincial level—for transit funding, it will certainly make the jobs of planners like me way, way easier, because right now it’s tough (p.24).*

These issues partly stem from issues of political will and the effect of the political cycle on long-term decision making.

Another key barrier to implementation was institutional. In Markham, where council was fully supportive of the planners’ goals, staff members were structured into interdisciplinary teams to streamline implementation, therefore, outcomes were much easier to achieve in comparison
to Calgary, where councillors were not that supportive of the planners’ vision. Planners spoke about the need to make compromises to get elements of their vision approved, resulting in the fact that often elements which did not fit with New Urbanism principles were incorporated into the community.

A third barrier is economic. Consumer preference is a powerful force. Planners and developers often feel that while they are pursuing public policy goals, these commitments are not being reflected in market preferences. Many consumers prefer their own large houses with attached garages, which challenges the central precepts of the New Urbanism philosophy. However, this may also work in the reverse. Consumers attracted to the New Urbanism form may move as they are influenced by the lifestyle benefits they already desire. This is mentioned by Handy (2005) when investigating the increase in local non-motorised trips in New Urbanism suburbs compared to traditional suburbs. It is currently unclear whether the reduction in non-motorised trips is due to land use planning decisions or due to the pre-disposition of the residents who choose to reside there.

While by no means exhaustive of the issues raised in Grant (2011), these three barriers are illustrative as some of the issues New Urbanism must contend with if it is to become a valid land use model on a large scale.

**Challenges to New Urbanism**

From the examination of these built New Urbanism communities, two key challenges become clear. Each will be dealt with in turn.

Firstly, the evidence that New Urbanism communities are actually achieving the key outcome of reducing automobile dependence is unclear. While Orenco Station and the suburbs of Washington, Portland are performing better in internal interconnectedness, they have failed to translate this into the wider city area. This is also found in Australian examples as outlined by Falconer et al (2010), where the incidence of local non-motorised trips was higher in New Urbanism communities than traditional suburbs, but the same in inter-suburban trips. Furthermore, questions have arisen whether this increase is due to land use planning outcomes or the pre-disposition of the residents who choose to live there. However, it is important to note that despite these criticisms, successes have been achieved. At some level, the planning and design decisions made have changed the behaviour of its residents. Whether this is due to New Urbanism enabling previously held tendencies or encouraging new ones, it is a step in the right direction. To take this a step further, increased investment in regional sustainable transport options is required. Land use planning and design alone can’t achieve significant changes to travel behaviour without a corresponding commitment in transport planning and investment. With increased connectivity between New Urbanism communities, the potential for significant behaviour change is much more likely.

The second key challenge to New Urbanism is the systemic barriers to implementation. Political will, in an environment of short term political cycles, tends to focus on populist policies rather than long term investments for the public good. Economic barriers play into this, with consumers influenced by the dominant form around them and unwilling to concede on elements of the private realm in return for the public realm. Herein lies a key tension within the planning profession - do you design for the public good or the personal want? After all, many of the things we desire are bad for us, yet should anyone have the power to take that choice away?

Implementation barriers pose a significant challenge for the short term future of New Urbanism. Inevitably, as in the Canadian case studies, all New Urbanism communities will require compromises in order to get off the ground and therefore will struggle to live up to the claims made by their proponents. Work is required to instill a belief in the vision across
all of those involved with the development process at the conception stage. As evidenced by the Markham experience, goals are more easily achieved when the vision is believed in at all levels. How effective this can be might still be unclear, but it is an important first step in addressing systemic issues of implementation.

**Conclusion**

New Urbanism is a planning and design model which aims to develop community and encourage sustainable development outcomes. Its attempts to create liveable communities which are diverse, mixed use and walkable are linked to the desire to reduce automobile dependence. At the local neighbourhood scale, New Urbanism has proved mostly successful in achieving modest changes to community behaviour and creating an urban form which is consistent with sustainability principles. Elements of mixed use with higher density and increased access to open space cater for those who are pre-disposed to utilise them at the very least. However, implementation between departments and regions needs to be improved, and significant corresponding investment in sustainable transport needs to be made for New Urbanism for achieve better outcomes in reducing automobile dependency. While New Urbanism does in fact provide a useful model for sustainable land use planning, there is still some way to go before it can achieve the desired outcomes.

