



PERTH

as a region of
2 million people

a FACTBase Special Report



THE UNIVERSITY OF
**WESTERN
AUSTRALIA**

ABOUT FACTBase

The FACTBase project is a collaborative research venture between the Committee for Perth and The University of Western Australia that commenced in 2008. Its objective is to explore Perth's liveability and global connectedness through an examination of its economic, social, demographic and political character.

The FACTBase team of researchers condense a range of existing information on important issues, map what is happening in Perth in pictures as well as words, and examine how

Perth compares with, and connects to, other cities around the world.

Research findings are released regularly, providing an important resource for academics, planners and decision-makers on the following major aims:

- Examining the dynamics of Perth's regional economy;
- Exploring Perth's social and cultural landscape;
- Considering issues related to 'urban liveability' in Perth; and
- Examining governance and policy arrangements.

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ABOUT THE REPORT



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Perth is a dynamic city in the Indian Ocean region, rapidly adapting to economic change, population growth and increasing diversity. This report provides fresh insights into how the city has responded to these factors.

It shows how, from the end of World War II, the city was transformed by growing levels of car ownership and steady population growth. The outcome was a model of development that saw the city's suburbs expand rapidly. The report demonstrates how successive planning strategies and policies have attempted to manage the expansion of the city, often with mixed success.

Comparing Perth with other Australian cities, the report reveals that while Perth has made significant progress in accommodating an estimated 3.5 million residents by 2050, there remains some way to go in responding to emerging economic and technological realities, changing social values, and community expectations.

The report emphasises that if Perth is to retain its position as one of the world's most liveable cities, it is critical that it takes the lead in developing innovative responses to the challenges facing all Australian cities.

FROM THE CEO



Marion Fulker
CEO, Committee for Perth
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This FACTBase Special Report: *Perth as a region of 2 million people* had its genesis in our *Hashtag Perth* project, which seeks to reposition the region by enhancing its reputation — both locally and further afield. But the first step in achieving this aim is to understand how Perth has grown and developed into a region of 2 million people.

This research was an important undertaking because there is no single document in existence that examines Perth's population growth in such detail. Rather than looking at Perth in splendid isolation, this report also benchmarks the region's performance against the three largest Australian cities: Sydney, Melbourne and Brisbane.

Through the *Hashtag Perth* project, we discovered that Perth is different — but it's often a 'good' type of different. This report also serves to demonstrate that Perth is not the same as Australia's other capitals.

Perth is the place where the Australian Dream still exists. Suburban living in single-dwelling, family style homes with backyards remains the dominant form of housing, albeit on much smaller lots than yesteryear.

But there are some negatives: Perth's low-density nature has resulted in a lack of critical mass, even in the city centre, and its residents mostly move between home and places of recreation and work by car.

Perth as a region of 2 million people shows that Western Australia's capital is at a fork in the road. Will its growth to 3.5 million people continue with the same low-density preference of its current residents? Or, will it consolidate around its city and inner-urban core, mimicking the reality of many other cities?

It is fair to say that what works well for a region of 2 million people is unlikely to be as efficient and effective with 1.5 million people more.

While this report is a detailed look in the rear-view mirror, it is also a handy reference tool for policy makers looking at navigating forward from the position that Perth currently finds itself in. Will it be more of the same, or will new paths be chosen?

AT A GLANCE

THE AUSTRALIAN DREAM

Home Ownership in WA and Australia from 1947 to 2019



Motor Vehicle Growth in WA, NSW, QLD, VIC and Australia from 1955 to 2019

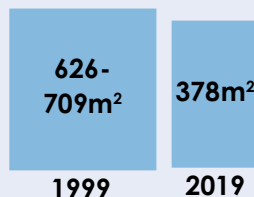


A SHIFTING DREAM

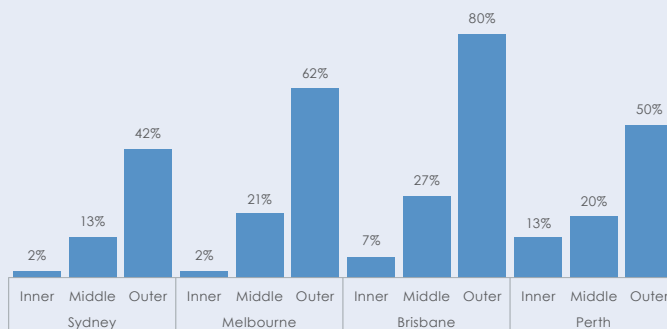
Governments have attempted to address the negative impacts of low-density expansion through land use and transport policies and strategies.

Policies for urban consolidation have had a significant impact on the form of Australia's suburbs which is most apparent in the shrinking size of suburban backyards.

Sizes of residential housing lots have nearly halved from 1999 to 2019.



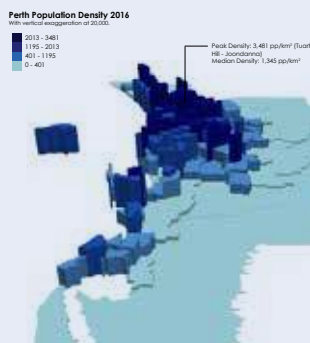
Percentage of Population Beyond Walking Access



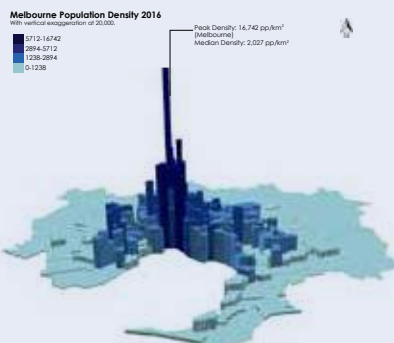
In Greater Perth public transport accessibility in inner-urban areas is relatively low while accessibility in the outer suburbs is comparatively high.

LOW INTENSITY CAPITAL

Perth's Gradient of Population Density by SA2



Melbourne's Gradient of Population Density by SA2



The distribution of Perth's population is uniquely dispersed and low to medium density compared to other Australian capitals. Greater Perth has been found to lack peaks of high population intensity.

SCATTERED EMPLOYMENT

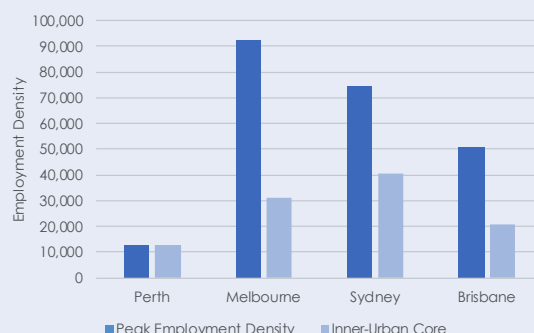
Employment densities in Greater Perth are highest in the Perth city centre, yet are low compared to peak densities in other major Australian capitals. Employment in Greater Perth is scattered through a large number of relatively low-density activity centres.

Top 3 SA2s of Employment Density in Greater Perth



Perth City Osborne Park Industrial Subiaco - Shenton Park

Peak Employment Densities



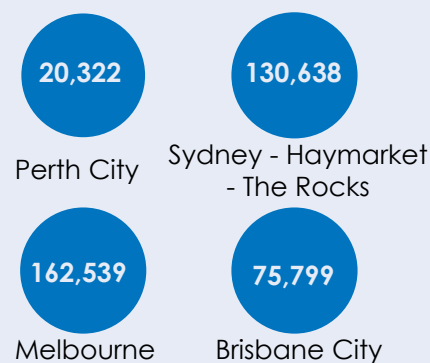
LOW INTENSITY HUBS

Perth lacks successful high-intensity, mixed-use residential, employment and entertainment hubs.

Perth's top 5 mixed-use hubs are:

1. Perth City
2. Osborne Park Industrial
3. Subiaco - Shenton Park
4. Wembley - West Leederville - Glendalough
5. Mount Hawthorn - Leederville

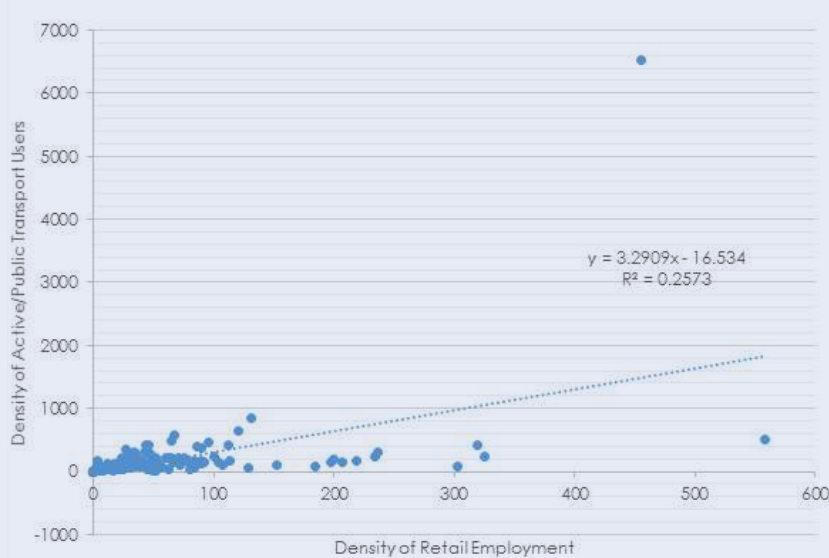
Peak Mixed-Use Hub Scores for each City



EXPANDING ENTERTAINMENT

In Greater Perth entertainment industries, particularly retail, have expanded outward and are car based. Despite this, the role of the city centre as an entertainment hub has been revitalised since 2011.

Retail and Public and Active Transport Relationship Greater Perth



Victoria Park-Lathlain-Burswood

is Perth's most densely employed SA2 in the arts and recreation services industry.



EXECUTIVE SUMMARY

This FACTBase Special Report examines and maps the urban settlement patterns that have shaped Perth's morphology as a region of 2 million people.

From early twentieth-century urbanisation, to mid-twentieth-century suburban growth, and twenty-first-century policy responses and trends, this report compares the spatial structure and form of Greater Perth with Australia's most populous cities — Greater Sydney, Melbourne and Brisbane. In doing so, it maps four main components of urban form: population density, employment density, mixed-use intensity and the spatial distribution of employment densities in the entertainment industries.

In the early twentieth-century, the introduction of light and heavy rail systems in Australian capital cities allowed for the initial outward spread of urban areas to deliver medium- to low-density suburban lifestyles along transport corridors. However, in the post-World War II era, low-density suburban growth increased exponentially, fuelled by the mass adoption of private cars and supported by population growth, post-colonial European

culture and Australia's egalitarian values.

New low-density suburbs delivered the best of town and country. Known as the 'Australian Dream', suburban living, car-based travel and home ownership became cornerstones of Australian lifestyles and culture.

In mid-twentieth-century Australia, land use and transport policy primarily sought to support and fortify preferences for low-density suburbs and motor vehicles.

Australian capitals consequently became heavily dependent on car travel — providing freedom and easy movement for owners but also delivering adverse consequences, including pollution and traffic congestion. The sprawl associated with low-density, car-oriented suburban growth also increased the size of urban regions, negatively impacting regional environment. Furthermore, the role of city centres as employment, retail, entertainment and cultural hubs markedly declined and many became run-down.

By the late twentieth-century, governments had started to respond with

policy to revitalise public transport systems and consolidate urban growth through smaller residential lots and urban infill. State Governments throughout Australia also invested in improving public transport and, in some cities such as Melbourne, there was renewed emphasis and investment focused towards redeveloping and reinvigorating city centres.

This report has found that while land use and transport policy was relatively consistent across capitals, the historical form of the regions and the implementation, emphasis and outcomes of land use and transport policy varied considerably. These differences are evident in the form and spatial structure of population and employment land uses in Australia's largest capital cities today.

Greater Perth is notable among Australian capitals for its low and relatively uniform population densities. In Greater Perth, population densities are more consistently suburban than other capitals, and — unlike Greater Sydney, Melbourne and Brisbane — the Perth region does not exhibit a significant spike in population densities in the inner-urban core.

The spatial structure of Greater Perth is also marked by its low-density and diffuse employment structure. While employment densities are highest in the Perth City Centre Statistical Area (SA2), they are low compared to the inner core of Greater Sydney, Melbourne and Brisbane, where employment is heavily concentrated in central locations. In this context, Greater Perth has been identified as lacking the high-intensity mixed-use hubs that are associated with vibrancy in both urban and suburban locations.

In addition, the report illustrates an expanding retail structure with employment particularly widely dispersed and car-oriented compared to other capitals, which exhibit strong concentrations of retail industries within inner-urban cores.

Greater Perth's suburban form also delivers many benefits. In particular, low-density lifestyles in Greater Perth are notable for continuing to deliver the foundations of the Australian Dream, including single residential housing, home ownership and high levels of accessibility by car.

These benefits are strongly reflected in the perceptions of Greater Perth among local residents and external



Photo: David Broadway. Source: Committee for Perth.

stakeholders. In particular, Greater Perth has become known for its affordable, low-density, family-friendly lifestyles as well as its beautiful landscape and access to nature.

However, suburban lifestyles also come with costs, including environmental impacts; continued car reliance; a lack of housing diversity and a low-intensity city centre that lacks the critical mass of people needed to facilitate vibrancy and innovation.

Looking forward, the maintenance of a uniformly suburban form is likely to hinder Greater Perth's global competitiveness, particularly by reducing its attractiveness to students and young people, innovative businesses and tourists. Greater Perth's

low-density form may also reduce the region's capacity to capture opportunities and adapt to new challenges, including the growth of innovation and knowledge economies; globalisation and the rise of Asia; shifting demographics; and climate change.

There is potential for Greater Perth to identify a new and more diverse 'dream' as it grows to a region of more than 2 million people. This dream should aim to not only enhance the region's lifestyle strengths but also to respond to transforming twenty-first century economic, social and environmental conditions, most notably by building Perth City Centre as a rich and dynamic regional heart.



Source: WA Today, 2018.

INTRODUCTION

Flamed by post-war prosperity, an abundance of space and post-colonial European ideals of a working and middle-class suburban utopia in the twentieth century, Australia became one of the world's first suburban nations and the Australian Dream was born (Horne, 1964).

The dream was simple: buy a quarter-acre block with a stand-alone house, a Hills Hoist, purchase a family car, have a couple of kids and invite friends over for weekend barbeques (Sgro, 2019).

At that time, suburban lifestyles were thought to deliver the best of both city and country. People could enjoy the employment prospects, comfort and

safety of the city, while also having access to affordable land ownership, larger homes, space, privacy and nature, which were previously only available in "the bush" (Davison, 1995; Turner 1986).

Suburbanisation also provided settlers and immigrants with access to aspirational, middle-class lifestyles that had been out of reach in late nineteenth- and early twentieth-century Australia and other countries of origin. This made suburbanisation synonymous with a uniquely Australian sense of egalitarianism (Gilbert, 1988).

Consequently, the suburbs were not just a way of living in Australia

but they also became a symbol and expression of national identity.

Despite the mass popularity of this way of living, anti-suburban sentiment was ever present. In the twentieth century, intellectual discourse about the suburbs presented them as dull, depressing and culturally deprived (Gilbert, 1988; Kinnane, 1998). Suburbanism was criticised as "a living death of conformity and safety" and characterised as delivering the worst of both worlds — destroying the traditional forms of community that were found in rural regions, while eliminating the freedom of choice that is characteristic of an authentic urban life (Kinnane, 1998, p. 42).

Governments and communities also became increasingly aware of the impact of low-density development and car-oriented transport systems on the environment; on traditional city centres and public transport systems; and on commuting distances between places of work and home (Davison, 1995).

Although these challenges and criticisms did not deter millions of Australians from suburban living, they did spur responses from governments. This included policy efforts to shift employment to the suburbs, promote infill development, revitalise and extend public transport systems and repopulate and redevelop city centres. While urban land use and transport policies showed consistency across capitals, emphasis in application and outcomes differed.

In Greater Perth, strategies for employment decentralisation were first mooted in the 1970s. They have remained a cornerstone of planning for the metropolitan region, as have policies for urban consolidation and heightened mobility choice, which emerged in the 1980s and 1990s.

Fast forward to the second decade of the twenty-first century and the impacts of twentieth century history and urban policy are apparent in the form of Australia's major capitals.

Greater Perth as a region of 2 million people remains the most suburban of the four major Australian capitals. Its urban density is particularly notable for its uniformity. Greater Sydney is Australia's highest density and most polycentric metropolis, while Greater Melbourne and Brisbane are characterised by high-intensity inner-urban areas and low-density suburbs.

This report provides a short history of Australia's suburbanisation in the twentieth century and it details the policy responses in Australian cities.

It considers the impact and urban outcomes of this period by mapping the current structure of Australia's four largest capital cities. It then examines the costs and benefits of suburban versus compact urban form based on current evidence from national and international literature. This report aims to establish the distinguishing characteristics of Greater Perth's urban form as a region of 2 million people, to understand the heritage of these outcomes and to consider it today in the context of future growth and challenges.

Four key indicators are mapped by Statistical Area 2 (SA2), as follows:

- Population density,
- Employment density,
- Mixed-use intensity,
- Employment in entertainment industries (including retail, food and accommodation services, and arts and recreation).

The primary data source used in this report is the Australian Bureau of Statistics 2016 Census of Population and Housing.

THE AUSTRALIAN DREAM

A BRIEF HISTORY OF SUBURBAN AUSTRALIA

Summary:

- The Australian infatuation with the low-density suburb is a cultural preference that arrived in Australia along with the British colonial settlers of the nineteenth century.
- Desires for clean and spacious living arrangements were supported by an egalitarian Australian culture that perpetuated the development of the outer suburbs among all Australian cities.
- The introduction of light and heavy rail systems in Australian cities allowed lower-density suburbs to emerge. In Perth these included Victoria Park, Nedlands, Subiaco, Leederville, Osborne Park and Inglewood.
- Suburban residential growth accelerated in the post-World War II era and was accompanied by rapid growth in the affordability and accessibility of the car.
- Suburban living provided Australian settlers and immigrants access to middle-class aspirations and lifestyles — including land and home ownership — that had been unattainable in their countries of origin.
- Owning a home in the suburbs became central to the Australian way of life in the twentieth century.
- Home ownership remains a dominant feature of life in Greater Perth.

residential and employment uses in close proximity to one another. This was due to the dependence of the population on non-motorised transport such as walking, as well as early approaches to town planning which focussed on surveying allotments rather than controlling land use (Freestone, 2010).

Yet Australia was “a big continent with seemingly limitless land” and suburbs emerged early (Freestone, 2010 p. 11). Processes of suburbanisation were expedited by the introduction of tram and rail in the late nineteenth and early twentieth century and by the subsequent adoption of the private car. This precipitated new cultural and lifestyle preferences, including individual freedom, home ownership and the domestication of the family unit (Hall, 2010), or what we know in contemporary Australia as ‘the Australian Dream’.

Introduction

Prior to the arrival of European settlers, the Noongar people had lived in the Greater Perth area for thousands of years (Owen et al., 2009). For the Noongar people, Perth and the south-west of Western Australia is their country. Today the Noongar people continue to observe traditional laws and customs, particularly in relation to land (Owen et al., 2009). This culture and connection to land

is vastly different to the cultures that were imported by the colonial settlers, which came to dominate the landscape post-colonisation.

In the nineteenth century, Australia emerged as a notably urban nation with a high degree of metropolitan primacy on a state-by-state basis (Jackson, 1977). At that time Australian capitals were relatively small and compact and delivered a mix of

PERTH CITY CENTRE, HAY AND WILLIAM STREET INTERSECTION C.1925–1929



Source: State Library of Western Australia, 2019.

Tram and Rail Cities

In the nineteenth century, Australian cities grew up around pedestrian and carriage networks. These cities were characterised by a central city centre that was home to government, businesses, shops, entertainment and higher-density residential areas, which was surrounded by medium-density inner suburbs that exhibited a gridded urban morphology (Freestone, 2010; Johnson et al., 2017).

City residents worked in close proximity to the home (Johnson et al., 2017). In response, the urban landscape was designed

around the fact that all public transport passengers were also pedestrians who would need to navigate through public spaces (Rode and Floater et al., 2014).

As a result, Australian city centres were vital economic, social and cultural hubs that were characterised by a mix of activities, both horizontally and vertically (Stephenson, 1975). The streets of old Perth incorporated a mix of retail, commercial, residential and industrial land uses, which provided varied and diverse street life and activity (Stephenson, 1975; Offen, 2018).

While vibrant, mixed-use high-density cities were not without issues. From the mid- to late nineteenth century, population growth, followed by rapid urban expansion, delivered problems associated with housing supply, slums, sanitisation, subdivision, water, sewerage provision and gas supply in Australia's capitals (Jackson, 1977; Freestone, 2010). This generated a need for improved and co-ordinated conceptions of town planning to facilitate the "orderly, efficient and healthful development of towns and cities" (Freestone, 2010 p. 13).

PERTH AS A REGION OF 2 MILLION PEOPLE

Population growth and urbanisation in the late nineteenth century also precipitated a need for public transport. In Greater Perth, passenger rail and tram networks emerged and were expanded in the early twentieth century. These networks enabled places of residence to be separated and located further away from the workplace (Frost and Dingle, 1995).

Mirroring the growth patterns of post-industrial

Britain and unencumbered by the availability of land, Australians were attracted to new residential suburbs located on the urban fringe, and along train and tram routes, to escape pollution and poverty and to reside in a cleaner and greener environment with abundant space (Troy 2004; Freestone, 2010).

The 'garden city' movement from Britain and the 'city beautiful' movement from North America also captured and inspired

the Australian palette, influencing the shape of emerging suburbs (Freestone, 2010; Freestone and James, 2019).

In Greater Perth, these movements provided the inspiration for new boulevards and public spaces such as Riverside Drive and Forrest Place in the Perth City Centre as well as lower-density suburbs including Floreat, Daglish, Coolbinia and Menora (McManus, 2005; Freestone, 2010).

THE 'SLUMLESS, LANELESS, PUBLESS' GARDEN SUBURB IN HABERFIELD, SYDNEY C.1911



Source: Snape Collection in Freestone, 2010.

SUBURBAN LEEDERVILLE, PERTH, C.1905



© LISWA 2001 Battye Library All Rights Reserved

Source: Shapcott, 1950 from State Library of Western Australia, 2019.

The appeal of a 'green and secluded neighbourhood', one where families could enjoy 'fresh air, a pleasant view and a shady garden' (Davison 1978, p. 144 cited by Troy, 2004) was reinforced by the perceived egalitarian culture of European Australian society and its relatively high standard of living.

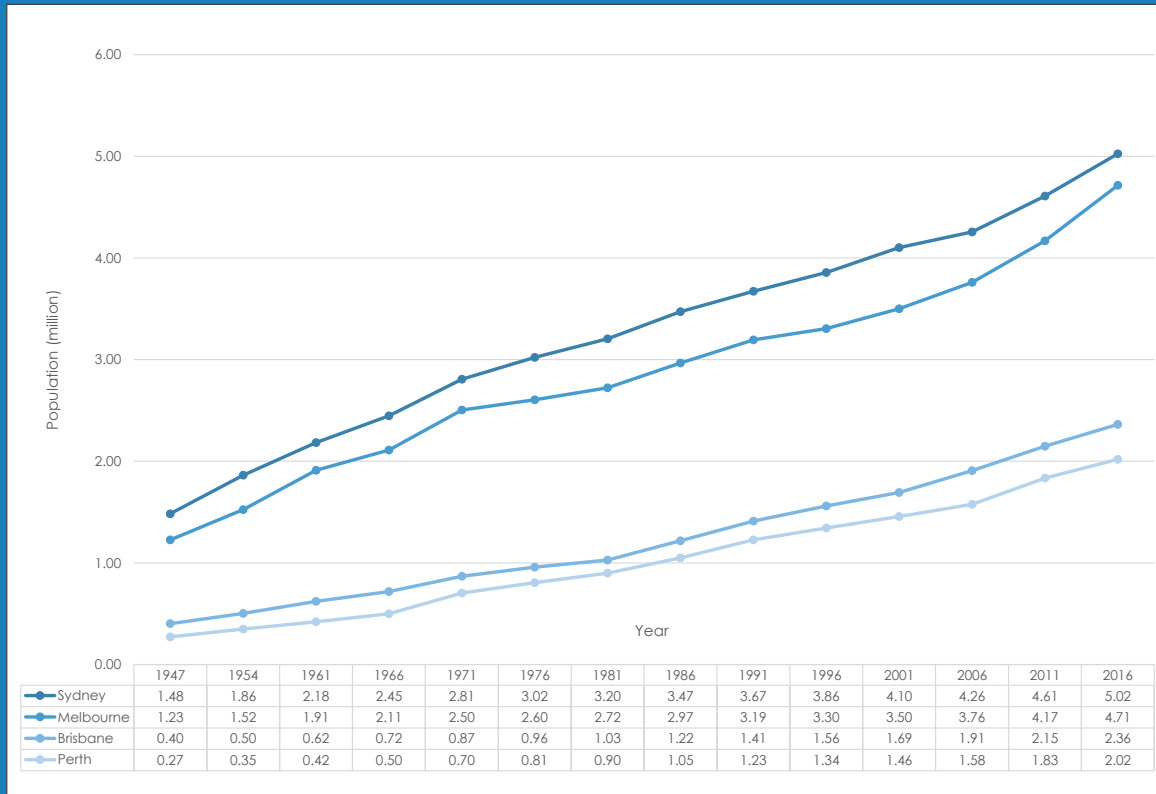
The imprint of early public transport systems is still evident in many Australian cities, including Greater Perth, yet it is particularly apparent in the larger metropolises, which experienced substantial population growth in the pre-car era.

The compact, medium-density, inner-urban areas and lower-density middle suburbs that were cultivated by early transit systems remain integral and desirable parts of the urban morphology.

By the 1940s Greater Perth remained a small region of less than 300,000 people. At that time Greater Perth was dual centred, with Perth City Centre as the primary heart of government, business, and services, and Fremantle as the region's port (Frost and Dingle, 1995; Troy, 2004).

