PERTH

as a resilient economy

a FACTBase Special Report

Committee for Perth

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 and databases 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.

Committee for Perth and The University of Western Australia
November 2017

Cover Image: Photo by Charlyne De Souza, *Passion for Perth* Photographic Competition.
Source: Committee for Perth, 2016.

PERTH

as a resilient economy

a FACTBase Special Report

Committee for Perth

THE UNIVERSITY OF WESTERN AUSTRALIA

Photo by Lukas Nickolson, *Passion for Perth* Photographic Competition.
Source: Committee for Perth, 2017.

PERTH

as a resilient economy

a FACTBase Special Report

CONTENTS

ABOUT THE REPORT

Professor Matthew Tonts
Pro Vice-Chancellor
Executive Dean, Faculty of Arts, Business, Law and Education

After significant economic growth and development off the back of Western Australia's recent mining boom, Perth is now in a position to reflect on what it means to be mostly a resource and minerals based economy, and how this can be leveraged and diversified to benefit future growth opportunities.

This report is a key input into the *Bigger & Better Beyond the Boom* project and has examined Perth's history of economic development since World War II. It provides a detailed look at Perth's industries, in order to identify those with the potential for steering our future. This report will inform a series of recommendations to be released at the end of 2018, by providing a roadmap for Perth and Peel's economic future.

ABOUT THE PROJECT

In 2017, the Committee for Perth commenced a major research project focused on the current and future economy of the Perth and Peel region. The project, entitled '*Bigger & Better Beyond the Boom: Perth's economic future as a region of 3.5 million people'*, aims to examine the size, industry composition and spatial structure of the Perth and Peel and wider Western Australian economy at a fine grain level. It will challenge conventional wisdoms and identify strategies for a more economically diverse and robust future for the region.

The primary aim of *Bigger & Better Beyond the Boom* is to identify industry sectors that are growing; industries in decline; and emerging economic threats and opportunities for the future. Over the life of the project, researchers will examine and illustrate the importance of local, regional, national and international connections to and between industries in Perth and Peel and the role of new technology, innovation and entrepreneurship.

This work will be undertaken through the lens of economic geographers – which will provide a fresh and approachable perspective on the economy of the Perth and Peel region. The outcome of *Bigger & Better Beyond the Boom* will be a major report to be released at the end of 2018, which will identify targeted strategies associated with the specific strengths and weaknesses of key locations and industries within the region.

FROM THE CEO

Marion Fulker
CEO, Committee for Perth
Project Director, *Bigger & Better Beyond the Boom*
Adjunct Senior Research Fellow, The University of Western Australia

Boom times have characterised Western Australia since the first gold rush and its economic strength has come from an abundance of natural resources. With every upturn in commodity prices has come a period of economic expansion which has driven growth in the regions as well as the capital city.

As each period of growth comes to an end, the call from the community gets louder and stronger about the need to have a more diverse economy.

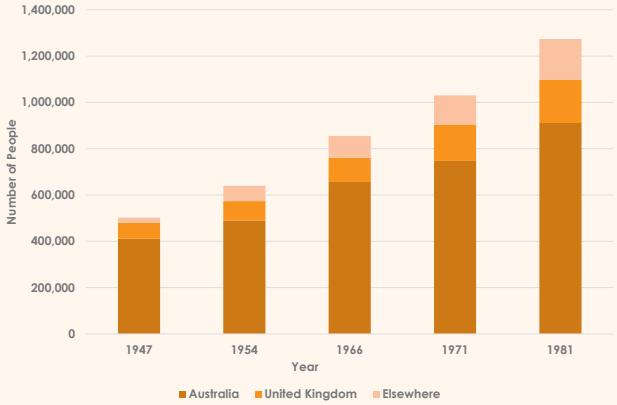
In this FACTBase Special Report the researchers have gone back over one of Perth's most significant periods of economic diversification and expansion to create a much needed evidence base to inform future planning.

Perth as a resilient economy 'sizes' the industries that have shaped Perth's economic development since the 1940s. Produced using quantitative data by the FACTBase team at The University of Western Australia, the report analyses industries and sectors that have been and are emerging as critical to the region's economy.

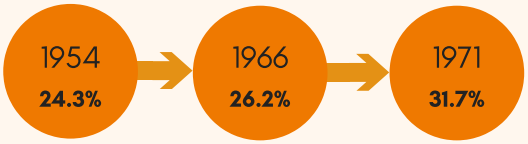
Perth as a resilient economy is a key input into our *Bigger & Better Beyond the Boom* project which will result in a blueprint for Perth's economic future as a region of 3.5 million people being released at the end of 2018. In the meantime, this report challenges conventional wisdoms by demonstrating that in fact, the economy is very resilient, recovers from shocks quickly and is increasingly diverse.

POST WW2 ECONOMY

Birthplace of the West Australian Population, 1947 to 1981



Proportion of population born outside of Australia:



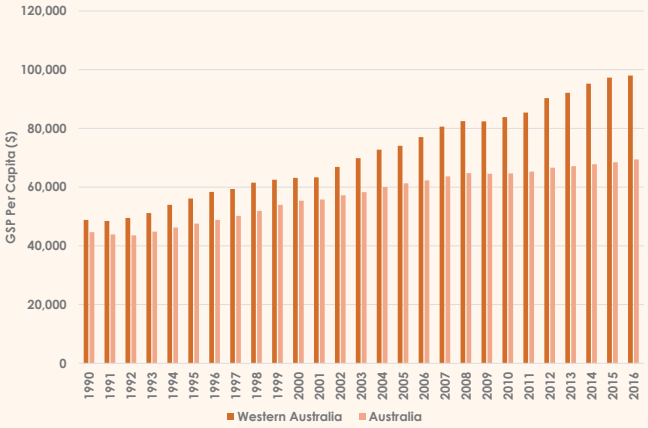
Greater Perth's Population: Between 1947 and 1971, the population of the region increased from over **272,000** to more than **750,000**; a rise of over **175.7%**.

WESTERN AUSTRALIA'S RESILIENT ECONOMY

Between 1991 and 2016, Western Australia increased its GSP every year.

In 20 of the 26 years, Western Australia outperformed Australia as a whole.

Gross State Product Per Capita, 1990 to 2016



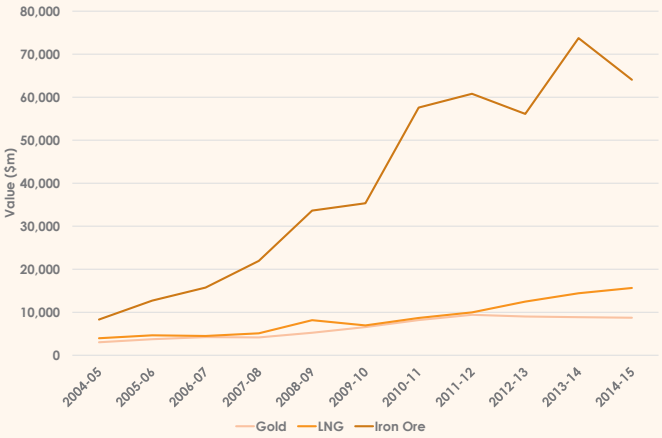
RESOURCES BOOM

The 2000s resources boom was caused by:

- Rapid industrialisation in China

- Associated demand for iron ore

Value of Selected Major Commodities in WA, 2004-05 to 2014-15

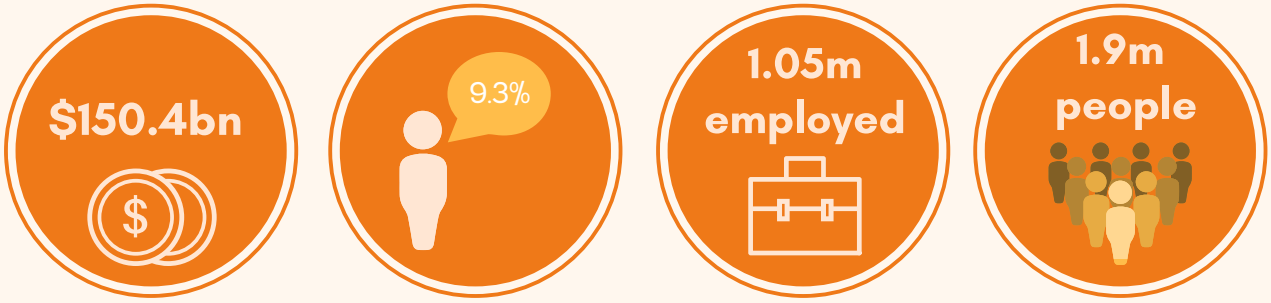


ECONOMIC IMPACTS

- Strong resources and investment activity
- Increased population and employment
- Housing supply could not keep up with growing demand

House prices doubled between 2001 and 2005, and doubled again between 2005 and 2015.

POST 2000s BOOM



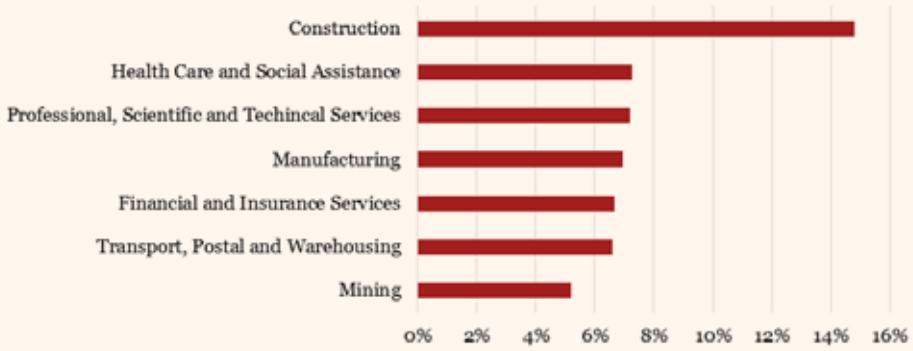
$150.4 billion economy in 2015

Accounts for 9.3% of the Australian economy

1,049,847 people employed in 2017

1,943,861 people living in Perth in 2017

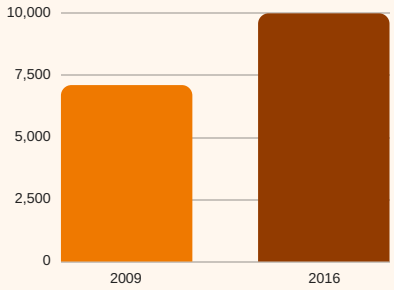
Industry composition of Greater Perth, Financial Year 2015:



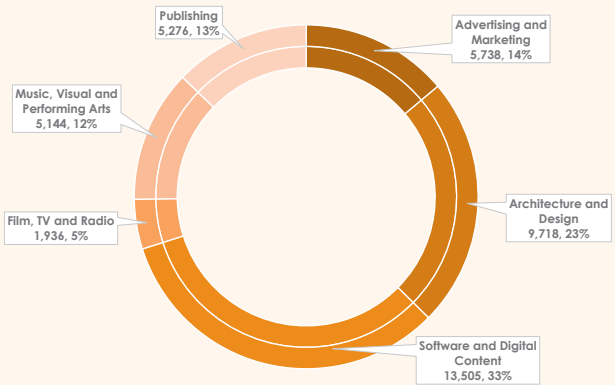
INDUSTRY GROWTH

Tourism, health, education and the creative industries are all emerging not only as important employment industries in the future but also as industries which will propel future growth.

Number of Health Care & Social Assistance Firms in Western Australia:



Creative Employment in Western Australia:



Education in Western Australia:
In Western Australia, the international education and training sector is estimated to have contributed between $1.39 billion and $1.41 billion in total export revenue in 2015.

Tourism in Western Australia:
The WA tourism industry contributed

4.6%

of total direct and indirect GVA to the economy, which totalled **$10.6 billion** and **109,000 jobs** in 2016.

EXECUTIVE SUMMARY

Rather than limiting the focus to the transformative impact of the most recent boom period, this FACTBase Special Report takes a longitudinal perspective of the Greater Perth economy. An extended time span provides an understanding of the spatial structure and dynamics of the Greater Perth economy and how it has changed. With a geographic framework, the report examines how the economy has evolved since World War II. It focuses on the interactions between people, place and space, and how time and policies have shaped the region. It helps to explain why some industries have consistently outperformed others and which are likely to be at the forefront of the economic future of Greater Perth in this post-boom phase.

A deeper understanding of the Greater Perth economy enables more nuanced planning and policy settings to assist the region to be bigger and better beyond the boom.

Three key questions outline:

- How and why the Greater Perth economy has changed over time;
- How it has experienced and recovered from different shocks; and
- The level of resilience in particular industries.

Immediately after World War II, Perth was a small city, which largely imported all of its value-add goods. It was trade dependent for its principal exports, which were then mostly agricultural in nature, although mining was also important. The national focus then was social and economic reconstruction and few imagined Australia's 'western third' would ever amount to much. It was a long way from anywhere, with large spaces and few people. In 2017, Greater Perth had grown significantly but, by international standards, it still had a modest population.

However, over the past 70 years, Perth, and Western Australia, has transformed from a mendicant economy to an economic powerhouse, contributing more per capita than the other Australian cities. Furthermore, there is evidence in this report, which challenges the presumption; the Perth economy is one that swings from boom to bust conditions. While there have been periods of slow growth, in broad terms, the Greater Perth economy has performed well over a long period and has remained resilient in the face of considerable external pressures.

This FACTBase Special Report has four sections. The first looks back to the 1940s and describes who we were immediately after World War II, and how the Greater Perth economy performed in relation to the nation to understand the foundations of Greater Perth's contemporary economy and society. This section also reviews the first of several boom periods with the short-lived influence of the Korean War in the 1950s followed by the much bigger, and longer lasting boom of the 1960s. The impact of rapid population growth influenced the urban planning of Perth and the emerging global outlook of Perth businesses is identified as Perth's 'coming of age'.

Photo by Greg Seaton, *Passion for Perth* Photographic Competition. Source: Committee for Perth, 2016.

The second section examines the impacts of the 2000s boom, 2001-2014, which was just as influential as the 1960s boom in terms of shaping Greater Perth's population, housing, urban landscape and global engagement. The long-run performance and resilience of the Perth economy is assessed against the national economy and within the context of globally challenging conditions.

The third section uses PwC's Geospatial Economic Model as a basis for the analysis of the Greater Perth economy and the industries that are driving it in the first decades of the 21st century. The geographical distribution of firms and employment provides a useful insight into the important activity areas.

In the fourth section, each of the highest performing industries are assessed by the concentration of firms in locations across Greater Perth and by employment. It is evident that despite Greater Perth's growing sophistication, the industries which underpin the current post-boom economy are still the mineral and energy resources and agriculture businesses, which are the foundation of the Greater Perth economy. However, the industries are changing.

Retail is still an important employer, but it is no longer the biggest employer in Greater Perth. The industry is increasingly dominated by retail businesses that can take advantage of economies of scale in product, distribution and marketing. Online shopping practices, the cost of rents and globalised fashion trends all challenge smaller operators. The industry has encountered similar seismic scale challenges before and survived. For example, the shift to the shopping

centre retail experience and the supermarket phenomenon in the 1970s, neither of which have restricted retail business in Greater Perth, but they certainly changed it and the social fabric of the city.

The rise of the service industry, a global phenomenon, is evident in Greater Perth. Industries such as retail, education, tourism, leisure and aged care are all important employers. However, the health care and social assistance industry has taken the lead as the biggest employer in Greater Perth. This industry is growing in response to the expanding population from the recent boom but also because of the ageing population. At one end of the health industry, high value medical facilities and globally recognised research dominate. At the other end is the rapidly expanding, poorly skilled and modestly paid care industry. Not only is the industry responding to an ageing population, but its workforce is also ageing, with predictions that within a decade, more than 50% of the current workforce will need to be renewed.

Similarly, manufacturing has never been a major contributor to the Greater Perth economy until now. While that industry is not a big employer or significant in terms of the number of firms, it is important for its emerging contribution to high-tech innovation, harnessing the knowledge economy and global export potential.

The industries are grouped by their likely economic development trajectories in the post-boom period. The Bright Lights Industries are those which are emerging. They are not always the biggest employers or have the most number of firms. However, their contribution to the vibrancy and diversity of the Greater Perth economy suggests new employment opportunities and enhanced global engagement are prevalent. These industries include the recreation and creative industries, the professional, technical and scientific services industries, tourism and higher education.

The Primary Industries, agriculture, forestry, fishing and mining are the economic perennials in the Greater Perth economy. The construction industry is another strong performer, capitalising on the recent population growth and the almost frenetic expansion of the resources industries in the 2001-2007 period. Together, these industries continue to be important and there are signs they are innovative and engaging with growth opportunities, both within Australia and internationally. Then there are the Industries in Transition. These industries are important, but they are facing economic or social headwinds, which are likely to continue to exert challenges in the post-boom period. These include the health care and social assistance, retail and manufacturing industries.

It is important to note there are inevitable overlaps in the industry analysis. For example, the mining industry has strong links to the emerging high-tech, high value mining equipment, technology and services (METS) industry, which in turn has links to the manufacturing industry and the professional scientific and technical services industry. Similarly, the health care and social assistance industry overlaps with the professional scientific and technical services industry in research and digital technologies. Regardless, what is important is that Greater Perth is able to continually innovate, renew and expand its economic horizons, to engage actively in the global marketplace.

LOOKING BACK TO LOOK FORWARD TO BEYOND THE BOOM

WHO WE WERE POST WORLD WAR II

Following World War II, the Western Australian population had reached a little over half a million people. The proportion of the population living in the Perth capital city and adjoining urban municipal areas had risen from pre-war times when about a third of the Western Australian population lived in Perth. In 1947, just over half of the Western Australian population lived in Perth, 272,528 (Commonwealth Bureau of Census and Statistics, 1947). The remaining population were scattered across towns and rural areas outside of the metropolitan area.

After the war, successive Western Australian Governments adopted growth strategies that were consistent with those being encouraged at the national level. Projections made by the Commonwealth Government estimated that without migration, Australia's population would peak at just 8.2 million in 1980 (Markus et al., 2009). From both a strategic and economic development perspective, 'populate or perish' became the catch-cry of the day (Caunt, 2013).

A range of migration and development schemes were implemented with the goal of promoting population growth and economic expansion. Central to this was attracting migrants from the United Kingdom, as well as 'displaced persons' from Europe, predominantly the Netherlands, Germany, Poland, Estonia, Latvia and Lithuania (Ghosh, 1981). New arrivals worked on a range of government-led projects focused on rural development, industrial expansion, housing and infrastructure. This first wave of post-war immigration occurred between 1947 and 1957, peaking in 1952 (Australian Bureau of Statistics, 1962; Australian Bureau of Statistics, 1972; Australian Bureau of Statistics, 2001b; Black, 1981).

At the beginning of the first post-war immigration period, nearly 81.8%, 411,035, of Western Australians were born in Australia (see Table 1). In the 1947 Census, immigrants largely came from the United Kingdom, 13.8%. The impact of post-war immigration is evident in the rise of immigrants coming from outside of the United Kingdom between 1947 and 1954. Immigrants from elsewhere in the world rose from 4.4% in 1947, 22,044, to 10.4% in 1954, 66,258.

TABLE 1: THE COMPOSITION OF WESTERN AUSTRALIA'S POPULATION ACCORDING TO BIRTHPLACE, 1947 TO 1981

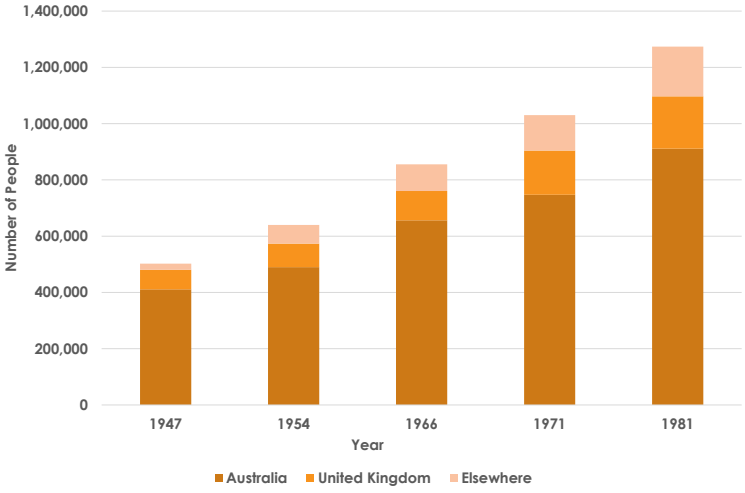
Birthplace	1947	1954	1966	1971	1981
Australia (%)	81.8	76.5	76.6	72.5	71.5
United Kingdom (%)	13.8	13.1	12.2	15.2	14.6
Elsewhere (%)	4.4	10.4	11.1	12.3	13.9
Total	502,480	639,771	855,112	1,030,469	1,273,624

Source: Commonwealth Bureau of Census and Statistics, 1947-1966; Australian Bureau of Statistics, 1971-1981.

The next major wave of post-war immigration occurred between 1962 and 1971. In 1966, there were 198,791 foreign born residents in Western Australia, who made up 23.3% of the population. Immigrants were predominantly of United Kingdom origin, but the increasing number of those coming from elsewhere in the world continued into the early 1970s (see Table 1). During this period, the origin of immigrants from outside of the United Kingdom shifted from Northern Europe to Mediterranean countries including Italy, Greece and Malta. The Australian born population continued to fall from 76.7% in 1966, 656,321, and reached just less than 72.5% in 1971, 747,196.

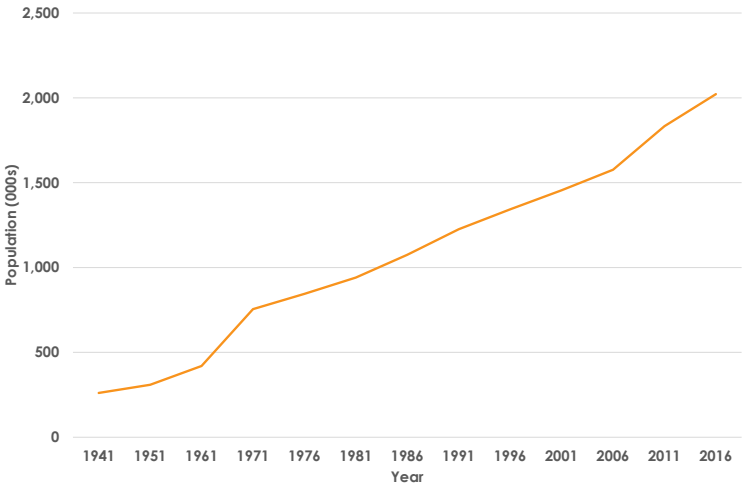
By 1981, the non-Australian population reached 362,658, which was 28.5% of the State. The number of immigrants from outside of the United Kingdom, 176,515, was closing in on the number of those who came from the United Kingdom, 186,143. The proportion of Australian born people in Western Australia was lower than previous years and reached 71.5% or 910,966 people (Australian Bureau of Statistics, 1982). Between 1947 and 1981, the composition of Western Australia's population became increasingly diverse (Figure 1).

FIGURE 1: BIRTHPLACE OF THE WESTERN AUSTRALIAN POPULATION, 1947 TO 1981



Source: Commonwealth Bureau of Census and Statistics 1947-1966; Australian Bureau of Statistics 1971-1982.

FIGURE 2: GREATER PERTH POPULATION, 1941 TO 2016



Source: Commonwealth Bureau of Census and Statistics 1947-1966; Australian Bureau of Statistics 1971-2017.

The trends occurring at the State level were largely replicated in Perth. Between 1947 and 1971, the population of the city increased from a little over 272,000 to more than 750,000; a rise of over 175.7%, Figure 2. More than half of this growth was the result of international migration, with more than 240,000 overseas migrants settling in the city (Australian Bureau of Statistics, 2001b).

The population of Perth also became increasingly diverse during the post-World War II period.

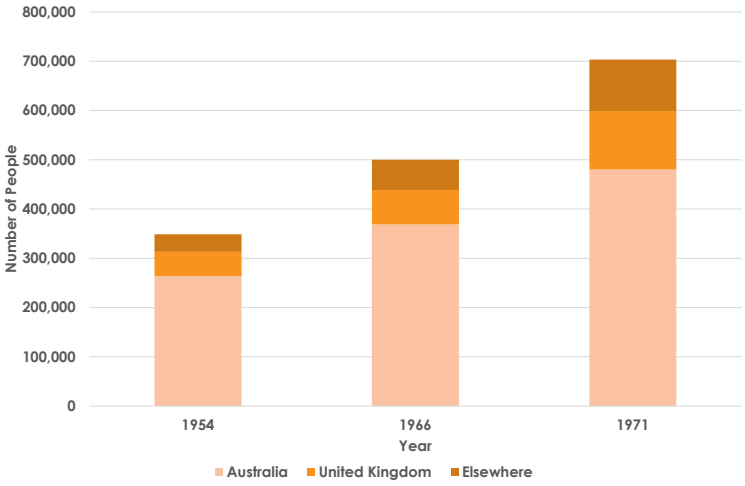
In 1954, 24.3% or 84,653 of people were born outside of Australia. By the 1966 Census, this proportion had reached 26.2%, and by 1971, 31.7% of the population was from overseas, see Table 2. At these three Census dates, the United Kingdom was the most common place of origin for immigrants living in Perth. However, the proportion of immigrants coming from other countries increased over time. The growth of overseas-born people caused a fall in the number of Australian born residents, from 263,994 or 75.7% in 1954 to 480,173, 68.3%, in 1971, Figure 3.

TABLE 2: COMPOSITION OF METROPOLITAN PERTH'S POPULATION ACCORDING TO BIRTHPLACE, 1954 TO 1971

Birthplace	1954	1966	1971
Australia (%)	75.7	73.6	68.3
United Kingdom (%)	14.1	13.9	16.9
Elsewhere (%)	10.2	12.3	14.8
Total	348,647	499,969	703,196

Source: Commonwealth Bureau of Census and Statistics, 1954-1966; Australian Bureau of Statistics, 1971.

FIGURE 3: BIRTHPLACE OF THE METROPOLITAN PERTH POPULATION, 1954 TO 1971



Source: Commonwealth Bureau of Census and Statistics 1954-1966; Australian Bureau of Statistics 1971.