**References**


A review of Victorian government’s planning policies in an attempt to construct a sustainable urban form

Hayley Presnell

Since the 1954 Melbourne Planning Scheme, the Victorian government has recognised the need to decentralise, in other words, move activity away from the Central Business District (CBD) into designated activity centres located within the suburbs of Melbourne. Every structure plan since has included policies to establish activity centres along major transport corridors, with the aim of constructing a polycentric urban form. However, over the years the Victorian Government has failed to implement these policies, allowing businesses to remain in the CBD or else locate to any area the business desired, regardless of its location to public transport or designated activity centre. This has resulted in Melbourne’s urban form becoming an unsustainable hybrid of both the monocentric and polycentric urban forms. This paper will firstly consider the differences between monocentric and polycentric cities, particularly what this means in terms of transport usage, and which urban form is more sustainable for Melbourne. Secondly the paper will examine the 1954 Planning Scheme of Melbourne, showing the intentions of the Victorian Government to create a polycentric city. Then, it will consider the effects of the 1980 District Centre Policy and the implications of failing to adhere to the policy, especially in the case of the Coles Myer head office. The paper proceeds with a review of Melbourne’s most recent strategic plans, which are Melbourne 2030 and Plan Melbourne, and the issues with the current activity centre policies. Lastly, the paper will consider the necessary actions to be implemented by the government to ensure the achievement of sustainable urban form.
Monocentric versus Polycentric Cities

Recently, there has been strong debate amongst scholars regarding which urban form is the most sustainable for a future city. Around the world, the majority of cities have developed either monocentric or polycentric urban forms. The monocentric city is seen as the more traditional structure of Western societies (Buliung and Kanaroglou, 2006), in which the urban form has a highly dense commercial core, sometimes known as the central business district, surrounded by residential suburbs (Buliung and Kanaroglou, 2006). The monocentric urban form provides strong support for a radial public transport network as commuters would have many origins but a concentrated destination (Buchanan et al. 2006). However, due to urban sprawl in the suburbs, it tends to lead to increased travel distances, car dependency and heavily congested roads (Buchanan et al. 2006). High-density mixed-use activity centres, decentralised from the CBD were thought to reduce travel distances, cull car dependency and encourage more journeys via public transport and walking (Buchanan et al. 2006). In many world cities, polycentric cities have culled distanced travelled by commuters as it has altered roadway demand routes with less congestion and away from the central routes heading towards the CBD (Gordon et al. 1991). Faster commuting times in polycentric cities are caused by businesses moving away from the CBD and into activity centres located within the suburbs. The idea is that employees will then relocate to those areas to be closer to their jobs, meaning less travel from home to work. From an environmental and sustainability perspective, an urban form with less travel time is far more appealing as it would reduce the emissions produced from cars travelling extended journeys.

In Germany, a study has shown that the average travelling time for people living in polycentric cities is shorter than that of monocentric cities. The findings show that average distance of commuters in the polycentric cities of Stuttgart (13.5 km) and Frankfurt (16.4 km) is shorter than those experienced in the monocentric cities of Munich (19 km) and Hamburg (20.8 km) in 2007 (Guth et al. 2009). However, urban forms have not always been the answer for some cities, as it has been found that employees do not always follow their jobs and relocate to or near an activity centre, continuing to commute long distances across the city to work. In some cities including Melbourne, policies have been implemented to require businesses to locate within activity centres. However, some of these policies were never properly enforced, leading to business locating outside of activity centres, causing problems that will be discussed later in this paper.

In many ways, in terms of sustainability, a polycentric urban form is ideal. However, unless all the elements fall into place, it can create an urban form that is not functional. In the case of Melbourne, the government’s failure to adhere to its policies to move the urban form away from a monocentric city towards a polycentric one has created an urban form that is a hybrid of the two, which is not functional. The following sections of the paper will discuss the past strategic plans of Melbourne and the realities of their implementation.

1954 Melbourne Metropolitan Planning Scheme

The first strategic plan of Melbourne worth noting was the 1954 Melbourne Metropolitan Planning Scheme published by the Melbourne and Metropolitan Board of Works. In 1954, Melbourne was a fraction of its current size, barely extending beyond what is now called the inner and middle suburbs (DELWP, 2014). There was also some development extending out of Melbourne’s CBD along the existing train lines (DELWP, 2014). The planning scheme was released at a time when war was a realistic threat and a major policy of the planning schemes was decentralisation of activity out of the CBD. One of the reasons for dispersing the concentration of population around the city and into district
centres, was to minimise the attractiveness of attacking Melbourne during war time (MMBW, 1953). The 1954 planning scheme was really the beginning for Melbourne’s strategic planning known today. The report outlines the beginning of development corridors along train lines as well as proposing 5 district centres for the decentralised activity centres, namely Footscray, Preston, Box Hill, Moorabbin and Dandenong (MMBW, 1953). Along with the district centres and development along transport corridors, the plan proposed major open space to be located between the transport corridors and along rivers and creeks (DELWP, 2014). The report planned for Melbourne’s population to reach 2.5 million by the 1990s a population that was actually reached in Melbourne two decades earlier in the 1970s (DELWP, 2014).