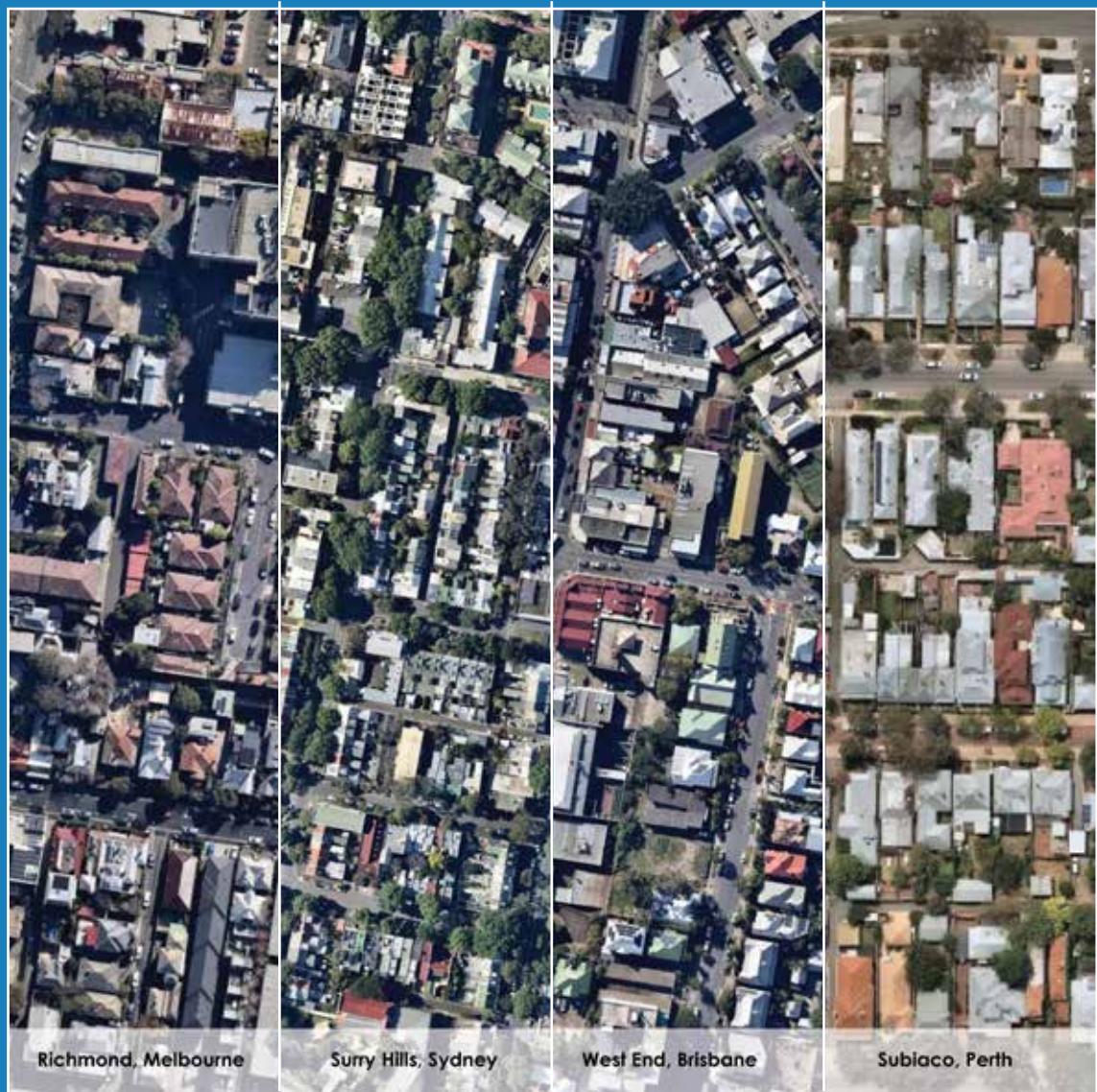
Consequently, early twentieth century urban settlement patterns were less dense in Greater Perth than in other larger and primarily mono-centric Australian capitals.

FIGURE 1: POPULATION CHANGE IN SYDNEY, MELBOURNE, BRISBANE AND PERTH, 1947–2016



Source: ABS, 2019.

MEDIUM-DENSITY INNER SUBURBS OF MELBOURNE, SYDNEY, BRISBANE AND PERTH



Source: Nearmap, 2019.

TRAMLINES LEADING INTO THE SUBURBS FROM PERTH CITY CENTRE, 1906



Source: Curtin University and the State Library of Western Australia, 2019.

The Shift to Motor Vehicles

In the twentieth century, new transport technology — automobiles — accelerated the suburbanisation of Australian cities.

In the 1920s, the number of cars in Australia began to increase but didn't experience rapid growth until the 1940s — aided by post-World War II prosperity, ideals of consumerism and National and State Government policy (ABS, 2019). Tariff barriers, subsidies, tax concessions and exclusions — introduced in the 1940s and aimed at encouraging car manufacturers to establish in Australia — also propelled the expansion of the car

industry and ownership during this era (Beer, 2018).

Between 1955 and 1985, ownership in WA grew faster than any other state but was surpassed by Queensland post-1985 (ABS, 2019).

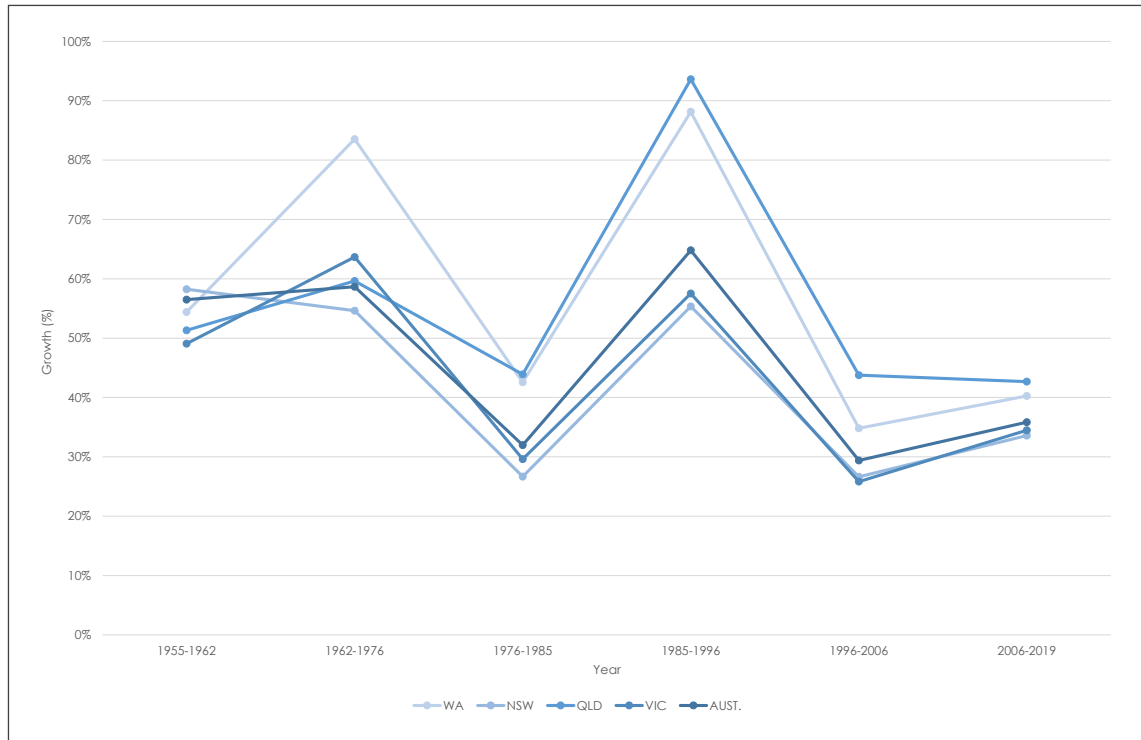
Automobiles drove suburbanisation in three ways: they allowed people to live away from public transport routes; the space requirements of cars were far higher than those of traditional public transport; and suburban growth could occur at much lower densities (Rode and Floater, 2014).

The perceived “limitless” availability of land and abundant natural resources

also fuelled motor-vehicle-oriented urban growth.

Rather than places and spaces created for pedestrians, which had dominated cities of the nineteenth century — twentieth-century Australian cities were increasingly designed for the car. This was reflected in wider suburban streets, lots and houses incorporating driveways and carports and the emergence of drive-in and drive-thru businesses, starting with the opening of Australia's first drive-in cinema in Melbourne in 1954 (Simpson, 2016).

FIGURE 2: MOTOR VEHICLE GROWTH IN WESTERN AUSTRALIA, NEW SOUTH WALES, QUEENSLAND, VICTORIA AND AUSTRALIA, 1955–2019



Source: ABS, 2019.

Motor vehicle ownership changed the way that Australians lived. Car owners gained speed and the flexibility to work, shop, and enjoy recreation almost anywhere and at any time — a freedom which became embedded in the Australian psyche (Walker, 1998). Cars also privatised transport. Driving became not only a form of transport but a source of private recreation, an extension of private space and a symbol of individual and national identity (Walker, 1998).

An illustration of the centrality of cars in twentieth century Australian identity can be seen in the nation's unique Ford vs Holden rivalry, which was sparked when car manufacturers General Motors and Ford brought motor vehicles to market that were both Australian made and uniquely suited to national conditions (Nicastri, 2017). These cars became suburban icons. Walker (1998) quotes a young Western Sydney resident: "Yes, a Ford man

since I was knee high to a hubcap...I'll stick to Fords. Hopefully my kids will be with Fords. There's nothing better, nothing better than a Ford. I've wanted a Ford V8 since I was four years old." (p. 30).

Home Ownership

Suburbanisation provided additional benefits for Australians.

Residents and businesses were able to shift out of established urban areas to access cheaper land and rent in new residential and commercial subdivisions in former agricultural and bushland areas on the urban fringe. In particular, car-oriented suburban growth provided an opportunity for lower-middle income earners to escape the city cores for the open air of suburbia, a privilege that had previously been reserved for the

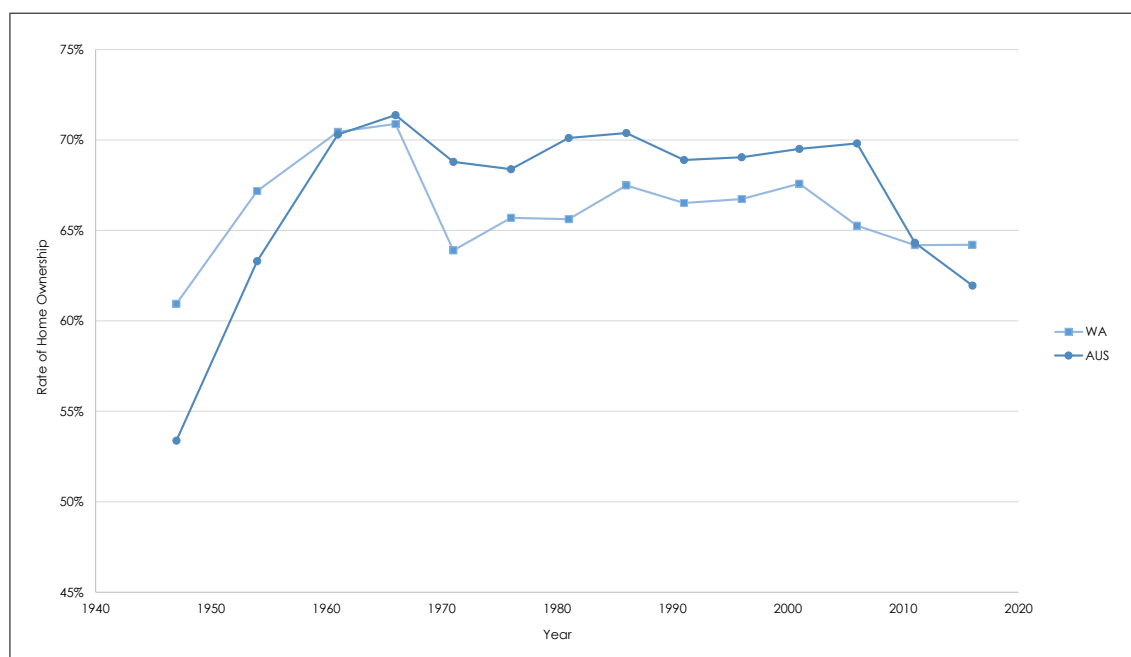
wealthy (Davison, 1995; Bruegmann, 2005). It also provided 'healthy' activities that are often associated with outdoor living, such as gardening and outdoor family play (Jacobs, 1964).

Furthermore, suburban growth provided working- and middle-class families with affordable access to land and home ownership. Immigrants who had chosen Australia as their home in the late nineteenth to mid-twentieth century mainly originated from Britain and Europe, where financial and class systems made land ownership and suburban lifestyles difficult

to attain (Gilbert, 1988). These immigrants viewed suburban living as a step up from living in the city and in Australia a house in the suburbs was financially and legally accessible (Gilbert, 1988). Consequently, Australia's suburbanisation became the spatial expression of egalitarianism and a property-owning democracy (Davison, 1995).

In Australia, rates of home ownership rapidly grew in the post-war years; most notably between 1947 and 1966, when home ownership peaked (Kryger, 2009; ABS, 2019).

FIGURE 3: RATES OF HOME OWNERSHIP IN WESTERN AUSTRALIA AND AUSTRALIA FROM THE 1947–2016 CENSUS PERIODS



Source: Kryger, 2009; ABS, 2019.

Since this period, national home ownership rates have fluctuated with an overall downward trend. This reflects national, global and state/regional economic conditions, including factors such as incomes, interest rates, access to finance and speculative demand (Senate Select Committee, 2008). It also reveals shifting demographics (Senate Select Committee, 2008).

In Western Australia the rate of home ownership was below the Australian average from the late-1960s to mid-2010s; however, at 64%, they are currently higher than the national average of 62% (ABS, 2019).

In 2016, home ownership rates in Greater Perth were 70%, which is substantially greater than both the Western Australian and Australian average. They are also significantly higher than the rates in the other three major capitals: Greater Melbourne (66%), Brisbane (62%) and Sydney (62%) (ABS, 2017a; ABS, 2017b; ABS, 2017d; ABS, 2017e). This indicates that in Greater Perth the dream of owning a home still remains achievable for many.

Suburban Nation

Over the twentieth century, suburbia transformed Australia and it became synonymous with the country's culture. The suburbs became places of comfort, security and relaxation — unlike the city, which was associated with the unknown, noise and a lack of parking. The term suburbia itself came to generate nostalgic connotations of family, backyards, the outdoors and barbeques, which were all enabled by freestanding houses surrounded by space (Wheeler 2010, p. 47).

Davison (1995) also wrote of the Australian suburban evolution: *"Australia, which had presented itself as a frontier society of bushmen, was not a land of sweeping plains but a land of sprawling suburbs. Its pioneers were more likely to roughen their hands planting a garden or building a barbeque than felling timber or erecting post-and-rail fences. A portrait of the typical twentieth-century male would show, not a heavily muscled sheep shearer but a more rotund figure in a T-shirt and stubby shorts, a can of beer in one hand and a garden hose in the other, maintaining the suburbanite's long summer vigil to keep his front lawn green, or at least alive."* (Davison, 1995 p.1).

Suburban living in Australia has not been without drawbacks or critics. In the early to mid-twentieth-century suburban living was condemned as socio-economically and culturally homogenous as well as racially and ethnically exclusionary (Clapson, 2003; Bruegmann, 2005). By the 1980s and 1990s, Australian governments and communities were also counting the costs of run-down city centres, rising energy and water use, land consumption, bushland and tree clearing, near-bankrupt transport systems and environmental pollution from carbon-emission-producing private transport (Clapson, 2003; Davison, 1995; Weller, 2009). Criticism heightened in the 2000s when suburban cities were identified as hindering productivity and stifling potential for creativity and innovation.



Source: Getty Images.

As Australia reaches the end of the second decade of the twenty-first century, global mega-trends — including rapid technological developments; demographic change including smaller households and increasing ethnic diversity; shifts towards knowledge and innovation economies; climate change; and increasing competition between cities world-wide — are further challenging the suburban status quo.

Australian governments have responded to suburban problems and challenges in the late twentieth and early twenty-first century with land use and transport strategies that aim to deliver more sustainable urban form, reduce travel distances and enable a return to public transport as an alternative to driving. Policy initiatives in some capitals have also aimed to instigate economic, social and cultural revival of city centres and generate vibrant mixed-use hubs as centres of population, employment and innovation.

These policies, along with historic land use and transport patterns, topography, land supply, demographic change and population growth are primary drivers of urban form and structure in Australian cities today, and they have resulted in fundamental shifts in the Australian landscape — a change that is most apparent in the form of the nation's largest capitals.

A SHIFTING DREAM

Summary:

- Suburban cities and lifestyles have drawn criticism since the early twentieth century.
- Low-density suburbs have been condemned as homogeneous, exclusionary, land hungry, environmentally unsustainable and unproductive. They have also been criticised for stifling creativity, limiting vibrancy and causing the decline of city centres as population and employment hubs.
- Governments have attempted to address the negative impacts of low-density expansion through land use and transport policies, and strategies such as employment decentralisation, urban consolidation, improvements to public transport, the development of vibrant mixed-use activity centres and city-centre revitalisation.
- Strategies for employment decentralisation have been actively pursued in Greater Perth since the 1970s.
- Policies for urban consolidation have had a significant impact on the form of Australia's suburbs, which is most apparent in the shrinking size of suburban backyards.
- In Greater Sydney — and to a lesser degree Greater Melbourne — strategies for urban consolidation and densification have substantially increased housing diversity in the metropolitan region.
- Greater Melbourne, Sydney and Brisbane have actively implemented strategies and projects to revitalise their city and inner-urban areas since the 1990s.
- Greater Sydney has the most accessible public transport system of the four capitals and it has also achieved the greatest public transport-mode share.
- In Greater Perth, public transport accessibility in inner-urban areas is relatively low while accessibility in the outer suburbs is comparatively high.
- The impacts of land use and transport strategies and policies, combined with factors such as population growth and historical urban form and mobility patterns, are substantially changing the form of Australian capitals and the expression of the Great Australian Dream.

From Public Transport to Road Building

The first casualty of Australia's mass shift towards motor vehicle-based transport was the tram system. In the mid- to late twentieth century, Sydney, Perth and Brisbane witnessed the termination of their tramways, which were increasingly perceived by transport professionals as redundant. Trams were also blamed for congesting city streets, which they shared with burgeoning numbers of cars and buses (Ticher, 2019).

Greater Perth was the first to decommission its trams and replace them with trolleybuses and buses, which occurred over a ten-year period from 1948–1958. Sydney followed in 1961, while trams continued to operate in Brisbane until 1969 (Spearritt and Keogh, 2015).

Melbourne was the only Australian capital whose leaders resisted this trend and retained a comprehensive inner-urban tram system.

CONGESTION ON BARRACK STREET BRIDGE C.1920



Source: City of Perth, 2019.

The shift from public transport to cars required massive investment in road building and new governance structures to oversee road planning and expenditure. In Western Australia, the Main Roads

Board was established in 1926. This body oversaw many early major metropolitan road projects (1930–1938), including the Stirling Highway upgrade, the Fremantle Traffic Bridge, the sealing of Albany

Highway and upgrade of Canning Bridge (Main Roads WA, 2019).

The 1955 release of the Stephenson-Hepburn Plan, which was the first strategic land use and transport plan

THE REMNANTS OF CALIFORNIAN BUNGALOWS AND GENEROUS LAWNED FRONT GARDENS IN WEMBLEY, WESTERN AUSTRALIA



Source: Nearmap, 2019.

for Greater Perth, signalled a milestone in planning for car-based urban expansion. It proposed a suburban yet relatively contained pattern of growth for Perth as a region of 1.4 million people. Addressing the increase in car ownership, it proposed a road network to cope with 400% more traffic than existed in 1955. This included eight new highways (Main Roads, 2019). Planning for the new highways commenced immediately and new car-based suburbs began to emerge. However, these suburbs were developed at significantly lower densities than foreseen by Stephenson and Hepburn, and Greater Perth grew outward at a faster rate than envisaged (Davis and Harford-Mills, 2016).

Rise of Suburban Retailing

The geographic shift in the population from the city to the suburbs was followed by a move in commercial activities. In the 1950s to 1970s, purpose-designed commercial and industrial centres emerged in suburban locations and manufacturing, warehousing and industrial businesses moved out of Australia's city cores to more spacious, affordable and suitable locations away from conflicting land uses (Dingle and O'Hanlon, 2009).

During this period suburban landscapes also became punctuated by large retail and entertainment centres (Hall 2010; Bailey 2014). Initially, these centres were

planned to take advantage of 'natural foci' developed around public transport nodes; however, new shopping centres were ultimately built in locations selected because of their ease of access by motor vehicles and their capacity to provide generous parking (Troy, 2004). Car-based commercial and industrial areas also emerged, shifting light and heavy industry and warehousing out of cities and inner-urban areas to new dedicated industrial estates (Mullins, 1995).

While supporting suburban lifestyles, the consequence was a decline in retailing within traditional city and suburban centres, which left many of them depressed and run-down (Mullins, 1995; Troy, 2004).

COCKBURN CENTRAL SHOPPING CENTRE (LEFT) AND GARDEN CITY BOORAGOON (RIGHT), PERTH



Source: Nearmap, 2019.

City Centre Decline

While new residential land subdivisions, commercial and industrial areas and retail centres on the urban fringes thrived in the mid-to late twentieth century, inner-city areas were on the decline. This phenomenon became known as the 'doughnut' effect (Hugo, 2002; Coffee et al., 2016).

By the 1970s, many Australian city centres were urban wastelands. They were failing to compete with the shift of population and employment to the suburbs, and were struggling to address the consequences of deindustrialisation (O'Hanlon, 2009; Collie, 2018). Media commentators such as John Stevens from Melbourne's *The Age* bemoaned "the 'deadness' of the city centre, its lack of 'liveliness' and bustle, especially after hours and on the weekends." (McLoughlin, 1992).

Retail in the Perth City Centre particularly suffered from the shift of the population to car-based suburbs and the associated removal of the tram lines. Trams had encouraged vibrancy though pedestrian traffic and access to the shopping strips within the city. They also created 'shopping ribbons' that sprawled along the most popular routes (Stephenson, 1975, p. 44). As reliance on private transport grew,

cars began to dominate the streets and by the 1960s–1970s unmet demand for parking drove many people from traditional inner-city retailers to new suburban shopping malls (Stephenson, 1975; MacCallum and Hopkins, 2011).

Adhering to retail trends established in North America, these new malls including Morley (originally Morley Park), Innaloo, Carousel, Karrinyup and Garden City delivered unrivalled consumer variety in convenient, car-oriented, climate controlled environments (Bailey, 2019).

The downturn in inner-city vibrancy was compounded by the demolition of many historic buildings during this era — including hotels, public baths, theatres, market gardens, schools and malls (Stephenson, 1975; Offen, 2018). This contributed to a loss of character, amenity and reduced activity within the city centre outside of business hours (Stephenson, 1975; Offen, 2018; MacCallum and Hopkins, 2011).

Despite numerous latter twentieth-century projects which aimed to reinvigorate Perth City Centre, including the pedestrianisation of Hay Street Mall in 1972 (City of Perth, 2018), the replacement of Boans Emporium with Myer

department store in Forrest Chase in 1986 (Forrest Chase, 2019) and the urban renewal of East Perth in the 1990s (Crawford, 2003; Maginn, 2018), the Perth City Centre struggled to recover from its twentieth century decline.

In the early twenty-first century, city centre vibrancy was further impacted by changes to retail trading legislation. In 2012, the Retail Trading Hours Amendment Act was implemented, permitting all general retail shops throughout the Perth metropolitan areas to trade on Sundays and most public holidays. Prior to this, trading had been restricted to retailers in the Perth City Centre and designated 'special trading precincts', including Perth, Fremantle, Joondalup, Armadale, Midland, East Perth, West Perth, Leederville, West Leederville, Subiaco, North Perth, Mount Lawley, Kings Park, Burswood Park, Victoria Park and South Perth (DCCP, 2015).

Retail and entertainment land use in other traditional inner-urban centres — including Fremantle and Subiaco — has also been impacted by this legislative change and these areas have struggled to compete with inner and suburban retail and employment centres over the past decade.

In 2018–2019, the Perth City Centre continued to be viewed as lacking vitality and was criticised as “dead after 5pm” (Wynne, 2018). In 2018–2019, retail vacancy rates were reported as “the highest recorded in two decades.” (Wynne, 2018).

Retail and service sector vibrancy in Greater Perth has been associated with

economic conditions and retail headwinds. However, it has also been associated with the lack of a critical mass of population in the city centre. In 2019 *WA Today* quoted Federal Cities Minister Alan Tudge: “Perth has the lowest population density of any capital city except Darwin and Hobart... There is a real opportunity to bring more

people into the CBD, which means more activity, retail, restaurants and tourism opportunities. All of this would make the city centre more vibrant and safe”.

PERTH CITY BATHS IN THE LATE-1800s



Source: Pickering from the State Library of Western Australia, 2019.

Decentralising Employment

As Australian cities grew, additional disadvantages of large-scale suburban development became apparent. The suburbs were extravagant users of land, energy, water and infrastructure. They generated problems such as traffic congestion and pollution. They often failed to support non-car modes of travel, such as walking, cycling and public transport. The time and distances required for travel to work also increased (Hall, 2010; Troy, 2004).

In response, planning strategies emerged which aimed to generate more sustainable suburban cities. A core tactic was employment decentralisation, which promotes the devolution of business, retail and services out of traditional city centres into employment 'activity centres' dispersed throughout the metropolitan region. The objective is to locate services and jobs closer to where residents live, thereby reducing the need for travel (WAPC, 2010).

By the late twentieth century, almost all metropolitan land use strategies in Australia had incorporated some variation of employment decentralisation (IA, 2018). In Greater Perth, decentralisation strategies have been a cornerstone of land use planning policy since the 1970 Corridor Plan (Davis and Harford-Mills, 2016).

Suburbanisation and active policies for employment decentralisation have led to a decline in employment located in the Perth Central Business District, from approximately 60% in 1955 to 15% in 2011. However, employment remains centred in inner-urban and middle suburbs within approximately 15km of the Perth CBD (Stephenson and Hepburn, 1955; Department of Planning, 2015; Committee for Perth, 2016).

Greater Sydney has also pursued a polycentric development structure, with an emphasis on developing Parramatta as a second city centre. The growth of Greater Parramatta as a Central Business District was first mooted in the 1968 Sydney Region Outline Plan, it was reinforced in the 1988 'Sydney into its Third Century' Plan and it was finally confirmed in 2005. Polycentrism in Greater Sydney was also supported by a centres policy, which

aims to direct close to half of all Greater Sydney's jobs into major activity centres (GSC, 2018).

The Greater Sydney Three Cities Plan is arguably the most ambitious. This plan provides a vision for Greater Sydney as a metropolis of 8 million residents organised around three '30 minute' cities — building on the strength of Sydney CBD and Parramatta as its 'Eastern' and 'Central Cities', while also developing a new 'Western City', with Western Sydney Airport as its heart (IA, 2018; GSC, 2018).

Consolidating Suburban Growth

Since the 1980s, Australian urban planning policy has also sought to address the negative externalities of suburban sprawl by promoting smaller suburban lot sizes, enabling the subdivision of traditional, large lots into two or more smaller allotments

and supporting the redevelopment of inner de-industrialised areas for higher-density housing (Troy, 2004). Urban consolidation and containment rather than uncontained outward expansion were identified as future priorities for Greater Perth in the 1987 Corridor Plan Review (Stokes and Hill, 1992).

URBAN INFILL AND TRADITIONAL HOUSING IN MOUNT HAWTHORN, PERTH, 2017



Source: Nearmap, 2019.

TRADITIONAL SUBURBS COMPARED TO EARLY TWENTY-FIRST CENTURY SUBURBS IN CARINA, BRISBANE



Source: Hall, 2016 Australian Institute of Architects.

In Melbourne, the 1981 Metropolitan Strategy proposed to concentrate housing, transport, employment and community facilities at highly accessible points. Meanwhile, the 1994 Creating Prosperity: Victoria's Capital City Policy laid the path for central city revitalisation, and identified central renewal projects by emphasising urban quality and place making (DPCD, 2012).