WHERE WE LIVED POST-WORLD WAR II

In the two decades following WWII, there was a rapid expansion in the geographical footprint of the Perth metropolitan region. The underlying causes included post-war economic reconstruction, mass immigration and the economic boom of the 1960s.

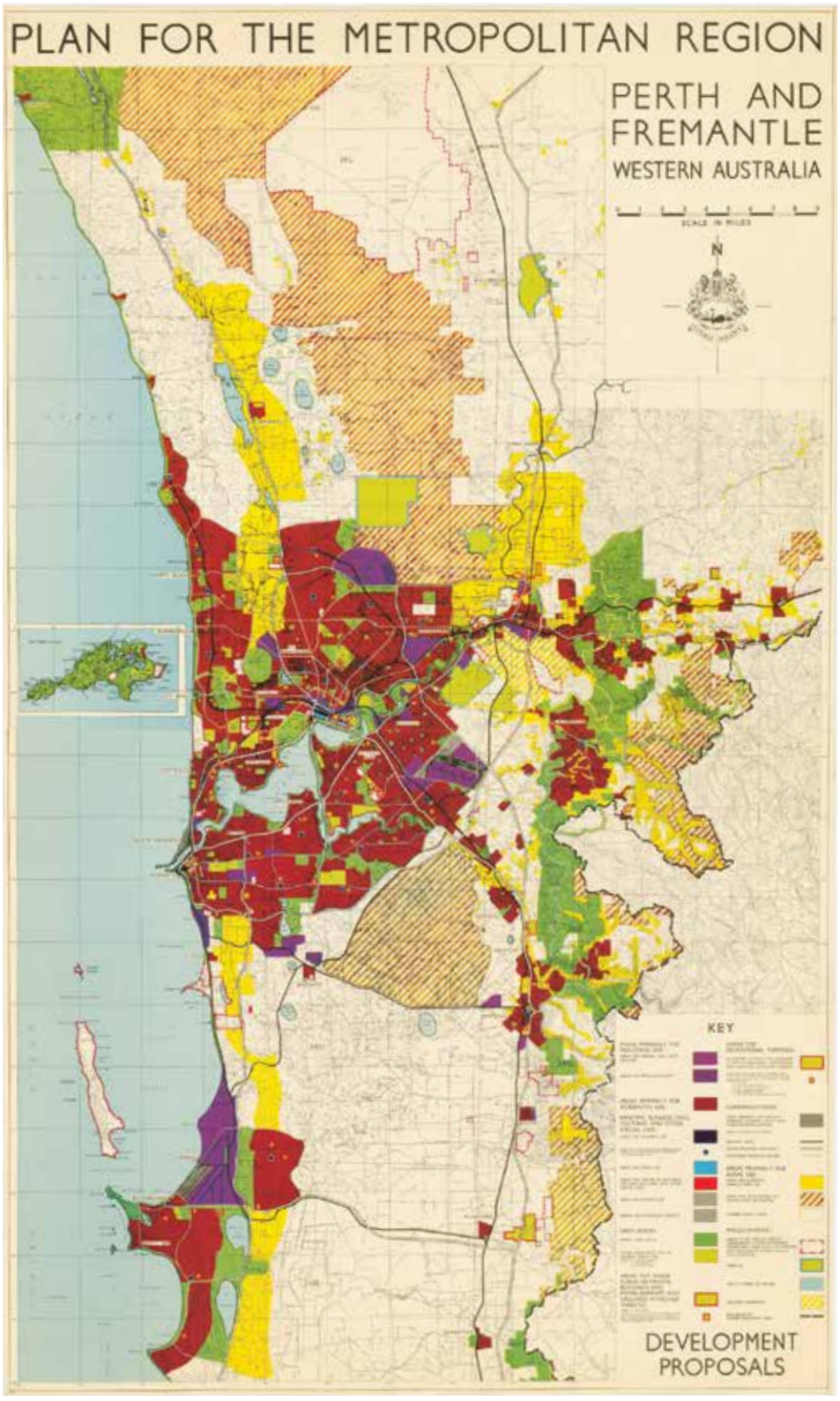
Perth's development between 1829 and the 1950s was largely oriented on an east-west axis between Fremantle and Midland. The Swan River played a critical role in early transport, and was followed by the development of a network of roads, tramways and railways that reinforced this orientation (Davis, 2011). The Fremantle-Guildford Railway was critical in shaping the city and underpinned the development of early metropolitan municipalities and road districts including Fremantle, Subiaco, Nedlands and Perth. This 'east-west' axis is evident in the 1947 population data for Perth, Table 3. Key nodes of economic activity at the time included Midland Junction, Fremantle, North Fremantle and Subiaco.

TABLE 3: POPULATION OF PERTH'S 'METROPOLITAN DIVISION' AREAS, 1947 TO 1971

Statistical Area	1947	1954	1966	1971	1947-71 % Change
Armadale - Kelmscott	-	-	-	10,933	-
Bassendean	5,243	7,152	9,747	11,360	116.7
Bayswater	6,453	14,555	25,118	34,080	428.1
Belmont	5,712	15,820	25,919	32,564	470.1
Canning	5,203	13,419	22,762	34,667	566.3
Claremont	7,769	8,643	8,938	9,179	18.1
Cockburn	-	-	9,894	20,982	-
Cottesloe	8,257	8,092	8,122	7,997	-3.1
East Fremantle	6,197	6,372	6,908	7,325	18.2
Fremantle	18,791	22,795	25,284	26,036	38.6
Gosnells	-	-	7,135	19,216	-
Guildford	2,217	2,134	-	-	-
Kalamunda	-	-	-	14,267	-
Melville	7,547	19,810	47,760	51,847	587.0
Midland Junction	6,182	8,496	9,335	-	-
Mosman Park	5,442	6,199	5,793	7,199	32.3
Mundaring	-	-	1,820	6,673	-
Nedlands	18,226	22,814	23,320	22,878	25.5
North Fremantle	2,946	2,890	-	-	-
Peppermint Grove	1,474	1,468	1,601	1,511	2.5
Perth (C)	30,989	50,090	96,223	97,546	214.8
Perth (S)	98,890	97,350	112,459	-	-
Stirling	-	-	-	154,450	-
South Perth	15,266	21,214	32,042	31,702	107.7
Subiaco	18,789	17,642	16,621	17,119	-8.9
Swan	5,047	1,692	2,556	18,651	269.6
Wanneroo	-	-	612	3,618	-

Source: Commonwealth Bureau of Census and Statistics, 1947-1966; Australian Bureau of Statistics, 1971.
* Note that changes to area boundaries over time make direct comparability difficult.

FIGURE 4: PLAN FOR THE METROPOLITAN REGION PERTH AND FREMANTLE, WESTERN AUSTRALIA, 1955



Source: Stephenson & Hepburn, 1955.

The Narrows Bridge in its final stages of construction, 1959. Source: Wylie 1959.

The official opening of the Narrows Bridge in November, 1959. Source: Wylie 1959.

The Narrows Bridge, connecting the north and south metropolitan areas. Source: Stevenson, Kinder & Scott Corporate Photography, 1974.

In 1955, the Stephenson-Hepburn *Plan for the Metropolitan Region – Perth and Fremantle* was implemented and provided the framework for the spatial organisation of residential development and economic activities, Figure 4 (Atkins, 2017). The plan was key in the development of dedicated economic hubs, especially in the industrial and retail industries. These hubs were supported by an arterial road system and an extensive north to south freeway, reflecting the growing importance of the car to most households.

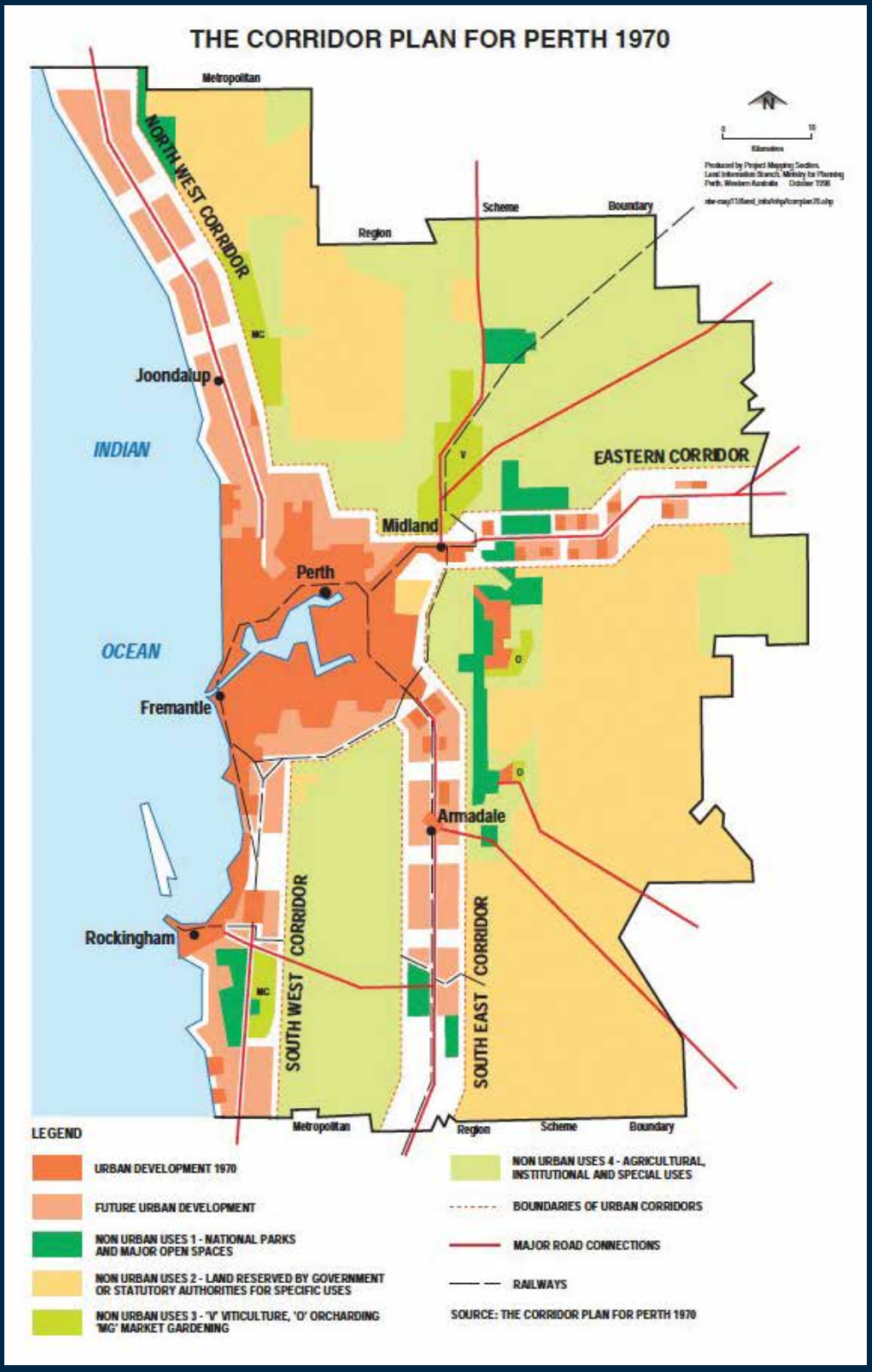
The development of the freeway system fundamentally shifted the orientation of the city – from east-west to north-south. Indeed, one of the first tangible expressions of the plan was the construction of the Narrows Bridge, which when completed in 1959, linked the previously underdeveloped regions south of the Swan River with the CBD. The outcome was the rapid development of several centres south of Perth including Melville, Canning and Cockburn, Table 3.

Such was the extent of Perth's population growth and spatial expansion during the 1950s and 1960s that an updated plan was required. The State Government adopted the *Corridor Plan* in 1970, Figure 5, which outlined a low-density, car dependent, urban expansion of the Perth metropolitan region.

Central to the plan was the development of linear urban corridors extending from the city centre in north-west, east, south-west and south-east directions. Each corridor was to develop sub-regional centres to attract and establish employment and economic activity. Consequently, locations such as Stirling, Armadale, Kelmscott and Cockburn grew in economic importance, Table 3.

The extent of outward expansion is evident in the growth of some of Perth's emerging post-war suburbs. For example, between 1947 and 1971, Melville's population grew by 587.0%, see Table 3; the greatest increase in population out of all the existing metropolitan areas. Canning followed with an increase of 566.3%. In contrast, inner city areas experienced slow growth or even decline. For example, Cottesloe and Subiaco declined by 3.1% and 8.9%, respectively, between 1947 and 1971.

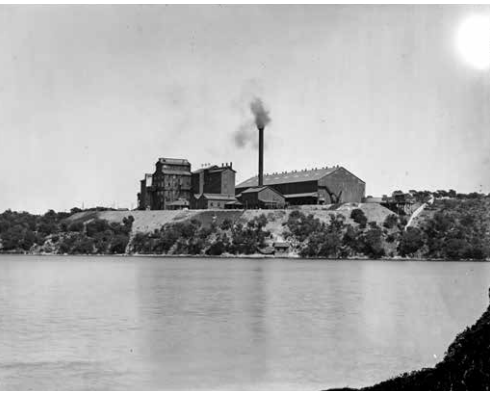
FIGURE 5: THE CORRIDOR PLAN FOR PERTH, 1970



Source: Metropolitan Region Planning Authority, 1970.

THE POST-WAR ECONOMY

Elders Woolstore in Fremantle, 1957. Source: Western Australia Government Photographer, 1957.



CSR Sugar Refinery in Mosman Park, 1930. Source: Illustrations Ltd Photographer, 1930.

The post-World War II period was an economic watershed moment for Western Australia marked by considerable optimism, rapid growth and new economic opportunities. Importantly, there was a high degree of direct government involvement in the State's economic and social development in this period.

In the years immediately following the War, the Western Australian and Perth economies were inextricably tied to the export of agricultural products. In the 1950s, agriculture contributed over 80% of the State's export earnings (Statistical Register of Western Australia, 1955). The relative contribution of agriculture peaked in 1951-52 at the height of the Korean War, largely because of increased demand for Australian wool. The end of the war in 1953 saw the wool price collapse and a rapid decline in farm incomes from 1954-55. Declines quickly rippled through the Perth economy, and while wheat production softened the collapse, it became increasingly evident the State's narrow base posed significant risks.

Indeed, the need for economic diversification had been a critical policy issue throughout the 1940s and early 1950s. Much of the focus had been on the need to develop 'heavy industry', in particular manufacturing. However, the small population, constrained local economy and relative remoteness had all been longstanding barriers to the development of a substantial manufacturing industry.

From the late 1940s, the State Government became increasingly proactive in promoting industrial development, providing development incentives to the private sector. An important part of this strategy was to build on a number of industries, which had emerged prior to World War II, including food processing, metal fabrication and vehicle manufacturing.

General Motors' Assembly Plant at Mosman Park. Source: Gore, 1939.

Advertisement for an Early Model Chamberlain Tractor
Source: Morawa District Historical Society, n.d.

Chamberlain Industries

The development of Chamberlain Industries is an example of the economic development aspirations of the post-War period, and the State Government's role in promoting manufacturing. It built directly on the State's comparative advantage in agriculture, and addressed a rapidly emerging market opportunity.

In the late 1940s, improving economic conditions in agriculture, together with an expansion in the area of land under farming, contributed to increased demand for new technologies. In the pursuit of labour-saving efficiency, farmers invested heavily in equipment – tractors, trucks and so forth.

While Australian farmers had traditionally relied on imported technologies, the Australian Government aimed to substitute imports for domestically manufactured agricultural machinery. Australian machinery manufacturers were protected by tariffs and provided with direct subsidies to expand their operations. Indeed, at the same time in 1947, the Western Australian Government had been promised support by the Federal Government to set up heavy engineering industry near Perth to provide employment to Western Australians returning from the war (Quick, 2006).

Chamberlain Tractors for Export.
Source: Illustrations Ltd, 1950.

The Western Australian Government persuaded a family-owned engineering company – Chamberlain Industries – to relocate their emerging tractor engineering enterprise to Perth from Victoria. The company was provided with promises of financial support and given access to an ex-munitions factory in Welshpool. Chamberlain Industries also benefited from the tariff protection provided to manufacturing industries. The first tractors were produced in 1949, and the company rapidly established itself as a leading farm equipment supplier.

Establishing a major manufacturing facility in Perth in the 1940s proved to be difficult. Power supply was initially not up to demands from the Chamberlain foundry, iron was expensive, and coastal shipping routes were inadequate. Despite these demands, the company continued to expand and by the 1950s was exporting tractors both interstate and overseas. At its peak in the late 1960s, Chamberlain was producing more than 3,200 tractors per year – nearly 25% of all new tractors sold in Australia.

Chamberlain Industries was also important in terms of its broader economic development impacts. Not only did it create direct employment of between 1,700 and 2,200 people during the period between the early 1950s and 1970s, it contributed to indirect employment through its use of an extensive local supply chain. This included components suppliers, services firms, transport companies, and utilities providers.

Yet, despite the company's technological and sales success, Chamberlain Industries endured ongoing financial pressure. The small size of the Australian market, isolation from international markets, increasing competition, and diminishing levels of government support all contributed to difficulties at various points in the company's development. In 1970, a partnership with US based John Deere Company provided access to capital and technology that provided stability during the 1970s.

However, the gradual reduction in tariff protection and production support eroded the viability of the industry in the 1980s. Alongside this, the company faced pressure from rising labour and other input costs, and eventually the manufacturing of tractors ceased in 1986. While production of smaller agricultural implements continued for a few years, eventually the Welshpool operations became solely an import facility for John Deere.

Kwinana Industrial Area

The largest, and most ambitious project for the post-war period was the construction of Western Australia's first major industrial hub at Kwinana. The development of Kwinana was underpinned by an agreement between the State Government of Western Australia and the Anglo-Iranian Oil Company, now BP Development Australia, to establish an oil refinery south of Perth. The State Government recognised that the establishment of an oil refinery provided the potential to support a range of other industries, contributing to a complex and self-sustaining industrial ecosystem.

In order to persuade Anglo-Iranian Oil to establish the refinery, the Government agreed to provide land, electricity, water, roads, railways and a major port. It also developed new towns at Parmelia, Medina and Kwinana, providing generous public housing and community facilities. More than a thousand homes were provided for the future workforce (Black, 1981).

The BP oil refinery provided the catalyst for a cluster of interdependent processing industries at Kwinana, Table 4. Co-location provided synergistic opportunities between smaller service industries, such as fabrication and construction facilities, and very large, heavy process industries, such as industrial gases, fertiliser production, and the processing of natural resources. Interplant flows of material commodities, water, energy, by-products and even specialised local labour and suppliers, contributed to both efficiencies and innovation. In essence, these local linkages within the Kwinana industrial ecosystem encouraged a process of self-reinforcing development that has continued for decades (MacLachlan, 2013).

While Kwinana provided the basis for a major economic expansion, its development has been limited by the same constraints that have affected manufacturing and related industries elsewhere in Perth. The combination of isolation, a small domestic market, and growing global competition have meant the industry has lagged behind its counterparts elsewhere in Australia.

TABLE 4: MAJOR PROCESSING PLANTS IN THE KWINANA INDUSTRIAL AREA

Corporate owner	Processing plant	Operation duration
BP Development Australia Pty Ltd	Oil refinery	1955 - ongoing
BHP	Steel rolling mill	1956-1995
Cockburn Cement (Rugby Group)	Portland cement	1955 - ongoing
ALCOA (Aluminum Company of America)	Alumina refinery	1963 - ongoing
BHP	Blast furnace	1968-1982
CSBP	Fertiliser	1968 - ongoing
Commonwealth Industrial Gases, renamed BOC Gases	Industrial gases	1969 - ongoing
BHP Billiton Nickel West	Nickel refinery	1970 - ongoing
Coogee Chemicals	Chemicals	1971 - ongoing
CBH Group (Cooperative Bulk Handling)	Grain terminal	1976 - ongoing

Source: MacLachlan, 2013.

BP Refinery, Kwinana.
Source: Courtesy of BP Development Australia Pty Ltd.

Aerial photo of the Kwinana Nickel Refinery, 1970. Source: Aerial Surveys Australia, 1970.

BP Refinery, Kwinana. Source: Courtesy of BP Development Australia Pty Ltd.

THE 1960s RESOURCE BOOM

While the 1940s and 1950s focused on consolidating Western Australia's agricultural industries and developing a manufacturing industry, the 1960s saw a dramatic shift in focus towards iron ore. The combination of the discovery of significant iron ore deposits in the north-west of Western Australia, the lifting of the iron ore export embargo in 1960, and the rapid expansion of Japan's industrial sectors underpinned one of the State's most significant periods of economic prosperity (Battellino, 2010; Measham et al., 2013; Haslam McKenzie, 2016).

Led by major multinational mining interests, Western Australia's iron ore industry developed rapidly in the mid-1960s with the first exports to Japan in 1966. The outcome was a major increase in economic returns to the State. Royalty receipts climbed from $721,954 in 1966 to over $5 million in 1967; a rise of almost 600% in a single year (Spillman, 1993).

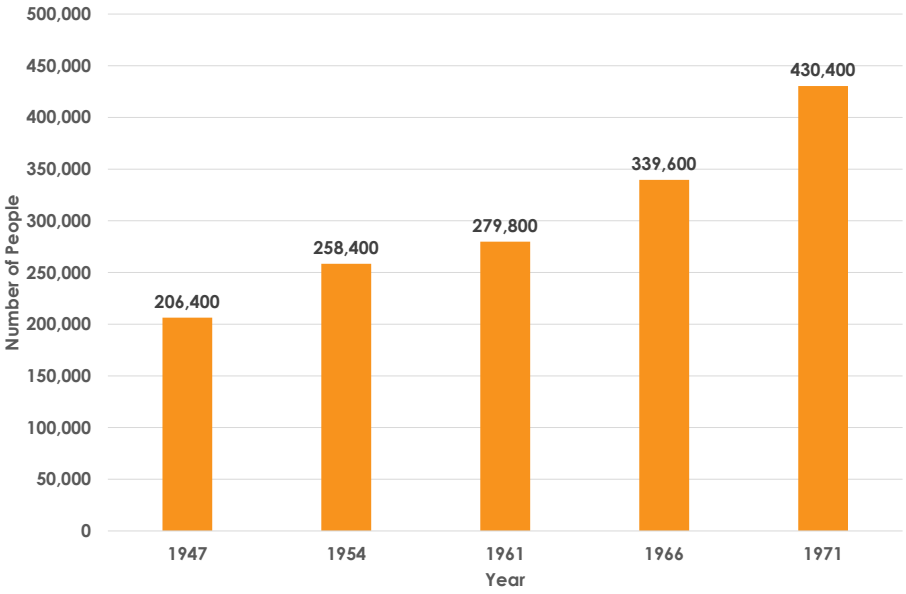
The result was increased opportunity for State investment in services and infrastructure that, in turn, contributed to further economic growth. Major projects included the:

- Rapid expansion of the metropolitan freeway system linking the south of the city with the rapidly expanding northern suburbs;
- Development and expansion of the Western Australian Institute of Technology at Bentley;
- Establishment of a second government funded university, Murdoch University, in 1975;
- Development of a naval base on Garden Island by the Commonwealth, stimulating extensive urban development in the southern suburbs of Perth; and
- The redevelopment and expansion of Perth Airport.

The collective impacts of industrial development and the 1960s iron ore boom are evident in the continuing growth of employment in Western Australia, and particularly Perth. Between 1954 and 1971, the number of Western Australian workers increased by 66.6%, Figure 6. Before the boom, in 1954, the State's largest employers were agriculture, manufacturing, and wholesale and retail trade. By 1971, wholesale and retail trade climbed to the top, followed by manufacturing, communities services and entertainment industries.

Murdoch University in the year that it opened, 1975.
Source: Hotchkin, 1975.

FIGURE 6: WESTERN AUSTRALIAN TOTAL EMPLOYMENT, 1947 TO 1971



Source: Commonwealth Bureau of Census and Statistics, 1947-1966; Australian Bureau of Statistics, 1971.

Between 1954 and 1971, total employment in Perth increased by 116.4% and all industries experienced rises of between 50.8% (manufacturing) and over 777.3% (mining), see Table 5 and Figure 7. While mining experienced rapid growth, it contributed 1.0% of all employment by 1971. Manufacturing was the major employer in Perth in 1954 and 1966. By 1971, the rise of the service industries and growing prosperity became increasingly evident with commerce, effectively retailing, contributing 21.2% of all employment. The 'other' industry category is also noteworthy in that it experienced rapid growth. Industries in this category include electricity, communications, finance and entertainment, and when combined, captured 20.9% of workers in 1971.

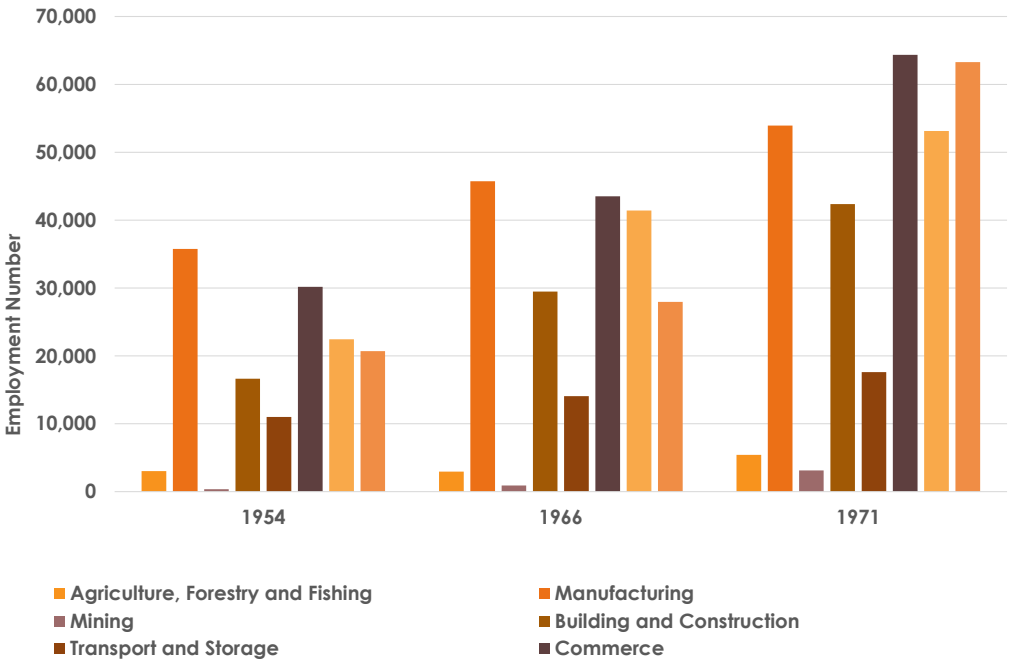
TABLE 5: METROPOLITAN PERTH INDUSTRY EMPLOYMENT SHARE (%), 1954 TO 1971

	1954		1966		1971		% change 1954-1971
	Number	%	Number	%	Number	%	
Agriculture, Forestry and Fishing	3,022	2.2	2,941	1.4	5,409	1.8	79.0
Manufacturing	35,769	25.5	45,735	22.2	53,933	17.8	50.8
Mining	357	0.2	910	0.4	3,132	1.0	777.3
Building and Construction	16,640	11.8	29,476	14.3	42,363	14.0	155.0
Transport and Storage	11,006	7.8	14,075	6.8	17,617	5.8	60.1
Commerce	30,184	21.5	43,508	21.1	64,347	21.2	113.2
Public Authority and Professional Activities	22,451	16.0	41,414	20.1	53,144	17.5	136.7
Other	20,703	14.8	27,942	13.6	63,287	20.9	205.7
Total	**140,132**		**206,001**		**303,232**		**116.4**

Source: Commonwealth Bureau of Census and Statistics, 1954-1966; Australian Bureau of Statistics, 1971.