During the 1950s car ownership had increased dramatically all over the Western world. Traditional suburban strip shops were deemed unsuitable for the modern day car owners (MMBW, 1953). In America, stand-alone shopping centres had really succeeded and they were thought to have had the same appeal in Melbourne. The Melbourne and Metropolitan Board of Works (1953, p. 53) stated that “We must anticipate that the decentralisation of retail shopping will be found just as necessary and desirable in Melbourne as it is in American cities.” With the backing of the planning scheme, the Myer family bought land in 1958 and established the first decentralised retail shopping centre at Chadstone, which was located 12km south east from the CBD (Goodman and Moloney, 2004). The success of Chadstone led to the opening of several other shopping centres around Melbourne in the 1960s and 1970s. The success of these centres was due to the increased consumer demand for comparison shopping, along with the emerging concept of shopping being a recreational activity (Bromley and Thomas, 2003). The new shopping centres, located on greenfield sites in the suburbs of Doncaster, Ringwood, Preston, Cheltenham and Maribyrnong, were to contribute to the decentralisation of the CBD. The shopping centres, with the exception of Northland in Preston, were not located within the designated district centres outlined in the 1954 planning scheme.

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Scheme in 1954 was the first strategic plan for Melbourne to implement policy in order to achieve a polycentric urban form. Its reasons for doing so, which are defence and anticipated car use, are much different than the reasons for decentralisation outlined today. The endorsement of the American style shopping centre was a major influence over the urban form of Melbourne today. As stated above, only one shopping centre moved into a designated district centre. This was due to the need for these centres to be developed on cheaper greenfield sites due to their size. The government failed to foresee the impact this would have on the urban form of Melbourne. Figure 1. shows the growth of Melbourne from the 1850-2010. Looking at the middle shade of green and the lighter shade of green, we can identify the growth of Melbourne that occurred between 1954 and 1971. The urban growth in 1954 shows development concentrated in the middle to inner suburbs as well as along the train lines extending outward from the CBD, as outlined in the planning scheme. The growth of 1971, however, shows the development of land in-between the transport corridors, significantly impacting Melbourne’s urban form. The construction of shopping centres, car dependency and the population’s desire to own their own home all contributed to this unplanned growth. A significant failure of the government during this era was the failure to consider the impacts of allowing shopping centres to locate in greenfield sites. Shopping centres brought residences to the surrounding areas. Some shopping centres, with Doncaster being a major example, were located on a greenfield site well away from a train line, creating a large residential area with limited transport access. It was not until the 1980 strategic plan that the government recognised the need to implement policy to discourage residential growth that was distant from suitable transport routes.

1980 District Centre Policy

By the 1980s, the government had recognised growing concerns over the spread of development across Melbourne and away from district centres. In 1980, the Melbourne and Metropolitan Board of Works released its Metropolitan Planning Strategy and subsequent Metropolitan Strategy Implementation Report in 1981 (DELWP, 2014). The whole report encouraged development into existing areas along with the establishment of high concentrations of housing, transport, employment and community facilities within district centres located across Melbourne’s suburbs (DELWP, 2014). A major part of the Metropolitan Planning strategy was the District centre policy, which was intended to ensure that the population of Melbourne could continue to enjoy the benefits of suburban living, whilst reducing some of the negative and costly impacts of urban sprawl (MMBW, 1981). The District centre policy aimed to encourage and facilitate the development of designated major activity centres spread strategically throughout the suburbs of Melbourne (MMBW, 1981). The centres were to become secondary to the CBD, providing residence in surrounding areas with local government administration buildings, along with commercial, retail, cultural and entertainment services (MMBW, 1981). By encouraging development within activity centres, the Melbourne and Metropolitan Board of Works intended to reduce the need for people to travel, subsequently alleviate the negative impacts associated with car use such as pollution or traffic congestion (MMBW, 1981).

The Board also argued that the concentration of activity would lead to better use of public amenities such as water supply, sewerage drainage, gas and electricity, as well as public transport (MMBW, 1981). The district centre policy outlined 14 established district centres and proposed 6 potential sites for new ones. The established district centres included Box Hill, Camberwell, Cheltenham, Dandenong, Footscray, Frankston, Glen Waverley, Greensborough, Moonee Ponds, Oakleigh, Prahran, Preston, Ringwood and Sunshine (MMBW, 1981). The proposed sites included
Berwick, Sydenham, Mill Park, Broadmeadows, Werribee and Knox City (MMBW, 1981). Figure 2 shows the location of the established and proposed district centres across the metropolitan area. To promote the district centres and encourage the concentration of activities, the Board implemented certain policies. The policies included locating new government branches into the district centres and allowing multi unit and apartment style buildings to be built on selected residential land located within 1 km from public transport and the district centres (MMBW, 1981). The most influential policy within the District Centre Policy, however, was the requirement of major office developments and shopping centres, with a floor space exceeding 4,000 square metres, to locate within a district centre (MMBW, 1981). This aspect of the policy was important, considering that if major businesses moved to a district centre, it would encourage other businesses and a proportion of the work force to do the same.