The 1988 Strategic Plan for Sydney was designed in collaboration with a

transport strategy and was the first to recommend higher development densities in established and greenfield areas. The strategy resulted in an increase in development densities in greenfield from eight lots per hectare in 1988 to close to 20 lots per hectare in 2018 (GSC, 2019).

In Greater Perth, strategies for urban consolidation emerged in the Metroplan (1990), which aimed to direct 20% of growth into infill locations. They have featured in all of the subsequent metropolitan

land use strategies (Davis and Harford-Mills, 2016). Directions 2031 (2010) has maintained and extended this approach, proposing to reduce the consumption of residential zoned land in Greater Perth by applying a 47% urban infill target and establishing minimum residential densities in new development areas (WAPC, 2010).

In 2017, 42% of all residential development in Greater Perth was infill development (WAPC, 2019).¹ The net physical effect resulting from close to four decades

¹ Infill development is defined as housing development within existing urban areas (as opposed to greenfield sites) (Rowley and Phibbs, 2012).

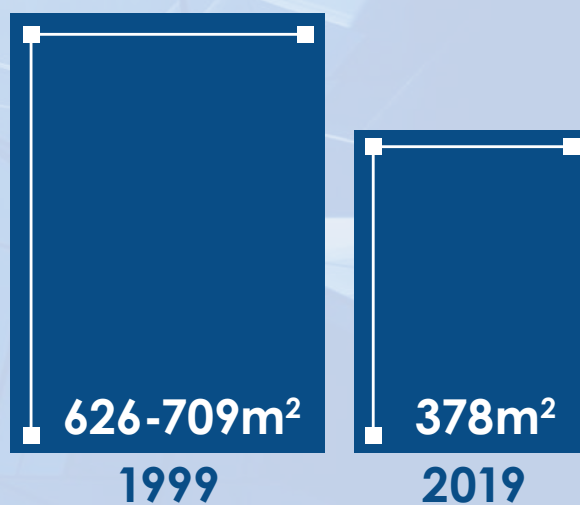
of urban consolidation are obvious in the physical form of Greater Perth and all Australian cities (Hall, 2010). The striking reduction in the size of suburban lots, and therefore Australian backyards, has been notable (Hall, 2010; Troy, 2004).

Bolleter (2016) examined the liveability impacts of 'background' infill in Greater Perth. Defined as "ad hoc infill development yielding fewer than five dwellings", background infill is the dominant form of densification in Greater Perth (2016, p. 1; WAPC, 2019). This assessment found that background infill reduces access and amenity of private open space without providing any adequate improvements to public open space to compensate. The author also associated background infill with reduced physical activity among residents; a reduction in the urban forest canopy; and limited access to multi-modal transport and neighbourhood cultural amenity (Bolleter, 2016).

Urban consolidation in Greater Perth has also delivered a dramatic reduction in lot sizes. In the two decades from 1999 to 2019, the average size of residential lots under construction in Greater Perth nearly halved from 626-709m² (1999) to 378m² (2019). This is the smallest

average of all Australian capitals (UDIA (WA), 1999; UDIA (WA), 2019).

By contrast, in Greater Sydney and Melbourne, it has facilitated a shift towards more diverse housing. In 2016, separate houses made up 55% of Greater Sydney's total housing stock, while 20% of housing was medium density and 23.5% high density (ABS, 2017b). In Greater Melbourne, 66% of houses are separate dwellings (ABS, 2016a). This shift is less apparent in Greater Perth and Brisbane, where separate houses make up 74.6% and 74.4% of the housing stock respectively. In Greater Perth this reflects low as well as medium-density housing forms – which are dominated by separate houses located on small freehold or strata lots (ABS, 2017e; ABS, 2017d).



SPACIOUS BACKYARDS IN WEMBLEY DOWNS COMPARED TO SMALLER LOTS IN YANCHEP, 2019



Source: Nearmap, 2019.

Revitalising City Centres

Responding to the decline of city centres associated with the 'doughnut effect' afflicting Australia's capitals, by the late 1980s and early 1990s, State and Local Governments were seeking ways to attract residents and investment back into

the city centre (Goodman, 2001; Sandercock and Dovey, 2002; Collie; 2018).

In 1991, these strategies were supported by the Commonwealth Government's 'Building Better Cities' programme, which targeted inner-city decline and promoted the

attraction of a critical mass to the CBD (Darchen and Ladouceur, 2013; Coffee et al., 2016).

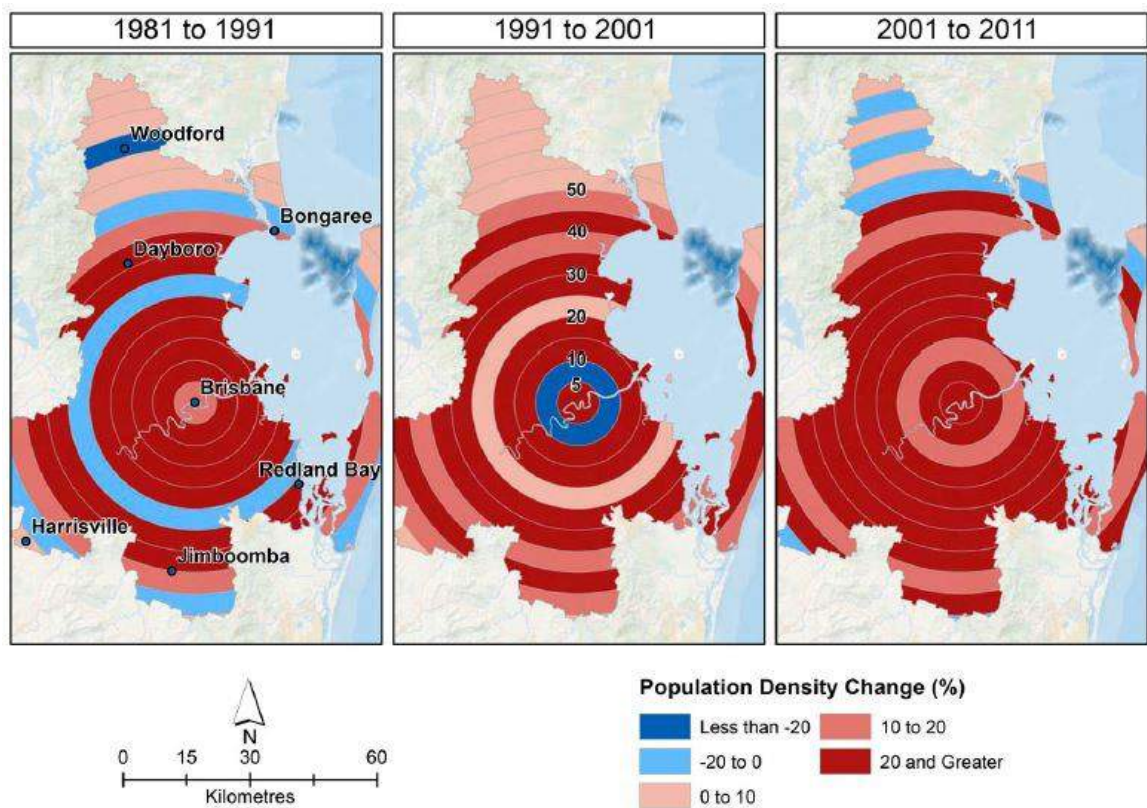
'Building Better Cities' was a partnership programme between Federal, State and Local Government (Darchen and Ladouceur, 2013).

Projects funded by Building Better Cities included the redevelopment of Pyrmont–Ultimo in Sydney; Fortitude Valley, Teneriffe, New Farm, Newstead and Bowen Hills in Brisbane; and the East Perth Redevelopment project on the eastern edge of the Perth City Centre SA2 (Darchen and Ladouceur, 2013).

City centre revitalisation began to reverse the population decline.

Greater Brisbane, for example, has achieved an almost continuous increase in population within the inner and middle suburbs since the 1980s–1990s (Coffee et al., 2016).

CHANGE IN POPULATION DENSITY IN BRISBANE FROM 1981–2011



Source: Coffee et al., 2016.

In Greater Melbourne a market-oriented urban planning response was initiated to regenerate the city's centre in the wake of the 1987 stock market crash (Collie, 2018). The strategy focused on stimulating residential development and industry growth to attract residents and investment (Goodman, 2001; Sandercock and Dovey, 2002; Collie, 2018).

Other key policy initiatives included changes to the Liquor Control Reform Act 1998, which encouraged development of the licensed industry; designation of the Melbourne CBD as a 24-hour, mixed-use zone in 1999; Postcode 3000, which transformed the city centre into a residential destination; and the Inner Melbourne Action Plan, which attracted residents, businesses and visitors to the CBD (City of Melbourne, 2008). These actions were enhanced by the State Government's intervention to speed up the redevelopment of Melbourne's Docklands; the redevelopment of strategic sites through the city centre; promotion of Melbourne as a destination for international students; revisions to regulation around Sunday trading; and substantial investments in city centre amenity, cultural and sporting facilities (Sandercock and

Davey, 2002; Costello, 2010). Combined, these policies regenerated Melbourne's inner core as a centre of vibrancy, culture, entertainment and consumption (O'Hanlon, 2009).

In Greater Perth, investment in the redevelopment of the Perth City Centre and Northbridge has been apparent since the 1990s. Redevelopment projects have increased amenity in the central city and facilitated population growth within the City of Perth. This was assisted by legislation that enabled the establishment of authorities to oversee the redevelopment of key areas (Davis and Harford-Mills, 2016).

Mixed-use Hubs

Strategies for city centre revitalisation and urban consolidation in the 1990s emerged alongside the 'New Urbanism' town planning/urban design movement. This promoted a 'renaissance' of traditional urbanism (such as that found in most successful precincts of Australia's inner cities) to replace suburban sprawl (ACNU, 2019). Rooted in seminal research by Jane Jacobs (1961) and subsequently by Peter Katz (1994), New Urbanism linked neighbourhood diversity and fine-grain design to vibrancy, sustainability and economic performance.

In the 1990s, New Urbanism gained acceptance in Australia as a solution to problems associated with low-density and car-oriented suburban development (ACNU, 2019).

New urbanism promoted compact, walkable neighbourhoods, towns and city centres. This included the development of higher-density mixed-use urban and suburban activity centres with an aim to: reduce car dependence; facilitate vibrant street life; deliver a critical mass of people to support retail and service industries and maximise the benefits of agglomeration (Kusumastuti et al., 2017). In the late twentieth and early twenty-first centuries, this idea was extended to mixed-use employment hubs — most notably nodes of knowledge employment — which have been promoted as critical to the generation of competitive knowledge and innovative economies (Committee for Perth, 2018; Shearer et al., 2019).

In Greater Perth, new planning policy emerged — including Operational Policy DC1.6, Liveable Neighbourhoods; and SPP 4.2, Activity Centres for Perth and Peel — which aimed to translate New Urbanist principles into practice. Liveable Neighbourhoods focused on the delivery of New

Urbanist principles within suburban greenfield development, while SPP 4.2 promoted the development of mixed-use regional activity centres incorporating retail, commercial and employment activity, diverse higher-density housing and development intensities capable of supporting high-frequency transport (State of Western Australia, 2010).

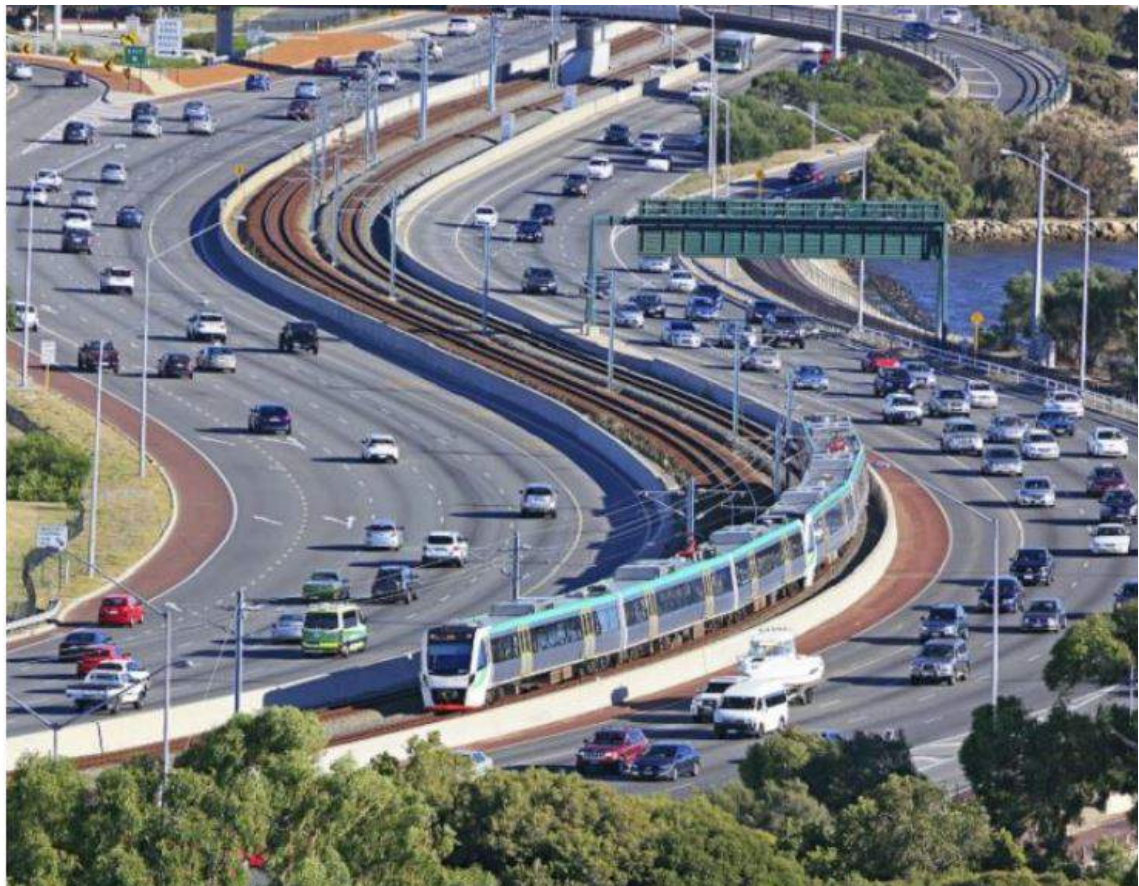
Providing Mode Choice

The effective delivery of strategies for urban consolidation, public-transport-oriented mixed-use development and city centre revitalisation required State Governments to refocus efforts to improve urban public transport networks.

While almost all of Australia's capitals had disbanded their urban tram systems by the 1970s (except Melbourne), heavy passenger rail — which was grade separated and

more suburban focused — continued to operate in all major capitals. In Sydney, the completion and electrification of the inner-city metro and suburban passenger rail system continued throughout the 1930s to 1960s, while in Brisbane the electrification of suburban rail commenced in the 1970s (NSW Gov, 2019; Queensland Rail, 2019). In contrast, passenger rail in Greater Melbourne and Perth suffered from decades of under-investment and by the 1970s had become run-down (ARHSVD, 2019).

JOONDALUP TO MANDURAH TRAIN SERVICE WITHIN THE MITCHELL FREEWAY



Source: BRS, 2019.



In Greater Perth, this period of under-investment culminated in a 1970 Regional Transport Study, which recommended the removal of the existing passenger rail lines and replacing them with buses running within rail reserves. Consequently, the government of the day closed the Perth-Fremantle rail line in 1979 — generating a substantial public backlash (Davis, 2011). Opponents comprehensively attacked the government's policy and decision-making process, and strongly questioned the strengthening of Perth as an automobile city at a time when increasing costs of motoring and the environmental and social costs of congestion, noise and air pollution were issues

of growing national and international prominence (Davis, 2011; Potterton, 2012).

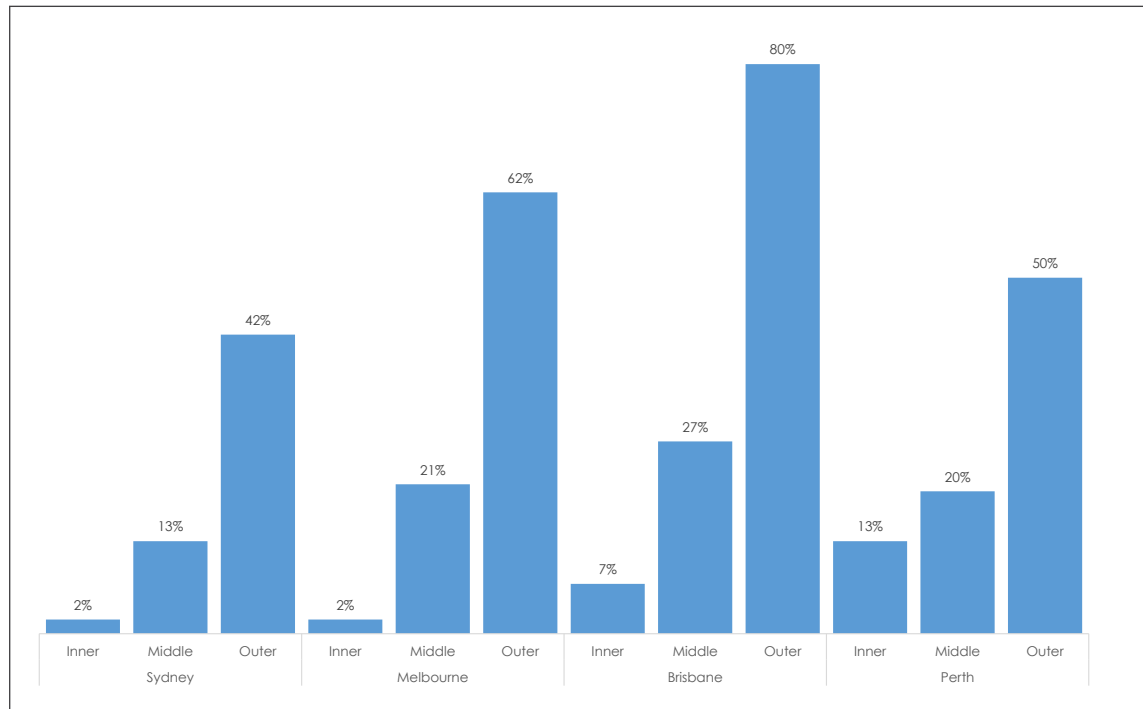
Initial investment in improving the passenger rail system in Greater Perth was ultimately initiated following a change of State Government in 1983, in an election that was heavily influenced by the rail debate (Davis, 2011). The investment process commenced with the re-opening of the Perth to Fremantle passenger rail line, the electrification of the Perth to Fremantle, Perth to Midland and Perth to Armadale rail lines, followed by the development of two new major suburban passenger railway lines — the Joondalup line to the city's north (1992) and the Mandurah line (2007) to its south (Davis, 2011).

Constructed within the road reserves of the north-south oriented Mitchell and Kwinana freeways, the new railway lines were designed to deliver high speed passenger rail in a low-density context. The design of the new lines was defined by increased distances between railway stations and the provision of park and ride, and feeder bus services (Committee for Perth, 2016).

These new services vastly improved public transport access to Greater Perth's northern and southern suburbs, as well as Perth's city centre. This made Greater Perth's outer suburbs among the most accessible in Australia, after Sydney (Committee for Perth, 2016; IA, 2018). The new rail infrastructure also arguably reinforced the expansive, linear form of the metropolitan region that had grown along the freeway routes in the late twentieth and early twenty-first centuries (Committee for Perth, 2016).

The outer suburbs in Greater Perth may be comparatively accessible compared to the other major capitals, yet inner-urban accessibility is relatively low. Overall, public transport accessibility is highest and most balanced in Greater Sydney, which also has a substantially greater metropolitan-wide public transport-mode share than Melbourne,

FIGURE 4: PERCENTAGE OF POPULATION BEYOND WALKING ACCESS



Source: IA, 2018, p. 26.

Brisbane or Perth — 7% compared to 19%, 14% and 12% respectively. Public transport-mode share is lowest among people who live and work in the outer suburbs (IA, 2018).

In Greater Perth, this is at least partially due to the ongoing speed and convenience of travel by car (Committee for Perth, 2016). In 2011, the share of the population that could access CBD-based firms within a 45-minute car commute was 93%, which is far higher than Greater Sydney (23%) or Greater Melbourne (45%) (Davis, 2016, p. 7, Committee for Perth, 2016; IA, 2018).

Major public transport infrastructure projects are currently underway in all major Australian capitals. A summary of the major public transport projects within each capital city is provided in Appendix A (on page 92).

In Greater Perth, the METRONET project is focused on delivering improved middle and outer-suburban public transport accessibility. However, in other major capitals, investment in inner middle and outer-suburban public transport projects is relatively balanced. Consequently, suburban public transport accessibility in Greater Perth is likely to increase significantly

over the coming decade. However, without additional investment, public transport accessibility in inner-urban areas is likely to continue to lag behind that of Greater Sydney, Melbourne and Brisbane. This is expected to support additional greenfield and suburban infill growth in the Perth region (IA, 2019).

LOW-DENSITY CAPITAL

Summary:

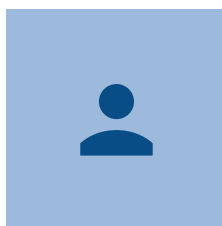
- The history of population growth, development and transport trends and land use and transport planning is reflected in the spatial form and structure of Australian cities.
- Greater Perth exhibits uniformly low to medium suburban population densities across the metropolitan region, whereas Greater Sydney, Greater Melbourne and Greater Brisbane exhibit more traditional city structures with high population densities in the city centre and lower density populations towards the fringe.
- A total of 3.4 people per km² live in inner-urban Sydney for every person living in inner-urban Perth.
- A total of 3 people per km² live in inner-urban Melbourne for every person living in inner-urban Perth.
- A total of 1.4 people per km² live in inner-urban Brisbane for every person living in the inner-urban Perth.
- Greater Perth lacks hubs of high-density living and is the only Australian capital city where the most densely-populated SA2 is located outside the CBD and inner-urban core.
- Greater Perth's most densely populated SA2 — Tuart Hill, Joondanna — is comprised of low-density single detached dwellings and low-rise medium-density urban infill typical of urban consolidation areas within the region.
- In Greater Perth, areas of higher than average population density are apparent in the outer suburbs, which is a reflection of minimum greenfield density requirements.

Greater Perth's history of population growth, transport and urban form, combined with land use planning and infrastructure investment, has established the region as suburban, low- to medium-density and primarily car-based.

Population densities in the four major Australian cities differ in structure.

Figures 5-9 (see pages 40-43) illustrate the number of people per square kilometre living in each SA2 in Greater Perth, Sydney, Melbourne and Brisbane. Tall spikes indicate peak and high densities while low gradients represent low densities.

Overall, Greater Sydney is Australia's highest density major capital and Greater Perth is the lowest density. Meanwhile, Melbourne SA2 (City Centre) has the highest peak population density.



Perth



Brisbane



Melbourne



Sydney

High population densities in Greater Melbourne are centralised in inner-urban locations, while middle and outer suburbs primarily record low population densities. Population densities in Greater Sydney and Greater Brisbane are slightly more graduated, with densities highest in the inner-urban core and becoming progressively lower moving outward, with medium densities in middle areas and lowest population densities on the urban fringe.

In contrast, Perth is uniformly low to medium-density from the centre outward and lacks a strong high-density peak. Nevertheless, there are areas which exhibit marginally higher densities.

Unlike other capitals, areas of highest density are not within the Perth City Centre or inner suburbs but are concentrated in the middle northern suburbs. These suburbs include Tuart Hill–Joondanna; Scarborough; Innaloo–Doubleview; Nollamara–Westminster; and North Perth. The higher-density form of these suburbs is a direct impact of policies for urban consolidation that have been implemented since the 1990s.

Little structure or pattern is evident in the distribution of population density in Greater Perth. Suburbs with higher and lower than average residential densities are dispersed throughout the region, including outer-

suburban areas. Butler–Merriwa–Ridgewood, for example, is the highest density outer-suburban SA2. Located approximately 37km north of the Perth City Centre, this SA2 is characterised by smaller residential lot sizes; that is, single residential homes consistent with traditional suburban vernacular, yet without traditional suburban backyards.

The increase in outer-suburban densities in Greater Perth, characterised by Butler–Merriwa–Ridgewood, reflects policies to limit urban sprawl through minimum residential densities in greenfield developments.

TABLE 1: AVERAGE AND PEAK POPULATION DENSITIES IN GREATER PERTH, GREATER MELBOURNE, GREATER SYDNEY AND GREATER BRISBANE

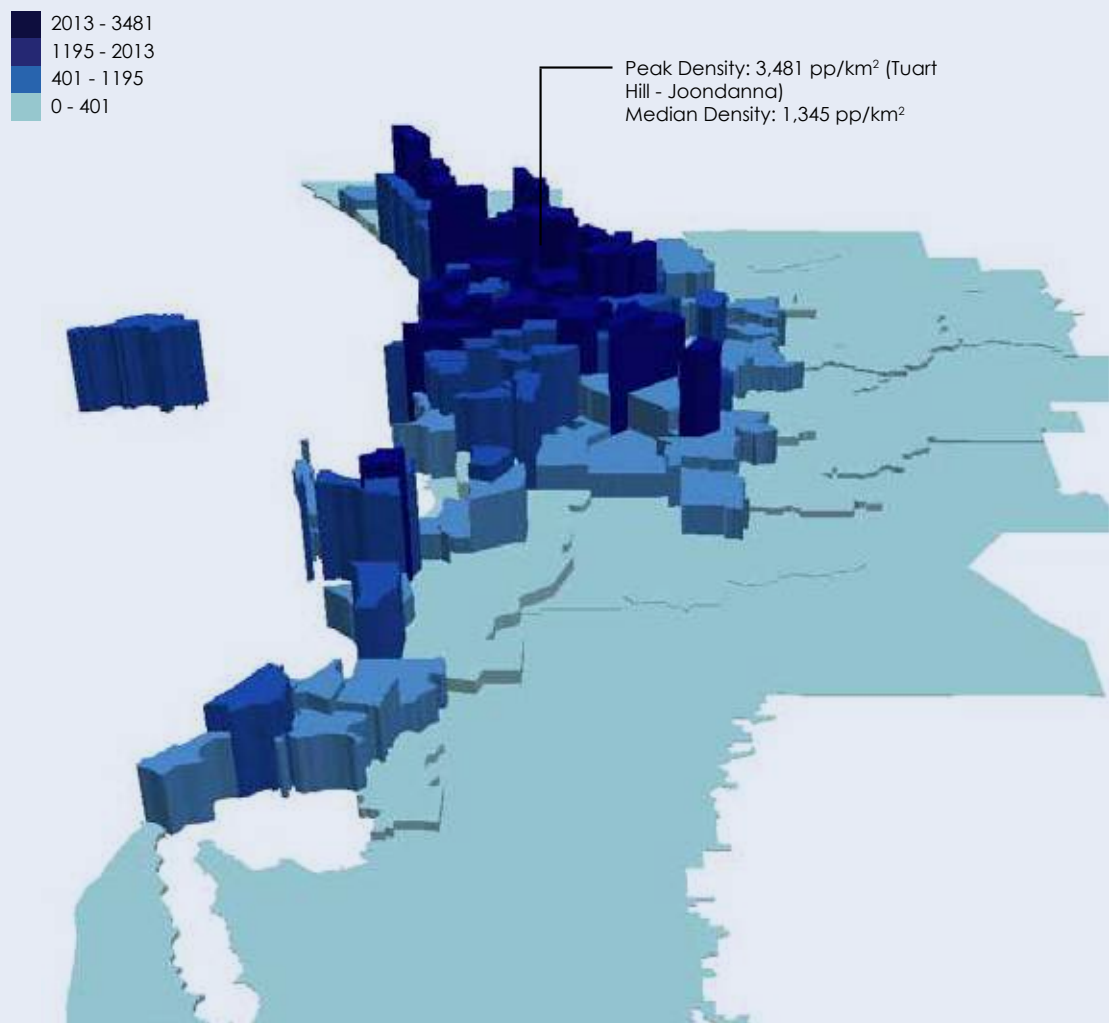
Metropolitan Region	Median Population Density	Peak Population Density	Peak Population Density SA2	City Centre SA2 Population Density	Inner-Urban Core Population Density (10-11km ²) of City Centre ²
Perth	1,345	3,481	Tuart Hill–Joondanna	3,102	3,102
Melbourne	2,027	16,742	Melbourne City Centre	16,742	9,352
Sydney	2,510	15,408	Pyrmont–Ultimo	6,892	10,252
Brisbane	1,412	6,802	Kangaroo Point	4,558	4,473

Source: ABS, 2018.