Rio Tinto's Silvergrass Iron Ore Mine. Source: Courtesy of Rio Tinto.

FIGURE 7: METROPOLITAN PERTH EMPLOYMENT NUMBERS BY INDUSTRY, 1954 TO 1971



Source: Commonwealth Bureau of Census and Statistics, 1954-1966; Australian Bureau of Statistics, 1971.

The areas experiencing the most rapid growth of workers were in the local government areas of Swan, 1,501.0%, followed by Bayswater, 427.7%, and Melville, 210.9%, see Table 6. In contrast, inner areas like the City of Perth and Peppermint Grove saw their number of workers decline by 1.9% and 9.6% respectively. Meanwhile, the number of workers living in other inner areas such as Cottesloe, Nedlands and Subiaco grew relatively little.

TABLE 6: EMPLOYMENT IN PERTH'S LOCAL GOVERNMENT AREAS, 1954 TO 1971

	1954		1966		1971		% change 1954-1971
	Number	%	Number	%	Number	%	
Armadale - Kelmscott	-	-	1,274	0.6	5,528	1.8	-
Bassendean	2,743	2.0	3,917	1.9	4,656	1.5	69.7
Bayswater	5,420	3.9	10,067	4.9	28,599	9.4	427.7
Belmont	5,906	4.2	20,799	10.1	13,465	4.4	128.0
Canning	4,732	3.4	8,325	4.0	14,021	4.6	196.3
Claremont	3,213	2.3	3,612	1.7	3,643	1.2	13.4
Cockburn	-	-	3,540	1.7	9,383	3.0	-
Cottesloe	3,366	2.4	3,640	1.8	3,620	1.2	7.5
East Fremantle	2,579	1.8	3,076	1.5	3,281	1.1	27.2
Fremantle	9,473	6.8	10,386	5.0	11,520	3.8	21.6
Gosnells	-	-	2,756	1.3	8,645	2.8	-
Guildford	766	0.5	-	-	-	-	-
Kalamunda	-	-	-	-	6,606	2.2	-
Kwinana	-	-	-	-	4,193	1.4	-
Melville	6,881	4.9	18,336	8.9	21,390	7.0	210.9
Midland Junction	3,349	2.4	3,628	1.8	-	-	-
Mosman Park	2,179	1.5	2,454	1.2	3,048	1.0	39.9
Mundaring	-	-	663	0.3	4,402	1.4	
Nedlands	8,263	5.9	8,686	4.2	8,557	2.8	3.6
North Fremantle	1,244	0.9	-	-	-	-	-
Peppermint Grove	531	0.4	513	0.2	480	0.2	-9.6
Perth (C)	44,085	31.5	38,571	18.7	43,215	14.2	-2.0
Perth (S)	19,295	13.8	39,250	19.0	-	-	-
Rockingham	-	-	-	-	3,962	1.3	-
Stirling	-	-	-	-	64,978	21.4	-
Serpentine - Jarrahdale	-	-	-	-	695	0.2	-
South Perth	8,078	5.8	13,968	6.8	14,272	4.7	76.7
Subiaco	7,415	5.3	7,424	3.6	7,841	2.6	5.7
Swan	614	0.4	867	0.4	9,830	3.2	1,501.0
Wanneroo	-	-	249	0.1	3,402	1.1	-
Total	**140,132**		**206,001**		**303,232**		**116.4**

Source: Commonwealth Bureau of Census and Statistics, 1954-1966; Australian Bureau of Statistics, 1971.

By the mid-1970s, Western Australian coal, alumina and mineral sands were mined at unprecedented levels for sale in global markets (Spillman, 1993). Exploration expenditure climbed from $2.6 million in 1966 to $46.5 million in 1970 (Spillman, 1993), which in turn led to further discoveries and expansion of the resources industry.

This phase of the boom was the beginning of Western Australia's dominance in the METS industries. Naturally, Perth became the administrative hub for the mining industry. The high presence of company branch offices at the time suggested the real economic power came from multinationals located elsewhere. Consequently, corporate Perth was heavily influenced by global capital, which shaped the economic and social structure.

The resource boom of the 1960s transformed the structure of the economy for the decades that followed. While the State held aspirations of developing manufacturing to complement the existing agricultural industry, the opening of the iron ore industry shifted the trajectory markedly. The State's Gross State Product (GSP) per capita was no longer lower than the rest of Australia and

Western Australia became increasingly one of the wealthier states (Western Australian Technology and Industry Advisory Council, 2000). Indeed, in 1971 the Australian Grants Commission removed Western Australia's designation as a 'claimant' State, dependent on Commonwealth grants. The State had gone from being a drain on the nation to contributing 22% of total Australian export income in 1976 (Appleyard, 1979).

ECONOMIC ADJUSTMENT AND CONSOLIDATION

Last Vehicle Assembled at General Motors Mosman Park Assembly Plant, 1972. Source: Courtesy of Peppermint Grove Library.

The period between the early 1970s and the 1990s were characterised by economic expansion and adjustment to emerging global conditions. The combination of the 1970s oil shocks, geopolitical instability and major national policy shifts toward a reduction in government intervention in economic affairs had profound effects on the Perth economy.

The State's manufacturing industry contracted under these conditions, with the gradual winding down or closure of a number of major employers. Examples included the end of car assembly by General Motors at Mosman Park, the demise of Chamberlain Industries, and the widespread closure of smaller manufacturing operators across the city.

Yet, against the background of upheaval, Perth continued to perform well in overall terms. The continued expansion of the mining industry proved to be critical, with further expansion in iron ore production in the Pilbara and bauxite in the south-west. Production in other commodities also increased, notably in nickel and gold.

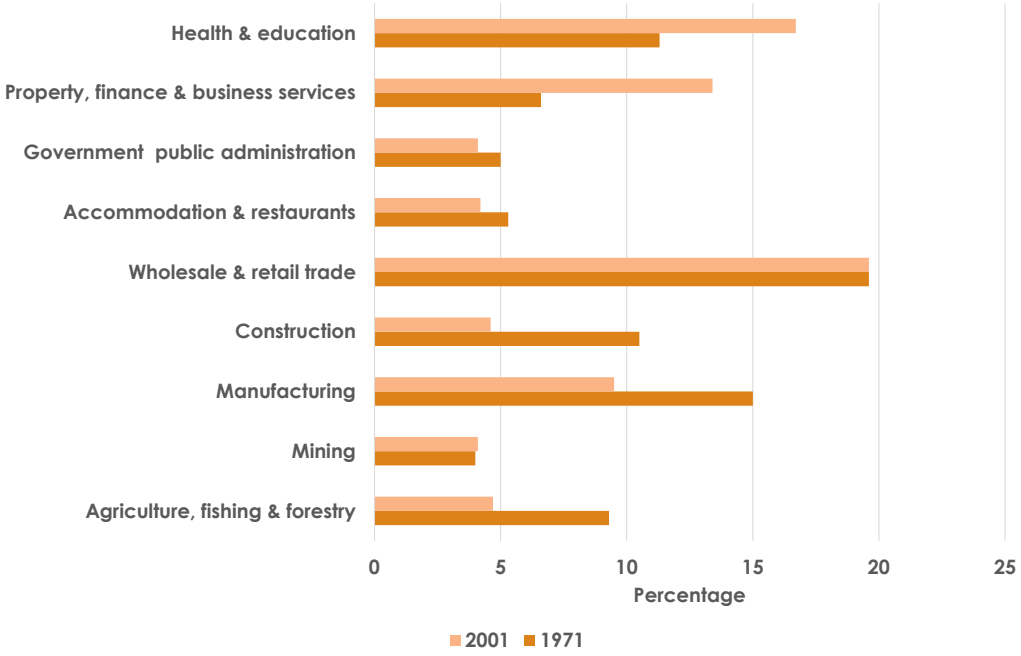
The resources industry diversified in the 1970s and 1980s, with the discovery and development of oil and gas reserves off the north-west of the State. The North West Shelf joint venture brought together a consortium of multinational energy firms to complete one of the largest engineering projects undertaken at the time. The industry continued to expand during the 1990s, and became one of the State's main sources of export earnings. It also established a presence in the city of a diversified set of companies, skills and global connections.

A highlight of the 1980s was the defence of the America's Cup in 1987. The run-up to the event was a frantic building program to ensure international tourists and sailing syndicates were impressed by Perth and Fremantle. Significant government and private investment went into upgrading the port city, marine services, hotels and other accommodation. Town planning bylaws and liquor licensing laws were relaxed to enable restaurants to serve food outdoors. The defence of the America's Cup transformed Perth and Fremantle, reorienting tourism services to an international market and establishing Perth as an attractive and comfortable place to visit. This event was also one of the first occasions that Australian food was served and celebrated, giving local producers new outlets and markets.

In the years 1971 to 2001, the workforce changed significantly. It grew by 59%, largely due to overseas migration, but it also became considerably more 'feminised', with more women participating in the workforce and for longer. The number of women employed more than doubled between 1981 and 2001. Unemployment peaked in 1991-2 at 10.7% but after that, labour force participation consistently increased (Australian Bureau of Statistics, 1972; 2002).

By 2001, changes in the percentage of employment in various industries is evidence of the shifting structure of the economy. The impact of technical applications and the restructuring of the agricultural and manufacturing industries are marked, while there was significant growth in the services industries such as property, education and health.

FIGURE 8: EMPLOYMENT AS A PERCENTAGE OF GREATER PERTH'S POPULATION, 1971 AND 2001



Source: Australian Bureau of Statistics, 1972; 2002.

Shell House and Shell Prelude. Source: Courtesy of Shell.

THE 2000s RESOURCE BOOM

The most recent resources boom began to gather momentum in the early 2000s. Rapid industrialisation in China and the associated demand for iron ore led the boom. However, other commodities were also in demand, including bauxite, nickel and energy resources. This placed Western Australia in a unique economic position in that it was able to provide these commodities in large quantities.

The level of economic activity this boom generated was unprecedented, both in the level of resource investment as a share of Gross Domestic Product (GDP) and the terms of trade. Some economic impacts caused by the boom:

- In 2011, national export earnings from resources peaked at a record $190bn, a 15% increase on 2010 (Bureau of Resources and Energy Economics, 2012; Office of the Chief Economist, 2015).
- Western Australia's GSP grew exponentially, reaching $265 billion 2013-14, contributing 17% of Australia's GDP (Department of State Development, 2015; Department of Treasury, 2014).
- The Western Australian per capita gross income in 2013 was 50% higher than it was 10 years before and household net wealth

TABLE 7: QUANTITY AND VALUE ($M) OF SELECTED MAJOR COMMODITIES IN WESTERN AUSTRALIA, 2004-05 TO 2014-15

		2004-05		2005-06		2006-07	
Product	Unit	Quantity	Value $m	Quantity	Value $m	Quantity	Value $m
Gold	t	167.5	3,016.4	166.2	3,715.1	161.8	4,222.9
LNG	Mt	11.0	3,953.1	11.7	4,625.2	12.2	4,481.8
Iron Ore	Mt	233.2	8,302.3	242.6	12,699.1	257.6	15,732.6

		2007-08		2008-09		2009-10	
Product	Unit	Quantity	Value $m	Quantity	Value $m	Quantity	Value $m
Gold	t	141.5	4,136.3	136.6	5,226.8	163.8	6,548.8
LNG	Mt	12.2	5,106.0	12.4	8,157.5	15.7	6,922.6
Iron Ore	Mt	291.0	21,949.8	316.5	33,633.4	385.0	35,325.9

		2010-11		2011-12		2012-13	
Product	Unit	Quantity	Value $m	Quantity	Value $m	Quantity	Value $m
Gold	t	183.8	8,186.2	180.4	9,402.6	179.8	9,012.1
LNG	Mt	17.0	8,658.1	15.4	9,958.1	19.8	12,468.2
Iron Ore	Mt	397.6	57,579.9	454.4	60,799.1	511.7	56,098.5

		2013-14		2014-15	
Product	Unit	Quantity	Value $m	Quantity	Value $m
Gold	t	195.9	8,841.3	191.4	9,020.9
LNG	Mt	20.1	14,409.5	20.5	13,816.9
Iron Ore	Mt	624.3	74,099.1	718.9	53,764.6

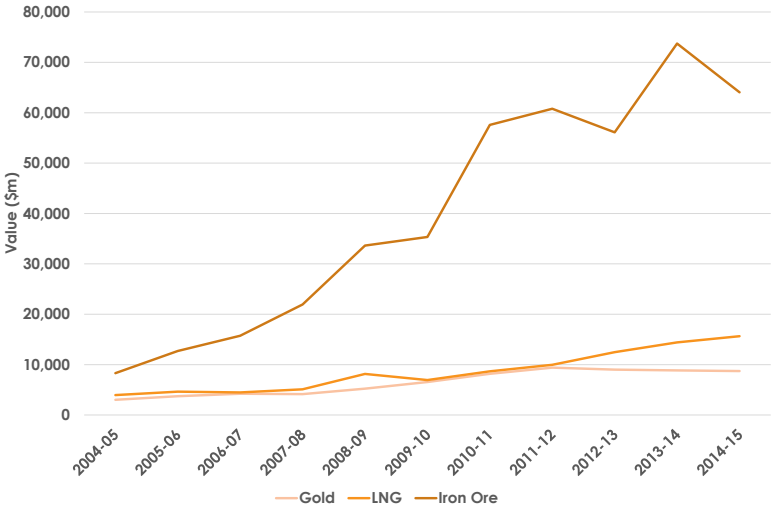
Source: Department of Mines and Petroleum, 2011; 2015.

increased by 70% in real terms in the decade 2003 – 2013, adding $268 billion to Western Australia's total wealth stock (Cassells et al., 2014a; Department of Treasury, 2014).

- The quantity and value of selected major commodities such as gold, LNG and iron ore greatly increased from 2004 to the end of 2014, Table 7 and Figure 9.

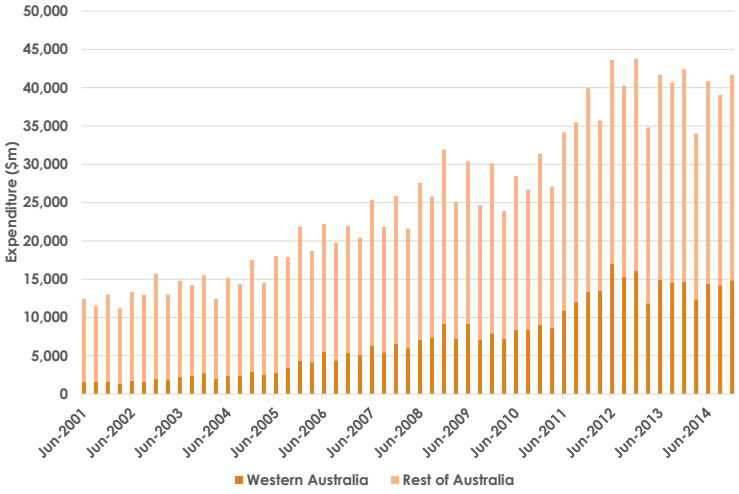
Commentary regarding the Western Australian mining industry throughout the boom was extremely positive, with year after year of record-breaking values and volumes further promoting high expectations of growth. Western Australia led all other states in terms of new capital expenditure, with much of this linked directly to mining (Department of Mines and Petroleum, 2010).

FIGURE 9: VALUE ($M) OF SELECTED MAJOR COMMODITIES IN WESTERN AUSTRALIA, 2004-05 TO 2014-15



Source: Department of Mines and Petroleum, 2011; 2015.

FIGURE 10: WESTERN AUSTRALIA'S SHARE OF AUSTRALIAN NEW CAPITAL EXPENDITURE, 2001 TO 2014

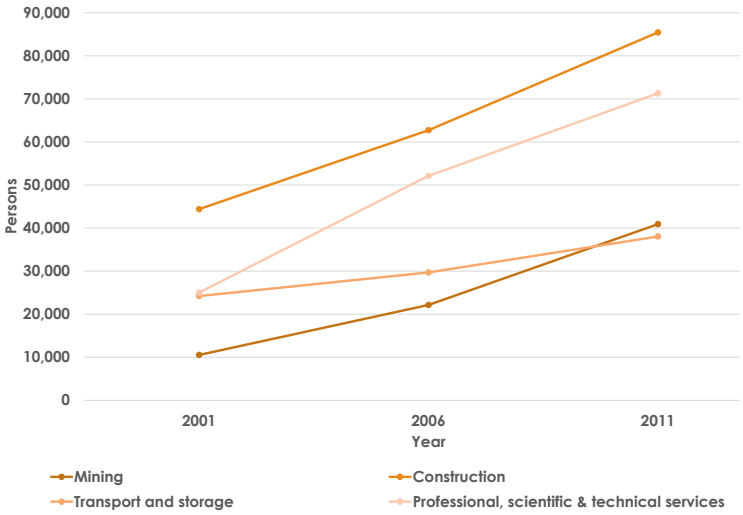


Source: Department of Mines, Industry Regulation and Safety, 2017.

EMPLOYMENT

For almost 10 years, Perth was under enormous growth pressure, not only as the hub for capital investment, corporate management and control, but also for flows of labour. Perth became an important national and regional labour hub, at a scale of which was unprecedented. This was assisted by growing synergies between minerals and energy companies, engaged in producing and promoting technical, economic, logistical and intellectual products and services.

FIGURE 11: NUMBER OF PERSONS EMPLOYED IN SELECTED INDUSTRIES IN WESTERN AUSTRALIA, 2001 TO 2011



Source: Australian Bureau of Statistics, 2002; 2007; 2012a.

Industries that performed well over the duration of the 2000s boom include resources, which accounted for an increased share of total employment from 1.7% in 2001 to 4.8% in 2011, or a total of 40,919 people, Figure 11. The industries of construction; transport, postal and warehousing; and professional, scientific and technical services are closely linked to the resources industry. All of these industries recorded increases in their overall share of total employment during the boom period.

Even though the mine sites were as far as 1,500 kilometres away in regional Western Australia, up to half of the remote resources workforce resided in Greater Perth (KPMG, 2013), commuting every few weeks via fly-in/fly-out (FIFO) work arrangements. This form of long distance commuting was, and remains, contentious with opponents suggesting it drains employment and economic activity from remote economies. Yet, the practice contributed significantly to economic activity in Perth, not only creating direct employment but indirectly, FIFO increased expenditure on housing, services and retail goods. This contributed to further economic activity within the city and drove development. However, the influx of population to Greater Perth imposed considerable pressure on the availability and cost of housing, causing the cost of living to also rise.

IMPACT OF THE 2000s BOOM ON PERTH'S ECONOMY

As the State's capital, Perth strengthened its intimate ties into the resources economy. Perth emerged from the decade long boom as a strong corporate centre for the resources industry.

Perth's economic role as a global minerals and energy resource hub attracted global companies to set up offices and operations in the Greater Perth area. Materials and energy companies make up 43% of the companies headquartered in Perth (Tonts et al., 2012). The regional headquarters of some of the world's largest minerals and energy operations such as Rio Tinto, BHP, Chevron Australia and Shell Australia are all located in Perth, making it an important locale of decision-making and power, injecting talent and diversity to the city. As identified by Tonts et al. (2012) large corporations of this size play a critical role in articulating the flows of finance, knowledge and influence within the global economy and in turn, attract international financial, legal and consulting firms to service their business.

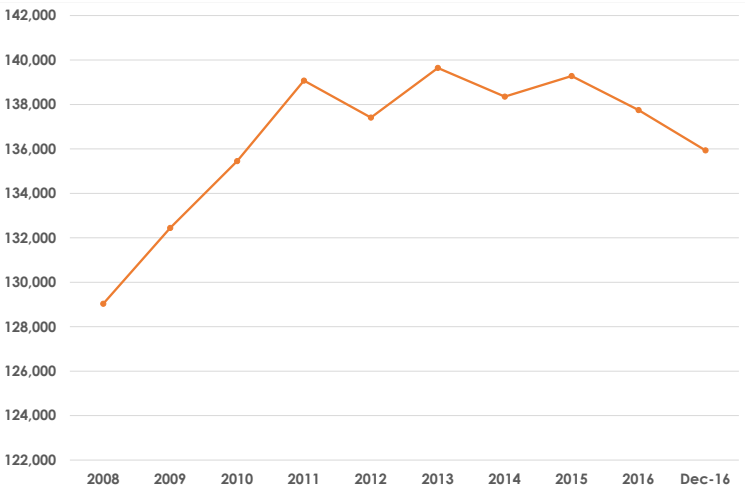
The proximity to Asia, and in particular its geographic location in the same time zone as some of Australia's most important trading partners, has been particularly advantageous. The global footprint of Perth's economy through trade linkages increased exponentially. This has enhanced Greater Perth's influence and connectivity with other cities around the world (Martinus and Sigler, 2016).

PUBLIC SECTOR EMPLOYMENT

While the private sector drove growth during the 2000s boom, the Western Australian public sector also grew, the head count peaking in 2013 at 139,642 employees, after which it began to decline. Between 2008 and 2015, the government sector grew by almost 8%.

The government departments that increased the most were the Department of Corrective Services, the Department of Child Protection, the Department of Education, (excluding TAFEs), and the Department of Health. In addition, the Metropolitan Redevelopment Authority, which was an amalgamation of several Redevelopment Authorities, grew from 84 employees in 2012 to 148 in 2016. It is evident the government sector played an important part of the structure of the labour market in Greater Perth. Their role as a key employer cannot be underestimated during this period.

FIGURE 12: WESTERN AUSTRALIAN PUBLIC SECTOR HEAD COUNT, 2008 TO 2016



Source: Public Sector Commission, 2017.

TABLE 8: GOVERNMENT DEPARTMENTS GROWTH AND REDUCTION, 2008 TO 2016

Government Department	2008	2012	2016	Change 2008 to 2016
Department of Child Protection	1,856		2,501	34%
Department of Corrective Services	4,001		4,522	13% Peaked Sept 2014, 4,749 employees
Department of Education (previously Department of Education and Training)	48,012		52,049	8.4%
Department of Health	37,901		44,544	17.5%
Department of Housing (previously Department of Housing and Works)	1,416		1,760	24%
Metropolitan Redevelopment Authority		84	148	76% An amalgamation of several different Redevelopment Authorities
Department of Attorney General	2,016		1,650	-18%
Department of Culture and the Arts	853		809	-6%
Department of Premier and Cabinet	682		559	-19%

Source: Public Sector Commission, 2017.

The Departments of Premier and Cabinet, Attorney General and Culture and the Arts showed a decrease in employees.

Early in 2017, the newly elected Premier Mark McGowan indicated he would reduce Western Australian Public Sector employment by 20%, decrease the number of State Government departments from 41 to 25 and deliver $750 million savings in order to pursue greater government efficiencies.

HOW THE 2000s BOOM SHAPED PERTH'S POPULATION

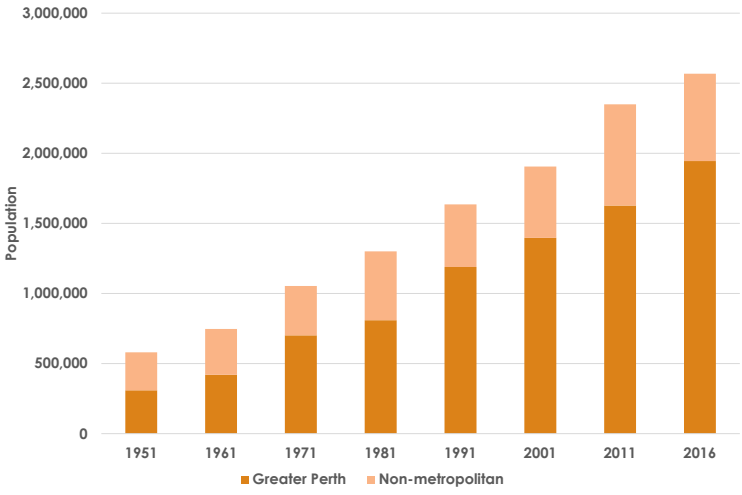
The 2000s boom strengthened the importance of Perth as a place to live and do business. In 1991, twice as many Western Australians lived in Perth compared to regional parts of the State. Within the boom decade, this proportion had increased to a ratio of 2.7:1 and by 2016, 82% of all Western Australians lived in Perth.

The 2000s boom and the associated high demand for both skilled and unskilled labour increased the Greater Perth population by 39% in 15 years to just over two million, from 2001.

Population growth was considerably higher than the national average rate of 15% (Australian Bureau of Statistics, 2015a) and Western Australia had the fastest growing population over the decade 2006-2016.

The development of Greater Perth continued in a linear fashion with the city stretching 150 kilometres north to south, although infill and greater densification was a planning policy priority. By 2011, a higher proportion of Greater Perth's population were living within five and ten kilometres of the CBD than in Melbourne or Sydney (Davis, 2016).