![Figure 2: Shows the established district Centres in purple and the proposed district centres in light blue as outlined in the Metropolitan Strategy Implementation Report. Source: (MMBW, 1981)](image)

Over the following decade, the District Centre Policy had some success in directing concentration into these designated district centres. Some centres including Prahran, Box Hill and Moonee Ponds benefited greatly from the relocation of government administrate buildings into their centres (Moodie, 1991; Goodman and Moloney, 2004). However, despite the government’s strong stance regarding the implantation of the policy, it came under pressure from large and influential businesses, especially stand-alone shopping centres, to
expand or locate outside of the designated activity centres (Goodman and Moloney, 2004). In 1984, the government caved into pressures of the Coles Myer corporation and allowed their 30,000 square metre head office to be located at Tooronga, which was not in a designated district centre (Kilmartin, 1986; Logan, 1986; Mcloughlin 1992; Goodman and Moloney, 2004). This breach in policy was then followed by the allowance of the RACV 16,000 square metre headquarters to be located at Noble Park, again outside a district centre (Kilmartin, 1986; Logan, 1986; Mcloughlin 1992; Goodman and Moloney, 2004). The failure of the government to implement their strategy was hailed as the core weakness of the 1980 Metropolitan Planning Strategy (McLoughlin, 1992). The subsequent location of such big businesses outside of activity centres leads to a continuation of the trends that occurred after the 1954 planning scheme, with residential and commercial development continuing to spread further into areas of Melbourne with limited access to public transport.

Melbourne 2030

In 2002, the Victorian Government released its next major strategic plan for Melbourne, Melbourne 2030 - Planning for Sustainable Growth. Melbourne 2030 was designed as a 30-year plan to manage the predicted growth and development across Melbourne (DELWP, 2014). In terms of activity centres, Melbourne 2030 has similar aims to its predecessors. Melbourne 2030 aimed to restrict any development occurring out of activity centre and reduce the need for car transport by concentrating activities into the activity sectors (Department of Infrastructure, 2002; Birrell et al. 2005). The strategy redefined the concept of an activity centre and identified over 1000 activity centres already established within metropolitan Melbourne (Goodman and Moloney, 2004). The plan categorised the activity centres into five categories including the CBD, principal activity centres, major activity centres, specialised activity centres and lastly, neighbourhood activity centres (Goodman and Moloney, 2004). The majority of the 1000 activity centres identified by the strategic plan were classified as neighbourhood activity centres. A controversial component of Melbourne 2030 was the naming of major stand-alone shopping centres such as Chadstone, Highpoint, Northland, Southland, Doncaster, Epping Plaza and Fountain Gate as principal activity centres and major growth areas, although they are not connected to suitable public transport such as trains. The lack of access to public transport will increase inhabitants’ car dependency (Department of Infrastructure, 2002; Goodman and Moloney, 2004).

Another significant issue of the implementation of Melbourne 2030 was the government’s struggle to encourage businesses to relocate from the CBD or other areas into the designated activity centres (Birrell et al., 2005). In the case of Dandenong, the government spent millions of dollars on a face lift to make it an attractive activity centre, full of retail, culture, businesses and entertainment. To encourage development within the activity centre, the government relocated several government departments into the area. However, they have had trouble providing incentives for other businesses such as major financial corporations to relocate into the centre (Birrell et al., 2005). This is mainly due to the fact that many corporations are already completely established in their current locations and therefore not willing to relocate, or there is no market for the service that they offer within the current population demographic of Dandenong. It soon became apparent that the result of Melbourne 2030 was going to be the same as the previous strategic plans of Melbourne, as they continued to aim to create secondary activity centres to the CBD in order to reduce the negative effects of urban sprawl but failed to make any significant changes.
**Plan Melbourne and the Future**

In 2014, the Victorian Government released its most recent strategic plan, Plan Melbourne. Once again, the plan outlined the importance of concentrating development into activity centres. Figure 3 shows the proposed activity centres outlined in the Plan Melbourne report. Plan Melbourne also included major employment clusters such as Parkville, Monash and Dandenong South (DELWP, 2014). The employment clusters are seen as the major centres, secondary to the CBD within Melbourne. Activity centres are then classified as either Metropolitan Activity Centres, of which there are 11, or just activity centres (DELWP, 2014).

The Plan Melbourne report also addresses the need for an extensive public transport system within Melbourne to tackle the growing environmental and social issues associated with Melbourne’s high car dependency. However, little evidence is seen as to whether much action to address the problems outlined in the plan will be taken.