² Intensity of inner city SA2s with combined area of 10-11km². Melbourne SA2s: Melbourne, Docklands, Southbank, Carlton, Fitzroy. Sydney SA2s: Sydney - Haymarket - The Rocks; Pyrmont–Ultimo; Surry Hills; North Sydney - Lavender Bay; Darlinghurst; Potts Point–Woolloomooloo. Brisbane SA2s: Brisbane City; Fortitude Valley; South Brisbane; Spring Hill; Woolloomooloo; Kangaroo Point. Perth SA2: Perth City Centre

FIGURE 5: POPULATION DENSITY IN GREATER PERTH, 2016

Perth Population Density 2016
With vertical exaggeration at 20,000.

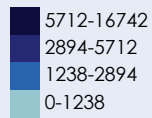


Source: ABS, 2018.

FIGURE 6: POPULATION DENSITY IN GREATER MELBOURNE, 2016

Melbourne Population Density 2016

With vertical exaggeration at 20,000.



Peak Density: 16,742 pp/km²
(Melbourne)
Median Density: 2,027 pp/km²



Source: ABS, 2018.

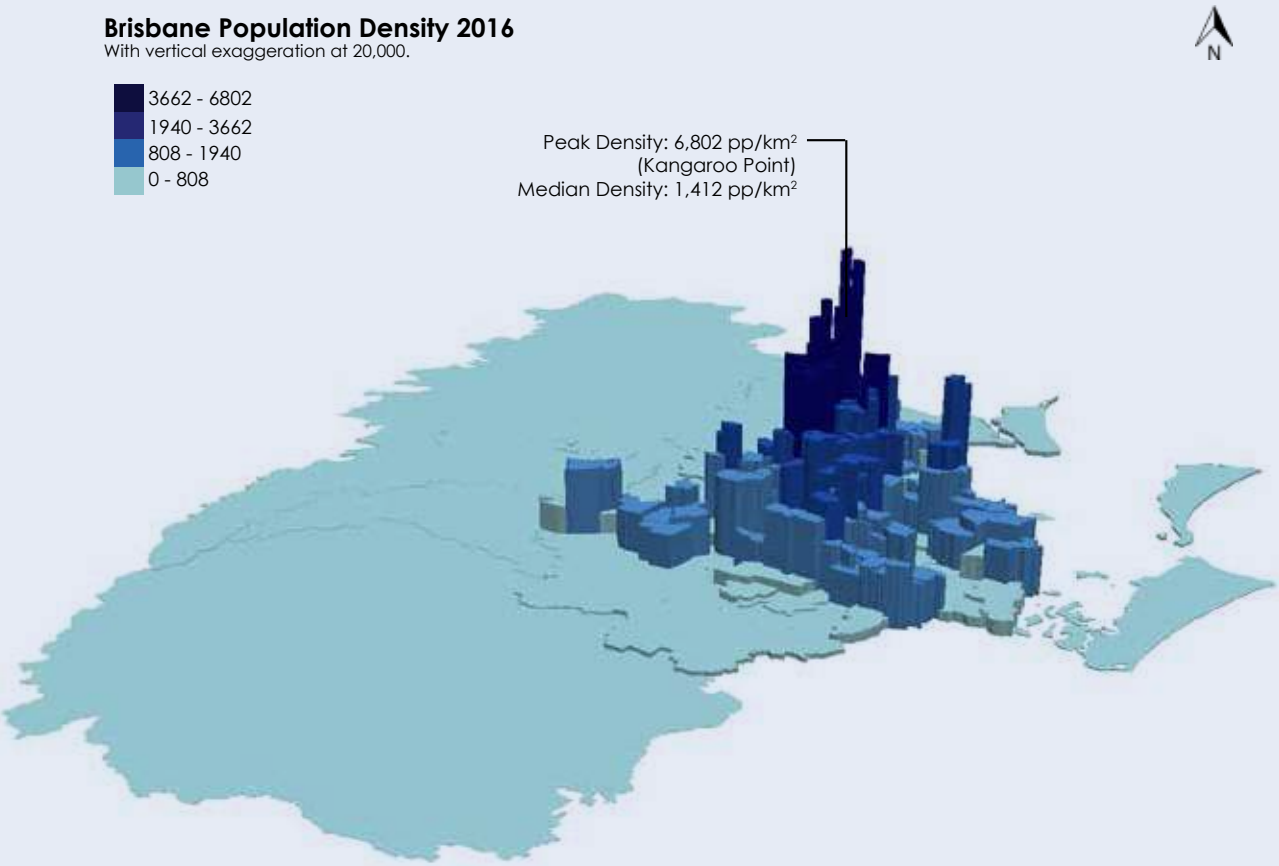
FIGURE 7: POPULATION DENSITY IN GREATER SYDNEY, 2016

Sydney Population Density 2016
With vertical exaggeration at 20,000.



Source: ABS, 2018.

FIGURE 8: POPULATION DENSITY IN GREATER BRISBANE, 2016

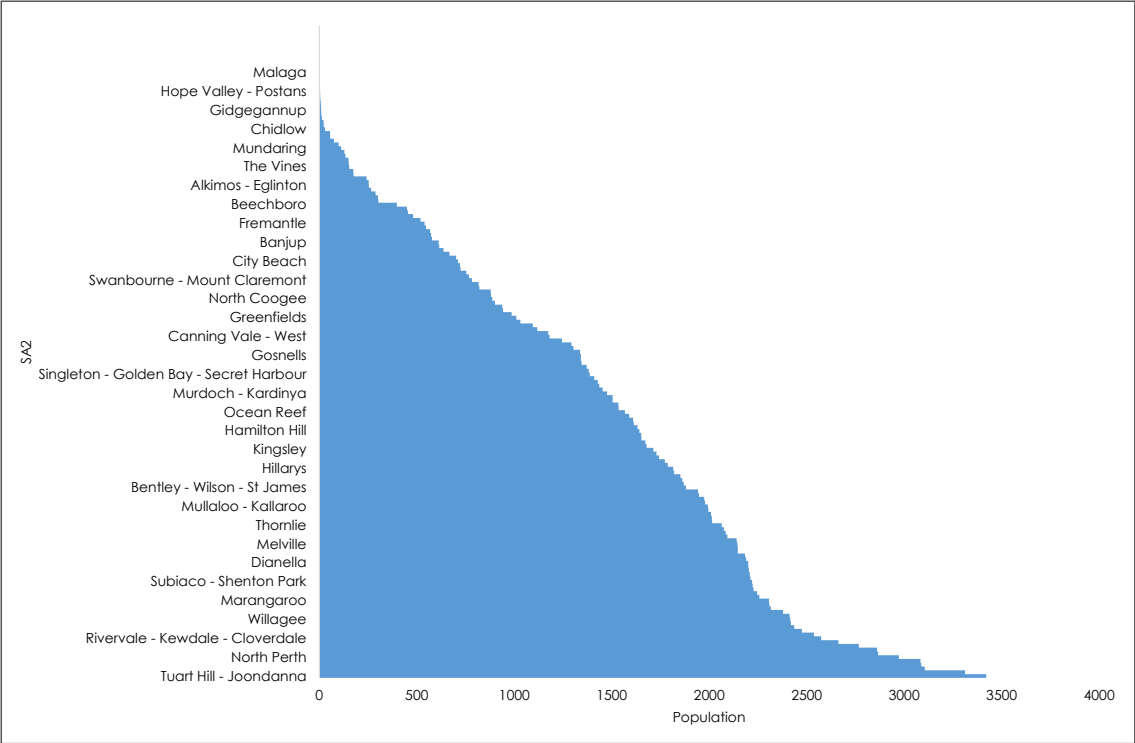


Source: ABS, 2018.

The following figures on pages 44-46 further illustrate the low- to medium-density and dispersed nature of Greater Perth's population density in comparison to Greater Melbourne, Greater Sydney and Greater Brisbane. Greater Melbourne has the most severe spike, signifying the

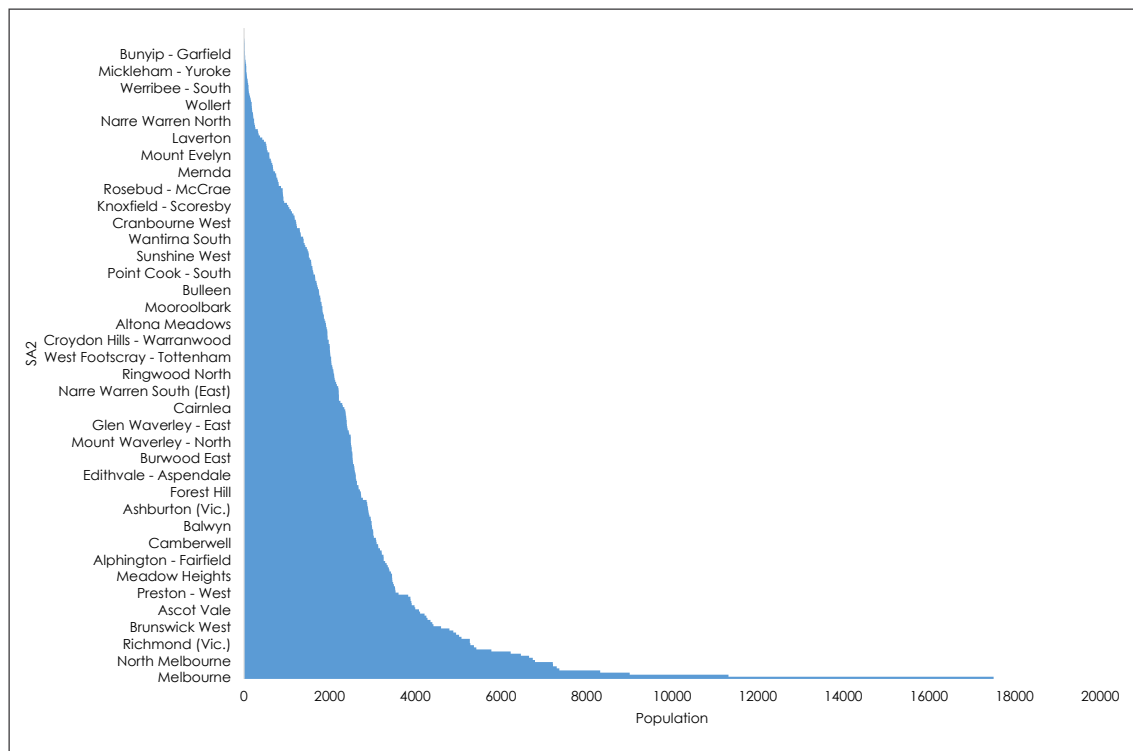
high-density and highly centralised nature of its inner-urban critical mass. Greater Sydney is Australia's highest density capital yet it has a slightly lower peak and a somewhat more even distribution of critical mass throughout the region when compared to Greater Melbourne.

FIGURE 9: PERTH'S GRADIENT OF POPULATION DENSITY BY SA2



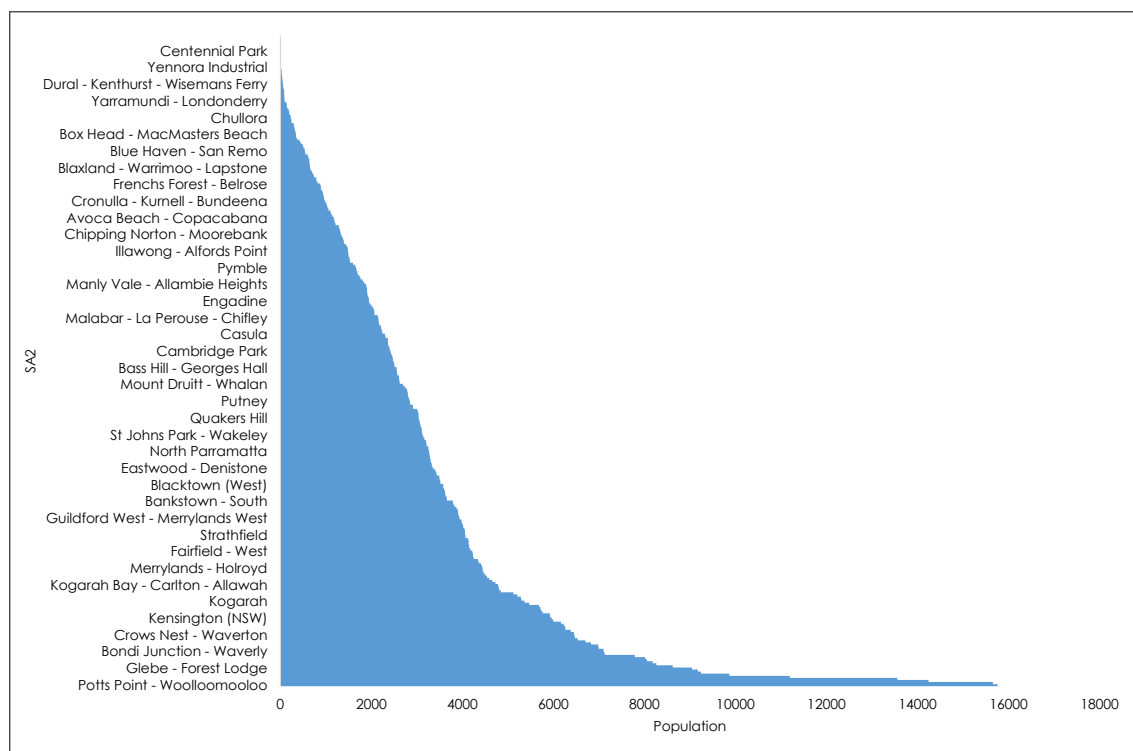
Source: ABS, 2019.

FIGURE 10: MELBOURNE'S GRADIENT OF POPULATION DENSITY BY SA2



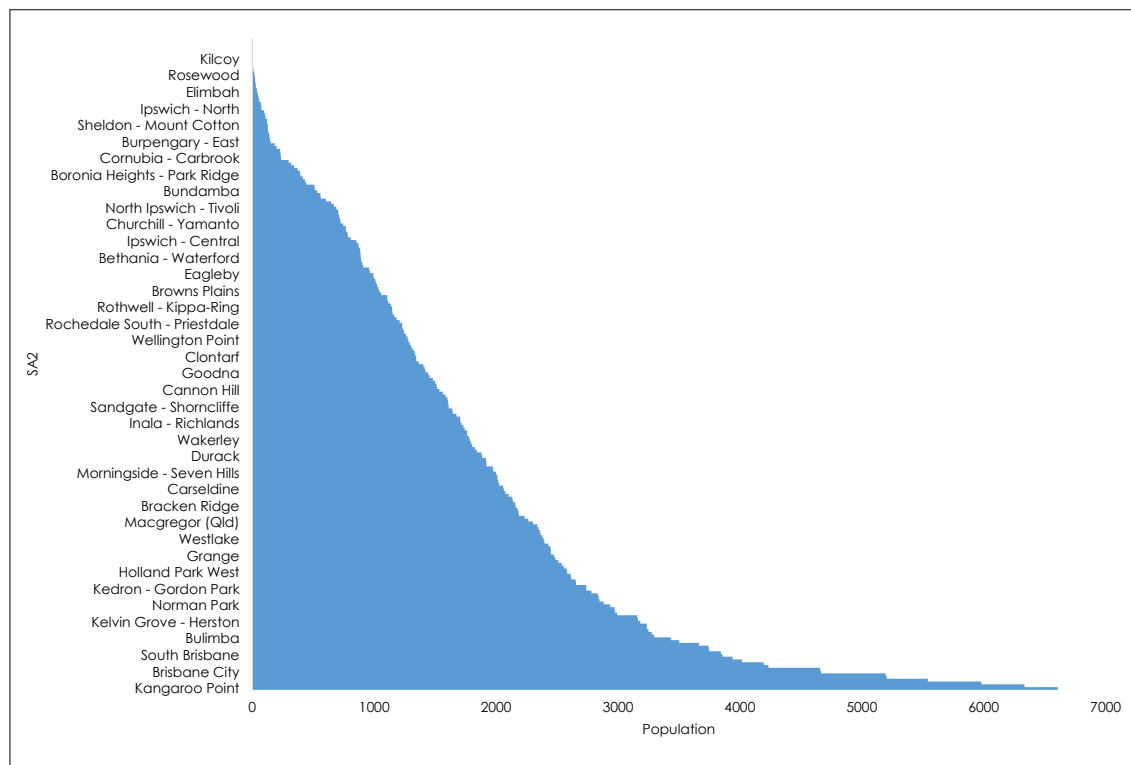
Source: ABS, 2019.

FIGURE 11: SYDNEY'S GRADIENT OF POPULATION DENSITY BY SA2



Source: ABS, 2019.

FIGURE 12: BRISBANE'S GRADIENT OF POPULATION DENSITY BY SA2



Source: ABS, 2019.

Aerial images of Australia's highest density SA2s illustrate differences in the form of peak and secondary nodes of population density SA2s within each capital city. In particular, they show that the areas with highest population densities are in inner-city locations incorporating medium and high-rise apartment development in Greater Sydney, Greater Melbourne and Greater Brisbane. In Greater Melbourne, population densities are highest within the city centre and inner-urban core, which suggests a mix of residential and employment land uses.

Meanwhile, in Greater Sydney and Brisbane peak population densities are found in inner-urban areas adjacent to the respective city centres.

Greater Perth's highest density SA2 is Tuart Hill–Joondanna, which is a suburban location 7–8 kms north of the Perth City Centre. Tuart Hill–Joondanna is a primary example of suburban density primarily delivered through the subdivision of traditional residential lots to deliver smaller green and strata title lots accommodating detached and semi-detached dwellings

and is a typical example of infill density in Greater Perth. Nodes of high-density apartment development are evident in the Perth City Centre and inner and middle urban SA2s, yet are not of a sufficient scale to deliver the population densities that are evident within larger capitals.

TUART HILL – JOONDANNA, PERTH



CARLTON, MELBOURNE



NORTH SYDNEY – LAVENDER BAY, SYDNEY



KANGAROO POINT, BRISBANE



Source: Nearmap, 2019.

Suburban Density: History of Tuart Hill-Joondanna

Tuart Hill-Joondanna SA2 is situated roughly 7–8kms north of the Perth CBD along one of Perth's main access routes – Wanneroo Road. The area was originally used for market gardens and was mainly rural – making land relatively cheap to develop in the post-war era (Heritage and Conservation Professionals, 1998; City of Stirling, 2019; City of Stirling, 2019a).

In the late-1940s and 1950s, Tuart Hill developed rapidly. Originally the most common housing typology in the area was the single detached home, however many of the original houses were removed in the twentieth century to make way for the extensive development of unit blocks (Heritage and Conservation Professionals, 1998; City of Stirling, 2019a). Some unit developments took place in the 1960s but more recently, higher-density housing has been developed through the subdivision of traditional suburban blocks into multiple green title and strata lots (City of Stirling, 2019).

Compared to state averages, Tuart Hill and Joondanna exhibit a low-rise medium density housing structure. In Tuart Hill, 69% of homes are 'semi-detached, row or terrace house and townhouses', compared to a metropolitan average of 16% (ABS, 2017c). Tuart Hill also provides a higher proportion of one-bedroom dwellings (4.2%) than the metropolitan average (3.4%) (ABS, 2017c). This medium-high-density dwelling structure, coupled with a relatively small SA2 area of 3.6km², has established Tuart Hill-Joondanna SA2 as the most densely populated SA2 in the Greater Perth region.

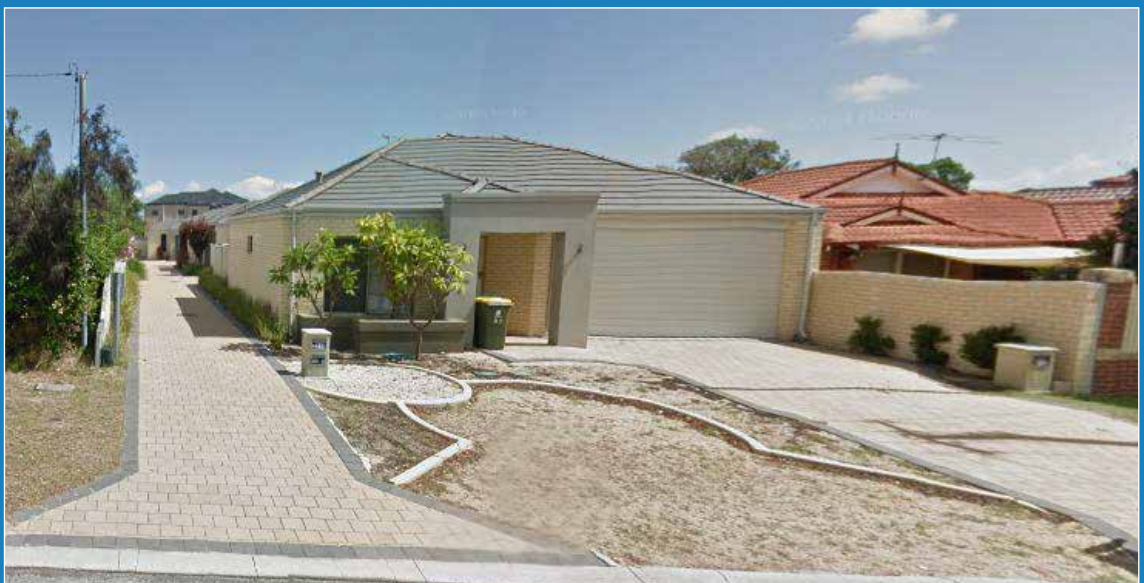
However, despite higher than average public transport use (13.9% of residents travel to work by public transport compared to 10.3% in Greater Perth), transport in the area is primarily car-based, with 64.3% of workers living in the area travelling to work by car (ABS, 2017c).

**REMNANT TRADITIONAL SINGLE DETACHED DWELLING IN
THE TUART HILL-JOONDANNA SA2**



Source: REIWA, 2019.

**MODERN SMALL STRATA URBAN INFILL DEVELOPMENT IN
THE TUART HILL-JOONDANNA SA2**



Source: Nearmap, 2019.

SCATTERED EMPLOYMENT

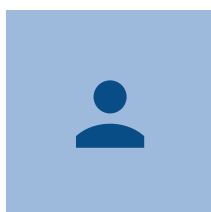
Summary:

- In Greater Perth, employment is scattered through a large number of activity centres.
- The Perth City Centre is the highest density employment hub in Greater Perth, yet employment densities here are comparatively low when compared to other Australian capital cities.
- In inner-urban Sydney, there are 3.2 workers per km² for every worker in inner-urban Perth.
- In inner-urban Melbourne, there are 2.5 workers per km² for every inner-urban worker in Perth.
- In Greater Brisbane, Sydney and Melbourne, SA2s with the highest employment densities are clustered around the city centre — delivering strong, high-density employment hubs and a critical mass of people within the inner-urban core.
- In Greater Perth, employment activity centres outside the Perth City Centre are mostly concentrated in the inner and middle suburbs and are primarily low-density, low-rise and car-based — reflecting high levels of accessibility by car.

employment land uses.

Vertical mapping shows a broad, flat structure of employment density in Greater Perth compared to other Australian capitals.

Peak employment densities are found within the city centres of all four major Australian capitals. Perth City Centre SA2 has the lowest peak employment density of the capitals. In Greater Sydney, Melbourne and Brisbane SA2s with the highest employment densities are primarily clustered around city centres — delivering strong, high-density employment hubs within the inner-urban core.



Perth



Sydney



Melbourne

Suburban form is not just defined by population density. In cities that are predominately suburban, employment — including office, industrial, retail, hospitality and entertainment activities — is commonly low-density and dispersed.

In Greater Perth, employment is scattered through a large number of

suburban activity centres rather than concentrated within high-density hubs. This is reflective of the economics of land, industry needs and preferences, low-density structure of the region, the dominance of car-based travel and metropolitan planning policy, which identifies a large number of metropolitan activity centres as suitable for

Despite the outward dispersal of the population in Australian capitals, the inner city retains a strong appeal, particularly for businesses in knowledge industries or those looking to establish a corporate headquarters, because a central location gives them access to the largest pool of potential employees. (Committee for Perth, 2016). Traffic congestion in major capitals, combined with strong inner-urban public transport accessibility and high central population densities can heighten the appeal of central locations (Committee for Perth, 2016).

Proximity to suppliers, customers and firms within the same and different sectors also helps businesses to work efficiently, to generate opportunities and to stay up to date with current ideas (Kelly & Donegan, 2014). In addition, city centre locations deliver prestige and high levels of amenity, access to the largest possible pool of skilled labour, and better road and public transport accessibility than secondary suburban centres (Committee for Perth, 2016).

A representative of large knowledge-based firms in Greater Perth explains this benefit, stating: *"The reason the city exists is the conglomeration of benefits, it is too expensive to be in outer areas. Big cities have big CBDs" and "The city is the only place for us to be. Our clients are here and so are our competitors. We rub shoulders and do business.*

It is the only way it [business] works" (Committee for Perth, 2016 p. 90).

In Greater Perth, higher-density employment SA2s outside the city centre are dispersed through inner-urban and middle activity centres. These remain highly accessible by car, enabled by access to land for parking and also deliver relatively high public transport access (Committee for Perth, 2016). In these locations, businesses can access city centre locations and networks with relative ease without paying city centre rents (Committee for Perth, 2016). These areas are also home to major infrastructure assets, including ports and airports, hospitals and universities (Committee for Perth, 2016).

In Greater Perth, these locations are attractive for businesses specialised in technology, logistics,

light industrial, property, architecture, education and health, as well as businesses in industries that lack a specific hub (Committee for Perth, 2016).