FIGURE 13: PERTH'S SHARE OF THE WESTERN AUSTRALIAN POPULATION, 1951 TO 2016



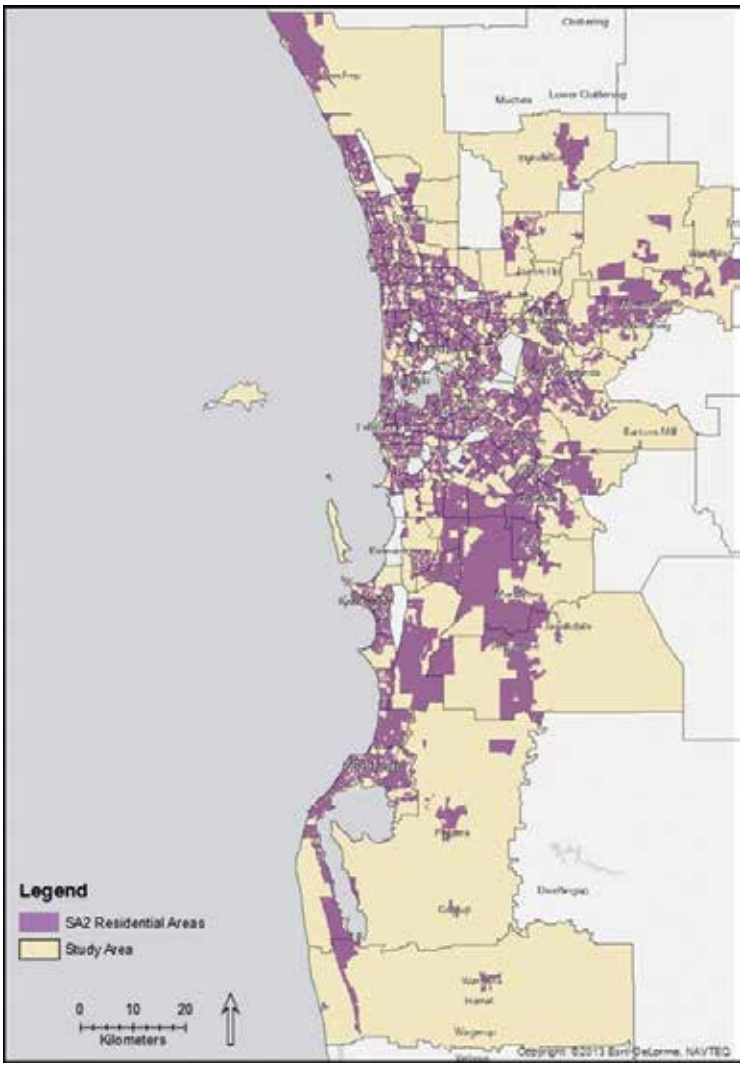
Source: Commonwealth Bureau of Census and Statistics, 1954; 1966; Australian Bureau of Statistics, 1972; 1982; 1992; 2017a.

Expansion to outer limits of the metropolitan area also occurred, with residential building activity concentrated in outer locations. Key residential building hotspots are primarily outer and middle locations including the Cities of Wanneroo, Swan, Stirling, Rockingham, Cockburn, Armadale, Mandurah, Gosnells, Belmont and Kwinana. This development trend has increased car dependence and put pressure on transport networks and services in these areas.

Many of the newcomers to Greater Perth came from overseas, rather than from interstate during the boom period. The United Kingdom continued to account for the highest proportion of the overseas-born population in Greater Perth, although at declining levels followed by New Zealand-born residents. Perth is also a popular destination for South African migrants. European migrants have traditionally made up a significant proportion of migrants, but in 2016 as many migrants from Malaysia as from Italy settled in Greater Perth. Asian migration, particularly from China and India is likely to increase in the future (Australian Bureau of Statistics, 2017g).

The intense demand for workers, especially in the resources industry during the boom period, attracted many temporary migrants on 457 visas. When compared to other states, Western Australia had the third highest proportion of 457 visa holders from 2006-07 to June 2012, behind New South Wales and Victoria (Tonts et al., 2012). Further, nearly 20% of Australia's total intake of 457 visa recipients during this same timeframe went to Western Australia. Holders of 457 visas made up 0.4% of the total Western Australian population and the top citizenship countries that temporary migrants originated from included the United Kingdom, Philippines and Ireland (Tonts et al., 2012). It is likely that these migrants added to the diversity of the Greater Perth population.

FIGURE 14: THE RESIDENTIAL AREAS OF GREATER PERTH, 2011



Source: Atkins, 2017.

SOCIAL CHANGE AND THE 2000s BOOM

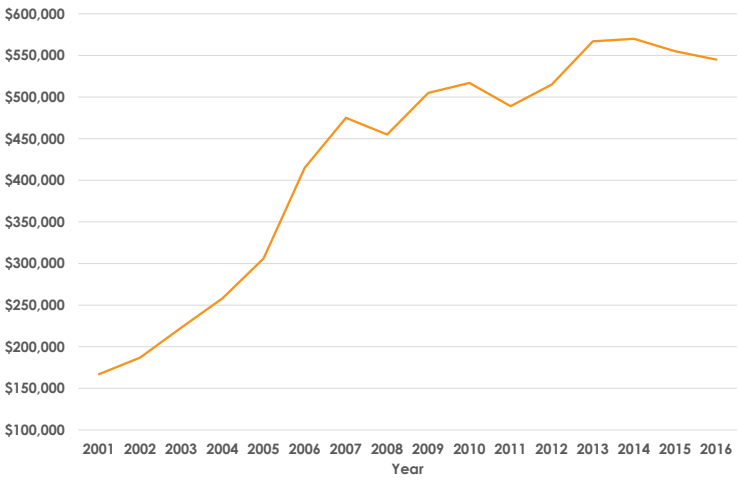
Perth attained the highest average gross household income in the nation in 2013-14. The strong growth in markets was a fillip for consumer confidence, with increased spending fuelled by rising incomes and wealth. This was reflected in the rising price of land and housing from 2001.

Impacts of the Boom: Housing

The rapid increase in population and employment generated through resources and investment activity flowing from outside the State drove commercial and residential property prices to unprecedented levels (Cassells et al., 2014b; Costello and Rowley, 2010).

Housing supply could not react quickly enough and Perth experienced rapid rises in house prices and rents. Between 2001 and 2005, the median house price in Perth doubled and as the population of Perth grew in response to the resources boom, it doubled again between 2005 and 2015 (Real Estate Institute of Western Australia, 2015). This caused considerable political, economic and social concerns.

FIGURE 15: PERTH'S MEDIAN HOUSE PRICES, 2001 TO 2016



Source: REIWA and Landgate Monthly House Sales Price, 2001-2016.

TRANSFORMATION OF PERTH

The liveability of Perth and its status as a place to visit has been the focus of a number of different investigations (Wetzstein, 2010). Liveability is particularly important in an era where people with high-end skills tend to be extremely mobile, often making decisions about where to live based on lifestyle. Danish urban architect, Jan Gehl, urged city planners in 2009 to capitalise on the natural attributes of the city, saying that "the fabulous setting of Perth is under-utilised and that the city's greatest asset, the Swan River should be used more creatively" (Gehl Architects, 2009).

Liveability is recognised for its potential to attract and nurture knowledge intensive capitalism and competitive business investment.

The promotion of the city's profile for retaining a globally qualified workforce was a catalyst for the transformation of, in particular, the city centre. Urban waterfronts throughout the world have become key drawcards for local residents and visitors and the Elizabeth Quay waterfront redevelopment was part of an overall plan to stimulate the vibrancy of the city. The reconnection with the iconic Swan River, development of public facilities and a re-orientation of the centre of the city towards the river was an important development antidote to the much-maligned 'Dullsville' tag attributed to Perth in 2000 by Lonely Planet.

A hallmark of a sophisticated, liveable and global city, is engagement with the arts and cultural industries. The Perth International Arts Festival is Australia's longest cultural festival and runs every year in February and March. The program includes a wide variety of events, which has grown with strong patronage from

all ages. After more than a decade of population and income growth, the art and cultural activities in Perth are on a growth trajectory, contributing to the liveliness and vitality of the city. This growth is not restricted to theatre or other paid patronage.

One of the most popular public artwork exhibitions is the Sculptures by the Sea, which commenced at Cottesloe Beach in 2005 and attracts local, national and international artists and more than 100,000 visitors each year.

Circus Freak Show, FRINGE WORLD Festival 2017. Photo by Jason Matz. Source: Courtesy of FRINGE WORLD Festival.

Big Giant in the City by Julias Shaka, *Passion for Perth* Photographic Competition. Source: Committee for Perth, 2015.

Perth's FRINGE WORLD Festival is another important cultural festival for the Greater Perth economy. In 2016, FRINGE WORLD recorded selling more than 350,000 tickets, valued at $9.3 million. In addition, FRINGE WORLD projected that an excess of one million people attended free events held throughout Perth as part of the festival (FRINGE WORLD, 2017). The arts contribute to a sense of place and connectedness, making the city more attractive and a destination for new residents, tourists and business.

The new Perth Stadium is expected to attract more sporting and entertainment events with its expanded capacity and a range of restaurant and café menus to encourage patrons to extend their time and experiences at the venue.

The Perth Arena, since opening in 2012, has generated in excess of $200m per annum, as reported in the Committee for Perth's *What We Thought Would Kill Us* report (Committee for Perth, 2014).

ECONOMIC RESILIENCE AND VOLATILITY

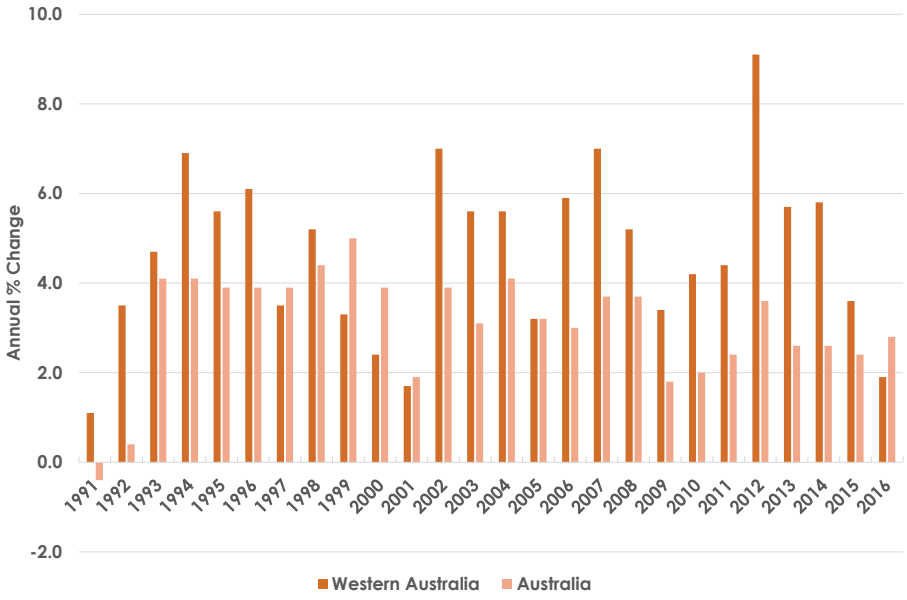
As the Greater Perth economy transitioned from the boom to more steady state conditions, there was widespread concern the economic outlook was gloomy for Western Australia and therefore Greater Perth. To date, the data does not support this. Over an extended period, there is virtually no evidence of severe boom-bust cycles and the Perth economy has performed well.

The decrease in global commodity prices over the past five years or so has had a significant impact on the Western Australian economy and State finances. On a range of indicators, including employment growth, unemployment, company profits and welfare recipients, the State has experienced considerable adjustment pressures.

One of the central issues that policymakers are concerned with is the extent to which the economy is both resilient and adaptive to changes in economic circumstances. In Western Australia, this also tends to be coupled with a concern about the State being a boom-bust economy. Yet, there is little evidence to suggest the State is a boom-bust economy, and indeed most indicators suggest over the longer run it has been highly resilient.

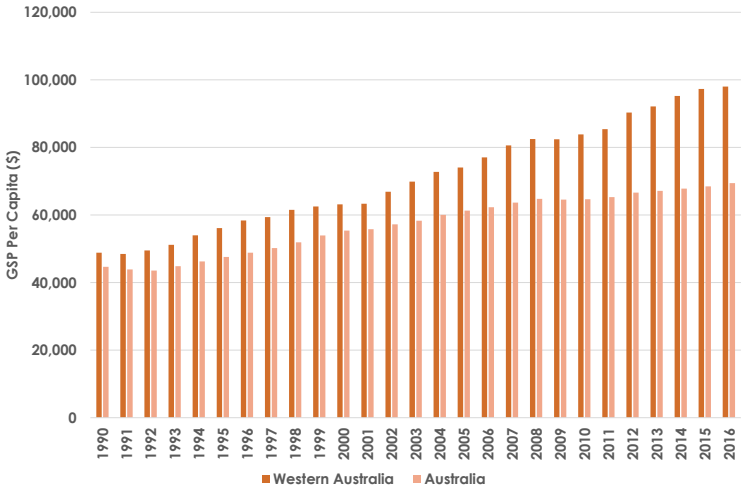
Figure 16 shows that between 1991 and 2016, Western Australia increased its GSP every year. Moreover, in 20 of the 26 years, Western Australia outperformed Australia as a whole. While these data are for the State as a whole, given the size of the Perth economy relative to Western Australia they provide an insight into the overall performance of the capital city.

FIGURE 16: ANNUAL PERCENTAGE CHANGE IN GROSS STATE/DOMESTIC PRODUCT, 1991 TO 2016



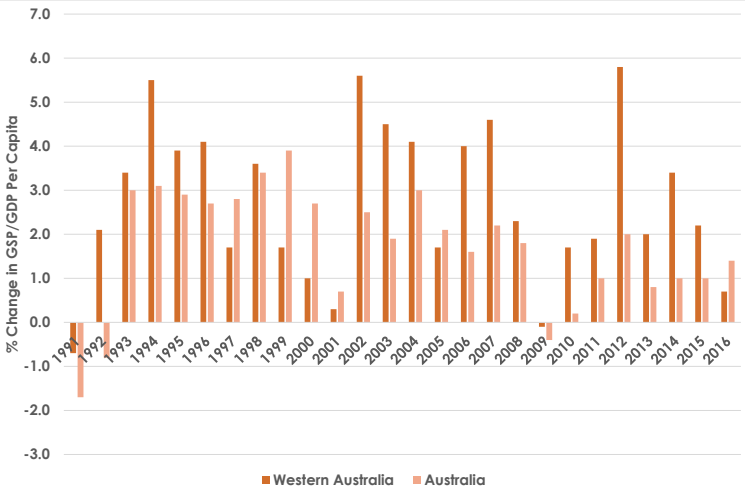
Source: Australian Bureau of Statistics, 2017b.

FIGURE 17: GROSS STATE PRODUCT PER CAPITA, 1990 TO 2016



Source: Australian Bureau of Statistics, 2017b.

FIGURE 18: ANNUAL PERCENTAGE CHANGE IN GROSS STATE PRODUCT PER CAPITA, 1990 TO 2016



Source: Australian Bureau of Statistics, 2017b.

Figures 17 and 18 further emphasise the long run performance of Western Australia by evaluating the State's performance in per capita terms. Collectively, they demonstrate consistent increases in GSP per capita over the period 1992 – 2008. While the global financial crisis eroded performance in 2009, the economy recovered strongly to record consistent increases until 2016.

Importantly, even in the context of the present downturn, GSP per capita has been increasing, albeit slowly. Not only does this challenge the 'boom-bust' narrative, but points to an economy that has remained resilient in the face of considerable external pressures.

When compared to Australia, the State's consistent, long run economic performance becomes even more evident, Figure 18. Australia has experienced three years of negative GDP growth per capita – 1991, 1992 and 2009. In contrast, Western Australia has had two years of negative growth – 1991 and 2009 – and in 18 of the 26 years outperforms Australia as a whole.

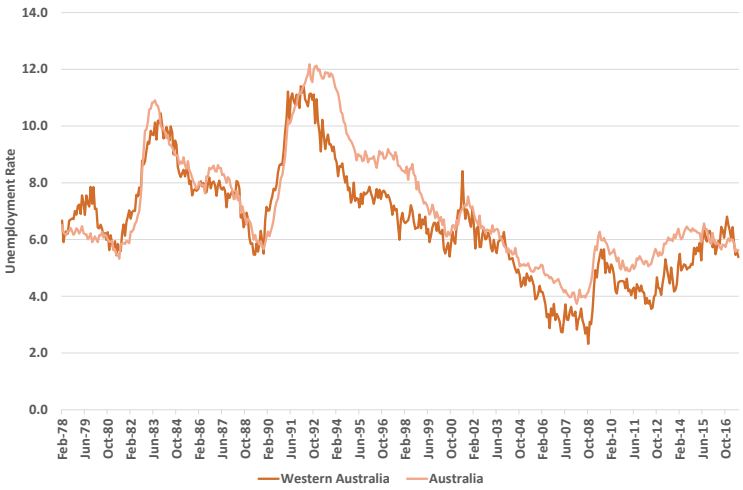
One of the other major indicators of long run economic resilience is unemployment data. In essence, unemployment data provide a crude

measure of the extent to which labour is being fully utilised. Figure 19 shows the unemployment rate for Western Australia for the period 1978-2017. While these data cover the State as a whole, the Perth labour market tends to move in quite similar directions to Western Australia (Plummer and Tonts, 2013) and therefore provides a reasonable analogy with the Perth metropolitan region.

Between 1978 and 2017, the Western Australian unemployment rate has tended to move more or less in line with the Australian rate. Yet, the overwhelming trend is that the Western Australian rate tends to be lower than that for Australia, Figure 19. Only for the period 1978 to 1982 and 1989 to 1992 was the State's unemployment rate consistently higher than the Australian rate. It was also above the Australian average for most of the period between October 2015 and March 2017. Of the 474 monthly unemployment reports between February 1978 and July 2017, in only 115 of these, 24%,did Western Australia record a rate higher than that of Australia.

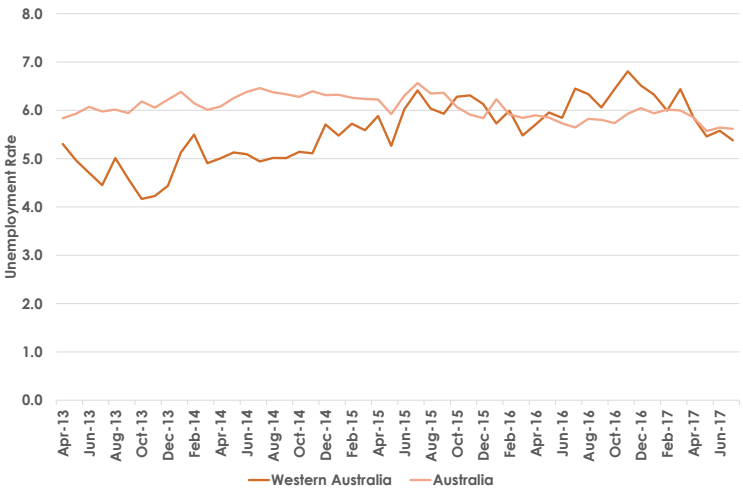
The most recent downturn is instructive in terms of how Western Australia's economy responds to and recovers from shocks, Figure 20.

FIGURE 19: WESTERN AUSTRALIAN AND AUSTRALIAN UNEMPLOYMENT RATES, 1978 TO 2017



Source: Australian Bureau of Statistics, 2017f.

FIGURE 20: WESTERN AUSTRALIAN AND AUSTRALIAN UNEMPLOYMENT RATES, 2013 TO 2017



Source: Australian Bureau of Statistics, 2017f.

In April 2013, Western Australia's unemployment rate stood at 5.3% compared to the national figure of 5.8%. While the Australian rate climbed steadily to peak at 6.5% in July 2014, Western Australia's fell sharply to a low of 4.2% in November 2013. While it rose steadily in the face of the decline in the resources industry, it only surpassed the Australian average consistently from October 2015. The unemployment rate peaked in November 2016 at 6.8%, but by April 2017 was at or below the Australian average. Even across this period of significant volatility in the Western Australian economy, out of 52 monthly reporting periods between April 2013 and July 2017, in only 14 of these was the rate above the Australian rate.

Table 9 provides a simple measure of economic volatility on a number of standard economic indicators. Again, this tends to challenge simplistic notions of boom-bust economies, and suggests a higher degree of stability in Western Australia than conventional wisdom might suggest. It shows that in terms of change in GSP/GDP and unemployment, Western Australia is more stable than Australia as a whole. Similarly, and perhaps surprisingly, median house price is less volatile in Perth than in Sydney and Melbourne. While it is the case that Perth experienced a significant increase in property prices associated with the resources boom, and has experienced a sharp fall, the reality is that these price movements are less extreme than those that were recorded in Sydney and Melbourne over the period March 2002 to June 2017. Only on the inflation indicator did Western Australia record a higher degree of volatility than Australia as a whole, or Melbourne and Sydney.

TABLE 9: COMPARATIVE VOLATILITY ON KEY ECONOMIC INDICATORS

	Change in GSP/GDP, 1991-2016	Unemployment, 1978-2017	Inflation, 2000-2017	Median House Price, 2002-2017
Perth	-	-	5.9	3.6
Melbourne	-	-	5.7	5.1
Sydney	-	-	5.8	6.1
Western Australia	0.8	1.9	-	-
Australia	1.9	2.0	5.7	-

Sources: Australian Bureau of Statistics, 2017b; 2017d; 2017f; 2017h.

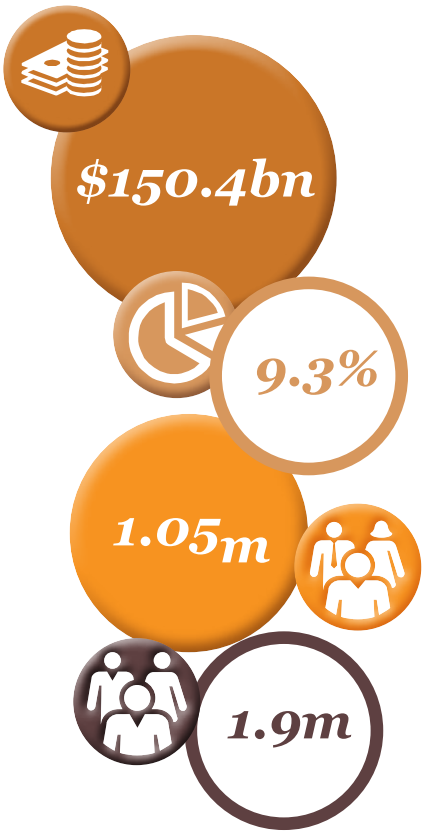
POST-2000s BOOM

GREATER PERTH ECONOMIC SCAN

This section examines in detail why the Greater Perth economy has performed well, particularly over the past two decades and shows no evidence of collapsing in the wake of slowed economic conditions. PwC (2017a) conducted an economic scan of Greater Perth in 2015 using the Geospatial Economic Model (GEM), combining big data analytics with economic theory to determine economic performance. This provides a comprehensive, evidence-based insight to Greater Perth's economic output, employment and industry characteristics from 2001 to 2015.

PwC (2017a) identified that the key industries for Greater Perth are construction, healthcare and social assistance and professional, scientific and technical services, based on Gross Value Add (GVA) in 2015. Construction was the largest industry in Greater Perth in 2015 and its industry performance has grown significantly since 2001. Similarly, professional, scientific and technical services has experienced strong growth but this has declined since 2013. Healthcare and social assistance has experienced sustained growth since 2001.

FIGURE 21: KEY ECONOMIC INDICATORS FOR THE GREATER PERTH REGION



$150.4 billion economy in 2015.

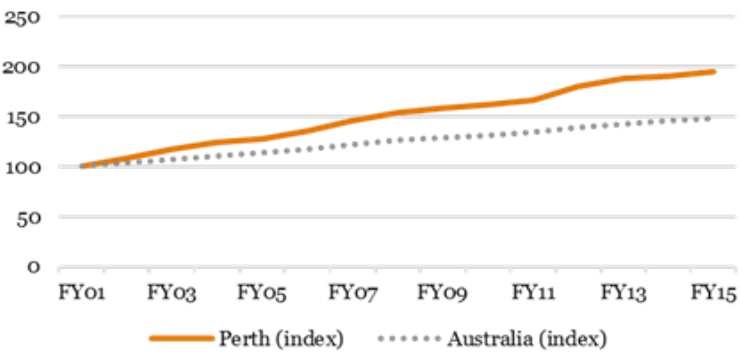
Accounts for 9.3% of the Australian economy.

1,049,847 people employed in 2017.

1,943,861 people living in Perth 2017.

Source: PwC, 2017a.

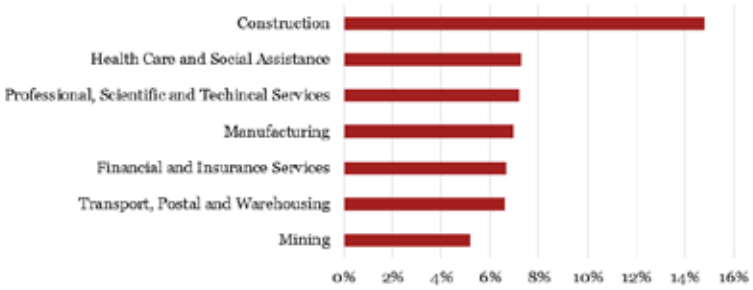
FIGURE 22: ECONOMIC OUTPUT OF GREATER PERTH (INDEX)



Source: PwC, 2017a.

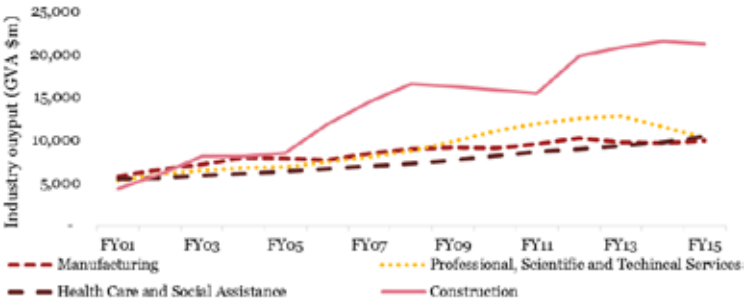
The consistent performance of the construction industry from 2001 to 2015 shows it is a strong contributor and an important employer. As a result, this industry is considered a 'strength' to the Greater Perth economy. The industries that also experienced above average growth but had low industry strength score were mining, financial and insurance services, arts, other services, wholesale trade and professional, scientific and technical services. These industries are classified as 'opportunities' for the future. The remaining industries were classed as either 'weaknesses' or 'threats', with only moderate growth and employment compared to the other industries.