Since 1954, every structure plan for metropolitan Melbourne has promoted decentralisation of the activity in the CBD and into Melbourne’s suburbs. However, as mentioned above, the plans have failed to ensure that the concentration of activity is located within certain centres. Rather than an ideal polycentric city, this has led to a hybrid type urban form of both monocentric and polycentric characteristics. The main activity centre remains the CBD, while other activity centres have taken off, perhaps not in the way intended by the government’s strategic planners, creating some decentralisation. The failure of governments to enforce their policies regarding business location, especially in 1984 with the Coles Myer head office, together with the take-off of stand-alone shopping centres, has led to decentralisation of activity that is dispersed across the metropolitan area and not contained within certain activity centres.
centres. This has occurred in a city being supported by a radial train network, which leaves gaping sections of the metropolitan area unserviced by trains. Even in Monash, one of the major employment clusters outlined in the Plan Melbourne, residents need to drive a car to the train station.

In terms of sustainability, Melbourne’s strategic plans have failed to reduce car dependency, which is an inevitable result of population growth, thus increasing the pollution levels caused by car use. Traffic congestion, a major problem for commuters, is only worsening due to Melbourne’s unpractical urban form. In order for the city to become more sustainable, the next strategic plan needs to implement and enforce policies, requiring business to locate within designated activity centres, promote and enforce medium to high density living within transport corridors and design an updated public transport network that needs to incorporate a sophisticated European style train system that is of semi lattice design. This is to ensure that commuters can travel from any point across metropolitan Melbourne to their destination as conveniently as possible, encouraging commuters to ditch their cars and take the train instead.

**Conclusion**

This paper has looked at the influence that the implementation of strategic activity centre plans has had over Melbourne’s urban form. In an ideal world, a polycentric urban form would create a more sustainable city, as it would encourage transport usage and have shorter commuting times. However, unless all factors fall into place, a polycentric urban form can create a city that is unsustainable. Although the Victorian Government sets out to decentralise Melbourne and turn it into a polycentric city, their failure to adhere to their own policies in terms of activity centres and in allowing business, shopping centres and activity centres to locate well away from suitable public transport, has created an unsustainable urban form that is a hybrid of the polycentric and monocentric forms. Drastic action needs to be taken soon, but unless the government can enforce their policies and build a sophisticated transport system, the future of Melbourne is likely to be put at risk.
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Is Plan Melbourne an effective urban strategy for employment, housing and transport?

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Plan Melbourne, released in 2014, is not an effective metropolitan planning strategy. The Plan fundamentally misunderstands, or ignores, the realities of Melbourne’s employment, housing and transport needs. It inadequately addresses job location trends, and the proposals for decentralising employment from Melbourne’s core to dispersed employment clusters and activity centres is unlikely to succeed. The Plan offers little incentive for employers to relocate away from the advantages offered by the Central Business District (CBD). In relation to meeting Melbourne’s future housing needs, the Plan, does not address housing densification imperatives and defers to maintaining low density in Melbourne’s established suburbs and developer preferences for detached housing on Melbourne’s fringe. The absence of measurable targets for housing consolidation within established areas presents an obvious challenge to maintaining Melbourne’s urban growth boundary. While Plan Melbourne acknowledges the importance of linking public transport to land use, it does not specify a cohesive transport strategy outside construction of private roads and vague statements about the importance of improving public transport services. Understanding where people live and work and how they get around are central considerations for urban planners. Strategic planning documents should understand how these three elements interact. This essay explores how well Plan Melbourne understands employment, housing and transport and whether the Plan represents sound urban strategy. Far from effective strategic planning, Plan Melbourne is heavy on description, lacks detail, extols market-driven planning ideology, and does not provide specific direction and strategy to safeguard Melbourne’s future liveability.
Employment

Manufacturing began to decline in Melbourne in the 1970s (Dingle & O’Hanlon 2009, p. 53; Tonts & Taylor 2013, p. 2646). Macroeconomic reform in the 1980s, including deregulation of the financial system, trade liberalisation and floating the Australian dollar, profoundly altered the Australian economy. A new service and knowledge-based economy emerged, concentrating highly paid professional work in the inner city (Dingle & O’Hanlon 2009, p. 55). By clustering in Melbourne’s central core, businesses exploit the benefits of agglomeration. These benefits include proximity to clients, competitors and labour (Glaeser 2011, p. 25). Warehousing and logistics services have clustered in parts of outer Melbourne which enjoy strong road transport links and cheaper land costs (Sigler et al. 2015, p. 3). While there are jobs located throughout Melbourne, its employment structure remains fundamentally monocentric with over-centralised employment opportunities resulting from agglomeration economics (Dodson & Berry 2004, p. 39; Kelly & Donegan 2014, p. 10; Sigler et al. 2015, p. 4). Figure 1 below demonstrates that economic activity, and therefore employment, is highly centralised in Melbourne.