Consequently, in Greater Perth higher than average employment densities are evident in industrial areas, traditional inner-urban employment strips, infrastructure nodes and urban consolidation/ redevelopment areas. For example, Osborne Park Industrial is a middle-suburban industrial area and it has the second highest employment density in Greater Perth, after the Perth City Centre. Subiaco-Shenton Park SA2 exhibits the third highest employment density in the region and areas of higher than average employment density are evident in proximity to The University of Western Australia, Fremantle Port and Perth Airport.

OSBORNE PARK INDUSTRIAL



SUBIACO



PARRAMATTA–ROSEHILL



Australia's highest density middle to outer-suburban employment SA2s are apparent in Greater Sydney and include Parramatta–Rosehill and Chatswood (East)–Artarmon.

This reflects Sydney's increasingly polycentric

CHATSWOOD (EAST)–ARTARMON



employment structure and relatively high middle- and outer-suburban public transport accessibility compared other major Australian capitals (IA, 2018). Like areas of population density, inner and middle SA2s with high employment densities in

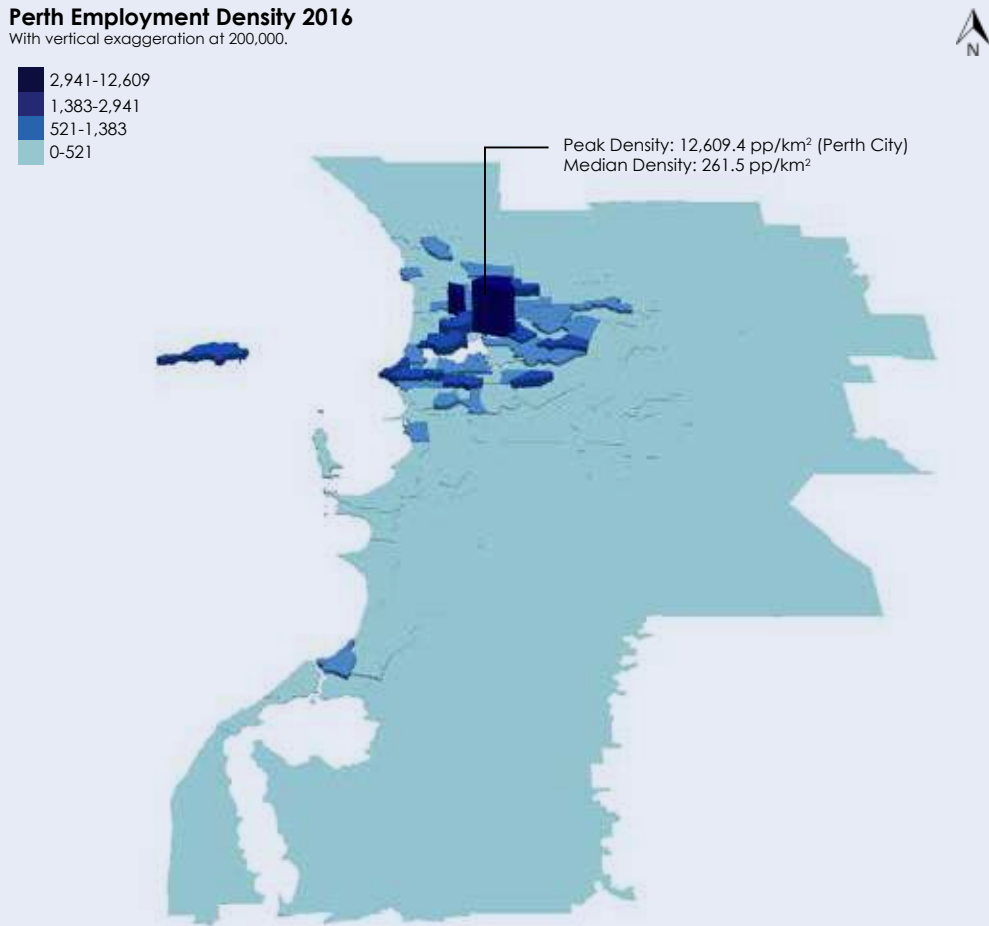
Sydney, Melbourne and Brisbane are compact and incorporate significant high-rise development compared to employment areas in Greater Perth, which are most often low- to medium-rise and designed to maximise motor vehicle and parking access.

TABLE 2: AVERAGE AND PEAK EMPLOYMENT DENSITIES IN GREATER PERTH, MELBOURNE, SYDNEY AND BRISBANE

Metropolitan Region	Median Employment Density	Peak Employment Density	Peak Employment Density SA2	Inner-Urban Core
Perth	262	12,609	Perth City Centre	12,609
Melbourne	488	92,140	Melbourne City Centre	31,290
Sydney	534	74,611	Sydney City Centre	40,654
Brisbane	361	51,037	Brisbane City Centre	20,815

Source: ABS, 2018.

FIGURE 13: EMPLOYMENT DENSITY IN GREATER PERTH, 2016

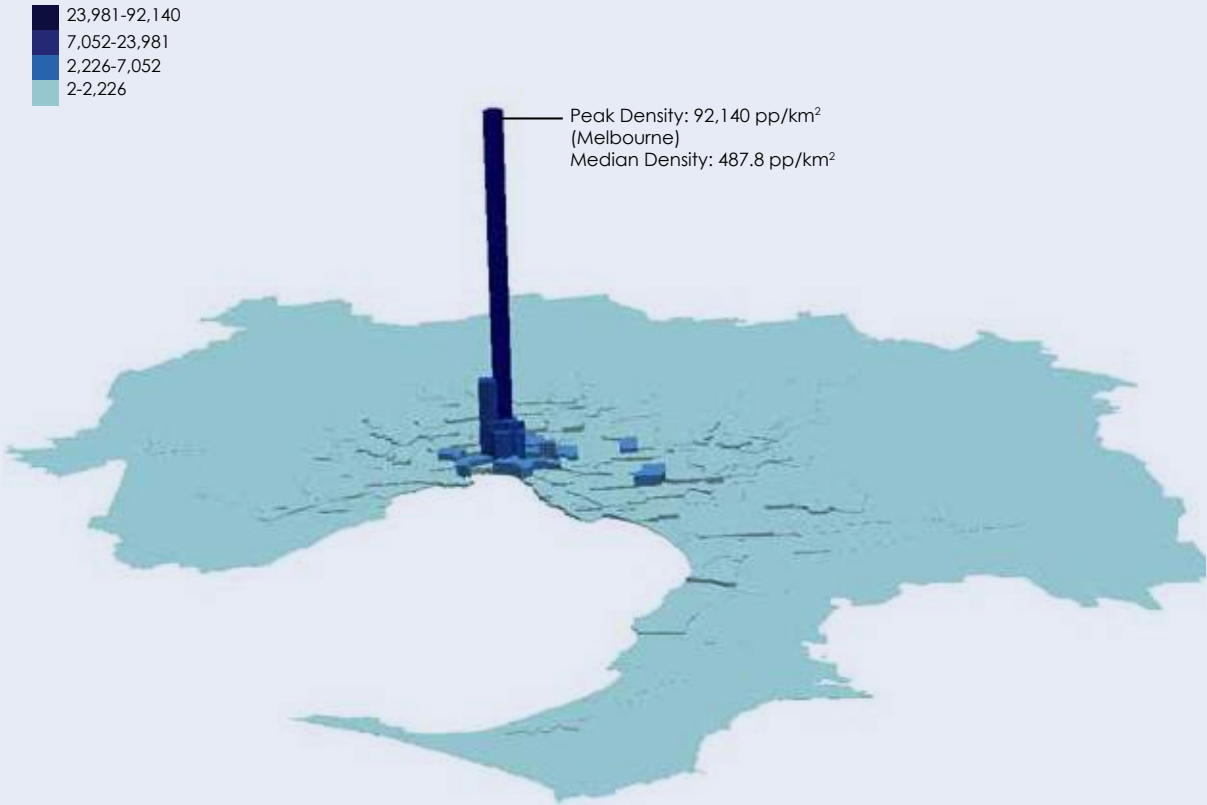


Source: ABS, 2018.

FIGURE 14: EMPLOYMENT DENSITY IN GREATER MELBOURNE, 2016

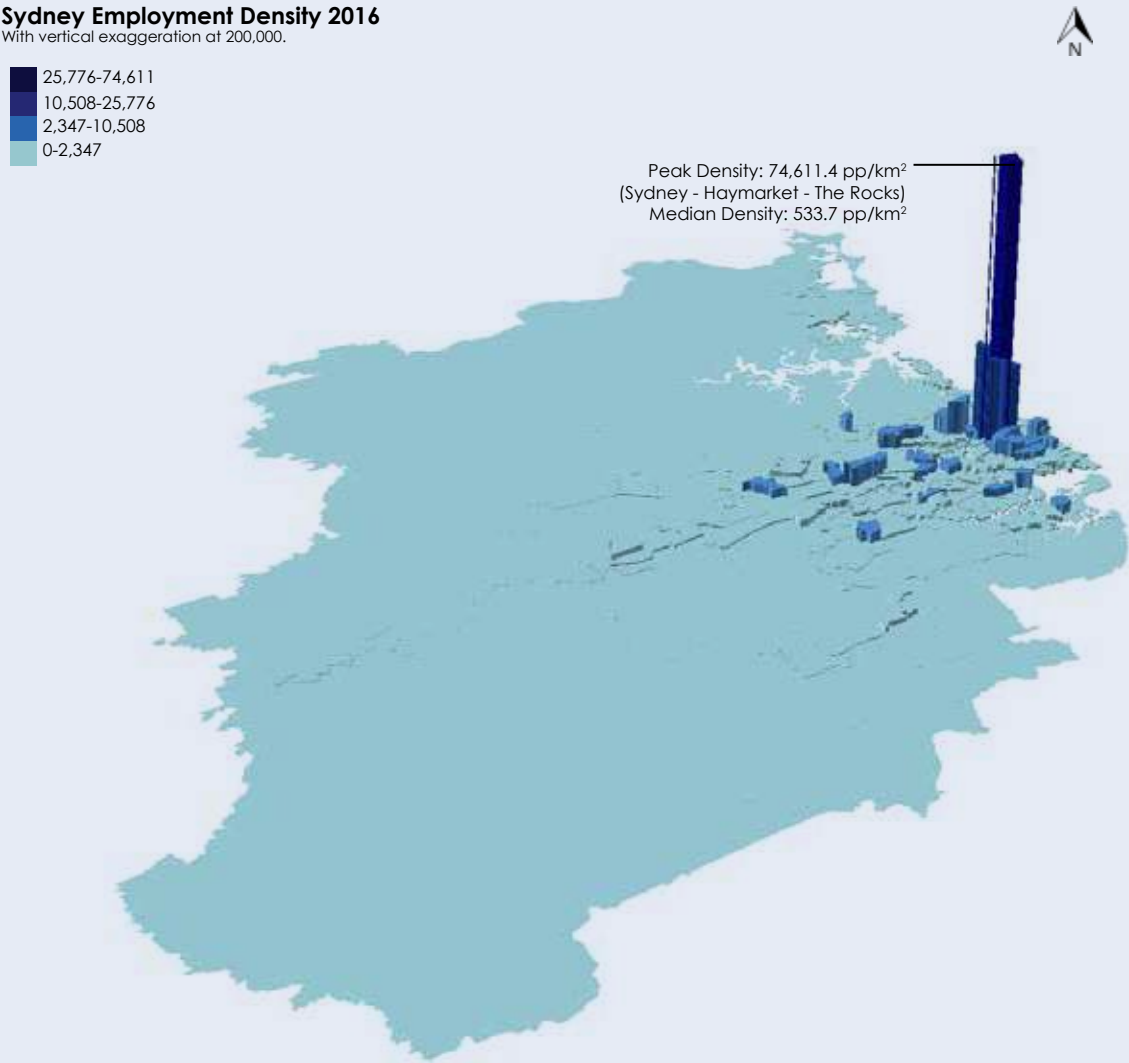
Melbourne Employment Density 2016

With vertical exaggeration at 200,000.



Source: ABS, 2018.

FIGURE 15: EMPLOYMENT DENSITY IN GREATER SYDNEY, 2016



Source: ABS, 2018.

FIGURE 16: EMPLOYMENT DENSITY IN GREATER BRISBANE, 2016

Brisbane Employment Density 2016
With vertical exaggeration at 200,000.



Source: ABS, 2018.

LOW-INTENSITY HUBS

Summary:

- Since the mid-1990s, mixed-use development has been promoted as delivering multi-modal accessibility, vibrancy, housing choice and agglomeration economies that are reminiscent of traditional pre-car urban centres.
- In the twenty-first century, the characteristics of mixed-use development — proximity, land use intensity, vibrancy and authenticity — are also heralded as creating the conditions that maximise economic competitiveness, including knowledge and innovation.
- The highest intensity mixed-use nodes in the four major Australian capitals are in Greater Melbourne and Sydney, and the lowest intensity nodes are in Greater Perth.
- The Melbourne SA2 (City Centre) generated the peak mixed-use intensity score within the four major capitals. Melbourne SA2 accommodates a balance of activities that most reflect the characteristics of a successful mixed-use hub as identified in international literature.
- Greater Sydney has the highest intensity mixed-use inner urban core.
- The Perth City Centre is the lowest intensity mixed-use city centre and exhibits low employment and population densities compared to other Australian capitals — accounting for perceptions that the city lacks a critical mass of people.
- Mixed-use hubs in Greater Perth lack a fine-grain mix of uses; that is, similar activities are clustered together rather than scattered through the geographical space.
- In Greater Perth the top 20 mixed-use hubs are dispersed throughout inner-urban and middle-suburban locations, while in Greater Melbourne and Brisbane the top 20 mixed-use SA2s are highly centralised.
- Greater Sydney exhibits the most polycentric structure of mixed-use development and incorporates middle- and outer-urban mixed-use hubs — Parramatta-Rosehill and Chatswood (East)-Artarmon — that rival the Perth City Centre in intensity.

In Greater Perth, employment and residential land uses are not only low-density but they also remain primarily separated. Consequently, while Greater Perth is a metropolis of 2 million people, it has not yet developed the high-intensity, vibrant mixed-use employment and residential hubs that are typical of traditional city centres and promoted within late twentieth and early twenty-first century planning policy. This accounts for local and external observations that Perth City Centre lacks critical mass and 24-hour vibrancy; that is, 'dead after 5pm' (Davis, 2019; Ipsos, 2019).

Characteristics of Successful Mixed-use Hubs

The concept of mixed-use development has been the subject of urban planning and economic literature since the mid-1990s. This form of development has been promoted as delivering multi-modal accessibility, vibrancy, housing choice and agglomeration economies that are reminiscent of traditional pre-car urban centres (Jacobs, 1961; Rowley, 1996). In the twenty-first century, amid the rapid urbanisation and rising competition between cities to attract skilled

people and businesses, the characteristics of mixed-use development — proximity, land use intensity, vibrancy and authenticity — are also heralded as creating conditions that maximise economic competitiveness —knowledge, skill and industry specialisation and innovation (Clos, 2018, Shearer et al., 2019).

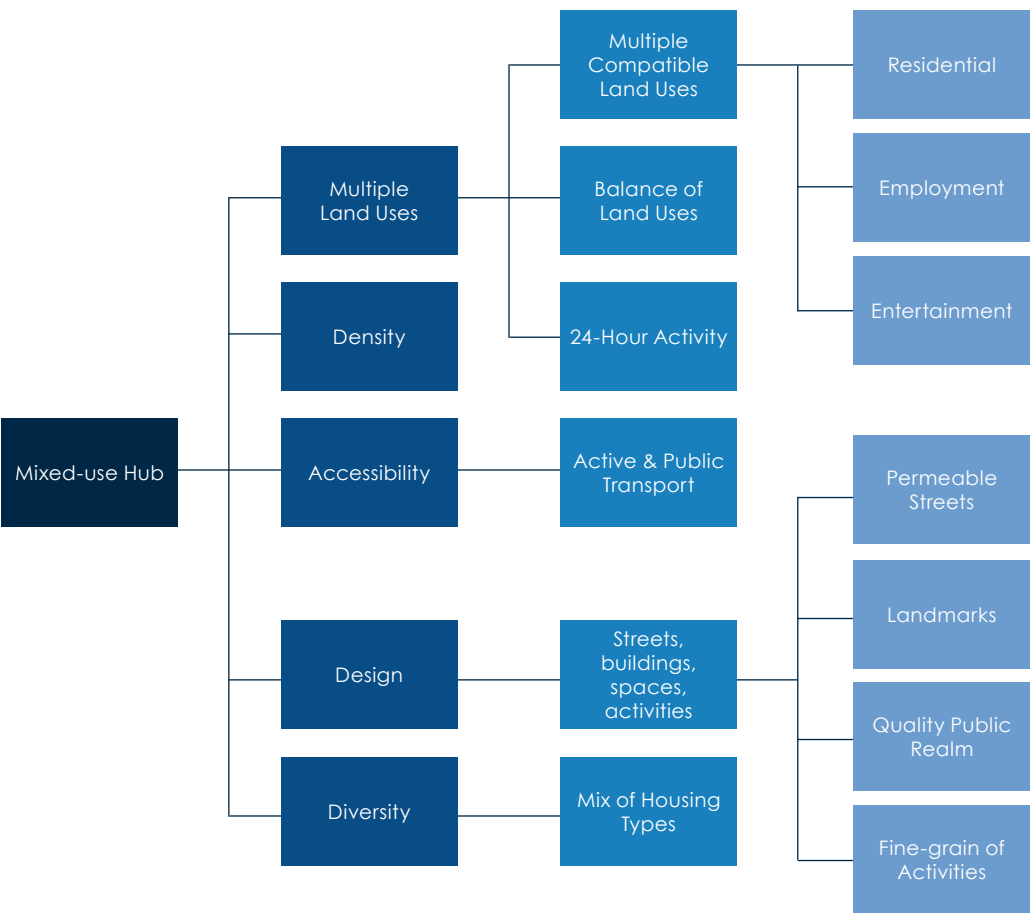
A review of the literature from the 1990s to 2000s identifies a general academic consensus that the term 'mixed-use' does not simply mean multiple

land uses (Kusumastuti et al., 2017). Rather, mixed-use development refers to a combination of multiple land uses, compatible land uses and activities within a precinct or neighbourhood, including residential; employment (office); retail; accommodation and food services; and arts, culture and recreation; as well as density; accessibility; and design features (Jacobs, 1961; Rowley, 1996).

Mixed-use development is also purported to have a time and socio-economic,

cultural and economic dimension. In particular, the fundamental goals of mixed-use development are to incorporate a balanced mix of uses and functions to generate urban vitality at different times of the day and week (i.e. a 24-hour economy), create economic synergies and generate innovation and provide for a community that is demographically diverse (Kusumastuti et al., 2017).

FIGURE 17: CHARACTERISTICS OF SUCCESSFUL MIXED-USE NEIGHBOURHOODS



Source: Kusumastuti et al., 2017; Shearer et al., 2019.



Source: iStockphoto

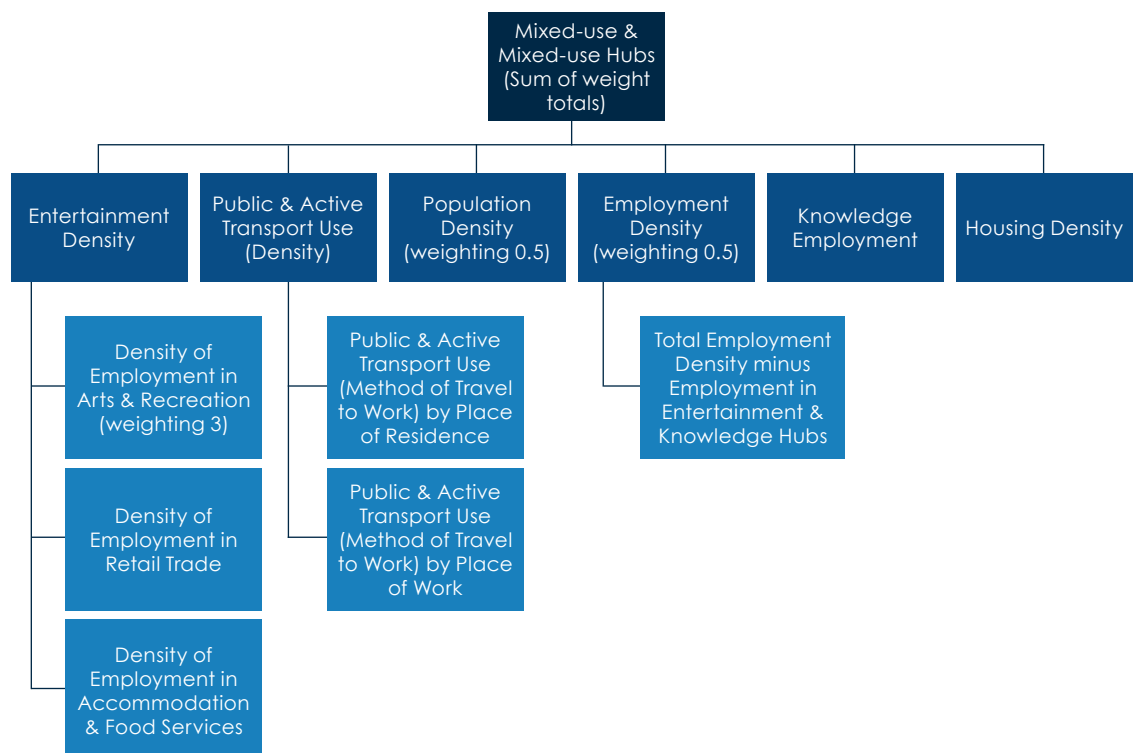
Mixed-use SA2s in Australian Capitals

Mixed-use SA2s within Australia's major capitals have been identified by calculating a mixed-use intensity score. This score is based on the

combined intensity of population, employment, public transport use and housing diversity (density of one and two bed homes). The densities have been weighted where appropriate to ensure

that the scores reflect the balance of characteristics identified as central to successful, 24 hour mixed-use centres. The methodology is outlined in Figure 18 below.

FIGURE 18: IDENTIFICATION OF MIXED-USE HUBS (METHODOLOGY AND WEIGHTING)



PERTH AS A REGION OF 2 MILLION PEOPLE

This process identified nodes of mixed-use activity within each capital city with the highest intensity nodes in Greater Melbourne and Sydney and lowest intensity in Greater Perth. High-density mixed-use SA2s were primarily identified in inner-city locations. A full list of the top 20 mixed-use

SA2s identified in each capital city are listed in Appendix B on page 96.

The Melbourne (City Centre) SA2 generated the peak mixed-use intensity score within the four major capitals. Melbourne SA2 accommodates a balance of activities that most

reflect the characteristics of a successful mixed-use hub as identified in the international literature, which includes high-density residential, knowledge employment, employment in entertainment industries, public and active transport use and housing diversity.

SYDNEY-HAYMARKET-THE ROCKS (LEFT) AND MELBOURNE (RIGHT)



Source: Nearmap, 2019.



Source: iStockphoto.

Australia's second highest intensity mixed-use SA2 is Sydney-Haymarket-The Rocks, which is a public transport oriented area incorporating high-density knowledge, retail and food and accommodation employment. Sydney-Haymarket-The Rocks is an employment focused hub. Consequently, population densities and densities of one and two bed housing are lower than intensities exhibited in Melbourne (City Centre) SA2.

As outlined in Table 4, when calculated by inner-urban core³, the mixed-use intensity of inner-urban Sydney exceeds that of inner Melbourne. The balance between employment and population densities within the two cities are comparable, with both centres exhibiting a strong weighting towards employment density.

Perth City Centre is Greater Perth's major mixed-use hub and it exhibits modest characteristics of mixed-use success. Population and employment densities are lower in the Perth City Centre than other major capital cities and employment densities far outweigh population densities, yet the proportion of knowledge employment in the city centre is comparatively high.

Like inner major capitals, land use in the Brisbane City SA2 and Brisbane's inner-urban core is weighted towards employment. The Brisbane City Centre SA2 mixed-use intensity score is higher than that of the Perth City Centre SA2 due to higher population densities and greater intensities of employment, including retail, food and accommodation and knowledge employment, combined with more intensive public and active transport use and provision of one and two bed housing.

³ 10-11.5km² area within the inner city. Inner Urban Core of Sydney includes: Sydney-Haymarket-The Rocks; Pyrmont-Ultimo; Surry Hills; North Sydney-Lavender Bay; Darlinghurst; and Potts Point-Woolloomooloo. Inner Urban Core of Melbourne includes: Melbourne; Docklands; Southbank; Carlton; and Fitzroy. Inner Urban Core of Brisbane Includes: Fortitude Valley; South Brisbane; Spring Hill; Woolloongabba; Kangaroo Point.

TABLE 3: MIXED-USE INTENSITY SCORE BY CITY CENTRE SA2

SA2	Arts & Recreation (Weighting:3)	Retail	Food & Accommodation	Public & Active Transport Density	Employment Density*
Sydney-Haymarket-The Rocks	1,754	3,174	5,128	60,662	11,015
Melbourne	1,295	4,705	6,980	70,133	14,993
Perth City Centre	402	454	822	6,528	1,534
Brisbane City	346	1,920	3,018	32,811	11,814

SA2	Knowledge Employment (Weighting:0.5)	Population Density (Weighting:0.5)	Density of One & Two Bed Homes	Mixed-use Intensity Score
Sydney-Haymarket-The Rocks	43,695	3,446	1,764	130,638
Melbourne	50,039	8,371	6,024	162,539
Perth City Centre	8,129	1,551	900	20,322
Brisbane City	22,356	2,279	1,255	75,799

*Minus knowledge and entertainment employment

Source: ABS, 2018.