FIGURE 23: INDUSTRY COMPOSITION OF GREATER PERTH, FINANCIAL YEAR 2015



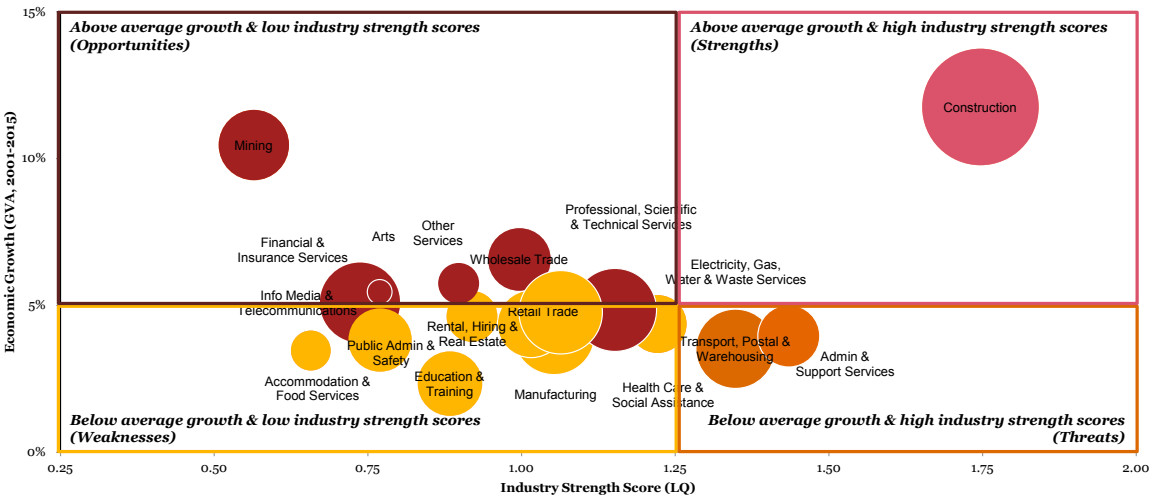
Source: PwC, 2017a.

FIGURE 24: INDUSTRY PERFORMANCE OF GREATER PERTH GVA $M, FINANCIAL YEAR 2001 TO 2015



Source: PwC, 2017a.

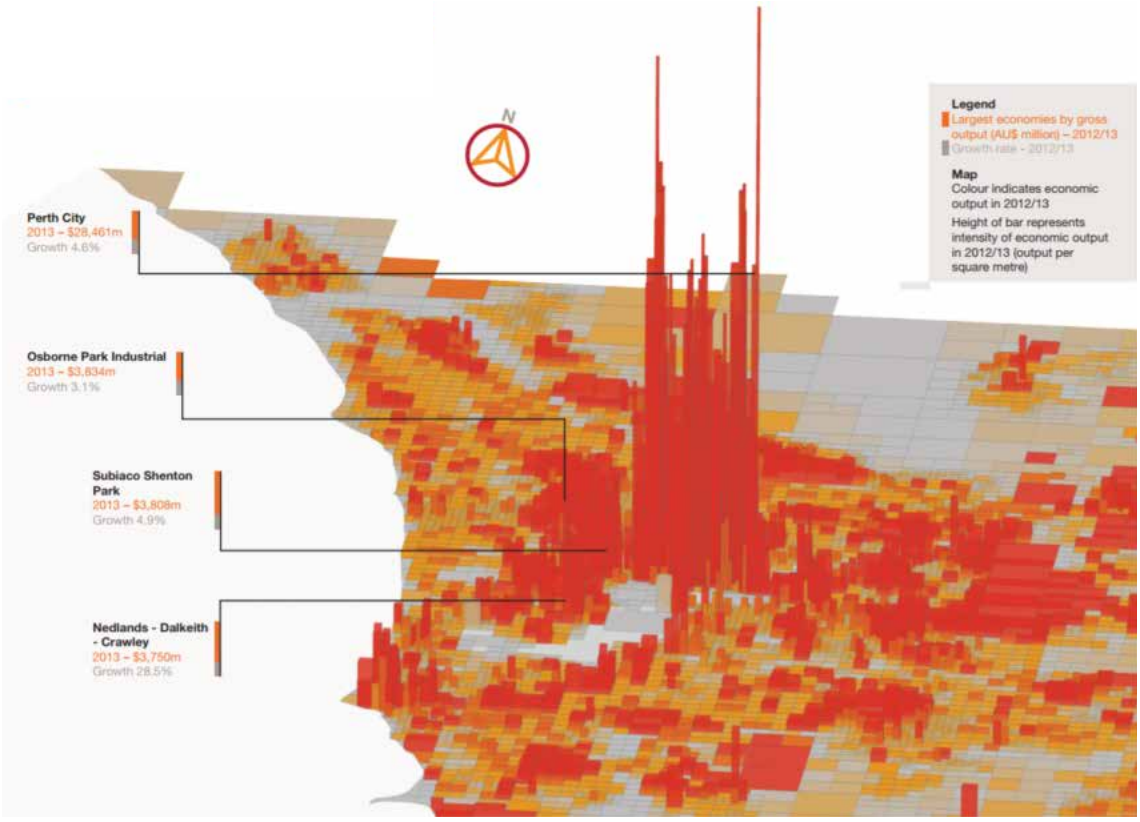
FIGURE 25: GREATER PERTH INDUSTRY STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS ANALYSIS



Source: PwC, 2017a.

The four most important locations in Greater Perth with the largest gross economic output in 2012-13, were Perth City, followed by the Osborne Park Industrial precinct, Subiaco-Shenton Park and finally Nedlands-Dalkeith-Crawley. Of these locations, Nedlands-Dalkeith-Crawley had the strongest growth in 2012-13, 28.5%. Perth City, Subiaco-Shenton Park and Osborne Park Industrial were the top three local areas out of an identified 15, based on Gross Regional Product (GRP) in 2015.

FIGURE 26: GREATER PERTH'S LARGEST ECONOMIES BY GROSS OUTPUT $M, 2012-13



Source: PwC, 2017a.

THE GEOGRAPHY OF FIRMS AND EMPLOYMENT

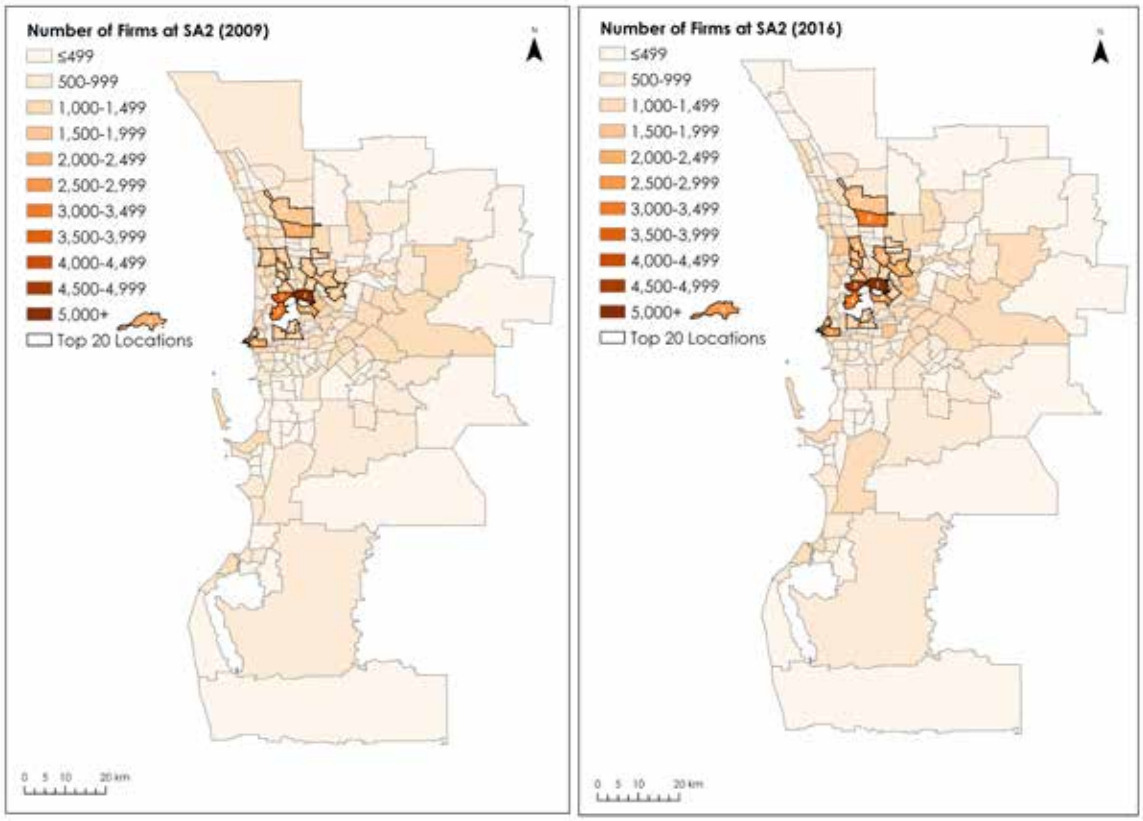
Looking at the geographical distribution of firms and employment at the Statistical Area Level 2 (SA2) spatial scale can provide insight into where economic activity is occurring and where employment is likely to be based. The number of firms in each SA2 in Greater Perth for 2009 and 2016 was calculated. Examining the top 20 locations in each year revealed that many 2009 locations reappeared in 2016 with, generally, a higher number of firms. This indicates that some locations are more attractive for the establishment of firms, regardless of industry. Additionally, the locations with the highest concentrations of firms have tended to be relatively central with a slight skew to the north of the Swan River.

- From 2009 to 2016, Perth City retained its position as having the greatest number of firms of all industries at the SA2 level. This is despite the actual number of firms declining from 14,227 in 2009 to 13,659 in 2016.

- Subiaco-Shenton Park was ranked second in both years, with 3,899 and 4,624 firms respectively.

- Another notable mention is Madeley-Darch-Landsdale, which climbed from sixth position in 2009 with 2,362 firms to third position in 2016, with 3,371 firms.

FIGURE 27: THE TOP LOCATIONS BASED ON THE NUMBER OF FIRMS OF GREATER PERTH, 2009 AND 2016



Source: Australian Bureau of Statistics, 2012b; 2017e.

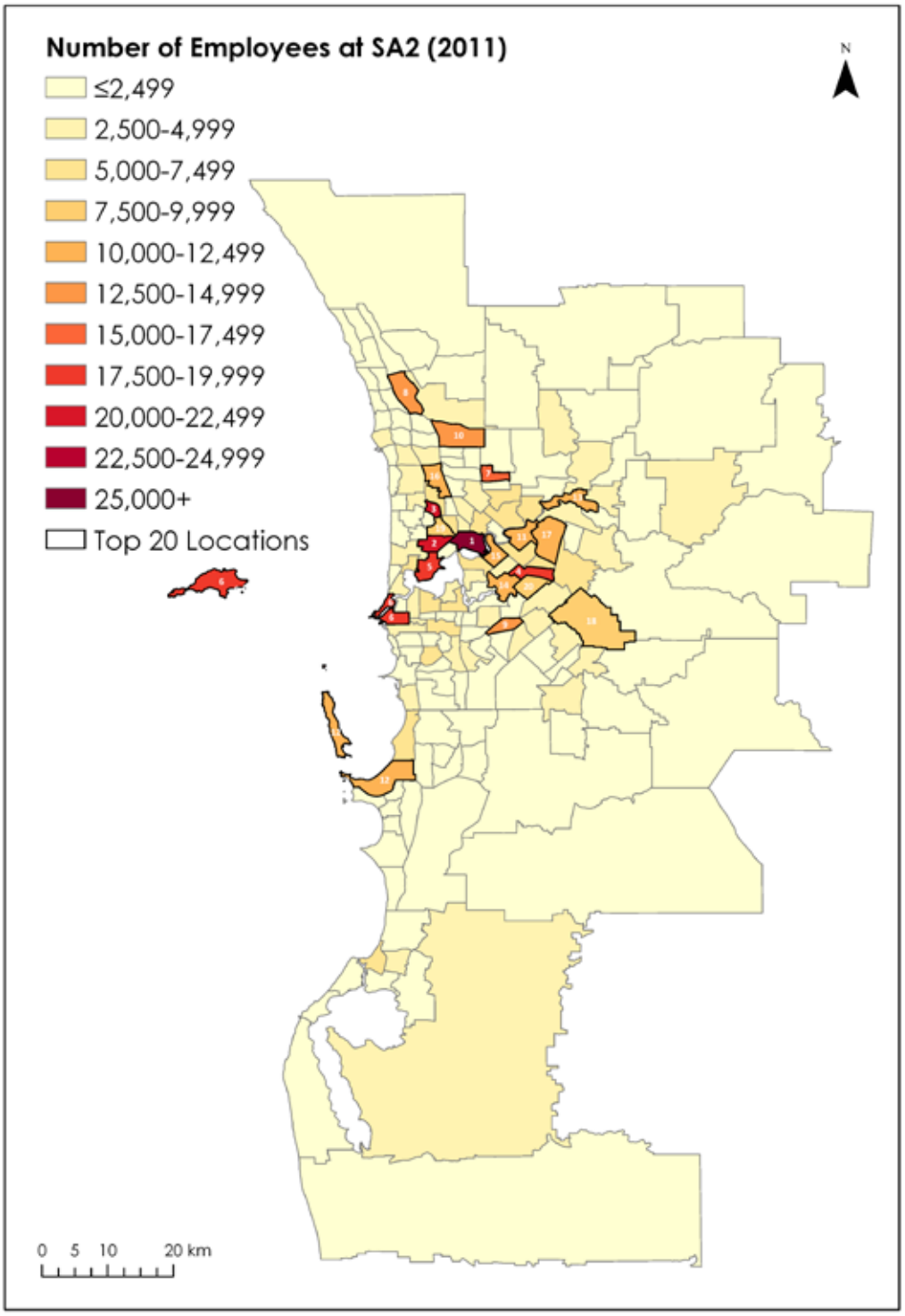
TABLE 10: CONCENTRATION OF FIRMS BY GREATER PERTH LOCATION, 2009 AND 2016

Rank (2009)	SA2	Number of Firms	Rank (2016)	SA2	Number of Firms
1	Perth City	14,227	1	Perth City	13,659
2	Subiaco - Shenton Park	3,899	2	Subiaco - Shenton Park	4,624
3	Nedlands - Dalkeith - Crawley	3,066	3	Madeley - Darch - Landsdale	3,371
4	Fremantle	2,418	4	Nedlands - Dalkeith - Crawley	3,303
5	South Perth - Kensington	2,404	5	Fremantle	2,730
6	Madeley - Darch - Landsdale	2,362	6	South Perth - Kensington	2,698
7	Osborne Park Industrial	1,964	7	Osborne Park Industrial	2,459
8	Balcatta - Hamersley	1,947	8	Balcatta - Hamersley	2,183
9	Bayswater - Embleton - Bedford	1,872	9	Bayswater - Embleton - Bedford	2,160
10	Dianella	1,853	10	Wembley - West Leederville - Glendalough	2,152
10	Wembley - West Leederville - Glendalough	1,853	11	Stirling - Osborne Park	2,131
12	Malaga	1,725	12	Dianella	2,074
13	Applecross - Ardross	1,702	13	Malaga	1,932
14	Melville	1,680	14	Booragoon	1,927
15	Karrinyup - Gwelup - Carine	1,676	15	Applecross - Ardross	1,921
15	Mount Lawley - Inglewood	1,676	16	Mount Lawley - Inglewood	1,866
17	Stirling - Osborne Park	1,672	17	Wanneroo	1,865
18	Booragoon	1,651	18	Victoria Park - Lathlain - Burswood	1,849
19	Belmont - Ascot - Redcliffe	1,574	19	Melville	1,833
20	Wanneroo	1,554	20	Morley	1,745

Source: Australian Bureau of Statistics, 2012b; 2017e.

The geographical distribution of 2011 Place of Work Census data demonstrates employee hotspots in Greater Perth at the SA2 level and this generally aligns with the distribution of firms. For example, Perth City has the highest concentration of firms and employees and Subiaco-Shenton Park is ranked second for both. Outer locations such as Joondalup-Edgewater, Rockingham and Maddington-Orange Grove-Martin have relatively greater concentrations of employees than they do of firms.

FIGURE 28: THE NUMBER OF EMPLOYEES IN EACH STATISTICAL AREA LEVEL 2 OF GREATER PERTH WITH THE TOP 20 LOCATIONS HIGHLIGHTED, 2011



Source: Australian Bureau of Statistics, 2012b.

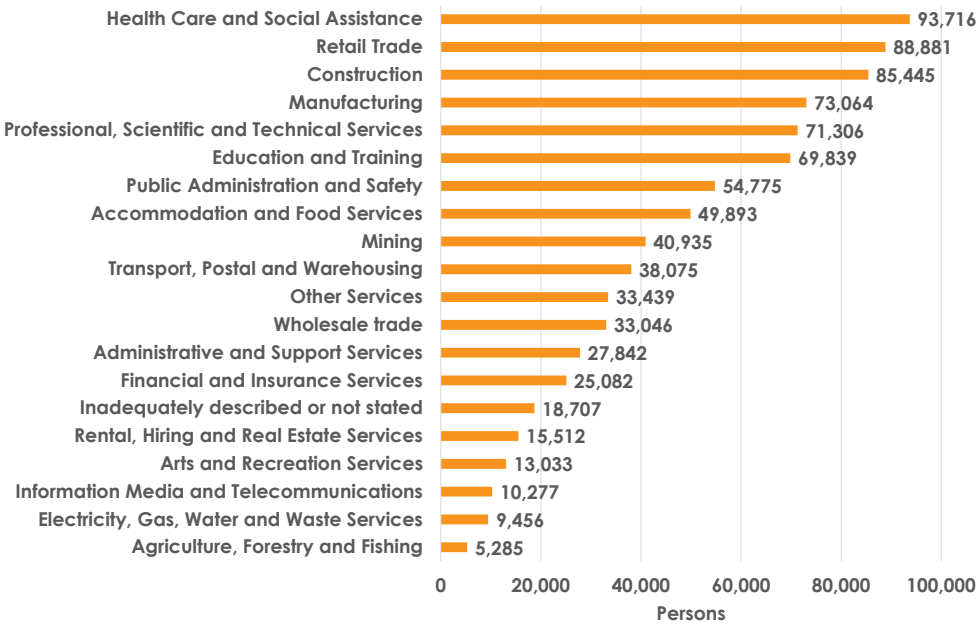
TABLE 11: CONCENTRATION OF EMPLOYEES BY GREATER PERTH LOCATION, 2011

Rank (2011)	SA2	Number of Employees
1	Perth City	134,275
2	Subiaco - Shenton Park	22,061
3	Osborne Park Industrial	20,977
4	Welshpool	17,946
5	Nedlands - Dalkeith - Crawley	17,712
6	Fremantle	17,575
7	Malaga	15,419
8	Joondalup - Edgewater	14,873
9	Canning Vale Commercial	14,763
10	Madeley - Darch - Landsdale	13,636
11	Belmont - Ascot - Redcliffe	12,236
12	Rockingham	11,989
13	Midland - Guildford	11,712
14	Bentley - Wilson - St James	11,445
15	Victoria Park - Lathlain - Burswood	10,829
16	Balcatta - Hamersley	10,825
17	Perth Airport	10,003
18	Maddington - Orange Grove - Martin	8,355
19	Wembley - West Leederville - Glendalough	8,348
20	Cannington - Queens Park	7,814

The largest industry employer in Greater Perth in 2011 was health care and social assistance, followed by retail trade and construction. Prior to 2011, retail was the largest industry for employment. This points to the growing importance of the service sector.

Source: Australian Bureau of Statistics, 2012b.

FIGURE 29: THE NUMBER OF EMPLOYED PEOPLE BY INDUSTRY IN GREATER PERTH, 2011



Source: Australian Bureau of Statistics, 2012b.

THE GREATER PERTH ECONOMY

This section of the report builds on PwC's (2017a) analysis of the Greater Perth economy and the industries that are driving it in the first decades of the twenty-first century. Each of the highest performing industries are assessed by the concentration of firms in locations across Greater Perth and by employment. It is evident that, despite Greater Perth's growing sophistication, the industries, which underpin the current post-boom economy, are still mineral and energy resources and agriculture businesses, which were the foundation of the Greater Perth economy in the nineteenth and twentieth centuries. However, the industries are changing, responding to global developments and technological innovation.

The industries have been grouped by their likely economic development trajectories in the post-boom period. The Bright Lights Industries are those that are emerging. They are perhaps not the biggest employers or have the most firms, but their contribution to the vibrancy and diversity of the Greater Perth economy suggest new employment opportunities and enhanced global engagement.

The Primary Industries are the economic perennials in the Greater Perth economy and the last group is the Industries in Transition. These are important industries but they are facing economic or social headwinds that are likely to continue to exert challenges in the post-boom period.

THE BRIGHT LIGHTS INDUSTRIES

Arts and Creative Industries

The creatives industry is a small but growing segment of the Greater Perth economy, turning creative ideas into commercial outcomes. The economic, social, industrial and cultural contributions from creative industries are usually a hallmark of an advanced and thriving economy and bring a wide range of benefits to the economy.

The creative economy describes all activity within the creative and cultural industries. Creative services, including software and digital content, advertising and marketing, and architecture and design, are an important feature of the knowledge economy that is focused on the production, distribution and use of knowledge and information. The outputs of creative services are essential inputs for a wide range of industries. Creative employment can be divided into three categories according to the Creative Trident Methodology (Higgs et al., 2007): creatives working in creative industry organisations, 'specialists'; non-creatives working in creative industry organisations, 'support staff'; and creatives working in non-creative industry organisations, 'embedded' creatives.

Additionally, creative employment falls into two sub-groups of creative services and cultural production, and each have three segments.

Two-thirds of the State's 41,317 creative workers are employed in the creative industries as 'specialist' creatives or 'support staff', while the remaining were 'embedded' creatives workers in other non-creative industries, e.g. public administration, professional services, education and manufacturing.

FIGURE 30: CREATIVE EMPLOYMENT SUB-GROUPS

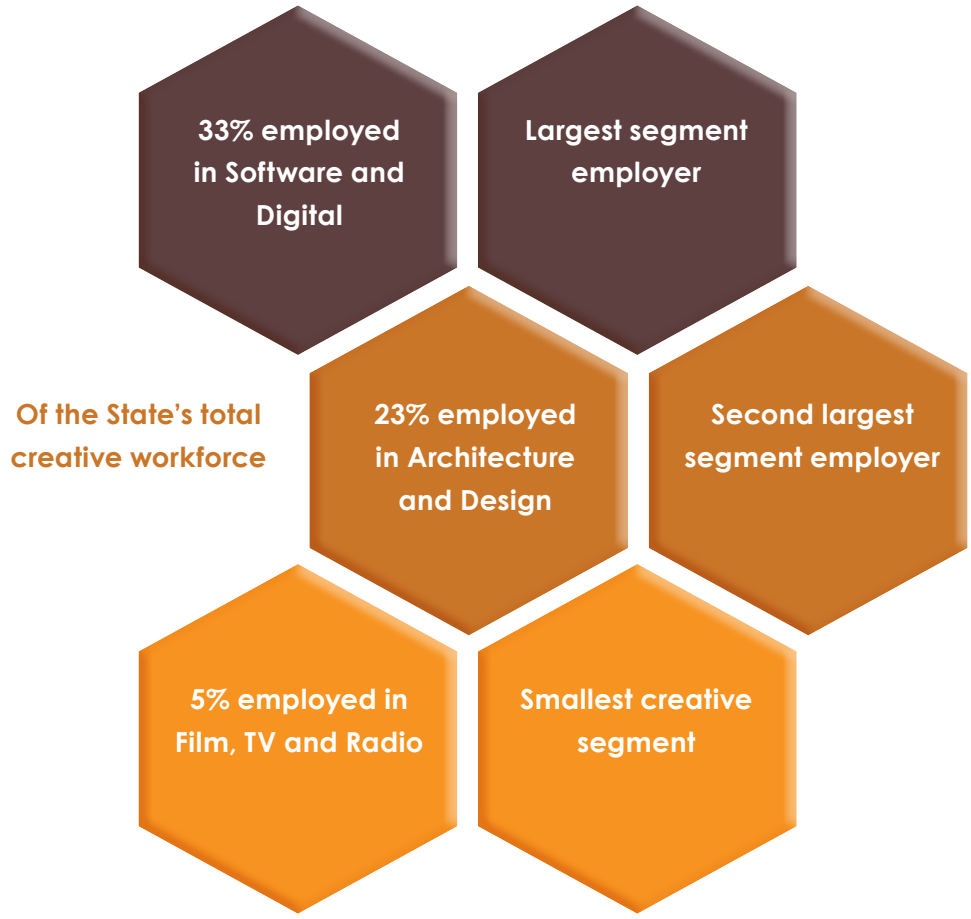
Source: Department of Culture and the Arts, 2013.

TABLE 12: CREATIVE TRIDENT EMPLOYMENT SUMMARY BY SEGMENT, WESTERN AUSTRALIA, 2011

	Creative Services Segments				Cultural Production Segments				
	Advertising and Marketing	Architecture and Design	Software and Digital Content	Total creative services segments	Film, TV and Radio	Music, Visual and Performing Arts	Publishing	Total Cultural Production segments	Total Creative Workers
Specialists	749	3,600	2,417	6,766	893	2,108	1,328	4,329	11,095
Support staff	1,012	2,941	8,304	12,257	797	1,721	3,615	5,133	17,390
Embedded	3,977	3,177	2,784	9,938	246	1,315	1,333	2,894	12,832
Total creative employment	5,738	9,718	13,505	28,961	1,936	5,144	5,276	12,356	41,317

Source: Australian Bureau of Statistics, 2012a; Department of Culture and the Arts, 2013.

FIGURE 31: WESTERN AUSTRALIA'S CREATIVE WORKFORCE



Source: Department of Culture and the Arts, 2013.