Changes to the Australian economy over the last forty years have created significant spatial changes in Melbourne; changes Plan Melbourne only partially understands. The Plan specifically cites expanding the central city ‘to allow the continued growth of knowledge-intensive and high-skilled firms in the central city’ (DTPLI 2014, p. 30). However, Plan Melbourne aims, somehow, to simultaneously develop the city’s core as a major employment hub and disperse employment opportunities through activity centre policy and national employment clusters (DTPLI 2014, p. 23). The Plan does not specify any methods for the difficult task of dispersing employment. It could offer incentives to second tier firms and government departments to relocate (Goodman & Moloney 2004, p. 49; Troy 1996, pp. 175-176) or facilitate the outward spread of low-skilled ‘back office’ functions such as data processing (Watkins 2009, p. 1554). As Figure 2 highlights, increasing the employment density of middle and outer suburbs is a significant challenge given current density trends; there is a clear concentration of employment in or within a few kilometres of Melbourne’s CBD.
With no clear direction on how to disperse employment, Plan Melbourne simply strengthens Melbourne’s monocentric employment structure which in turn, impacts Melbourne’s housing and transport policies.

Plan Melbourne aims to ‘facilitate the development of national employment clusters’, with each ‘anchored by specialised activity (such as a university, research facility, medical facility or manufacturing enterprise) that has seeded its growth, but which over time will develop a unique profile’ (DTPLI 2014, p. 41). Plan Melbourne nominates six national employment clusters: Monash, Parkville, Dandenong, Werribee, Sunshine and LaTrobe, although details for implementing the clusters are vague and ‘subject to further investigation’ (DTPLI 2014, p. 42). Additionally, and crucially, there is little meaningful discussion of public transport links to these clusters other than ‘identifying transport development and investment opportunities (DTPLI 2014, p. 51). This is of particular concern as Monash University and La Trobe University currently have poor public transport connectivity. Given Melbourne’s prevailing monocentric employment structure, Melbourne can only become truly polynuclear through aggressive incentivisation, including subsidies for business to relocate. In addition, significant investment in public transport infrastructure is required (Goodman & Moloney 2004, p. 49).

Plan Melbourne does not provide any definitive strategy to support national employment clusters. Variants of activity or district centre policy have been pursued in Melbourne since 1954 (Mees 2000, p. 219). Plan Melbourne continues this tradition and aims to ‘plan for jobs closer to where people live’ (DTPLI 2014, p. 41). However, Plan Melbourne offers an incomplete vision for the creation of activity centres. As opposed to allowing the market to disperse activity, activity centres are designed to cluster a range of people-attracting activities including retail and employment around a public transport node. Activity centres are designed to encourage infill development and reduce pressure on the urban growth boundary. The benefits of activity centres include decreased car use, greater social interaction and the capacity for business to realise the benefits of agglomeration economics (Goodman & Moloney 2004, p. 48). Successful activity centres must be mixed use and be built around a key public transport node such as a railway station (Goodman & Moloney 2004, p. 53; Troy 1996, p. 176). ‘Big box’ retailers who rely on consumers to drive to stores situated
on cheaper isolated sites, exert enormous pressure on governments to abandon activity centre policy (Goodman & Moloney 2004, p. 49). Subsequently, government regulation as opposed to ‘encouragement’ is required to ensure activity centres are successful.

Coordinated local government involvement and meaningful funding to facilitate activity centre development, especially investment in public transport infrastructure, is essential for viable activity centres (Goodman & Moloney 2004, p. 54). For best effect, activity centres should be located along transit lines (McNabb 2001, p. 17; Troy 1996, p. 175). Plan Melbourne states that metropolitan activity centres will provide opportunities for Melburnians to access a broad range of goods and services, be well-connected to public transport and will provide employment, recreation and housing (DTPLI 2014, p. 42).

While Plan Melbourne nominates a number of activity centres which are situated along existing transport corridors, Melbourne’s current rail network is not sufficiently high capacity to sustain activity centres. Plan Melbourne’s activity centre policy is ultimately likely to fail as it does not incentivise relocating employment opportunities or provide any meaningful detail on how it will deliver high quality public transport services.