TABLE 4: MIXED-USE INTENSITY SCORE—INNER-URBAN CORE

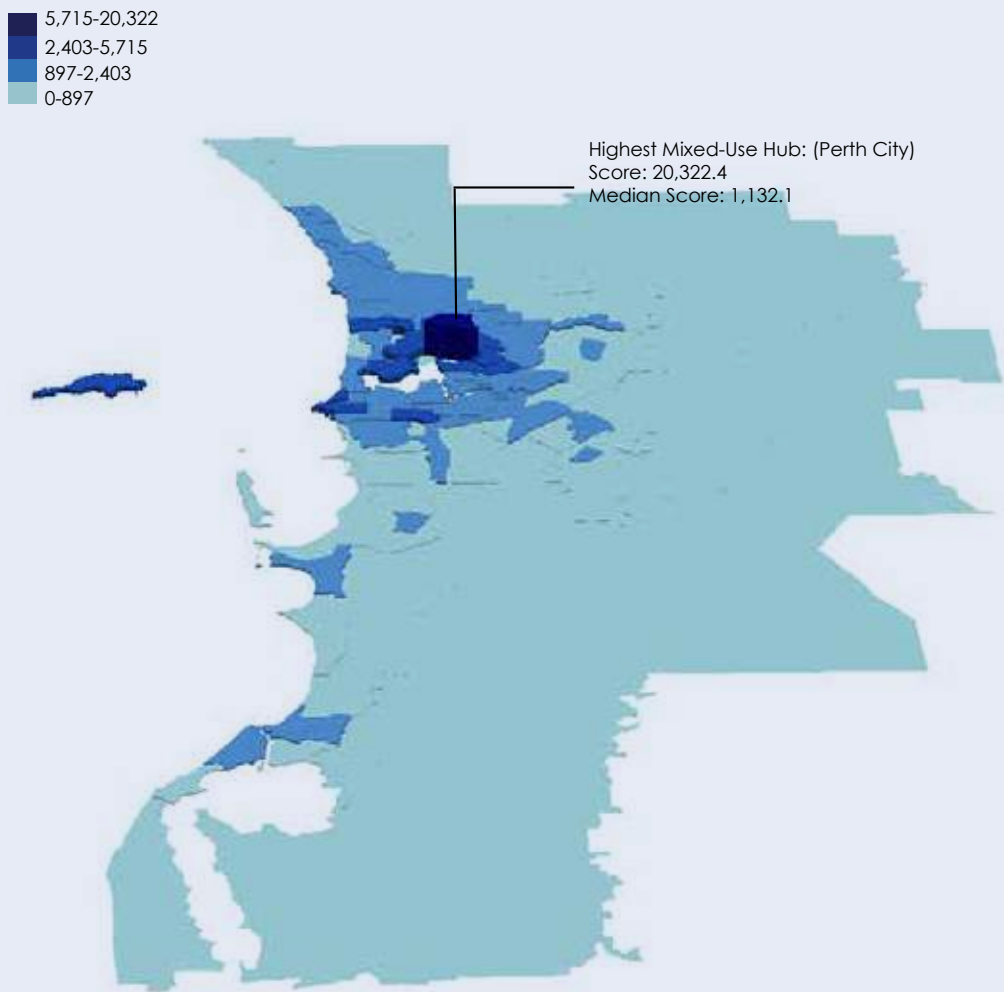
SA2	Arts & Recreation (Weighting:3)	Retail	Food & Accommodation	Public & Active Transport Density	Employment Density*
Melbourne Inner-Urban Core	938	1,503	2,346	23,094	5,480
Sydney Inner-Urban Core	1,261	1,700	2,768	33,349	6,256
Perth City Centre	403	455	822	6,528	1,535
Brisbane Inner-Urban Core	491	654	1,314	10,784	3,847

SA2	Knowledge Employment (Weighting:0.5)	Population Density (Weighting:0.5)	Density of One & Two Bed Homes	Mixed-use Intensity Score
Melbourne Inner-Urban Core	16,170	4,676	3,108	57,314
Sydney Inner-Urban Core	23,260	5,126	2,956	76,673
Perth City Centre	8,129	1,551	900	20,322
Brisbane Inner-Urban Core	9,319	2,236	1,205	29,853

Source: ABS, 2018.

FIGURE 19: PERTH’S TOP MIXED-USE HUBS 2016

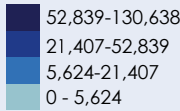
Perth’s Top Mixed-Use Hubs 2016
With vertical exaggeration at 500,000



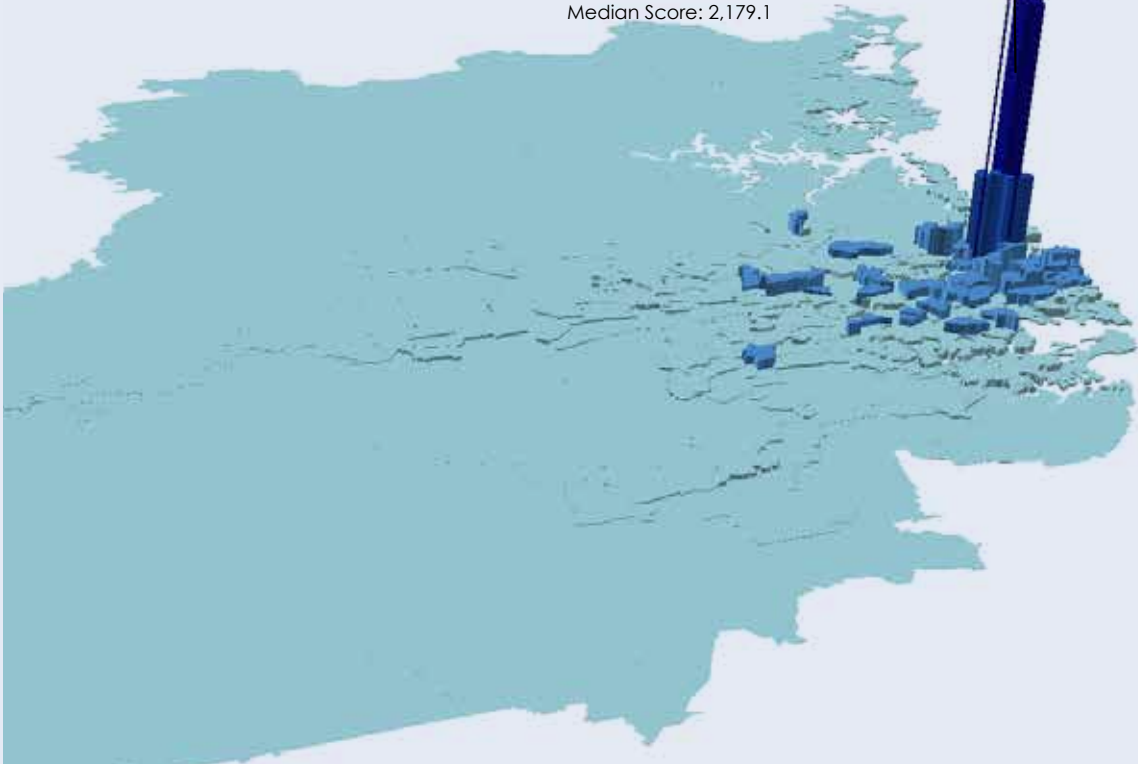
Source: ABS, 2018.

FIGURE 20: SYDNEY'S TOP MIXED-USE HUBS 2016

Sydney's Top Mixed-Use Hubs 2016
With vertical exaggeration at 500,000



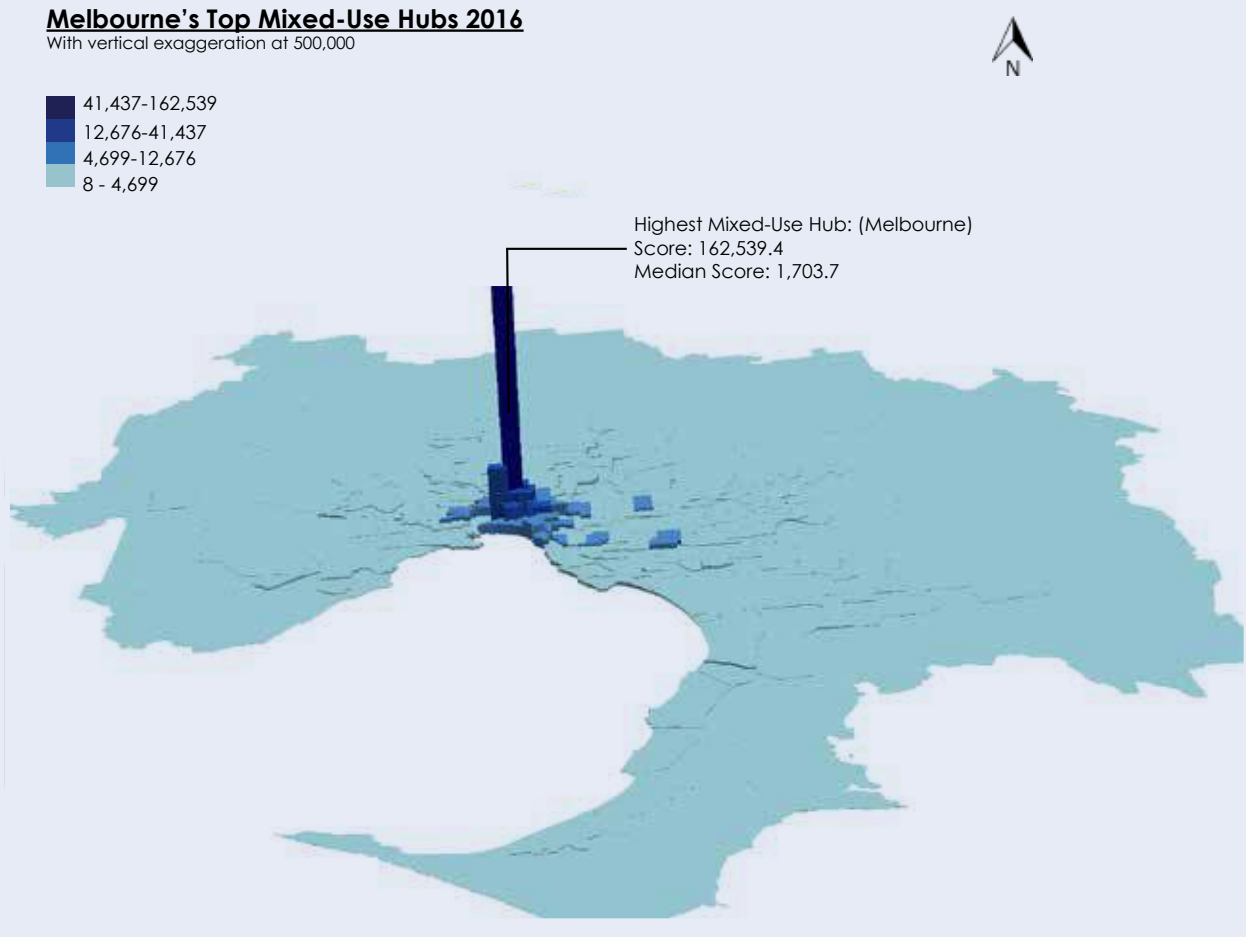
Highest Mixed-Use Hub: (Sydney - Haymarket - The Rocks)
Score: 130,638.3
Median Score: 2,179.1



Source: ABS, 2018.

FIGURE 21: MELBOURNE'S TOP MIXED-USE HUBS 2016

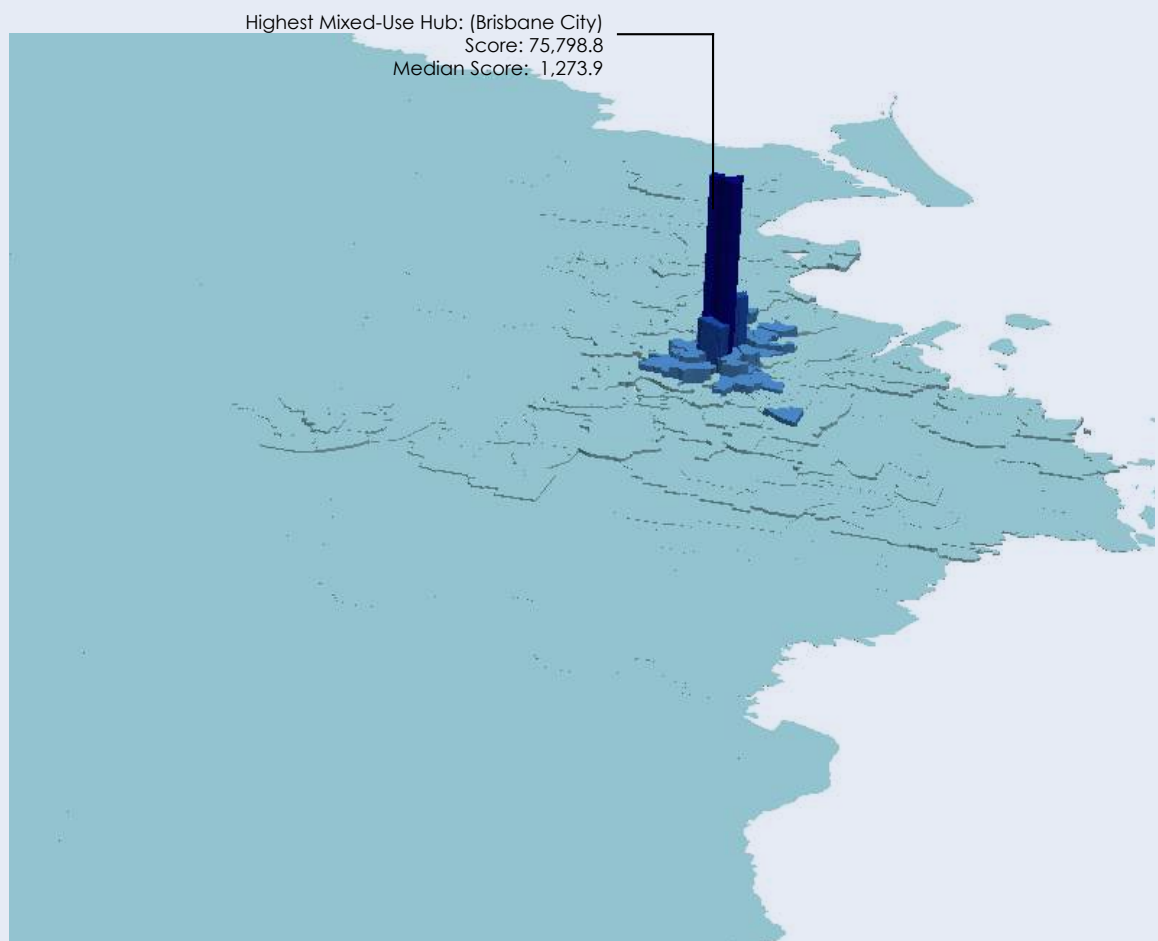
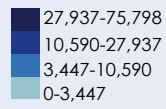
Melbourne's Top Mixed-Use Hubs 2016
With vertical exaggeration at 500,000



Source: ABS, 2018.

FIGURE 22: BRISBANE'S TOP MIXED-USE HUBS 2016

Brisbane's Top Mixed-Use Hubs
With vertical exaggeration at 500,000



Source: ABS, 2018.

Design Characteristics

A review of urban design characteristics of mixed-use hubs in Greater Perth (which is provided in Appendix B) found that in most areas, land uses and activities retain some separation. Consequently, mixed-use hubs in Greater Perth lack fine-grain integration (i.e. scattering of different activities through the geographical space rather than similar activities clustered together) that deliver dynamic, 24-hour economies (Jacobs, 1961). Land use separation also remains a characteristic of the Perth City Centre

SA2; for example, the St Georges Terrace area is the Strategic Office Central Core; the Hay and Murray Street area is the retail core and the Northbridge area is the primary cultural or civic attractor and hospitality node. Existing residential areas are currently situated on the extremities of the City Centre in West Perth, East Perth and Northbridge (noting that the Perth City Centre SA2 excludes the Nedlands-Crawley area).

Outside the Perth City Centre, mixed-use SA2s in Greater Perth are also suburban in intensity. Some centres such as

Subiaco exhibit population and employment balance, yet at a low-intensity scale. Few hubs incorporate the mix of activities and characteristics required to stimulate 24-hour vibrancy.

Land Use Synergies

Land use correlations provide an indication of synergies in activity intensity, the balance of uses within mixed-use locations, and the degree to which land uses in cities support one another. Table 5 below provides an overview of land use synergies in the top 20 mixed-use hubs within each of the four major capitals.

TABLE 5: LAND USE AND ACTIVITY SYNERGIES WITHIN TOP 20 MIXED-USE HUBS IN GREATER PERTH, MELBOURNE, SYDNEY AND BRISBANE

Land Use	Perth	Melbourne	Sydney	Brisbane
Office Employment				
Residential	●	●●●	●	●
Food & Accommodation	●●●●	●●●●●	●●●●●	●●●●
Retail	●●	●●●●●	●●●	●●●
Arts, Recreation	●	●●	●●●	●
PT & Active Transport	●●●●●	●●●●●	●●●●●	●●●●●
Residential				
Food & Accommodation	●	●●●●	●	●
Arts, Recreation	●	●	●	●
Retail	●	●●●●	●	●
PT & Active Transport	●	●●●	●	●
Food and Accommodation				
Retail	●	●●●●●	●●●●	●●●
Arts, Recreation	●	●●	●●●	●
PT & Active Transport	●●●●●	●●●●●	●●●●●	●●●●
Retail				
Arts, recreation	●	●	●●●	●●
PT & Active Transport	●●	●●●●●	●●●●	●●●
Arts, Recreation				
PT & Active Transport	●	●●	●●●	●
●	Very low or no synergy			
●●	Low synergy			
●●●	Moderate synergy			
●●●●	Strong synergy			
●●●●●	Very strong synergy			

The top 20 mixed-use hubs in Greater Sydney are the highest intensity of the four capitals. However, as observed in Sydney-Haymarket-The Rocks, no synergy is evident between employment and population densities. This confirms that in Greater Sydney the nodes of high-intensity employment are primarily separated from nodes of high density residential. The same pattern is evident in the top 20 hubs in Greater Perth and Greater Brisbane.

In Greater Melbourne, by comparison, high-intensity employment is associated with elevated population intensity. Greater Melbourne's top 20 mixed-use hubs also exhibit the strongest synergies between densities of knowledge/office employment; employment in food and

accommodation industries; and retail employment. This suggests that Melbourne's mixed-use hubs have more successfully incorporated residential and employment land uses. It also indicates that mixed-use hubs in Melbourne incorporate employment land uses that generate a vibrant 24 hour economy and deliver economic synergies.

The low association between retail density and densities of other residential and employment activities is notable in Greater Perth. This reflects the separation of high-density retail activities from other high-intensity commercial and residential land uses. In addition, Greater Perth is the dispersal of the top 20 mixed-use hubs throughout inner-urban and middle-suburban locations. In contrast, in Greater

Melbourne and Brisbane the top 20 mixed-use SA2s are highly centralised.

Mixed-use hubs in Greater Sydney, like Greater Perth, are more dispersed, yet are developed at much higher intensities than in Greater Perth. This reflects Sydney's increasingly polycentric structure. Key middle and outer-suburban mixed-use activity centres include Parramatta–Rosehill; Macquarie Park–Marsfield; and Chatswood (East)–Artarmon.

It is noted that major regional centres, including Parramatta–Rosehill and Chatswood (East)–Artarmon have comparable mixed-use intensity scores to Perth City Centre. The high-intensity form of these centres is illustrated in the following aerial images.

PARRAMATTA–ROSEHILL



CHATSWOOD (EAST)–ARTARMON



EXPANDING ENTERTAINMENT

Summary:

- Despite global headwinds in some sectors, Greater Perth is home to relatively strong entertainment industries with employment in the retail trade, food and accommodation, and arts and recreation sectors comparable with employment in other Australian capitals.
- Unlike other capitals, where the inner-urban core is the combined high intensity retail and food and accommodation hub, in Greater Perth entertainment areas, particularly those for retail, have expanded outward and densities within the inner-urban core are lower. Despite this, the role of the city centre as an entertainment hub has been revitalised since 2011.
- In the 1960–1970s, new, dispersed retail and light industrial areas were built around the convenience of the car and became prominent features of retail in Australian suburbs. These centres remain significant in Greater Perth.
- Perth City Centre SA2 is Greater Perth's primary food and accommodation hub; however, peak densities of food and accommodation employment are lower than in other capitals and patterns of density are more dispersed.
- Peak densities of arts and recreation employment in Greater Perth are more comparable with densities of arts and recreation employment in other capitals.
- Peak densities of employment within the arts and recreation industry in Greater Perth are evident in Victoria Park-Lathlain-Burswood, followed by the Perth City Centre SA2.
- Unlike high-density arts and recreation nodes in other capitals, which are part of the mixed-use inner-urban fabric, the primary arts and recreation hub in Victoria Park-Lathlain-Burswood is Crown Perth, which is a purpose-built entertainment complex.

Prior to the widespread adoption of motor vehicles, retail and entertainment activities in Australian capital cities were primarily located within the city centre, and in urban and suburban nodes focused around tram routes and railways stations.

However, by the 1960s–1970s new, dispersed retail and entertainment centres and light industrial areas, built around the convenience of the car, became prominent features of retail and entertainment in the Australian suburbs (Hall 2010; Bailey 2014).

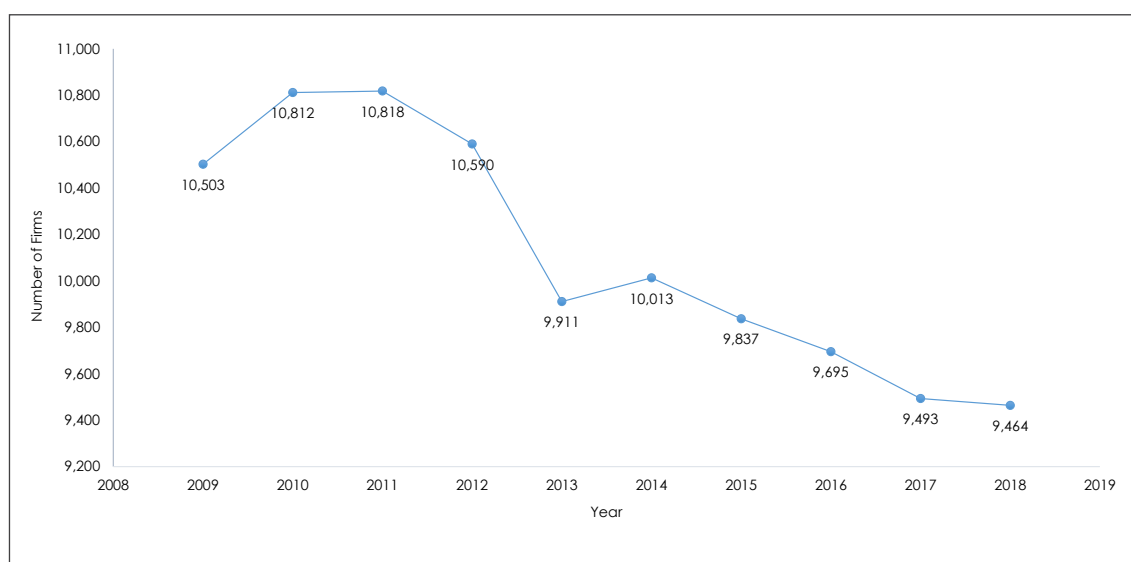
Suburban retail and entertainment remain core features of Greater Perth today. There is, however, evidence that the role of the Perth City Centre as an entertainment hub has been revitalised since 2011–2016, with 19% growth recorded in the total number of retail, food and accommodation and arts and recreation businesses within the City of Perth local government area, following a 6% decline in the 2006–2011 period (ABS, 2007; ABS, 2012; ABS, 2017).

Suburban, Car-based Retail

Suburban retail centres are focal points for store-based retail⁴ in Greater Perth. Suburban retail includes major regional shopping centres (i.e. home to department and discount department stores, chain clothing stores and specialty stores; light industrial areas), which are preferred locations for mega stores, warehouse outlets and large format specialist retail. It also includes neighbourhood shopping centres, such as shopping centres and convenience retail (McArthur, 2005).

The retail sector world-wide has been subject to significant headwinds over the past decade and the number of retail firms in Greater Perth and the proportions of firms which employ 5-19, 20-199 and 200+ employees have each experienced a decline (Tonts et al., 2017). Nevertheless, proportionally, employment in the retail trade industry in Greater Perth is comparable with employment in other Australian capitals (ABS, 2019).

FIGURE 23: NUMBER OF FIRMS IN THE RETAIL AND TRADE INDUSTRY IN GREATER PERTH FROM 2009–2018



Source: Tonts et al., 2017; ABS, 2018.

⁴ Including ABS categories of 'Retail Trade, nfd', 'Food Retailing' and 'Other Store-Based Retailing' (ABS, 2018). These are sub-categories that come from the Industry of Employment, 'Retail Trade' category (ABS, 2018). The report excludes the categories of 'Fuel Retailing', Motor Vehicle and Motor Vehicle Parts Retailing' and 'Non-Store Retailing and Retailing Commission-Based Buying and/or Selling'.

The dispersal of employment in the retail trade industry in Greater Perth differs significantly to the spatial distribution of employment in other capitals. In Greater Perth, retail densities are relatively uniform across the metropolis, reflecting the dispersal of the regional population. Perth City Centre SA2 is an important retail node and area with the most retail employees. However, it does not accommodate the region's highest retail densities, which are found in Osborne

Park Industrial. Other industrial areas include O'Connor and Malaga. The suburban shopping nodes in the middle- and outer-suburban locations include Joondalup-Edgewater, Innaloo-Doubleview, Cannington-Queens Park, Morley, Booragoon and Hillarys, which are also locations of higher-density retail employment within Greater Perth.

In contrast, in Greater Sydney, Melbourne and Brisbane, the SA2s with the highest retail densities

are located within the inner-urban core⁵. In Sydney, retail employment densities are highest in Sydney-Haymarket-The Rocks. In Melbourne, retail employment densities are heavily concentrated in the Melbourne City SA2. Meanwhile, in Brisbane, primary retail employment concentrations are within the Brisbane City and Fortitude Valley SA2s.

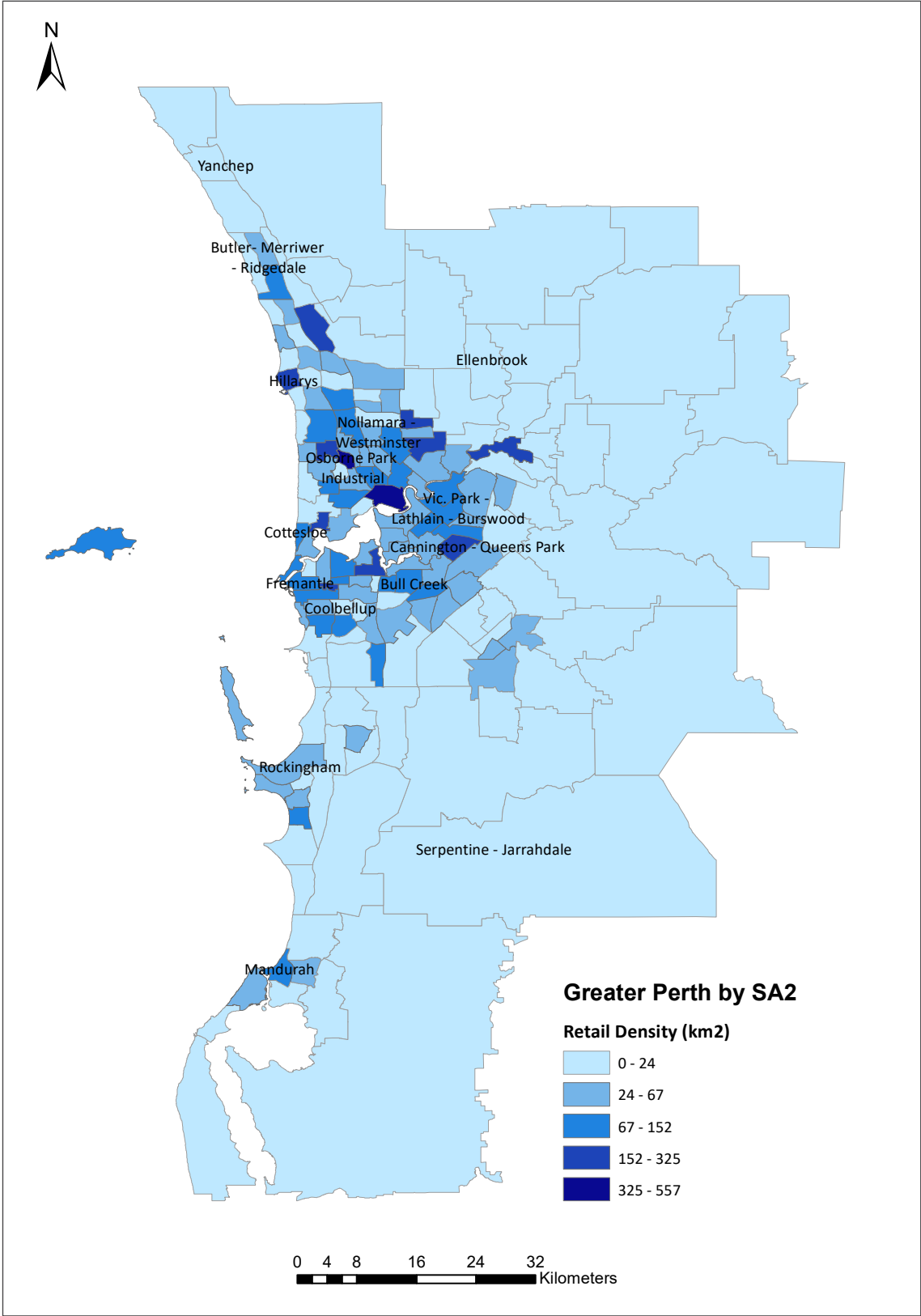
TABLE 6: RETAIL DENSITIES IN THE INNER-URBAN CORE (EMPLOYEES PER KM²)

Retail Density Inner-Urban Core Perth	Retail Density Inner-Urban Core Sydney	Retail Density Inner-Urban Core Melbourne	Retail Density Inner-Urban Core Brisbane
455	1,700	1,503	654

Source: ABS, 2018.