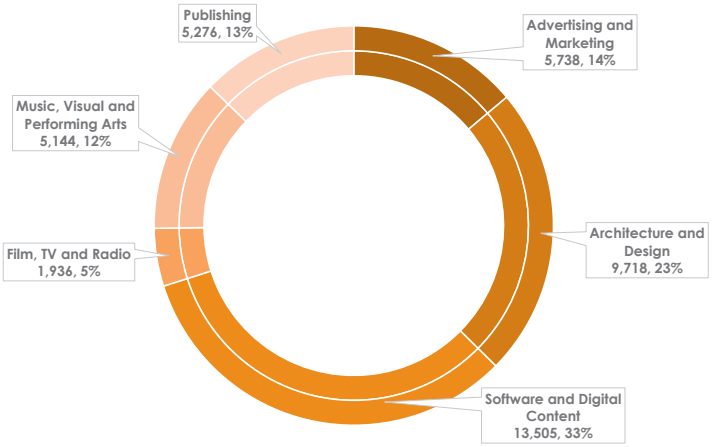
According to *Perth's Creative Industries – An Analysis* (City of Perth, 2007), Perth's location, history and industry structure have influenced the key characteristics of Perth's creative economy:

- Wide dispersion and low-density of creative activities;
- A very high concentration of WA's total creative industries activity is in metropolitan Perth;
- Very large number of micro-firms employing one to two people;
- Competition due to low entry barriers and WA's small market, which drags business development;
- There are domestically-focused creatives catering to the Perth market, usually mass market-oriented, and other creatives are pursuing export niches; and
- There is an additional priority to capture and build on the opportunities presented by the staples industries – mining and agriculture.

The 'creative services' segments employed 70% of creative workers. Meanwhile, the remaining 30% were employed in the 'cultural production' segments, see Figure 32. This 70/30 split between creative services and cultural production segments has been a similar trend around Australia.

Western Australia's cultural production segments have been smaller in size and economic contribution. These segments have indirect and induced effects; particularly notable is their potential to attract tourists, increase tourist expenditure and increase the vibrancy of the community life (Department of Culture and the Arts, 2013).

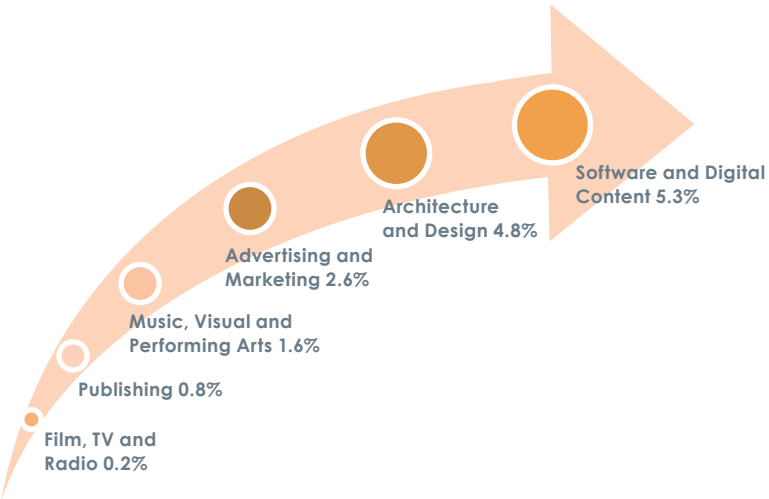
FIGURE 32: CREATIVE EMPLOYMENT BY NUMBER AND PROPORTION IN EACH SEGMENT, WESTERN AUSTRALIA, 2011[1]



Source: Australian Bureau of Statistics, 2012a; Department of Culture and the Arts, 2013.

1 The creative services segments are on the right and the cultural production segments are on the left.

FIGURE 33: AVERAGE ANNUAL GROWTH IN CREATIVE EMPLOYMENT BY SEGMENT, WESTERN AUSTRALIA, 2006 TO 2011



Source: Australian Bureau of Statistics, 2012a; Department of Culture and the Arts, 2013.

Employment growth in Greater Perth's creative industry was four times the rate of any other industry in the first half of the 2000s (City of Perth, 2007). Between 2006 and 2011, WA's creative workforce grew at an average annual rate of 3.2% or by 5,956 workers. Along with Victoria, WA experienced the nation's highest rate of growth in creative employment (Department of Culture and the Arts, 2013). The strongest creative employment growth was in the creative services segments, see Figure 33. Software and digital content was the segment demonstrating the highest average annual rate of growth, at 5.3%.

Perth Fringe Festival

The Perth FRINGE WORLD festival is part of the growth of the creative industries. It has been running since 2011, and in 2017 it was reported that it was the biggest box office earner of any arts event in Western Australia. Perth's FRINGE WORLD became the third largest Fringe festival in the world, delivering more than $8.6 million in payments to participating artists. In 2017, the flow on economic impact of FRINGE WORLD was $84.3 million, equating to 1,857 full-time equivalent jobs, with $1 of investment from the government returning $77 into the Western Australian economy (FRINGE WORLD, 2017).

La Soirée, FRINGE Central at Perth Cultural Centre and The Gold Digger, FRINGE WORLD Festival 2017. Photos by Sebastian Mrugalski, Jarrad Seng and Matthew Parker. Source: Courtesy of FRINGE WORLD.

Perth's FRINGE WORLD captured a wide range of audiences, with as many attendees in the 54-59 age category as those aged 24-29 years old. Media coverage reached a potential national and international audience of almost 54 million. In addition, the audience captured by FRINGE WORLD includes consumers and non-consumers of arts, with 39% of attendees in 2017 considered high cultural consumers, attending a cultural event at least once per month, while 45% attended 3-4 times per year, 14% attended 1-2 times a year and 1.5% had never attended a cultural event in the prior 12 months (FRINGE WORLD, 2017).

The cumulative impact of FRINGE WORLD is vast and increasing as the festival grows each year. Perth gains positive flow on effects to urban vitality, civic pride, social cohesion, community engagement, economic stimulus and the development of local cultural industries (FRINGE WORLD, 2017).

Perth Stadium. Source: Courtesy of Perth Stadium.

Recreation

Sport is just one component of the recreation industry and while data regarding sport is not as systematically recorded, it is widely recognised that it has as many indirect as direct benefits. The social benefits include social inclusion and building a sense of community from shared sporting experiences and achievements. Sport also contributes to the economy through business investment and employment (Department of Sport and Recreation, 2009).

According to the Department of Sport and Recreation (2009), every dollar invested by the State Government in the Community Sporting and Recreation Facilities Fund generates $2.4 in direct economic activity and $6.5 in total economic activity. Further, based on 2009 data, an annual commitment of $10.5 million would equate to more than $24.7 million in direct and $68.3 million in total economic activity (Department of Sport and Recreation, 2009).

The Community Sporting and Recreation Facilities Fund documents the development of sustainable sport and recreation infrastructure and the State Government's annual investments in the development of high-quality environments for people to enjoy sport and recreation. There is $12 million available for allocation in the 2017-18 fund (Department of Local Government, Sport and Cultural Industries, 2017).

Major sporting events and competitions generate direct employment and infrastructure investment. Indirect employment is generated through sporting events and competitions, with people visiting a destination to participate or spectate at sporting events, therefore contributing to tourism, accommodation and food. Sport is powerful in attracting thousands of local, interstate and international visitors to WA every year. The Perth Stadium is expected to be a prime sporting hub when it is completed, and it will be a great asset to the recreation industry.

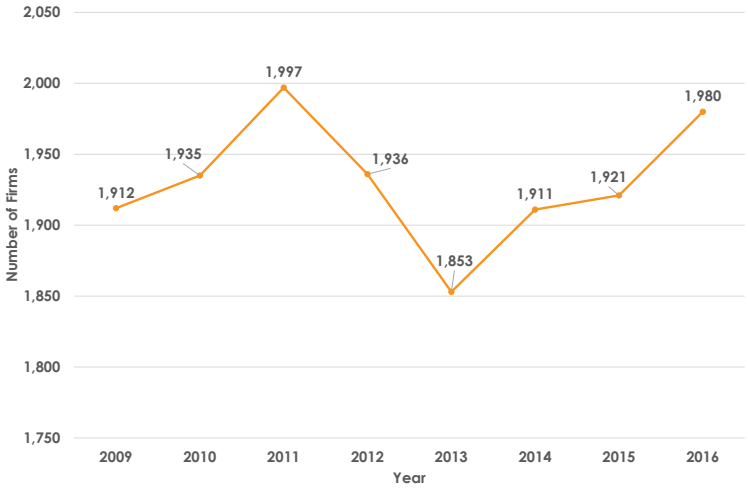
The Perth Stadium

The new 60,000-seat Perth Stadium is a critical piece of infrastructure, with leading edge facilities having the capacity to accommodate both sporting and large-scale entertainment events. It is anticipated it will attract large-scale, international sporting and entertainment events to Greater Perth and

they, in turn, will increase the potential of Perth as a holiday destination, attracting higher value international and domestic travellers with an extended stay potential.

An assessment of the economic impact of the Stadium by the AEC Group estimated that the venue would attract at least 66,760 new visitors per year to Greater Peth, and this increase in visitor numbers will translate into increased visitor spending in WA (Tourism Council, 2015). An assessment by the AEC Group estimated the Stadium has the tourism capacity to create $291 million in total economic output, $19 million in State taxes and 139 full time equivalent jobs per annum (Tourism Council, 2015).

FIGURE 34: THE NUMBER OF FIRMS IN THE ARTS AND RECREATION SERVICES INDUSTRY IN GREATER PERTH, 2009 TO 2016



Source: Australian Bureau of Statistics, 2017e.[2]

2 Throughout this report, data regarding the number of firms and their employees have been derived from the Australian Bureau of Statistics (ABS) and the Australian Business Register (ABR). In the 2012-13 financial year, there were programs conducted by the ABR that reduced the overall number of Australian Business Numbers (ABNs). There were increases in the number of ABNs excluded from ABS counts based on having no active/ valid tax roles (thus not considered to be actively participating in taxation) and ABNs that were cancelled (mostly sole proprietors and deregistered companies) between June 2012 and June 2013. This is reflected in the larger number of 'Exits' in the publication between 2012-13. The decrease was not restricted to Greater Perth, as there was a general decrease of 2.9% in the number of businesses in Australia from June 2012 to June 2013 (with a decrease of 2.7% in Western Australia).

TABLE 13: THE NUMBER OF FIRMS IN EACH ANNUAL TURNOVER PERFORMANCE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Zero to less than $50k	$50k to less than $100k	$100k to less than $200k	$200k to less than $500k	$500k to less than $2m	$2m or more
2009	667	321	353	326	197	48
2010	749	353	303	312	167	51
2011	723	345	351	344	198	36
2012	718	312	375	298	203	30
2013	646	260	339	327	190	56
2014	590	309	345	347	223	62
2015	561	311	395	384	234	60
2016	573	276	380	397	244	61

Source: Australian Bureau of Statistics, 2012b; 2017e.

TABLE 14: THE NUMBER OF FIRMS IN EACH EMPLOYEE SIZE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Non-employing	1-4 Employees	5-19 Employees	20-199 Employees	200+ Employees
2009	1,219	359	215	119	0
2010	1,339	294	202	100	0
2011	1,312	397	191	97	0
2012	1,307	330	203	96	0
2013	1,206	419	152	73	3
2014	1,205	387	180	66	0
2015	1,232	440	172	69	0
2016	1,236	469	176	65	0

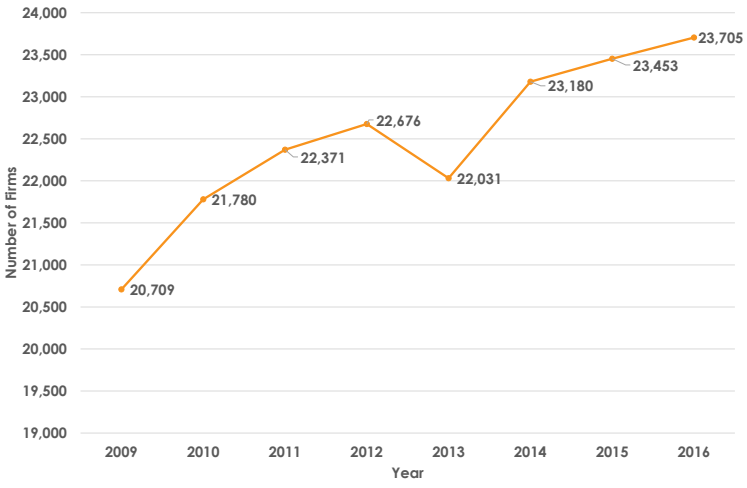
Source: Australian Bureau of Statistics, 2012b; 2017e.

Professional, Scientific and Technical Services

Technology is increasingly restructuring the global economy and while the digital and internet technology industry in WA is still young and fragile, there is promise for its growth given the new technologies coming to the market. Digital and internet technologies refer to those companies developing their own intellectual property in technologies such as computing, software, mobile applications, internet focused companies, electronics and hardware/software such as wearables, sensors, drones, robotics and autonomous vehicles. The market focus of all these companies is diverse, although there are clusters of companies in eCommerce, fin-tech, health-tech, resource-tech, education-tech, GIS, gaming and human resources.

As shown in Tables 15 and 16, this industry is dominated by small to medium sized firms.

FIGURE 35: THE NUMBER OF FIRMS IN THE PROFESSIONAL, SCIENTIFIC AND TECHNICAL SERVICES INDUSTRY IN GREATER PERTH, 2009 TO 2016



Source: Australian Bureau of Statistics, 2017e.

TABLE 15: THE NUMBER OF FIRMS IN EACH ANNUAL TURNOVER PERFORMANCE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Zero to less than $50k	$50k to less than $100k	$100k to less than $200k	$200k to less than $500k	$500k to less than $2m	$2m or more
2009	569	511	776	1,414	1,293	403
2010	524	544	821	1,419	1,329	451
2011	567	521	859	1,530	1,393	475
2012	595	516	872	1,588	1,468	527
2013	468	494	857	1,478	1,564	619
2014	497	472	942	1,683	1,654	617
2015	537	500	1,010	1,795	1,730	627
2016	536	522	1,025	1,924	1,796	630

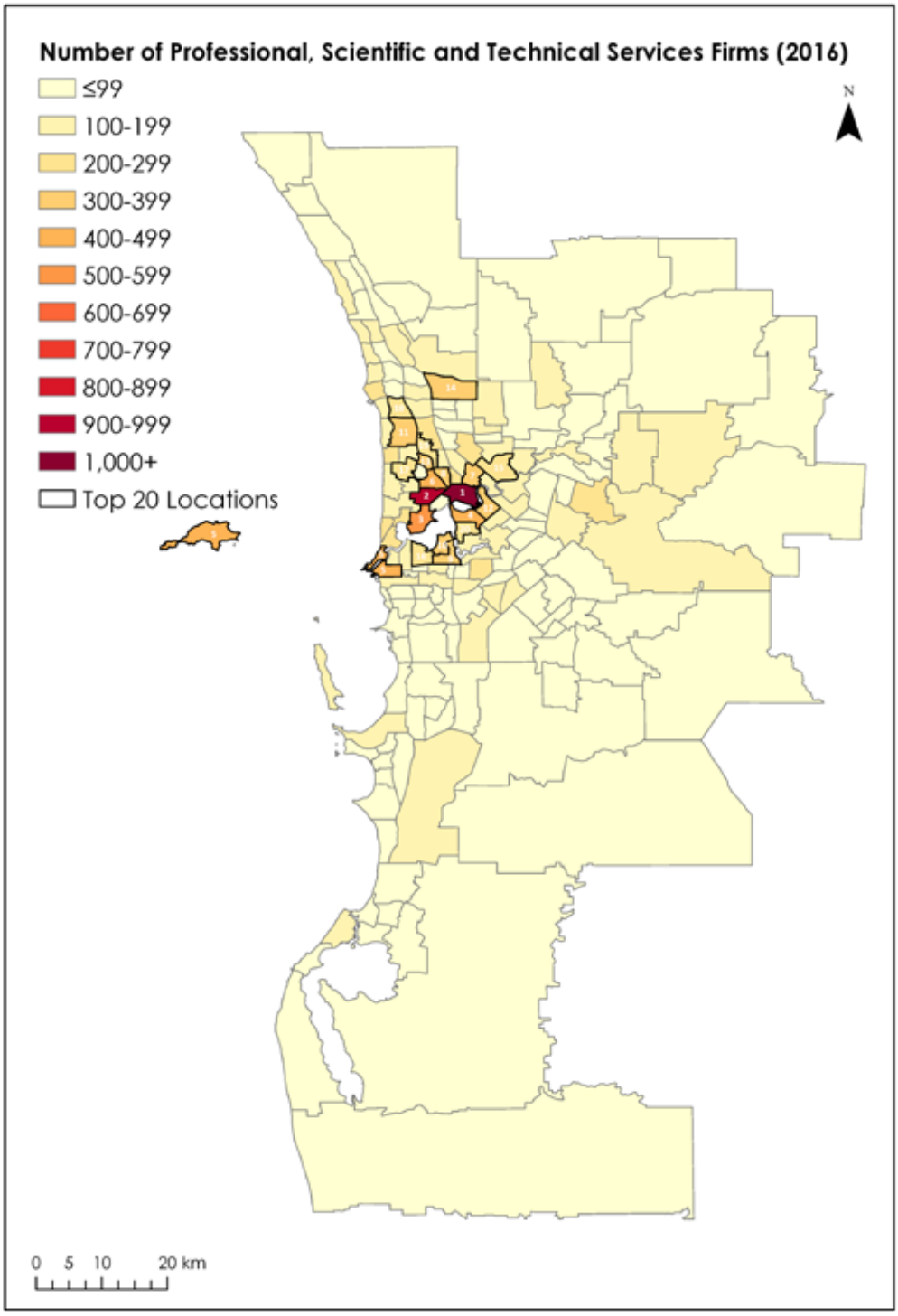
Source: Australian Bureau of Statistics, 2012b; 2017e.

TABLE 16: THE NUMBER OF FIRMS IN EACH EMPLOYEE SIZE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Non-employing	1-4 Employees	5-19 Employees	20-199 Employees	200+ Employees
2009	1,290	1,155	1,383	1,088	50
2010	1,377	1,136	1,374	1,149	52
2011	1,448	1,186	1,502	1,168	41
2012	1,431	1,300	1,566	1,217	52
2013	1,396	1,647	1,745	639	23
2014	1,511	1,807	1,925	701	13
2015	1,512	1,955	1,925	746	16
2016	1,609	2,071	1,992	767	15

Source: Australian Bureau of Statistics, 2012b; 2017e.

FIGURE 36: THE NUMBER OF PROFESSIONAL, SCIENTIFIC AND TECHNICAL SERVICES FIRMS IN EACH STATISTICAL AREA LEVEL 2 OF GREATER PERTH WITH THE TOP 20 LOCATIONS HIGHLIGHTED, 2016



Source: Australian Bureau of Statistics, 2017e.

TABLE 17: CONCENTRATION OF PROFESSIONAL, SCIENTIFIC AND TECHNICAL SERVICES FIRMS IN GREATER PERTH BY LOCATION, 2016

Rank (2016)	SA2	Number of Firms
1	Perth City	2,582
2	Subiaco - Shenton Park	959
3	Nedlands - Dalkeith - Crawley	581
4	South Perth - Kensington	485
5	Fremantle	481
6	Wembley - West Leederville - Glendalough	431
7	Mount Lawley - Inglewood	367
8	Mount Hawthorn - Leederville	345
9	Booragoon	343
10	Applecross - Ardross	336
11	Karrinyup - Gwelup - Carine	335
12	Victoria Park - Lathlain - Burswood	312
13	Osborne Park Industrial	310
14	Madeley - Darch - Landsdale	308
15	Bayswater - Embleton - Bedford	278
16	Melville	273
17	Wembley Downs - Churchlands - Woodlands	267
18	Duncraig	261
19	Stirling - Osborne Park	256
20	Como	255

Source: Australian Bureau of Statistics, 2017e.

The City of Perth commissioned the *Startup Ecosystem Report* in 2013. The report was designed to quantify and report on Perth's startup ecosystem. A core of 100 digital and internet-based startup businesses in Perth were recorded. The City of Perth and WA Department of Commerce then funded the *WA Startup Ecosystem Report 2015-2016*. This latter report outlined opportunities for the technology industry and evidence for its ongoing growth. The report quantifies the Perth startup ecosystem:

- Most startups are located in Perth-CBD, followed by West Perth and Subiaco. A core of 100 digital and internet-based startup businesses in Perth were recorded in 2013 and the number of active startup businesses had grown to 335 by 2015-16, a 235% increase in two years (Markham et al., 2016).

Clustering at the early stages of company startups creates clusters of creative people, innovation, capitalism and competitiveness. Table 18 lists the top suburbs in Greater Perth according to the number of startups in 2015-16.

TABLE 18: SUBURBS WITH THE HIGHEST NUMBER OF STARTUPS IN GREATER PERTH, 2015 TO 2016

Suburb	Number of Start-ups
Perth CBD	29
West Perth	9
Subiaco	7
South Perth	5
Northbridge	5
Leederville	5
Unknown	4
Como	4
Victoria Park	3
Perth	3
Osborne Park	3
Malaga	3
Fremantle	2
Scarborough	2
East Victoria Park	2
Belmont	2
Bayswater	2
Balcatta	2
Applecross	2
Ascot	1

Source: Markham et al., 2016.

It is also important to note that company activity can occur outside of the primary office address. Particularly co-working spaces, incubators and cafes offer locations for networking and group meetings, and provide offices based in the suburbs with central and easily accessible places to meet other companies. Spacecubed, in the Perth CBD, is one of the most visited co-working locations (Markham et al., 2016).

Technology Park in Bentley is dedicated to information technology, telecommunications, renewable energy, clean technologies and life sciences. Many leading local, national and international technology companies are based at this Technology Park, such as suppliers of technology to global markets in pharmaceuticals, digital and information technology, resources processing and clean technologies.

Technology Park in Henderson is dedicated to fostering enterprises involved in specific technological development, training and education associated with ship design, building, repair and marine engineering. The Federal Government's investment into navy and defence-related industrial infrastructure is likely to be directed towards HMAS Stirling, Garden Island, and the Australian Marine Complex, Henderson. A future defence-related technopole is earmarked for the City of Rockingham, which will further consolidate professional, scientific and technical services in the south-western suburbs of Greater Perth.

Examples of innovative, knowledge-based companies are:

- West Perth-based Optika Solutions and their decision to support environment and data analytics platform, Akumen, which won the 2016 National Innovation of the Year Award at the Australian Information Industry Association iAWARDS (Big Data winner). Akumen is an innovative, cloud-based simulation and data modelling tool that operates on a whole of industry scale.
- Joondalup-based business SEQTA is a software company that created an all-in-one collaborative teaching and learning ecosystem.
- Perth CBD-based Track'em is an asset tracking and managing system for businesses using

Barcode, RFID and GPS technologies. It won the WA 2015 Innovator of the Year award.

- Subiaco-based iCetana is part of a paradigm shift in urban surveillance. The iCetana system turns vast surveillance infrastructures into effective dynamic live monitoring systems. It does this by utilising computer vision and a patented machine-learning algorithm to automatically learn the difference between normal movement patterns and abnormal exception events in real-time.

TOURISM

Lyle Bicknell, an architect from Seattle, urged Perth to "build it for the people and the tourists will come". A dynamic, highly liveable, accessible, affordable and welcoming Perth not only retains residents, but has the additional advantage of attracting visitors. In Greater Perth, tourism was largely overshadowed by the 2000s resource boom. Since the boom, conditions have subsided, tourism and the flow-on businesses such as restaurants, entertainment and creative industries have been recognised as potential growth areas.

In a report by Deloitte, tourism has been identified as one of five 'super-growth' industries in Australia, with

Perth Airport Terminal 1. Source: Courtesy of Perth Airport Pty Ltd.

capacity to drive new jobs and economic expansion. While international visitors have the potential to drive the tourism industry growth (Deloitte, 2013), it is domestic tourism that makes the biggest contribution to the Australian economy (Davis, 2017b). It is difficult to measure the value of the tourism industry because the systems of National Accounts do not recognise tourism as a single industry. Despite this, Gross Value Added (GVA) is considered the most accurate measure of tourism's contribution to the economy (Deloitte, 2013; Davis, 2017b).

In Western Australia, the tourism industry contributed 4.6% of total direct and indirect GVA to the economy, which totalled $10.6 billion and 109,000 jobs in 2016. Figures from

Eye of the Storm by Howard Elton, *Passion for Perth* Photographic Competition.
Source: Committee for Perth, 2014.

the past six years show that interstate domestic tourism is underperforming. Reasons include the reduction in business travel to Perth post-boom and the isolation and distance from the other Australian capital cities (Davis, 2017b).

International tourist numbers to Western Australia have grown over the past five years, increasing by 32% from 2011 to 2016; however, this growth has been much slower than national figures that saw tourists increase by 43% over the same period. The origin of international visitors to Western Australia also differs to national trends, with more visitors from the UK, Malaysia and Singapore.

The types of visitors to Western Australia also show significant differences in terms of length of stay and expenditure per visitor and per visitor night. Western Australia typically attracts longer-stay visitors who spend an average of 30 nights in the State, topping national figures for any other state or territory. While these visitors spent less money on a nightly basis in Western Australia compared with other states, longer stays meant the average spend per visitor for WA was $2,611 for the year ending March 2017 — the second highest nationally, behind Victoria, $2,684.

'Purpose of visit' has a significant impact on the economic contribution of tourism to the State. International visitors who came to study or work spend the most, averaging $19,983 and $8,634 respectively. Domestically, those who are travelling for holiday and business purposes spend more, averaging $841 and $805 per visitor respectively. Those visiting friends and relatives spend closer to $394. It appears that the State's beaches, wildlife, unspoilt natural wilderness and island experience offerings are significant attractors for visitors to the Perth region and into WA (Davis, 2017b).

There are key locations that attract higher visitor numbers within the Experience Perth tourism region, which includes Greater Perth and surrounds. This is one of a number of designated tourism regions in Western Australia. There is a dominance of visitors choosing to stay in the Perth CBD, accommodating 59% of commercial accommodation nights for the region. Other locations of note include Scarborough, Trigg-North Beach-Watermans and Belmont-Ascot-Redcliffe, which each accommodate approximately 5% of commercial visitor accommodation nights in the region. These statistics highlight the preference of visitors for city centre accommodation locations; coastal locations; and accommodation in proximity to the region's international and domestic airport terminals (Davis, 2017b).