**Housing**

Using Victoria in Future modelling, the Plan states that Melbourne requires an addition 1,570,000 dwellings by 2051. The Plan advocates allocating 610,000 new dwellings to growth areas, 310,000 dwellings into the central city and surrounds, with the remaining dwelling balance of 650,000 slated for established suburbs (DTPLI 2014, p. 62). Unfortunately, the Plan also states ‘we must clarify where future development will occur, while simultaneously acting to protect the majority of our existing suburban areas from inappropriate development’ (DTPLI 2014, p. 61). This desire to ‘protect’ Melbourne’s prevailing urban form is inconsistent with the stated intention of altering the same urban form through residential intensification (Dowling 2014, p. 1). Substantial changes to urban form in established suburbs will likely draw considerable resident opposition (Cook et al. 2012, p. 1; Madden 2015, p. 1; Woodcock et al. 2010, p. 95). Increasing density in existing suburbs requires political will and agency. Given that the Plan states it is yet to identify areas for residential intensification, and that it wants to protect the ‘majority’ of Melbourne, the Plan is effectively meaningless as an avenue to increase housing density within the existing urban growth boundary. The Plan attempts to specify where growth will occur: the inner city, urban renewal projects, employment clusters, activity centres, along public transport corridors, greenfield sites and where councils voluntarily apply the reformed residential growth zone (DTPLI 2014, p. 63). Council application of the reformed residential zones is likely to have a far greater strategic impact on housing location and supply than the Plan itself (Rowley 2014, p. 14). The Plan recommends a surprising 50 per cent of suburban Melbourne be allocated to the Neighbourhood Residential Zone (DTPLI 2014, p. 119). Melbourne’s middle ring, which offers great possibilities for residential infill is hampered by the potential for conservative application of the reformed residential zones (PIA nd, p. 2; Milner 2014, p. 5). Historically, urban consolidation objectives have been pursued unevenly in Melbourne: high-rise development has concentrated in the CBD, inner city and around activity centres, with little consolidation activity in the outer suburbs (Buxton & Tieman 2005, p. 151). The current reliance on two dominant dwelling models – detached housing in the outer suburbs and inner city apartments are not desirable (Buxton, Hurley & Phelan 2015, p. 44). Successive state governments have allowed the market to dictate Melbourne’s future housing locations. In the absence of meaningful implementation strategies, including matching housing projections to location and supply, and specifying minimum density requirements, Plan Melbourne offers little in directing Melbourne’s future housing needs. The Plan acknowledges the need to prepare a metropolitan housing map
(DTPLI 2014, p. 60), however without this map, and in the absence of other clear direction, Plan Melbourne’s strategy for coordinating housing growth in established suburbs is weak.

Rather than facilitating fragmented and piecemeal market-led development (Newton 2010, p. 93; Buxton, Hurley & Phelan 2015, p. 7), Plan Melbourne could have explored a number of intensification options. Significant additional housing along transport corridors is available (Woodcock et al. 2010, p. 94) although this would see an enormous loss of heritage buildings (Buxton, Hurley & Phelan 2015, p. 11). Increased density along transport corridors could be supported by strong action to support activity centres, however as previously discussed, Plan Melbourne does not assist with providing the conditions necessary for successful activity centres. Newton (2010, p 81) points out that greenfield and brownfield densification has been politically easier than pursuing ‘greyfield’ opportunities which lie in older suburban areas within 5-25 kilometres of the CBD. Greyfield development is crucial for the future sustainability of Melbourne, however brownfield opportunities should not be overlooked. Brownfield sites in Melbourne’s CBD and surrounds, if developed at medium density of up to six storeys can yield almost as many dwellings as high-rise towers (Buxton, Hurley & Phelan 2015, p. 3). Melbourne has more than enough land within the existing urban growth boundary to meet the dwelling needs of its future population (Buxton, Hurley & Phelan 2015, p. 4). Churchman (1999, p. 408) and Filou et al. (2010, p. 541) both emphasise the need to customise consolidation practices to the specific needs of particular locations. However, clear direction on in-fill opportunities including minimum density yields, are not evident in Plan Melbourne. The Plan does not specify how urban consolidation will occur other than applying broad brushstrokes to the idea of residential intensification. The Plan is attempting to implement residential densification without touching Melbourne’s established suburbs – the very place where increased density is suitable and desired.

Greenfield development remains the dominant development model in Melbourne and the city’s urban growth boundary has been progressively relaxed (Bunker 2014, p. 453; Buxton & Taylor 2011, p. 5). Melbourne is one of the least dense cities in the world (Bunker 2014, p. 449; Buxton & Tieman 2005, p. 138; Mees 2009, p. 59). Plan Melbourne specifically acknowledges that low-density housing growth will exert pressure on Melbourne’s urban growth boundary (DTPLI 2014, p. 61) and acknowledges that pushing the urban boundary ever outwards is not sustainable (DTPLI 2014, p. 60). There are intensification options available in greenfield areas which have traditionally been overlooked (Buxton & Tieman 2005, p. 151) and there are substantial land savings available in greenfield locations if residential densities are increased (Buxton & Scheurer 2007, p. 92). Plan Melbourne does not mention these options and is silent on the issue of specifying desirable density for different locations within Melbourne – it could have specified minimum housing density requirements. Without better strategy to densify established suburbs, Melbourne’s growth boundary and the food production capacity of its urban hinterland may be compromised. Direction 6.1 of Plan Melbourne suggests ‘confirming a mechanism to lock in an urban growth boundary’ (DTPLI 2014, p. 162). An effective urban strategy would provide clear and specific parameters for such a boundary.