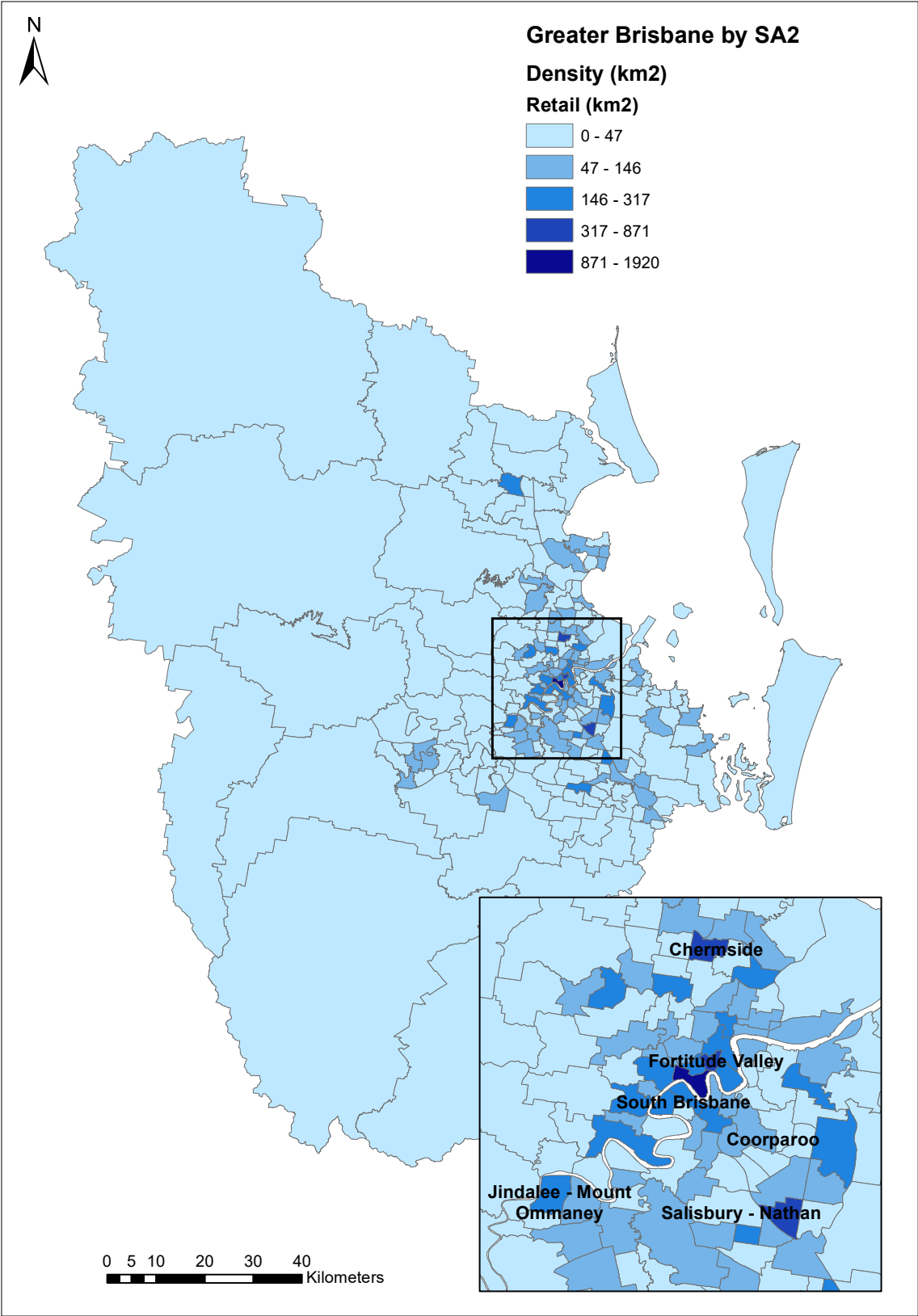
5 10–11.5km² area within the inner city. Inner Urban Core of Sydney includes: Sydney - Haymarket - The Rocks; Pyrmont–Ultimo; Surry Hills; North Sydney - Lavender Bay; Darlinghurst; and Potts Point–Woolloomooloo. Inner Urban Core of Melbourne includes: Melbourne; Docklands; Southbank; Carlton; and Fitzroy. Inner Urban Core of Brisbane Includes: Fortitude Valley; South Brisbane; Spring Hill; Woolloongabba and Kangaroo Point.

FIGURE 24: RETAIL TRADE EMPLOYMENT DENSITY IN GREATER PERTH



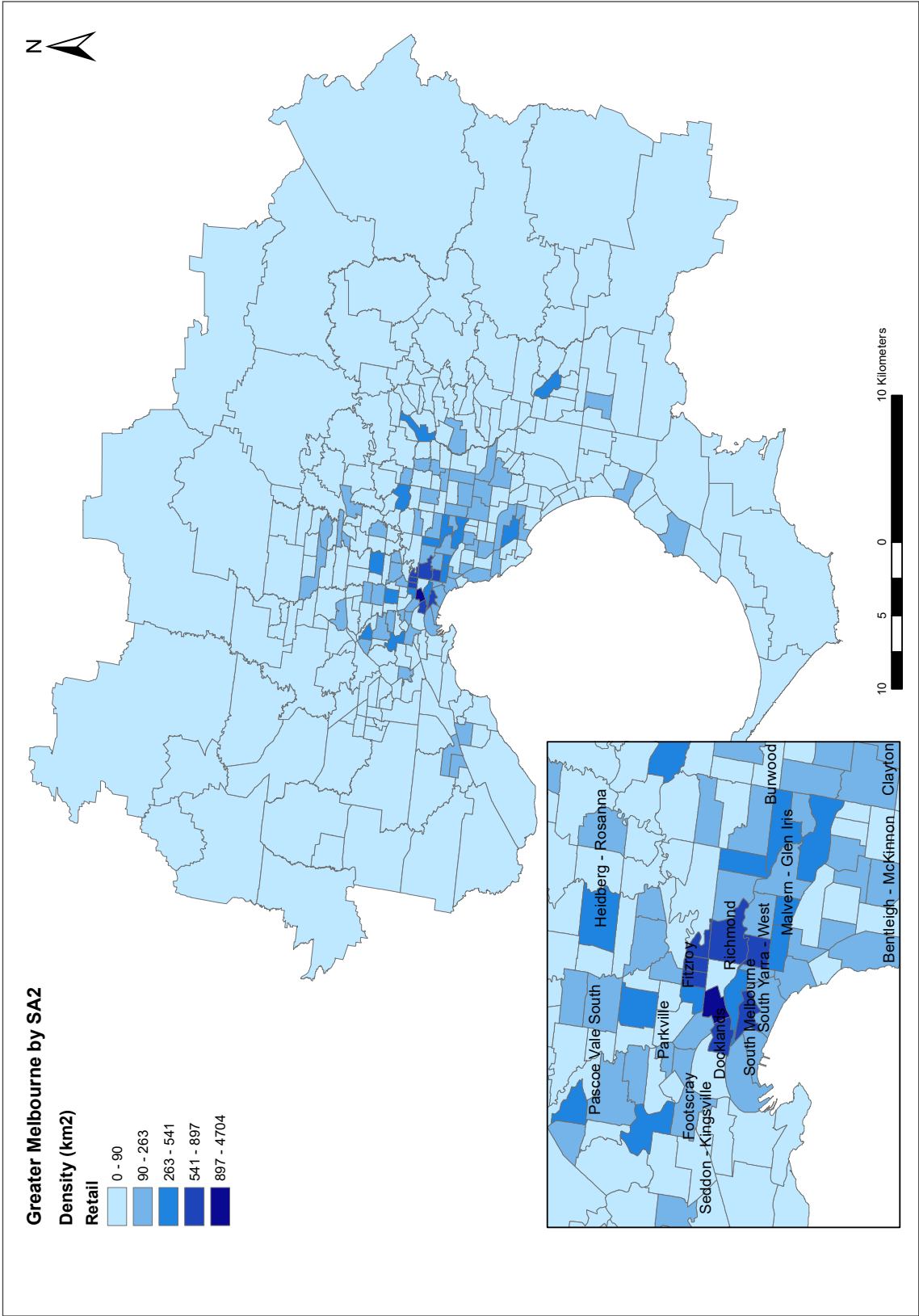
Source: ABS 2018; ABS, 2019b.

FIGURE 25: RETAIL TRADE EMPLOYMENT DENSITY IN GREATER BRISBANE



Source: ABS 2018; ABS, 2019b.

FIGURE 26: RETAIL TRADE EMPLOYMENT DENSITY IN GREATER MELBOURNE



Source: ABS 2018; ABS, 2019b.

76





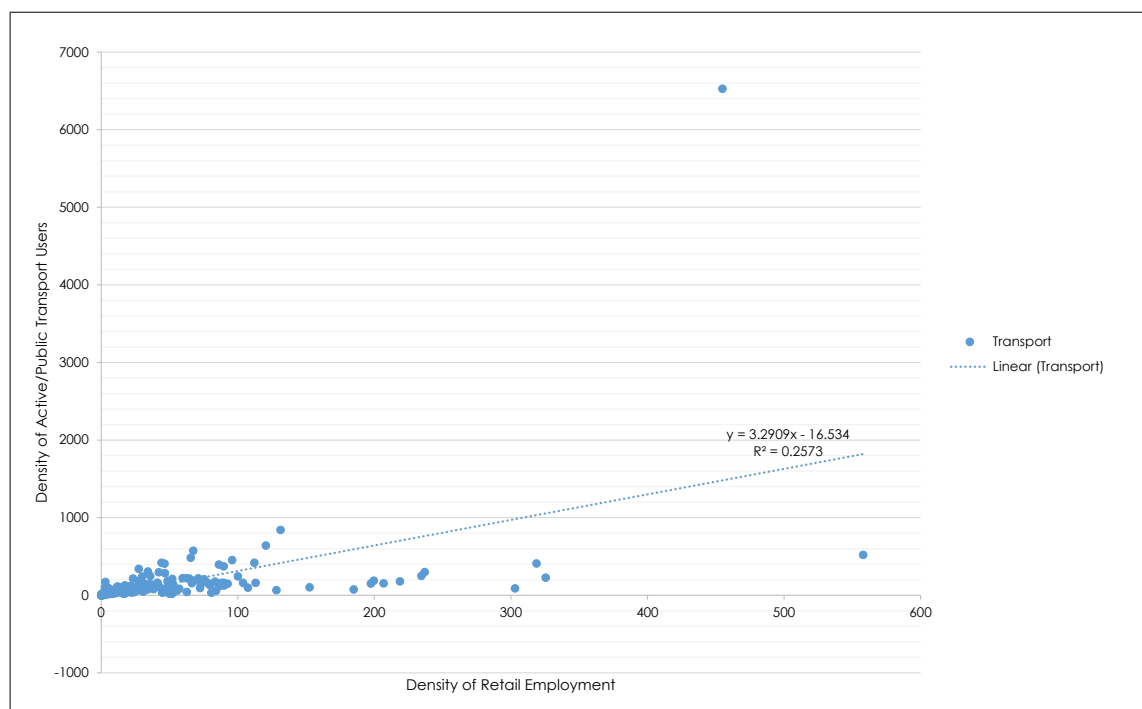
Photo: Julius Shaka. Source: Committee for Perth.

A further distinguishing feature of retail in Greater Perth is that it is car-based. In other words, there is no significant relationship evident between high densities of retail and higher-density public

and active transport use. This lack of retail-multi-modal synergy is unique to Greater Perth and reflects its suburban retail structure. In other capitals, high-intensity retail employment nodes are moderately to

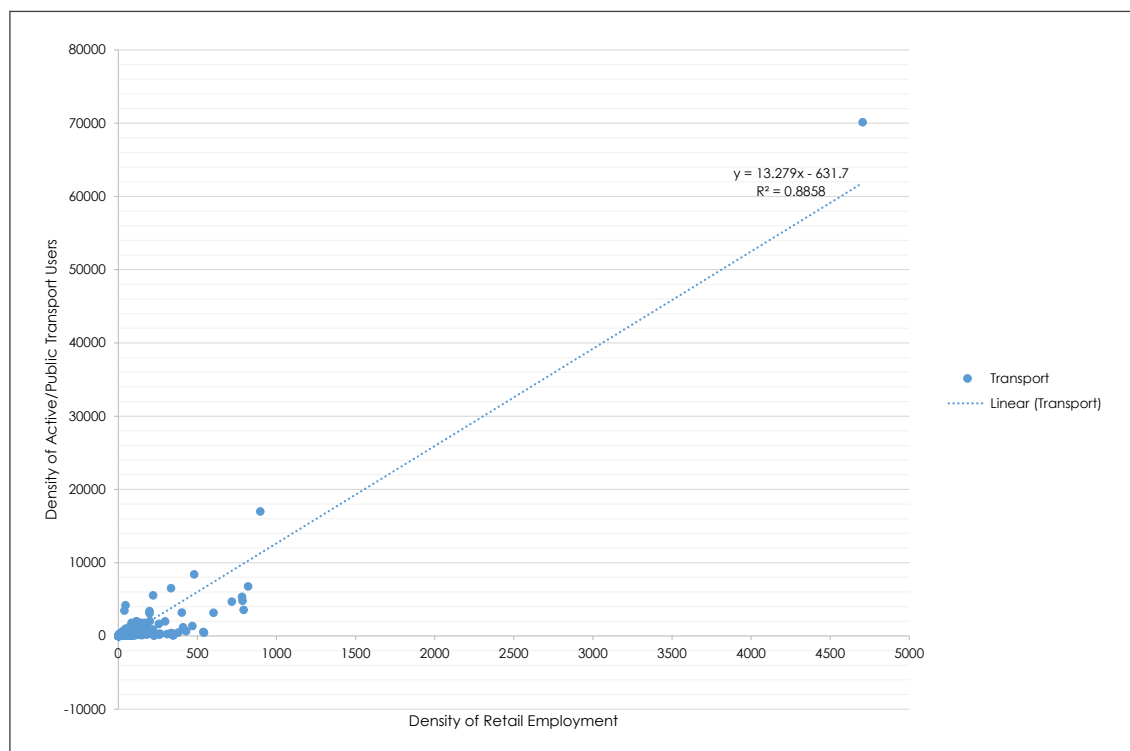
strongly associated with higher densities of public and active transport use, with the strongest relationship in Greater Melbourne: $R^2=0.8858$, followed by Sydney: $R^2=0.7702$ and Brisbane.

FIGURE 28: RETAIL AND PUBLIC AND ACTIVE TRANSPORT RELATIONSHIP GREATER PERTH



Source: ABS, 2018.

**FIGURE 29: RETAIL AND PUBLIC AND ACTIVE TRANSPORT RELATIONSHIP
GREATER MELBOURNE**



Source: ABS, 2018.

Dispersed Food and Accommodation

As Greater Perth has grown towards a population of 2 million people, it has developed a vibrant food and accommodation sector that is comparable in size with industries in Greater Sydney, Melbourne and Brisbane on a per capita basis (ABS, 2018). The number of firms and number of people employed in the food and accommodation sector in Greater Perth has grown over the past decade (ABS, 2018).

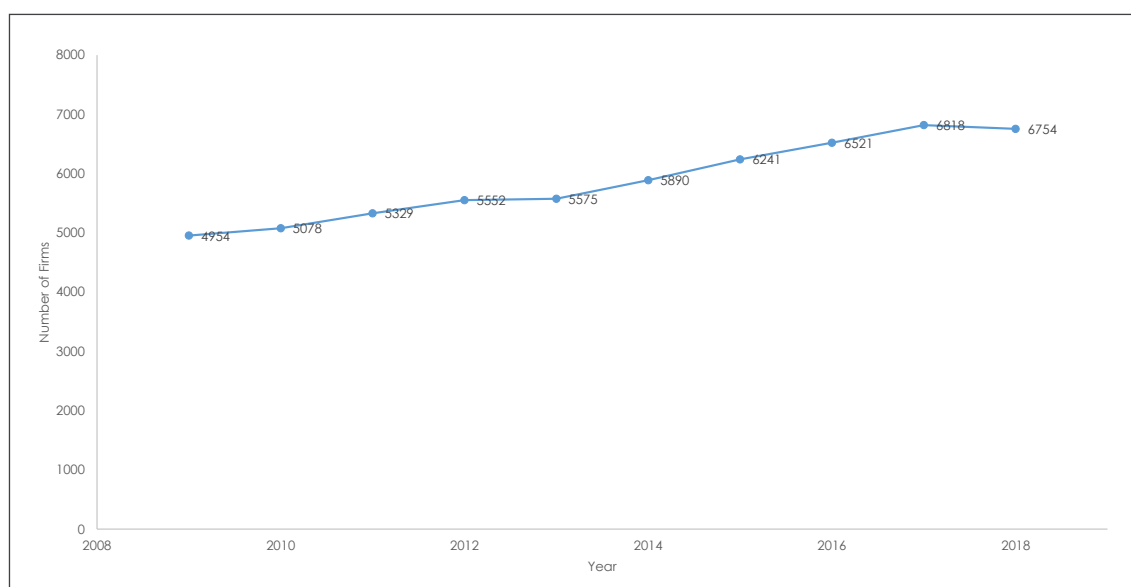
However, nodes of employment in the food and accommodation

sector (e.g. retail densities) are more suburban and dispersed in Greater Perth than in other major capitals. This supports the assertion that vibrant food, wine and shopping experiences are often found in the suburbs in Greater Perth rather than in the city centre (Brabazon, 2012).

Despite this, the Perth City Centre SA2 is the peak food and accommodation service employment hub within Greater Perth. Densities of food and accommodation employment in the Perth City Centre (inner-urban core) are significant but

are 37% to 70% lower than densities within the inner-urban core of other major capitals.

FIGURE 30: NUMBER OF FIRMS IN THE ACCOMMODATION AND FOOD SERVICES INDUSTRY IN GREATER PERTH FROM 2009–2018.



Source: ABS, 2019.

TABLE 7: FOOD AND ACCOMMODATION DENSITIES IN THE INNER-URBAN CORE (EMPLOYEES PER KM²)

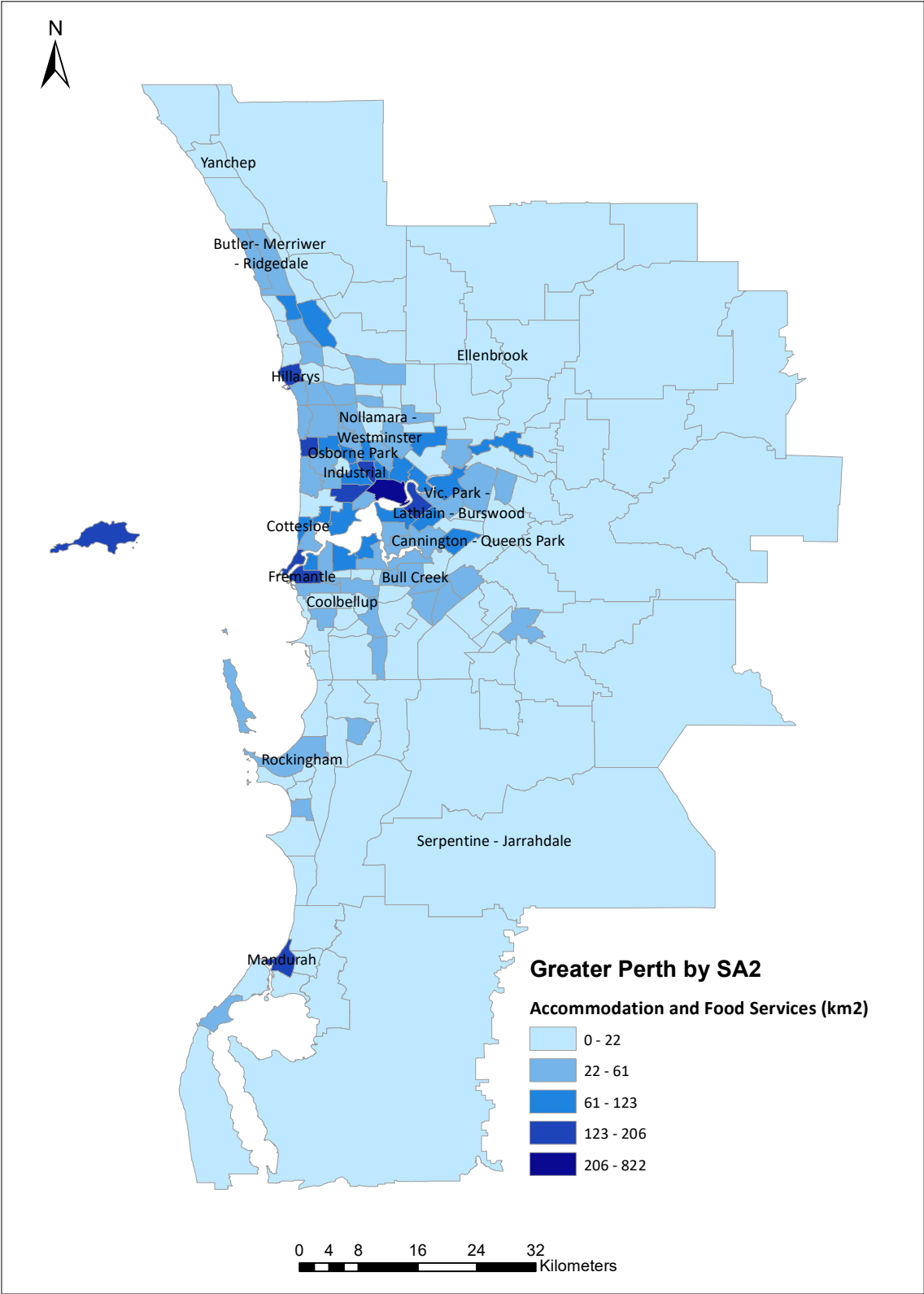
Food & Accommodation Density Inner-Urban Core Perth	Food & Accommodation Density Inner-Urban Core Sydney	Food & Accommodation Density Inner-Urban Core Melbourne	Food & Accommodation Density Inner-Urban Core Brisbane
822	2,768	2,346	1,314

Source: ABS, 2018.

Greater Perth's second tier food and accommodation hubs are dispersed with highest concentrations in inner-urban and middle suburbs surrounding the Perth City Centre and the Swan River including Fremantle, Subiaco-Shenton-Park, Victoria Park-Lathlain-Burswood. Food and accommodation densities in these centres

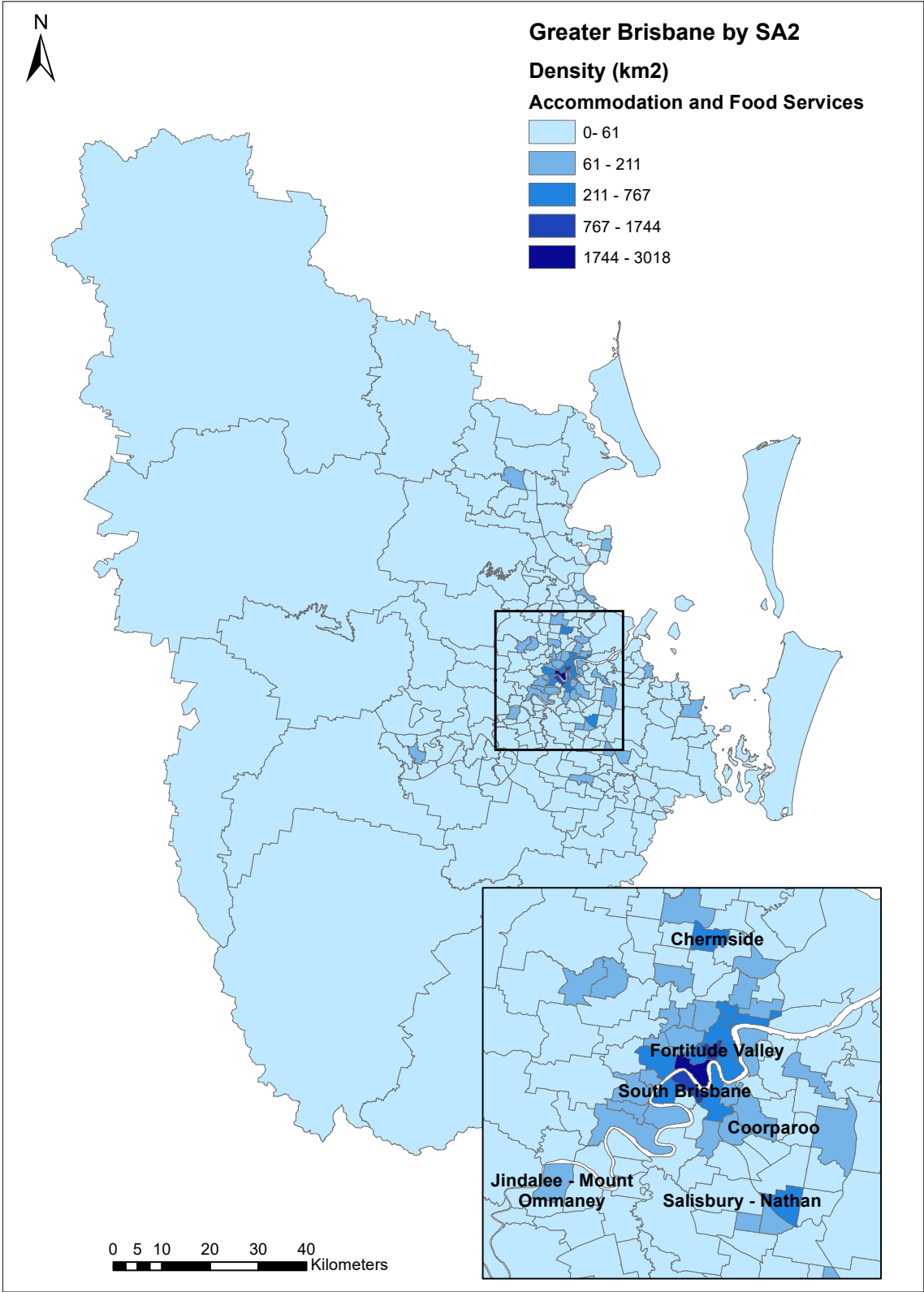
are comparable with suburban food and accommodation densities in other major capitals.