Destination choice is influenced through a number of circumstances, which include both push and pull factors such as accessibility, needs satisfaction, peer reviews, destination marketing, social media, climate, risk and familiarity (Davis, 2017b). Accessibility is essential to enable visitation and there is potential to increase access to Western Australia by increasing the number and frequency of direct flights to the State,

as well as developing new regional airports with the capacity to accommodate flights from interstate capitals.

Higher Education

A responsive and globally engaged higher education industry is critically important if the capacity of human capital and economic development in Greater Perth is to expand. The exponential value that well-educated members of a community can bring to a local economy assists in its growth, development and overall sustainability.

Accessibility to quality education helps increase the retention of people in the community. Additionally, education is particularly vital if Greater Perth is to grow the emerging industries of the niche advanced engineering and manufacturing, professional, scientific and technical services, the creative industries and the knowledge economy. It will enable Greater Perth to remain competitive in the global marketplace. Technical and skills gaps have already been identified as potentially compromising the progress of advanced engineering and manufacturing in Greater Perth.

The higher education industry is under pressure in Western Australia. The 2000s boom period witnessed a decline in domestic higher education enrolments due to high incomes and strong demand in non-university educated employment positions. The ageing population trend in Greater Perth is another potential inhibitor to domestic higher education take-up (Davis, 2017a).

Greater Perth dominates higher education in Western Australia, and within Greater Perth there are three large education and training nodes: Nedlands-Dalkeith, Bentley-Wilson-St James and Perth city with Joondalup, Murdoch, Mt Lawley and Fremantle as smaller nodes of employment and higher education activity. Curtin University has the highest number of enrolments, 50,648 in 2015, and will soon open a medical training facility in Midland. The University of Western Australia is in the top 100 universities in the world and is the only Group of Eight and highest ranked university in the State. Importantly, UWA, Curtin and Murdoch Universities all attract considerable competitive research income, but even on a per capita basis, the Western Australian universities lag the Queensland, New South Wales and Victorian universities. Not only do universities in Queensland, New South Wales and Victoria attract more research funds per capita but they also have a higher proportion of Fulltime Equivalent Student Load (FTESL) than do the Western Australian universities.

Universities which are highly engaged in research activities have a greater reputation and therefore are likely to attract external funding and higher value postgraduate students.

The University of Western Australia. Source: Courtesy of The University of Western Australia.

Curtin University. Source: Courtesy of Curtin University.

Murdoch University. Source: Courtesy of Murdoch University.

The resources industries have influenced higher education and skills development over the past two decades. Western Australia attracts a greater share of Vocational Education and Training (VET) enrolments than higher education, approximately 10.7% of national VET students (Davis, 2017a). National Centre for Vocational Education Research (2016) data shows that engineering and related technologies, education, management and commerce, and architecture and building were the most popular fields of study in VET, although they had declined since the boom period. University enrolments have also been dominated by engineering and related technologies and architecture and building. Davis (2017a) highlights that enrolments in information technology and environmental related studies are disproportionately low in Western Australia compared to Queensland, New South Wales and Victoria.

International student enrolments are therefore very important for the sustainability of a broad range of higher education programs in Greater Perth. However, as noted by Davis (2017a), the proportion of international students studying onshore at Western Australian institutions has declined since 2004. The region's largest international student destination, Curtin University, experienced particularly high decline in the years 2009 to 2015. Further, international enrolments at The University of Western Australia have been static. In 2015, Western Australian higher education institutions accommodated 5% of total international students studying onshore in Australia, including non-university higher education institutions (Davis, 2017a).

The primary and growing source of international students in Australia is

China, but in Western Australia, the international student market is more diverse than in other states. India, Malaysia, Brazil, Vietnam, Taiwan, Korea, Hong Kong, Singapore and Pakistan are all important markets for international students at higher education institutions in Greater Perth (JCIPP, 2016).

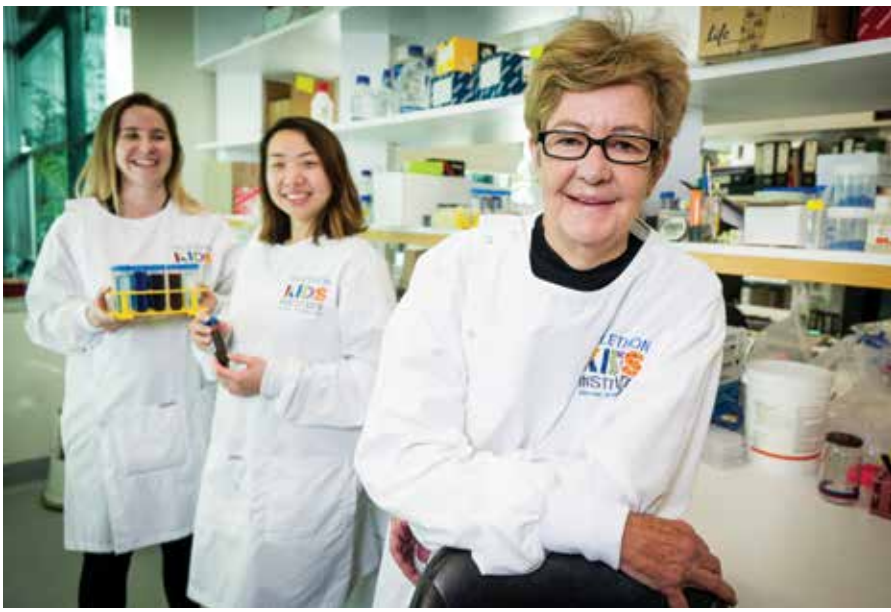
There are several potential threats to the international student market. The value of the Australian dollar, like all exports, has an influence on international enrolments as seen in 2009 to 2012. There is global competition for international students, especially high value students who contribute to research programs and the knowledge economy, and Australia is not always their first-choice destination.

There are some challenges facing universities globally in terms of what and how they offer courses and what is wanted by industry. At the same time, Asian nations are keen to reduce the number of students travelling overseas to study. It is therefore important that attracting international students to higher education institutions in Greater Perth is viewed as a lifestyle and learning package. Liveability, affordability, quality of student experience, and employability are priorities for all students, regardless of them being international or local. It is therefore important that university life, including where and how students live and plan for their future, assists their selection to study in Greater Perth and their ability to achieve lifelong learning opportunities.

It is also essential that all Western Australians understand the value that international student education offers the local economy but also the contribution to the social and cultural capital of the community in which they live and learn.

The Telethon Kids Institute

The Telethon Kids Institute, located in the Subiaco-Nedlands health precinct, is a world-class children's health research institute with a global impact. Its purpose is to discover causes, cures and treatments for the illnesses, diseases and conditions that target children and young people. It attracts world leaders in children's health research and local scientists collaborate on a variety of international research programs. The Telethon Kids Institute has trained local scientists through a wide variety of research programs, who have subsequently gone on to make international medical breakthroughs. The Telethon Kids Institute has also contributed to changes in community practices. For example, the dangers of alcohol consumption during pregnancy and the recognition of different forms of bullying and developing approaches to prevent it in schools.



Professor Prue Hart (right) and her Research Team at Telethon Kids Institute Focus on the Effects of Ultraviolet Radiation and Vitamin D3 on the Immune System. Source: Courtesy of the Telethon Kids Institute.

The Square Kilometre Array

The Square Kilometre Array (SKA) project is a global science and engineering project led by the international SKA Organisation. The SKA project is currently constructing a next-generation radio telescope in Murchison, employing sophisticated technologies to enable scientific investigation into the universe and deep space. It is expected this project will advance communication, supercomputing, electricity generation and numerous other technologies and contribute to science through its discoveries. The project is an international collaboration and acts as a global attractor for scientific experts. In addition, an industry body of Australasian companies are participating in the SKA project, with the expectation that the findings of this project will have wide commercial application.

One Tile of 16 Murchison Widefield Array Antennas.

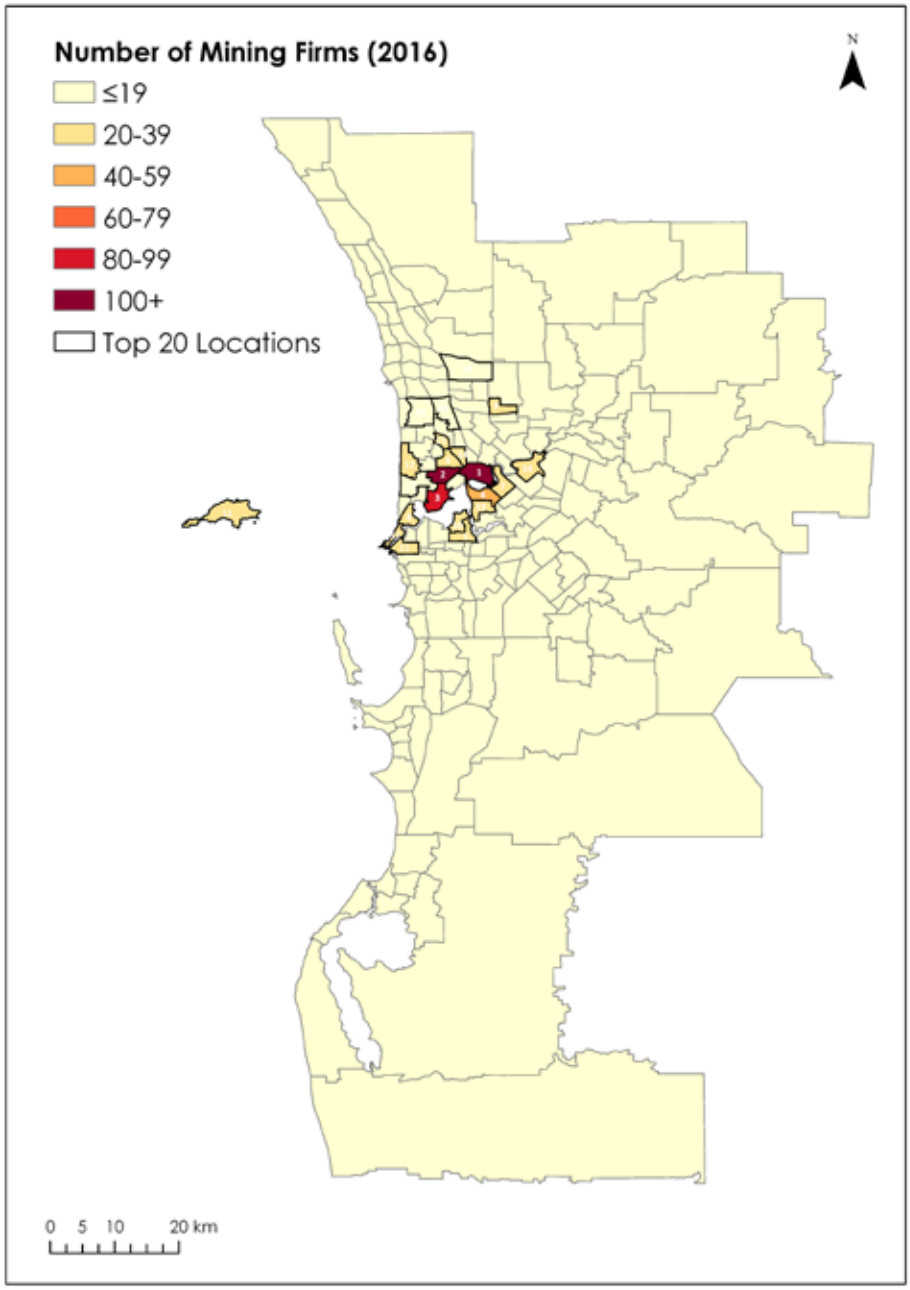
CSIRO's new ASKAP antennas at the Murchison Radio-astronomy Observatory (MRO) in Western Australia, 2010.
Source: WA Department of Commerce.

PRIMARY INDUSTRIES

Mining

Hundreds of international mining and related supply-chain firms are active in Greater Perth, despite the majority of mine sites being hundreds of kilometres away. Perth City is the mining corporate hub, followed by Subiaco – Shenton Park.

FIGURE 37: THE NUMBER OF MINING FIRMS IN EACH STATISTICAL AREA LEVEL 2 OF GREATER PERTH WITH THE TOP 20 LOCATIONS HIGHLIGHTED, 2016



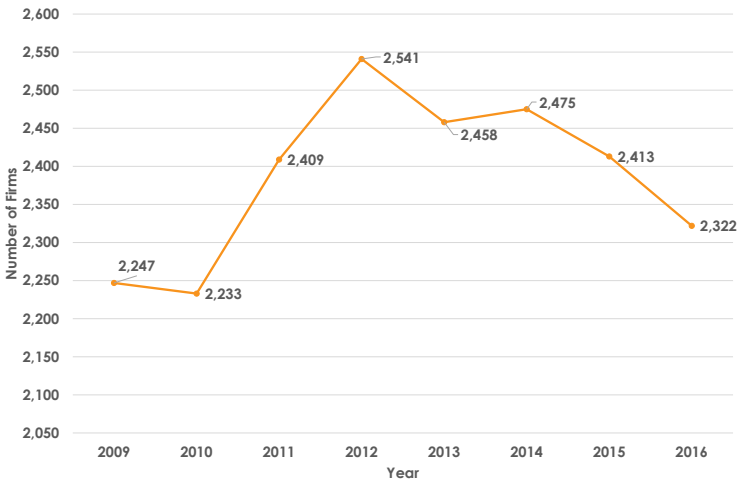
Source: Australian Bureau of Statistics, 2017e.

TABLE 19: CONCENTRATION OF MINING FIRMS BY GREATER PERTH LOCATION, 2016

Rank (2016)	SA2	Number of Firms
1	Perth City	878
2	Subiaco - Shenton Park	233
3	Nedlands - Dalkeith - Crawley	80
4	South Perth - Kensington	59
5	Booragoon	36
5	Wembley - West Leederville - Glendalough	36
7	Victoria Park - Lathlain - Burswood	33
8	Mosman Park - Peppermint Grove	29
8	Malaga	29
11	Applecross - Ardross	23
11	Fremantle	23
12	City Beach	21
12	Como	21
12	Mount Hawthorn - Leederville	21
12	Osborne Park Industrial	21
16	Belmont - Ascot - Redcliffe	20
17	Swanbourne - Mount Claremont	19
17	Madeley - Darch - Landsdale	19
19	Karrinyup - Gwelup - Carine	18
19	Balcatta - Hamersley	18

Source: Australian Bureau of Statistics, 2017e.

FIGURE 38: THE NUMBER OF FIRMS IN THE MINING INDUSTRY IN GREATER PERTH, 2009 TO 2016



Source: Australian Bureau of Statistics, 2017e.

Following the peak in 2012, when the number of mining companies increased by 308 firms since 2010, the numbers began to decline. Decline does not necessarily equate to falling industry value or economic importance. Instead, it could mean the mining industry may be experiencing higher value, jobless growth. This is supported by the increase in the number of highly technical METS firms.

The Australian METS industry is growing in importance and highlights the strong interdependence of the manufacturing and

professional, scientific and technical services industries. The Australian Bureau of Statistics classified METS businesses as those that provide specialised support and solutions to the mining and minerals processing industry. Naturally, this makes METS diverse and includes service providers for both metal ore and non-metallic mineral mining. Examples are equipment manufacturers, engineering services and mine software products. The METS industry is high-value, harnessing the knowledge economy and has strong export potential.

Given the historical importance of mining in the Greater Perth economy, which is supported by the co-location of some of the world's largest mining companies with pre-eminent mining and resources research institutions, the METS industry has great potential to flourish in Greater Perth.

Firms under the METS umbrella are already operating in the region and have specialised in products and solutions for mineral exploration, extraction and mining supply chains. Examples include:

- Nedlands-based Stavely Minerals, which provides early to advanced stage mineral exploration projects with mining support services.
- Gnangara-based Direct Mining & Industrial are suppliers of sophisticated mining equipment, which sell worldwide.
- Perth CBD-based startup Minnovare developed a device to help better execute drilling at mine sites.
- Azimuth Aligner, the leading drill rig alignment technology for mining and construction produces faster, cheaper and more accurate drilling to drill rigs because of high-tech sensors.

Rio Tinto's Operations Centre, Perth. Source: Courtesy of Rio Tinto.

Pilbara Landscape. Source: Courtesy of Rio Tinto.

North Rankin Complex, North West Shelf Project, Western Australia. Source: Courtesy of Woodside Energy Ltd.

Pluto LNG Onshore Gas Plant and Loading Jetty.
Source: Courtesy of Woodside Energy Ltd.

A notable mention is how mining software has been successfully developed in Perth and marketed internationally using locally derived, advanced knowledge-based services. For example, Balcatta-based Sentient Computing uses virtual reality to recreate mine sites in 3D. Companies are opting to use such software to remotely train workers in safety and mine site procedures, reducing the need for workers to learn from manuals. Another feature is the ability to view the mine site in real time from any location.

As explained by Martinus and Sigler (2016), the importance of materials and energy to Greater Perth's economy is evident by the number of firms whose headquarters are Perth-based. Of the top 30 Perth City firms, 19 are directly involved in the resources industry and many are likely to have strong global connections. Woodside for example, the largest resource company, has international corporate connections through the North West Shelf oil and gas project, such as BP, Chevron, Royal Dutch Shell and BHP. The Perth based mining companies are high-value but they are not necessarily the biggest employers.

TABLE 20: THE NUMBER OF FIRMS IN EACH ANNUAL TURNOVER PERFORMANCE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Zero to less than $50k	$50k to less than $100k	$100k to less than $200k	$200k to less than $500k	$500k to less than $2m	$2m or more
2009	847	238	327	332	218	285
2010	941	292	297	285	190	228
2011	1,083	255	297	324	196	254
2012	1,146	245	288	340	218	304
2013	1,140	210	253	307	216	302
2014	1,235	220	240	282	208	295
2015	1,270	206	240	248	168	263
2016	1,282	204	180	197	183	267

Source: Australian Bureau of Statistics, 2012b; 2017e.

TABLE 21: THE NUMBER OF FIRMS IN EACH EMPLOYEE SIZE CATEGORY IN EACH YEAR, 2009 TO 2016

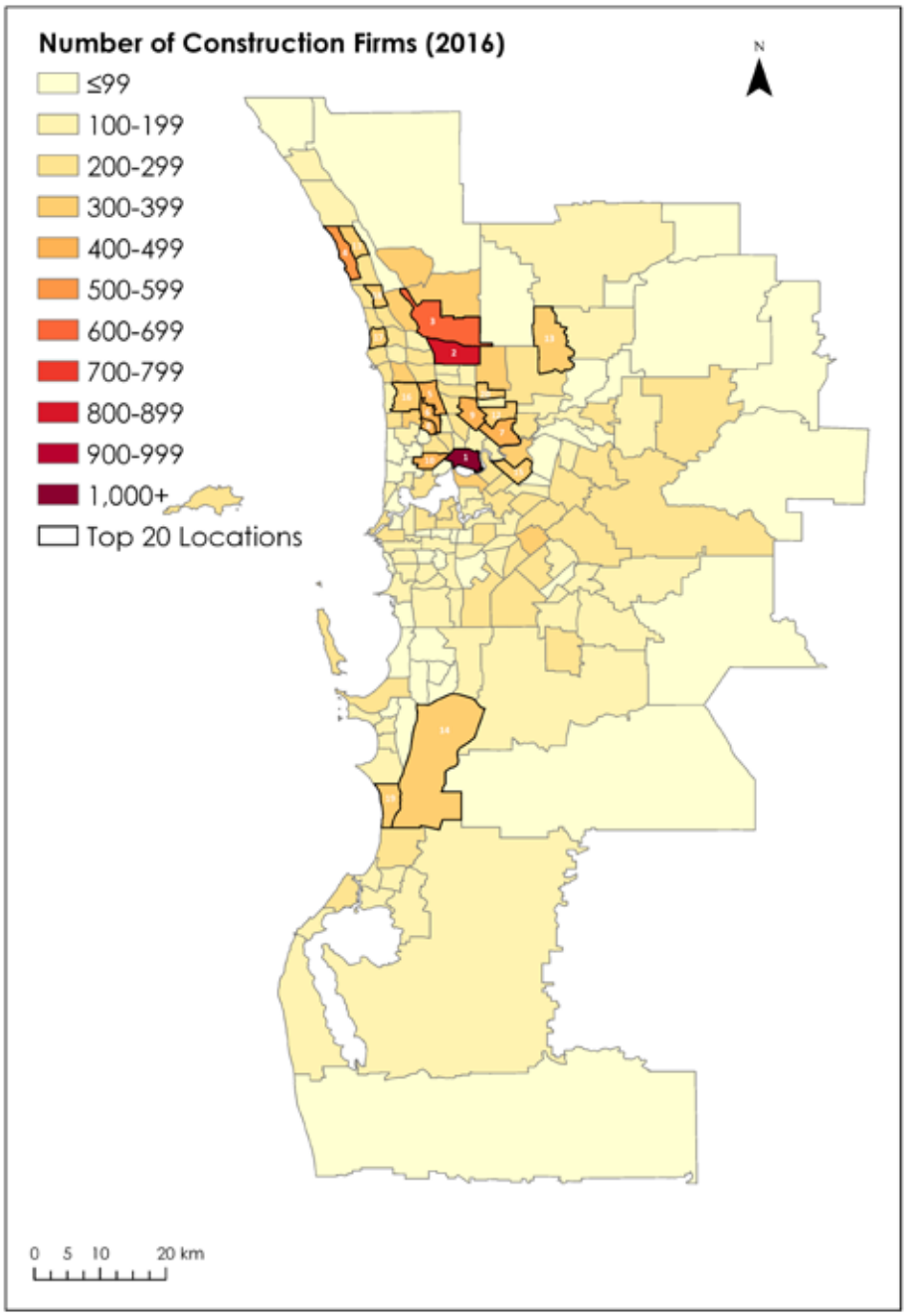
Year	Non-employing	1-4 Employees	5-19 Employees	20-199 Employees	200+ Employees
2009	1,237	532	268	195	15
2010	1,306	500	264	151	12
2011	1,424	530	287	162	6
2012	1,463	551	347	174	6
2013	1,360	616	302	153	27
2014	1,457	595	285	146	18
2015	1,431	598	251	142	19
2016	1,397	559	227	131	12

Source: Australian Bureau of Statistics, 2012b; 2017e.

Construction

For almost two decades, the construction industry has experienced strong growth, synchronised with the mining boom and the growing Greater Perth population. Despite the importance of large construction firms, which tend to be located in the Perth CBD, the employment data shows that the vast majority of construction firms are single and self-employed operators. Many of the smaller construction firms are located in the northern suburbs of Perth, as shown in Table 22.

FIGURE 39: THE NUMBER OF CONSTRUCTION FIRMS IN EACH STATISTICAL AREA LEVEL 2 OF GREATER PERTH WITH THE TOP 20 LOCATIONS HIGHLIGHTED, 2016



Source: Australian Bureau of Statistics, 2017e.

TABLE 22: CONCENTRATION OF CONSTRUCTION FIRMS BY GREATER PERTH LOCATION, 2016

Rank (2016)	SA2	Number of Firms
1	Perth City	1,301
2	Madeley - Darch - Landsdale	898
3	Wanneroo	646
4	Mindarie - Quinns Rocks - Jindalee	584
5	Balcatta - Hamersley	499
6	Stirling - Osborne Park	471
7	Bayswater - Embleton - Bedford	431
7	Osborne Park Industrial	431
9	Dianella	419
10	Subiaco - Shenton Park	405
11	Butler - Merriwa - Ridgewood	390
12	Morley	382
13	Ellenbrook	375
14	Baldivis	371
15	Rivervale - Kewdale - Cloverdale	365
16	Karrinyup - Gwelup - Carine	362
17	Mullaloo - Kallaroo	360
18	Currambine - Kinross	344
19	Singleton - Golden Bay - Secret Harbour	343
20	Malaga	337

Source: Australian Bureau of Statistics, 2017e.

TABLE 23: THE NUMBER OF FIRMS IN EACH ANNUAL TURNOVER PERFORMANCE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Zero to less than $50k	$50k to less than $100k	$100k to less than $200k	$200k to less than $500k	$500k to less than $2m	$2m or more
2009	5,497	8,182	7,161	5,651	3,482	1,952
2010	5,663	8,715	6,966	5,606	3,586	1,939
2011	5,458	8,165	7,543	6,046	3,733	2,072
2012	5,516	7,136	7,597	6,136	3,874	2,134
2013	5,067	6,251	6,946	6,012	3,908	2,272
2014	5,093	6,521	7,710	6,757	4,033	2,316
2015	5,153	5,997	8,557	7,116	4,354	2,416
2016	5,492	5,787	8,957	7,152	4,532	2,470

Source: Australian Bureau of Statistics, 2012b; 2017e.

TABLE 24: THE NUMBER OF FIRMS IN EACH EMPLOYEE SIZE CATEGORY IN EACH YEAR, 2009 TO 2016

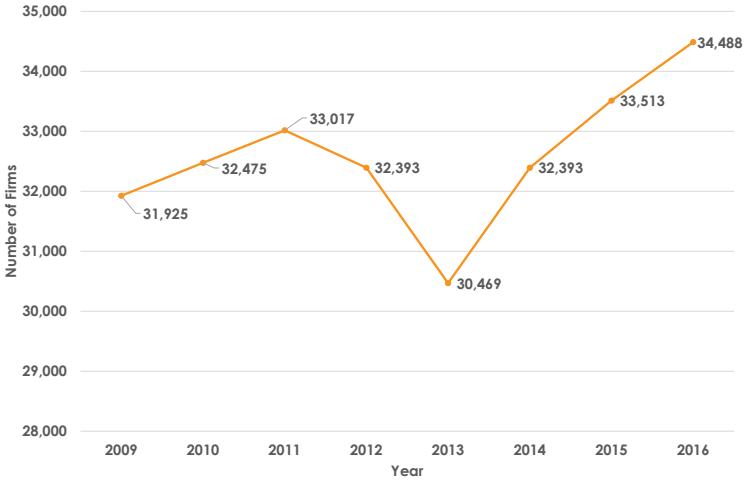
Year	Non-employing	1-4 Employees	5-19 Employees	20-199 Employees	200+ Employees
2009	22,406	6,655	2,093	729	42
2010	22,772	6,753	2,203	708	39
2011	23,018	6,979	2,226	773	21
2012	21,999	7,203	2,306	834	51
2013	20,080	7,880	1,878	594	37
2014	21,215	8,479	2,068	605	22
2015	21,704	9,043	2,203	591	27
2016	22,269	9,236	2,316	583	30

Source: Australian Bureau of Statistics, 2012b; 2017e.