Transport

Due to the over-centralisation of employment and haphazard dispersal of housing, Australian cities increasingly trap households to locations remote from services and employment (Gleeson, Dodson & Spiller 2012, p. 117). Plan Melbourne offers little detail on future public transport strategy and is also limited by failing to specify a funding commitment to improving services (Hale 2014, p. 18). It makes a number of general observations about the importance of transport
systems and improving access to job rich areas, yet fails to specify details. It advocates ‘moving’ to a metro-style Melbourne rail link and improving services generally (DTPLI 2014, p. 83), yet offers no detail on how to achieve this. The Plan largely focuses on big-ticket items such as the East West link, the North East link, removing level crossings and developing port infrastructure (DTPLI 2014, p. 83). However, there is no specific land use or density analysis. The issue of density is fundamental to public transport policy considerations. Yet density considerations of any kind are conspicuously absent from the Plan. Density can be defined in a multitude of ways and is a hugely complex and problematic concept (Mees 2000, p. 185; Churchman 1999, p. 389). Mees (2009, p. 58) argues that urban policy in Australia has largely been based on the mistaken belief that low residential density has led to high car use and poor public transport provision. Mees argues against this prevailing view, stating density has little relationship to transport mode share and that transport policies have a greater impact than residential density. Mees’s contention is in direct contrast to Newman and Kenworthy (1989, p. 31) who hold the view that a link exists between transport energy use, car dependence and urban density. They argue that as metropolitan densities fall, fuel consumption rises. The extension to this argument implies that high densities are required to generate sufficient economies of scale in relation to providing public transport services. Mees argues that the quality of public transport is more influential than density. Mees (2009, pp. 60-61) also recognises that inconsistent definitions of density can lead to misleading and at times absurd density comparisons. Transport policy can be altered far more easily and quickly than urban form and ultimately, urban consolidation objectives, including the pursuit of compact city objectives, are unlikely to decrease car dependence (Mees 2009, p. 60). The relative amenity of different transport modes, including walkability to stations, influence mode choice more than density considerations.

Melbourne’s largely monocentric employment structure, coupled with housing affordability largely being confined to the urban fringes presents a challenge for public transport policy in Melbourne. The journey to work is the single largest contributor to traffic volumes, particularly during peak hour (Mees & Groenhart 2014, p. 67). Car parking restraints in the CBD have also increased public transport use. In light of the challenges Melburnians face travelling potentially long distances from middle and outer suburbs to Melbourne’s employment-rich centre, it is hard to justify the strategic need for the East-West link (or Western Distributor) or connecting the ‘missing’ ring road link between Eastlink and the Western Ring Road. While not a universally held view, it is widely acknowledged that building more roads does not reduce traffic congestion, as increased road capacity leads to a proportional increase in car driving (Mares 2012, pp. 15-16). After decades of bipartisan neglect, given increasing road congestion and environmental concerns, massive investment in heavy rail infrastructure is a significant priority and should form the cornerstone of Plan Melbourne’s transport considerations. Rail has greater transport capacity and shorter travel times than other modes of public transport (Buxton & Tieman 2005, p. 150), a view shared by Mees and Groenhart (2013, p. 69) who agree with the primacy of heavy rail over buses and light rail and consider that an effective multi-modal public transport system requires heavy rail as its backbone, with trams and buses used to feed heavy rail. A good transport network must provide smooth connections between nodes. Removal of level crossings as specified in the Plan is a positive development for improving connectivity (Woodcock 2016, pp. 21-22). However, overall, Plan Melbourne lacks strategy for developing Melbourne’s public transport, a crucial oversight given the increasing environmental imperative of reducing car use – especially for journeys between home and work. Heavy rail is the most effective means of connecting people to work and leisure activities in a large urban centre (Mares 2012, p. 19).
Our cities are becoming inequitable due to employment concentrating in the centre and affordable housing being mostly available on the urban fringe, thus necessitating long commute times (Kelly & Donegan 2015). Plan Melbourne should address this growing social and spatial inequality. The Plan also ignores the need for improved regional transport services which could link Melbourne to satellite cities, thus dispersing population pressure away from Melbourne.

Plan Melbourne does not adequately understand Melbourne’s employment, housing and transport needs. It does not provide effective means to disperse Melbourne’s over-centralised employment, fails to address the need for medium density housing in established suburbs and is likely to exacerbate developer-led housing trends for extreme high density in Melbourne’s core, and low density sprawl at its fringes, with obvious implications for the urban growth boundary. Finally, Plan Melbourne offers only vague statements on the importance of improving metropolitan public transport services and regional rail links. Effective urban strategy is detailed and measurable. Plan Melbourne is vague, non-committal and ultimately inadequate as a means to safeguard Melbourne’s future liveability.

References


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