**FIGURE 31: ACCOMMODATION AND FOOD SERVICES EMPLOYMENT DENSITY
IN GREATER PERTH**



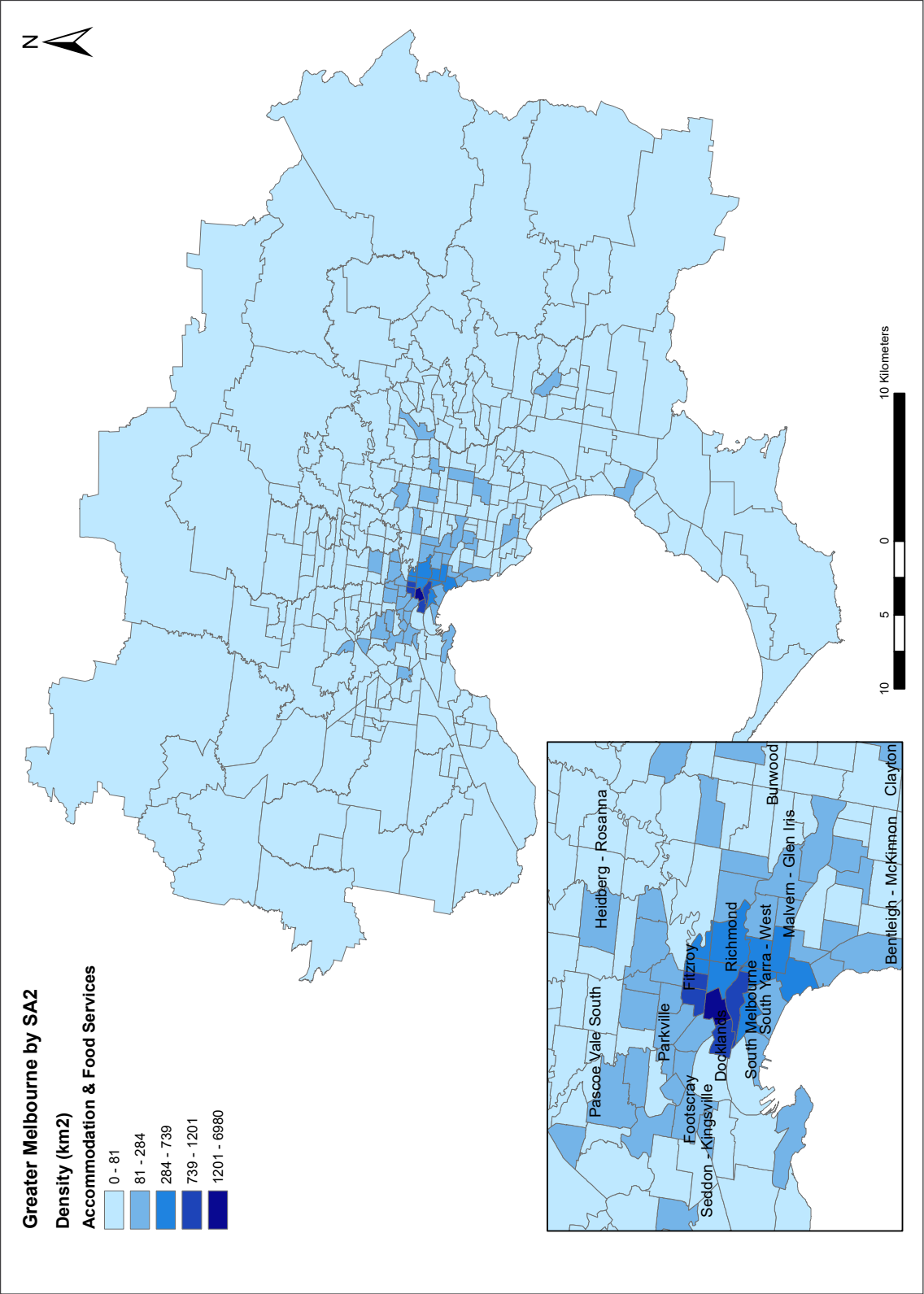
Source: ABS 2018; ABS, 2019b.

**FIGURE 32: ACCOMMODATION AND FOOD SERVICES EMPLOYMENT DENSITY
IN GREATER BRISBANE**



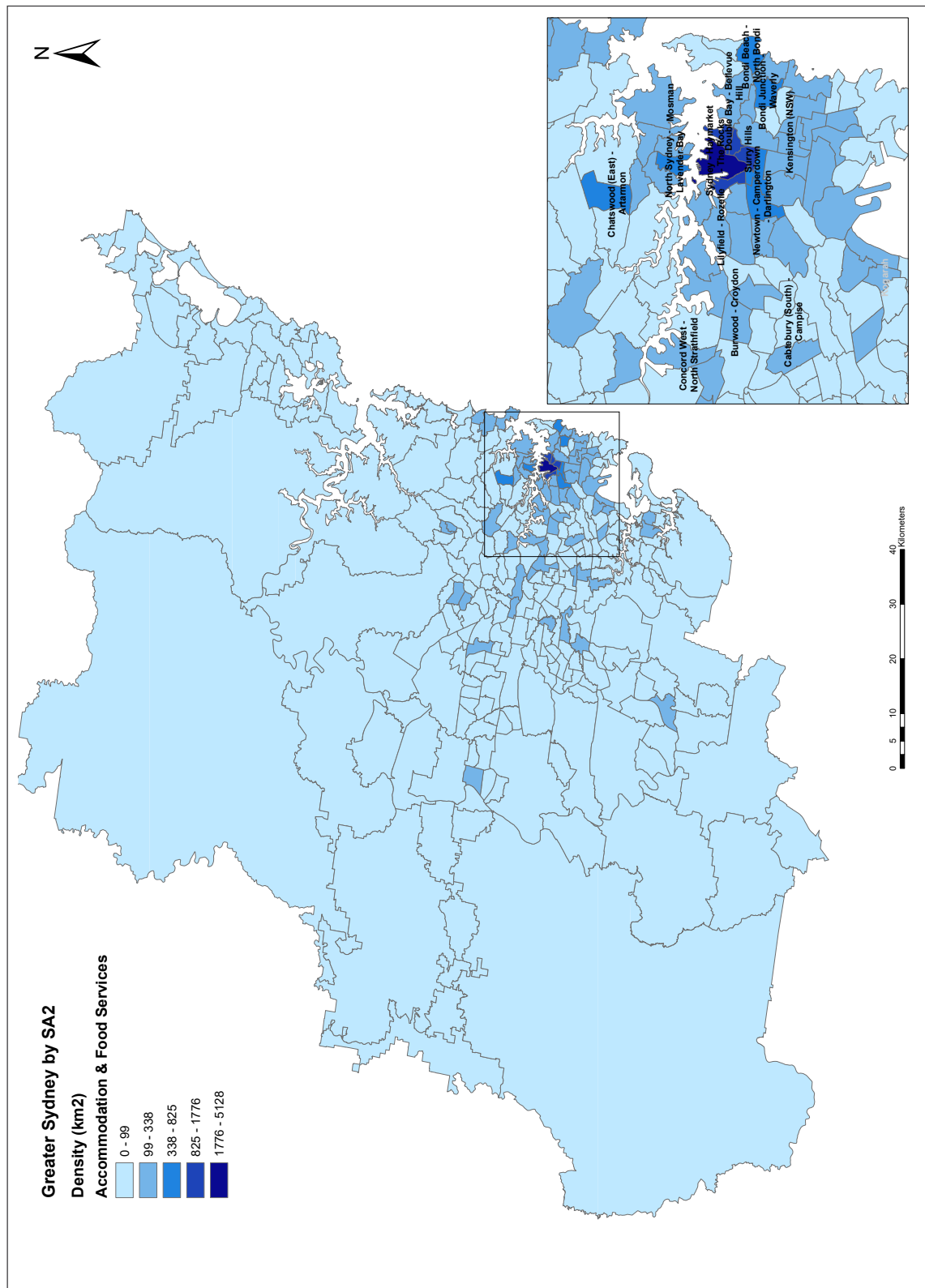
Source: ABS 2018; ABS, 2019b.

FIGURE 33: ACCOMMODATION AND FOOD SERVICES EMPLOYMENT DENSITY
IN GREATER MELBOURNE



Source: ABS 2018; ABS, 2019b.

**FIGURE 34: ACCOMMODATION AND FOOD SERVICES EMPLOYMENT DENSITY
IN GREATER SYDNEY**



Source: ABS 2018; ABS, 2019b.

Arts and Recreation

Compared to the retail and food and accommodation sectors, employment in arts and recreation services in Greater Perth is more centralised. In addition, the densities of employment in the arts and recreation sector in the Perth City Centre and high-density nodes are more comparable with employment densities in other capitals, most notably Greater Brisbane.

Peak densities of employment within the arts and recreation industry in Greater Perth are evident in Victoria Park-Lathlain-Burswood, followed by the Perth City Centre SA2. Nineteen percent (19%) of all employment within arts and recreation services within Greater Perth is located within Victoria Park-Lathlain-Burswood and 10% is in the Perth City Centre

(ABS, 2019b). This pattern of dispersal is relatively consistent with the dispersal of arts and recreation in other major capitals, where centres of arts and recreation are located in SA2s immediately adjacent to the city centre.

Greater Melbourne's highest density arts and recreation node is East Melbourne SA2. In Greater Sydney, the highest densities of arts and recreation employment are in Surry Hills SA2. Meanwhile, in Greater Brisbane, South Brisbane is the highest density arts and recreation hub.

High-density arts and recreation nodes in other capitals are part of the mixed-use inner-urban fabric. In contrast, the primary arts and recreation hub in Victoria Park-Lathlain-Burswood is Crown Perth, which is a purpose-

built entertainment complex separated from primary local commercial and residential areas by major transport infrastructure and the Swan River. Originally constructed as the Burswood Resort and Casino in the late 1980s, the wider Burswood area has become an arts and recreation hotspot. This includes the recent development of a 60,000 seat sporting and entertainment facility, Optus Stadium, as well as apartment complexes and outdoor recreation areas (Heritage Council WA, 1995; Morling, 2016; Optus Stadium, 2019).

TABLE 8: ARTS AND RECREATION EMPLOYMENT DENSITIES

Metropolitan Region	Median Arts & Recreation Density	Inner-Urban Core Arts & Recreation Density	Peak Arts & Recreation Density	Peak Arts & Recreation Density SA2
Perth	2.6	134	384	Victoria Park-Lathlain-Burswood
Melbourne	5.2	313	593	East Melbourne
Sydney	4.7	420	687	Surry Hills
Brisbane	3.6	164	440	South Brisbane

Source: ABS, 2018.

SOUTH BRISBANE



SURRY HILLS



EAST MELBOURNE



BURSWOOD (CROWN PERTH)



Source: Nearmap, 2019.

PERTH AS A REGION OF 2 MILLION PEOPLE

BURSWOOD ISLAND RESORT 1988



Source: State Library of Western Australia, 2019a.

CONCLUSION

LOW-DENSITY CITY — A COST OR BENEFIT?

This report has documented Perth's growth and development into a region of 2 million people. It has illustrated that while Australian cities developed as suburban centres during the twentieth century, the inner-urban centres of Australia's largest three capitals — Greater Sydney, Melbourne and Brisbane — have become increasingly urban. In contrast, Greater Perth has remained primarily suburban, although suburban densities have increased.

Evidence shows that Greater Perth is notable for its relatively uniform dispersal of population and — to a lesser degree — employment. In contrast, Greater Sydney, Melbourne and Brisbane exhibit high-intensity, mixed-use city centres and inner areas that are home to a critical mass of population and employment activities, with densities gradually dispersing towards the outer-suburban limits.

This spatial variation is rooted in the growth and land use and transport history of each region.

Sydney and Melbourne were already relatively large cities a century ago,

before mass produced cars became the dominant source of transport. Therefore, these cities exhibit higher-density inner-urban structures than Greater Brisbane or Perth, which were small cities of less than 500,000 people in the 1920s–1940s.

As the populations of larger metropolitan regions continued to grow over the past century, problems such as traffic congestion increased. Consequently, the value of proximity to employment and public transport became a substantial economic driver of urban form, leading to the densification of highly accessible city centre and inner-urban locations (IA, 2008).

This process was also influenced by public policy. In Greater Melbourne, Sydney and Brisbane, land use and transport policy actively sought to consolidate urban growth. It also aimed to revitalise and repopulate city centres and inner-urban areas to combat the 'doughnut effect' associated with population and employment activities moving from the city centre to suburban locations. The revitalisation of inner-

city and urban areas has been supported by the maximisation of public transport accessibility in inner-city and inner-urban locations.

In Greater Perth, land use and transport policy has been primarily focused on supporting suburban expansion through employment decentralisation and limiting sprawl through urban consolidation via infill development and smaller lots in greenfield locations. This has been reinforced by high quality road infrastructure, combined with investments in improving public transport accessibility, particularly in the middle and outer suburbs. While Perth City Centre has been revitalised over the past decade and intensities of entertainment activities have increased, this has not yet generated substantial growth in population or employment intensities.

Compact vs Low-Density Growth

Greater Perth's suburban form delivers many benefits. In particular, low-density lifestyles in Greater Perth are notable for continuing to provide aspects of the Australian Dream, including single residential housing, home ownership, and high levels of accessibility to employment and entertainment by car.

These benefits are strongly reflected in perceptions of Greater Perth among local residents and external stakeholders. In particular, Greater Perth has become known for its low-density, outdoor, family-friendly lifestyles; beautiful landscape features; and access to nature. It has also built a reputation for quality lifestyles that are more affordable

than those in Greater Sydney or Melbourne. These are supported by car accessibility and quality suburban public-transport options.

FIGURE 35: PERCEIVED STRENGTHS AND WEAKNESSES OF GREATER PERTH'S URBAN FORM

Strengths:

- Quality, low-density, outdoor lifestyles
- Family friendly
- Beautiful landscapes
- Beaches and parks
- Access to nature and regional WA
- Clean and neat
- Sunny
- Relaxed/Not crowded
- Friendly
- Multicultural/Increasingly diverse
- Work-life balance
- Safe
- Quality travel by car
- Free CAT buses in the city centre
- Revitalised
- Quality cultural and sporting infrastructure and events

Weaknesses:

- Lack of urban and cultural vibrancy (dull)
- Quiet CBD (dead after 5pm)
- Lack of attraction to global headquarters
- Low levels of innovation
- Lack of public transport accessibility
- Spatially dispersed innovation
- Lack of employment opportunity
- Generic shopping offerings
- Decline in retail in some locations
- Car oriented/dominated
- A sustainability/climate change laggard

Source: Ipsos 2019; Davis, 2019; Davis, 2019a; Martinus and Guo, 2019.

However, suburban lifestyles also come with costs, including environmental impacts, continued car reliance, a lack of housing diversity, and a low-intensity city centre that lacks the critical mass of people needed to facilitate a vibrant centre and strong service industry growth and innovation. In the case of Greater Perth, this has resulted in criticism for being dull, lacking cultural and inner-city vibrancy, being unappealing to young people and students, and for failing to invest in innovation or attract global company headquarters (Ipsos, 2019; Davis, 2019).

High-intensity inner-city and inner-urban areas in Greater Melbourne, Sydney and

Brisbane also have costs, including reduced levels of home ownership and longer traffic delays. In Melbourne and Brisbane, this also includes very low outer-suburban public transport accessibility, which disadvantages people living on the fringe and contributes to inequality between inner and outer-suburban accessibility (IA, 2018).

Nevertheless, the high-density, mixed-use urban form brings advantages, including housing and lifestyle diversity; city centres with a critical mass of people and activities to generate vibrancy and maximise agglomeration benefits; and reduced car dependence. The

reputation of Australian capitals reflects this divergence. Greater Melbourne, Sydney and Brisbane — like Greater Perth — are rated as highly liveable on a global scale but are also considered to be more vibrant, smart and innovative, to be less car dependent and provide more global appeal to businesses and students (Davis, 2019; Ipsos, 2019).

Perth: A Suburban or Urban-Suburban Future?

The costs and benefits of density in Australia broadly align with the costs and benefits of density identified through research world-wide, which has established that, as a whole, density delivers net benefits.

TABLE 9: THE COSTS AND BENEFITS OF HIGHER-DENSITY URBAN FORM

Costs of density	Benefits of density
Higher rents	Higher wages
Higher construction costs	Higher patent activity
Increased public spending	Lower car use
Lower travel speed	Lower vehicle mileage
Pollution	Preservation of open space
Increased inequality/skill wage gaps	Reduced energy use
Lower self-reported well-being*	Price index reduction
	Better access to jobs and services

*It is noted that this study included high- and low-income countries and that negative impacts of density such as lower reported well-being were higher between countries rather than within countries.

Source: Ahlfeldt et al., 2019.

Despite these benefits, the costs of density may be perceived as challenging the values and characteristics that remain at the heart of Greater Perth's suburban culture, including affordability, the ability to live in and own a single residential home, the freedom of car travel and low-density, family-friendly lifestyles.

However, in practice, land use outcomes in Greater Sydney, Melbourne and Brisbane show that inner-urban density and low-density suburbs do not need to be mutually exclusive. These cities are characterised by both high-density urban centres and low-density suburbs. The global reputations of these cities also indicates that, on a national and global scale, high-intensity, highly accessible inner-urban centres are considered favourably – with Greater Melbourne consistently rated the most liveable capital city in Australia – and this perception has been confirmed by Committee for Perth research (Davis, 2019; Ipsos, 2019).

In addition, while urbanisation will have costs, the expense of maintaining a 'business as usual' focus on suburban growth will arguably be higher. For example:

- Greater Perth is already among the most unequal of all Australian cities. Wage inequality in the region is second only to Greater Sydney (Tonts et al., 2017). People living in the outer suburbs also have lower levels of access to jobs, services and cultural amenity than people who live in inner and middle locations (Committee for Perth, 2016).
- Dispersed suburban infill development and small greenfield lots on the fringe are already arguably reducing amenity in the suburbs and delivering 'in between densities' — that is, densities that are too high to deliver traditional suburban amenity, such as quality private open space, and too low to generate urban vibrancy (Bolleter, 2016; Jacobs, 1961).
- Although Greater Perth remains comparatively affordable, homes are most affordable on the fringe — while the majority of Greater Perth residents would prefer to live in inner and middle locations (WAPC, 2013).
- Traffic congestion is getting worse. Infrastructure Australia

forecasts that the annual cost of road congestion for Greater Perth will more than double over the coming decade, from approximately \$1.5 billion in 2016 to \$3.6 billion in 2031. This means that on Greater Perth's most congested roads — including the Mitchell Freeway, Marmion Avenue, West Coast Highway and Wanneroo Road — congestion will add between 48% and 62% more time to car journeys during peak periods (compared to non-peak) (IA, 2019).

- Crowding on public transport is forecast to grow. The annual costs of public transport crowding in Greater Perth are expected to increase almost ten-fold, from \$17 million in 2016 to \$159 million in 2031, with the majority of rail crowding on the Joondalup and Mandurah rail lines (IA, 2019).

Furthermore, maintaining a uniformly suburban form has been identified as hindering the Perth region's global competitiveness as a place to live, work, study and invest by reducing its attractiveness to students, young and talented people, company headquarters, innovative businesses and tourists (Committee for Perth, 2018).



Source: Getty Images.

It also potentially limits Greater Perth's capacity to capture opportunities and adapt to new challenges generated by global forces—including the growth of innovation and knowledge economies, globalisation and the rise of Asia, shifting demographics, and climate change—which are expected to influence the short and long-term competitiveness of industries in Perth (Committee for Perth, 2018).

For example, multiple reports suggest that the traditional Australian Dream is a thing of the past. Australia's millennials are identified as preferring urban over suburban living environments; less likely to

buy a car; more concerned about the climate, the environment and health; less able to afford to buy a home; and more likely to live in a small home (Day, 2019; Ipsos, 2019; Llewellyn-Smith, 2017; Taylor, 2017; Christensen, 2019).

In this context, the traditional suburban 'Australian Dream' is arguably less achievable today and is likely to be less relevant to Greater Perth's future than it has been to its past.

Looking forward, there is potential for the region to identify a new, more diverse and future-focused 'dream' for Perth as it grows to a region of 3.5 million

people. This dream should aim to not only enhance the region's lifestyle and affordability strengths but also to respond to shifting twenty-first century economic, social, cultural and environmental conditions. In addition, it should address the region's major weaknesses, most notably by building Perth City Centre as a strong and vibrant high intensity regional heart.

APPENDIX

APPENDIX A: SUMMARY OF CURRENT MAJOR PUBLIC TRANSPORT PROJECTS IN SYDNEY, MELBOURNE, BRISBANE AND PERTH

Metropolitan Region	Public Transport Project	Value (\$)	Spatial Focus (Inner, Middle, Outer-suburban)	Project Description
Greater Sydney	Sydney to Parkes Fast Rail Business Case	16 million	Outer-suburban and non-metropolitan	The business case will determine a cost-benefit analysis of fast passenger rail from Parks to service and job opportunities in Sydney.
	Sydney to Woollongong Fast Rail Business Case	16 million	Outer-suburban and non-metropolitan	The business case will provide a cost-benefit analysis of fast rail access from Woollongong to service and job opportunities in Sydney.
	Western Sydney Infrastructure Plan (WSIP)	4.1 billion	Outer-suburban	WSIP involves major road and transport linkages to a new airport.
	Western Sydney Airport	5.3 billion	Outer-suburban	This infrastructure project will generate economic activity, provide employment opportunities, and meet Sydney's growing aviation needs.
	Sydney Metro	Over 30 billion	Inner, middle and outer	Australia's first fully-automated metro rail service.
	Sydney Light Rail	2.9 billion	Inner	This is a high frequency 'turn up and go' light rail service operating from key inner CBD locations.
	Parramatta Light Rail	2.4 billion	Middle and inner	This is a high frequency 'turn up and go' light rail service operating from Parramatta and surrounding.

Metropolitan Region	Public Transport Project	Value (\$)	Spatial Focus (Inner, Middle, Outer-suburban)	Project Description
Greater Sydney	New Intercity Fleet		Inner, middle and outer	New fleet of intercity trains carrying passengers from Sydney to the Central Coast, Newcastle, The Blue Mountains and the South Coast.
	Sydney Growth Trains	Part of 4.3 billion funding for More Trains, More Services	Middle	24 new 8 car Warratah Series 2 suburban trains as part of the More Trains, More Services programme.
Greater Melbourne	High-Capacity Metro Trains	2.3 billion	Inner, middle and outer	65 high-capacity trains for the metropolitan network.
	Melbourne Airport Rail Link	8-13 billion	Middle and outer	Connecting a rail service to Melbourne Airport.
	Suburban Rail Loop	50 billion	Middle	90km rail ring around Melbourne's middle suburbs that will connect all metropolitan rail lines.
	The Metro Tunnel	11 billion	Inner, middle and outer	Two new 9km rail tunnels to create a new end-to-end rail line from Sunbury (west) to the Cranbourne/Pakenham line (east) with 5 new underground stations.
	Fast Rail to Geelong	100 million	Outer	Investigating a new fast rail between Melbourne and Geelong, unlocking capacity in Melbourne's booming west and north.

Metropolitan Region	Public Transport Project	Value (\$)	Spatial Focus (Inner, Middle, Outer-suburban)	Project Description
Greater Brisbane	Springwood Busway Extension	undecided	Middle	The south-east busway will be extended by 6.6km to Springwood, resulting in new 'park and ride' facilities at Rochedale.
	Park and ride	undecided	Middle and outer	Work underway to plan and deliver additional car park spaces at various stations across the metropolitan region.
	Northern Transitway	53 million	Middle	Deliver bus priority measures along Chermside, facilitating reliable, high-frequency bus services.
	Eastern Transitway	22 million	Inner -middle	Deliver bus priority measures to Carindale, facilitating reliable, high-frequency bus services.
	Brisbane Metro	300 million	Inner, middle and outer	Replacing overcrowded bus services with high-frequency, high-capacity Metro services.
	Gold Coast Light Rail Stage 3A	undecided	Middle -outer	Last connector of the Light Rail system running from Helensville to Broadbeach. Light rail connector is from Broadbeach to Burleigh Heads.
	Southern Moreton Bay Island ferry terminals upgrade project	34.1 million	Inner	Delivering essential upgrades to make ferry jetties safer, modern and accessible anticipating future population growth.

Metropolitan Region	Public Transport Project	Value (\$)	Spatial Focus (Inner, Middle, Outer-suburban)	Project Description
Greater Perth	METRONET –Forrestfield Airport Link	1.86 billion	Outer and middle to CBD (inner)	Rail service connecting Perth eastern foothills to the CBD and Perth Airport.
	METRONET –Thornlie-Cockburn link	535.8 million	Outer	Perth's first cross-connecting rail service, opening up new opportunities for service and transport to Perth's south-eastern suburbs.
	METRONET –Morley–Ellenbrook line	1 billion	Outer	A new 21km rail line from Ellenbrook via Morley connecting to Bayswater Station on the Midland line.
	METRONET –Line extensions	Over 600 million	Outer	Extensions to Yanchep on the Joondalup line and Byford on the Armadale line increasing connectivity to Perth's outer subregions.
	METRONET –Bayswater Station Upgrade	140 million	Middle	Undergo a major upgrade to become a key node in the Midland Line, Forrestfield Airport Link and the Morley–Ellenbrook Line.
	Mandurah Station Multi-Storey Carpark	32 million	Outer	Addition of a multi-level car park to ease demand for access to a car park at Mandurah Station.

Source: NSW Government, 2019a; Department of Transport (Victoria), 2019; State of Queensland, 2019; State of Queensland Department of Transport and Main Roads, 2010-2019; WA Labour Party, 2017.

APPENDIX B: PERTH'S TOP 20 MIXED-USE HUBS

SA2 Name	Mixed-use Score
Perth City	20,322
Osborne Park Industrial	5,715
Subiaco - Shenton Park	5,124
Wembley - West Leederville - Glendalough	3,921
Mount Hawthorn - Leederville	3,863
Victoria Park - Lathlain - Burswood	3,843
Nedlands - Dalkeith - Crawley	3,616
Claremont (WA)	3,255
North Perth	3,171
Tuart Hill - Joondanna	3,086
Fremantle	2,902
Mount Lawley - Inglewood	2,842
Scarborough	2,825
Maylands	2,796
South Perth - Kensington	2,780
East Victoria Park - Carlisle	2,777
Innaloo - Doubleview	2,766
Murdoch - Kardinya	2,574
Stirling - Osborne Park	2,404
Booragoon	2,388

Source: ABS, 2018.

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