Australian Bureau of Statistics data (2017b) shows that building approvals peaked in 2010 and then fell away sharply, before recovering in 2014-15. The construction industry suffered a sharp decline in the number of firms in 2013, but by 2014 there was a rapid recovery.

The growth of the construction industry was closely aligned to the increased investment in mining from 2001. The development of new mines and the expansion of already established mines throughout the state between 2001 and 2012 exerted considerable pressure on the construction industry. It is during the construction phase of a mine's lifecycle that the demand for labour and skills is at its highest. For most mining operations in remote locations, especially in the Pilbara, it was more strategic to utilise FIFO construction workers, most of whom were Perth-based, who were accommodated in transient worker accommodation (TWA). KPMG (2013) calculated that at the height of the mining construction boom in 2012, 44% of long distance commuting workers, 7,464, were involved in mine site building and land preparation jobs. Between the 2006 and 2011 Census, KPMG calculated an increase in construction workers by 260%, 57% of whom commuted from Perth.

FIGURE 40: THE NUMBER OF FIRMS IN THE CONSTRUCTION INDUSTRY IN GREATER PERTH, 2009 TO 2016



Source: Australian Bureau of Statistics, 2012b; 2017e.

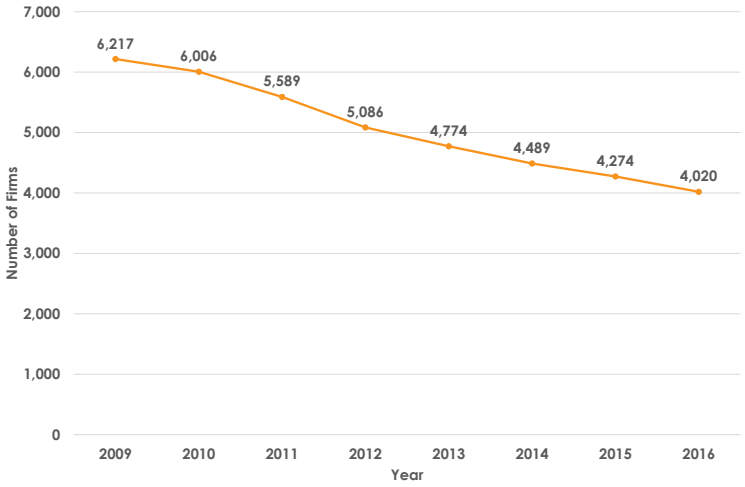
Agriculture, Forestry and Fishing

Agriculture has always been an important industry in Western Australia but the impact of mining and its contribution to GDP has eclipsed the contribution of agriculture, forestry and fishing to the Western Australian economy.

Since the 1980s, when government policies imposed a restructuring of the industry, the number of people involved in the industry has continually contracted, while productivity has increased; another example of jobless growth. Agricultural business consolidation, the application of highly technical mechanisation and the increasing importance of corporate farming has seen the industry continue to transform. The overall number of firms in Greater Perth whose business is agriculture, forestry and fishing declined by 35.3% between 2009 and 2016.

Perth City consistently rated as the top location for most firms for the agriculture, forestry and fishing industry. It is likely that firms at this location would be offices and headquarters for trading and larger corporate firms with the main agriculture operations taking place in regional Western Australia and elsewhere. Pinjarra, in the Peel region, was the second most popular location for firms.

FIGURE 41: THE NUMBER OF FIRMS IN THE AGRICULTURE, FORESTRY AND FISHERY INDUSTRY IN GREATER PERTH, 2009 TO 2016

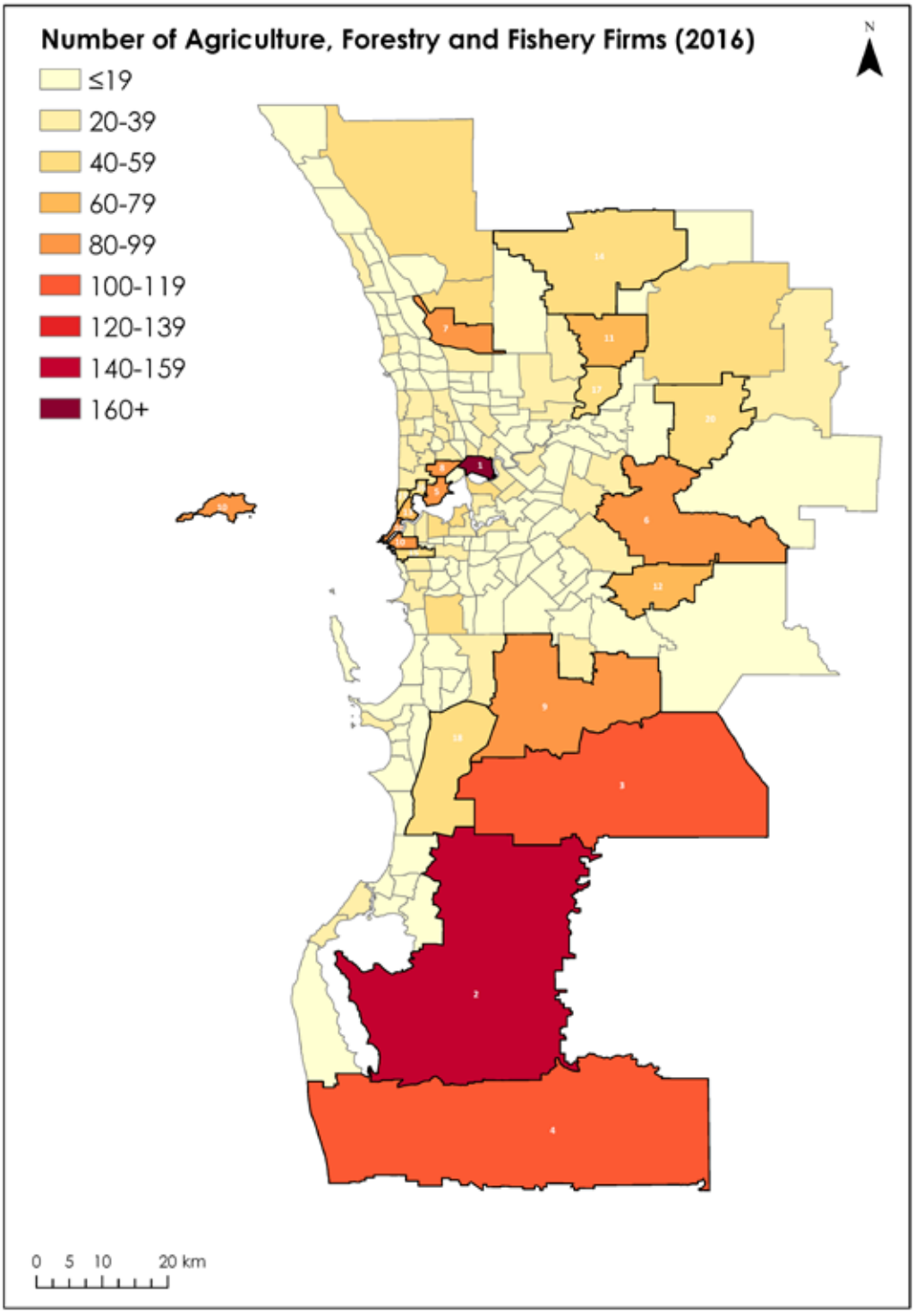


Source: Australian Bureau of Statistics, 2012b; 2017e.

Data also shows that the number of businesses with an annual turnover of less than $50K sharply declined from 2009 to 2016, while the trend for the number of firms turning over more than $500K had slightly increased. This could indicate the surviving firms are becoming more productive.

In terms of employee size, the 1-4 employee category experienced the greatest growth over the last five years, while the 20-199 employee category declined significantly.

FIGURE 42: THE NUMBER OF AGRICULTURE, FORESTRY AND FISHING FIRMS IN EACH STATISTICAL AREA LEVEL 2 OF GREATER PERTH WITH THE TOP 20 LOCATIONS HIGHLIGHTED, 2016



Source: Australian Bureau of Statistics, 2017e.

TABLE 25: CONCENTRATION OF AGRICULTURE, FORESTRY AND FISHING FIRMS BY GREATER PERTH LOCATION, 2016

Rank (2016)	SA2	Number of Firms
1	Perth City	227
2	Pinjarra	151
3	Serpentine - Jarrahdale	108
4	Waroona	101
5	Nedlands - Dalkeith - Crawley	95
6	Lesmurdie - Bickley - Carmel	94
6	Wanneroo	94
8	Subiaco - Shenton Park	93
9	Mundijong	92
10	Fremantle	81
11	The Vines	75
12	Roleystone	68
13	Mosman Park - Peppermint Grove	61
14	Bullsbrook	59
15	Fremantle - South	58
16	Claremont (WA)	57
17	Middle Swan - Herne Hill	56
18	Baldivis	55
19	Cottesloe	54
20	Mundaring	50

Source: Australian Bureau of Statistics, 2017e.

TABLE 26: THE NUMBER OF FIRMS IN EACH ANNUAL TURNOVER PERFORMANCE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Zero to less than $50k	$50k to less than $100k	$100k to less than $200k	$200k to less than $500k	$500k to less than $2m	$2m or more
2009	3,416	771	633	676	545	176
2010	3,336	700	631	692	484	163
2011	2,961	702	652	654	453	167
2012	2,598	657	614	585	474	158
2013	2,300	602	596	601	483	189
2014	1,976	645	562	580	523	195
2015	1,757	603	585	586	517	221
2016	1,510	562	535	604	555	234

Source: Australian Bureau of Statistics, 2012b; 2017e.

TABLE 27: THE NUMBER OF FIRMS IN EACH EMPLOYEE SIZE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Non-employing	1-4 Employees	5-19 Employees	20-199 Employees	200+ Employees
2009	4,976	711	374	147	9
2010	4,843	715	314	131	3
2011	4,451	688	312	135	3
2012	4,001	692	300	90	3
2013	3,633	780	277	78	6
2014	3,346	733	260	92	3
2015	3,189	728	241	81	3
2016	2,956	740	236	77	6

Source: Australian Bureau of Statistics, 2012b; 2017e.

The number of locations with more than 100 firms declined over the 2009 to 2016 period. In 2009, there were eight locations while in 2016 there were only three.

Locations that featured in the top 20 list of firms include Pinjarra, Wanneroo, Serpentine-Jarrahdale, Yanchep, Mundijong and Waroona.

The peri-urban fringe of Greater Perth is important for the production of fresh produce for the metropolitan region. For example, the City of Wanneroo accounts for the production of almost all of Greater Perth's demand for sweet corn, strawberries, tomatoes and avocadoes in addition to selling produce overseas.

Asia's demand for food is forecasted to outstrip supply and this presents a huge opportunity for Western Australian agriculture. Agribusiness is in the top five industries in which Australia has a comparative advantage relative to global competitors.

Due to the geography, time zone and logistics supply chain infrastructure, Greater Perth is well positioned to embrace these market opportunities. It is expected the China-Australia Free Trade Agreement negotiated at the end of June 2015 will be a significant boost to agricultural, forestry and fishing businesses.

It is essential for agricultural firms to utilise technological advancements in order to thrive. Below are examples of companies in Greater Perth that are blending agricultural expertise with new research discoveries and highly technical equipment. These examples represent how firms in this industry can position themselves to experience growth in the future.

Melaleuka Stud – Nambeelup

An innovative breeding program at Melaleuka Stud in Nambeelup, the Peel region, is focusing on the production of beef that is 'healthier to eat'. The breeding program expands a herd of Akuashi cattle through artificial insemination, embryo transfer and recipient dams. Akuashi cattle produce meat with fat that melts below human body temperature, which translates to higher palatability as well as reducing the formation of harmful levels of cholesterol. The cattle are used by a research team at the CY O'Connor Erade Village Foundation, where DNA testing facilities and equipment are used to measure fat melting points

in beef products. The work by the research team for low melting point beef has achieved international recognition and the focus of the research is centred in the Peel region (Peel Development Commission, 2015).

GD Pork Pty Ltd

The pork industry is becoming increasingly high-tech and highly skilled. The latest technology used in pork production is equipment that captures pig produced methane and waste to be used for electricity generation and fertiliser respectively. Highly specialised, efficient and modern production techniques are improving the ability to create a closed loop system while maintaining high animal welfare standards. GD Pork Pty Ltd near Pinjarra, has been upgrading its WA piggeries to build WA's first facilities with the latest technology. GD Pork Pty Ltd already supplies to the Singapore market but exports to the rest of Asia is likely in the future (Peel Development Commission, 2015).

Melt Beef by Melaleuka. Source: CY O'Connor Pub, n.d.

GD Pork Facilities. Source: Finrone Systems, 2017.

Manuka Flower with Bee. Source: Courtesy of ManukaLife.

ManukaLife Workers Planting Seedlings.
Source: Courtesy of ManukaLife.

ManukaLife

ManukaLife is a company participating in the newly established Honey Bee Research Centre led by The University of Western Australia, which brings industry and academic expertise together. Across sites in Peel and the south-west, plant breeding of high-grade plants is being undertaken to produce high-grade medical Manuka honey which has antibacterial properties and enhanced hydrogen peroxide properties, used in disinfectant for medical purposes (Peel Development Commission, 2015). Manuka honey has other unique properties, which have important healing and medicinal uses. Manuka honey is increasingly sought after by the pharmaceutical, cosmetic and neutraceutical industries.

INDUSTRIES IN TRANSITION

Health Care and Social Assistance

Since the 1960s, Perth's population began to age noticeably with the influence of improved post-war living conditions, birth control and fewer fatalities from wars.

In the mid-twentieth century, people aged 50 years and older represented 19% of the population but by 2001, the 25-34 year age group accounted for 15% of the population whereas the proportion of people aged 50 years and over had increased to 26%. By 2016, 31.2% of the Greater Perth population was 50 years and over. Between 1979 and 1996, the median age rose from 29.1 to 33.1 years. By 2016, the median age of people in the Greater Perth area had risen to 35.7 years (Australian Bureau of Statistics, 2017a).

Those born between 1945 and 1971, a bigger cohort than preceding and succeeding generations, are projected to represent more than 25% of the State's population in the next decade, further driving the ageing trend.

Life expectancy has increased for both sexes. In 1981, life expectancy for males was 72.1 years and 79.3 years for females. In 2000, life expectancy at birth for males was 76.4 years and 82.1 years for women. By 2015, this had extended further, with men expected to live to 80.5 years and women to 85 years (Australian Bureau of Statistics, 2016b).

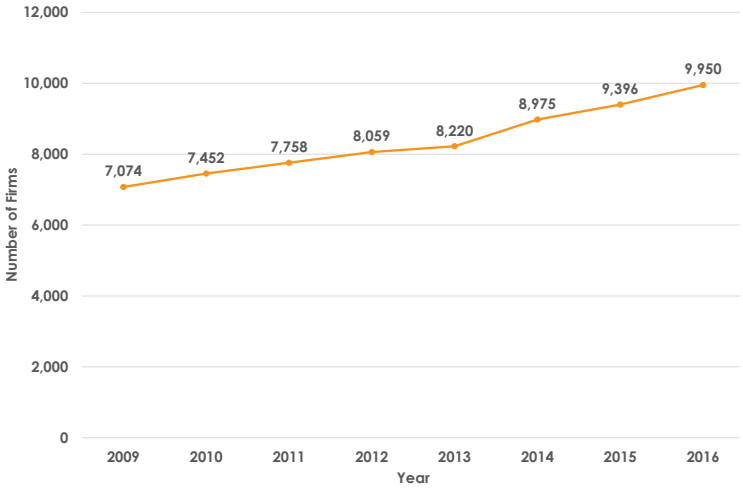
Ageing in Western Australia is occurring at a similar pace to that of the nation. In 2016, the age structure of Western Australia's population almost mirrored the structure of the population nationally, with 50% of West Australians being of working age. The State's population included 29 children for every 100 people of working age and 21 adults aged over 65 for every 100 people of working age (Davis, 2017c).

In Greater Perth, the highest rates of numeric ageing are evident in peripheral local authorities in the Peel region and in local authorities in the north-west, such as Joondalup. Research has determined that most older people in Greater Perth 'age in place' and, when they do move, they are most likely to remain in their local area. Therefore, as peripheral suburban locations become more established, so their populations will age. This has been identified as a significant issue moving forward because urban design, transport systems and access to services in peripheral locations tend to be less suitable for older Australians (Davis, 2017c).

Davis (2017c) identifies a number of strategies from the literature that can address the challenges of an ageing population through positive actions. These include developing new and innovative businesses associated with health care products and services, encouraging entrepreneurship among older Australians and increasing and recognising volunteering and philanthropy among older Australians.

An ageing population has significant implications for the future Perth economy. Not surprisingly then, the health care and social assistance industry is growing throughout Australia, and Greater Perth is showing similar strong increases in terms of employment and firm numbers.

FIGURE 43: THE NUMBER OF FIRMS IN THE HEALTH CARE AND SOCIAL ASSISTANCE INDUSTRY IN GREATER PERTH, 2006 TO 2016



Source: Australian Bureau of Statistics, 2012b; 2017e.

The rapid growth in the industry is also one of its greatest challenges. An ageing population is putting considerable strain on healthcare resources, most particularly staff levels. A Senate Inquiry (2017) into the future of Australia's aged care workforce found that it is ageing and will need to grow by 2% every year to accommodate the increased demand for services in addition to current workforce renewal. There is growing evidence that the care workforce of the future needs to engage with smart technologies and innovations in the provision of care, be adaptive to the consumer-centred reforms of government and up to date in appropriate quality care practices.

As shown in the PwC (2017a) data, there are other weaknesses in the health care and social assistance industry. At one end of the technical and knowledge spectrum, employees are highly educated and well remunerated. However, the much larger and growing, care-giving employee cohort are considerably less well paid and often lower skilled.

TABLE 28: THE NUMBER OF FIRMS IN EACH ANNUAL TURNOVER PERFORMANCE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Zero to less than $50k	$50k to less than $100k	$100k to less than $200k	$200k to less than $500k	$500k to less than $2m	$2m or more
2009	1,381	852	1,195	1,931	1,478	237
2010	1,424	968	1,257	1,994	1,546	263
2011	1,352	1,006	1,392	2,046	1,666	296
2012	1,395	996	1,460	2,117	1,752	339
2013	1,271	1,007	1,430	2,196	1,932	377
2014	1,361	1,112	1,608	2,477	2,028	402
2015	1,265	1,215	1,751	2,599	2,129	421
2016	1,328	1,232	1,844	2,767	2,215	436

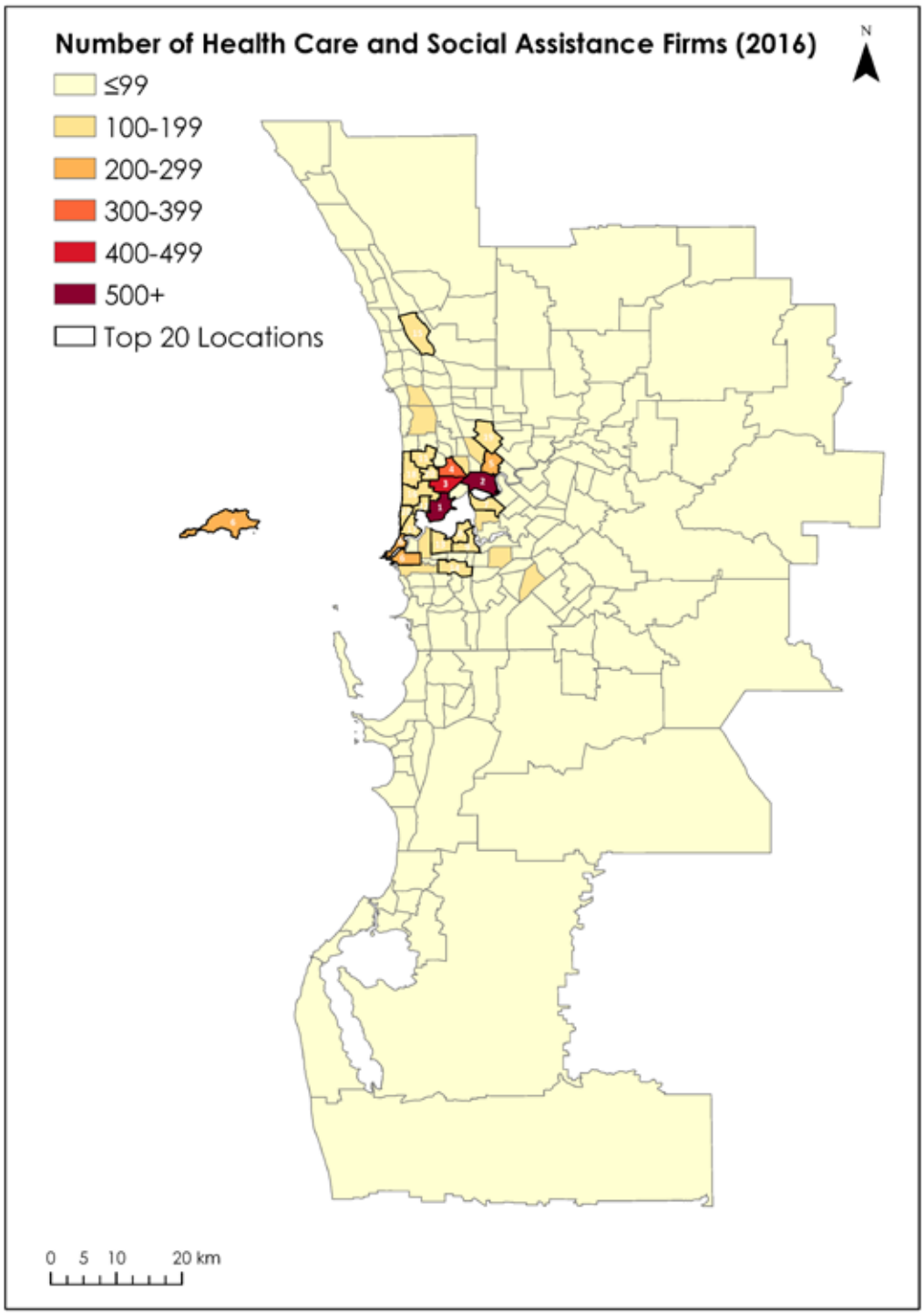
Source: Australian Bureau of Statistics, 2012b; 2017e.

TABLE 29: THE NUMBER OF FIRMS IN EACH EMPLOYEE SIZE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Non-employing	1-4 Employees	5-19 Employees	20-199 Employees	200+ Employees
2009	3,611	2,055	1,051	325	32
2010	4,008	2,053	1,029	336	26
2011	4,265	2,059	1,080	329	25
2012	4,409	2,107	1,169	345	29
2013	4,490	2,360	1,060	283	27
2014	5,048	2,570	1,114	272	18
2015	5,429	2,583	1,095	253	21
2016	5,789	2,710	1,212	235	18

Source: Australian Bureau of Statistics, 2012b; 2017e.

FIGURE 44: THE NUMBER OF HEALTH CARE AND SOCIAL ASSISTANCE FIRMS IN EACH STATISTICAL AREA LEVEL 2 OF GREATER PERTH WITH THE TOP 20 LOCATIONS HIGHLIGHTED, 2016



Source: Australian Bureau of Statistics, 2017e.

TABLE 30: CONCENTRATION OF THE HEALTH CARE AND SOCIAL ASSISTANCE INDUSTRY BY GREATER PERTH LOCATION, 2016

Rank (2016)	SA2	Number of Firms
1	Nedlands - Dalkeith - Crawley	548
2	Perth City	544
3	Subiaco - Shenton Park	426
4	Wembley - West Leederville - Glendalough	367
5	Mount Lawley - Inglewood	205
6	Fremantle	200
7	South Perth - Kensington	192
8	Applecross - Ardross	160
9	Booragoon	153
10	Cottesloe	152
11	Wembley Downs - Churchlands - Woodlands	148
12	Claremont (WA)	143
13	Melville	140
14	Murdoch - Kardinya	138
15	Joondalup - Edgewater	136
16	Swanbourne - Mount Claremont	134
17	Mosman Park - Peppermint Grove	132
18	City Beach	124
19	Dianella	119
20	Floreat	114

Source: Australian Bureau of Statistics, 2017e.

There are several locations where there is a concentration of medical research and associated commercial activities, consulting suites, clinics, community health and medical research facilities and other complementary firms.

Nedlands-Crawley-Dalkeith

In 2016, Nedlands-Crawley-Dalkeith had the highest number of health care and social assistance firms in Greater Perth. More than half were classified as 'non-employing', indicating independently operated, self-employment businesses.

The Queen Elizabeth II (QEII) Medical Centre in Nedlands is a strong magnet for health care and social assistance firms, which benefit from the co-location of medical expertise and facilities. The QEII Medical Centre is on its way to becoming the largest medical, research and education facility in Western Australia. Redevelopment has been completed, and includes a comprehensive cancer centre, Mental Health Unit, PathWest and Harry Perkins Institute for Medical Research.

Sir Charles Gairdner Hospital is also located at the QEII

QEII Medical Centre, Photo by Robert Johnson. Source: Courtesy of QEII Medical Centre Trust.

Medical Centre and houses WA's only comprehensive cancer centre and WA's principal hospital for neurosurgery and liver transplants. This hospital has close ties with The University of Western Australia, creating a health and medical research precinct in Crawley and Nedlands.

Hollywood Private Hospital is located adjacent to the QEII Medical Centre and strengthens the attraction for health care and social assistance firms in the area.

Joondalup-Edgewater

Health has been identified in the City of Joondalup's current economic development strategy as being a high-value, strategic industry. The City of Joondalup has one of the highest concentrations of health professionals behind that of Nedlands-Crawley-Dalkeith. With the health care and social assistance industry employment strongly trending upwards, Joondalup Health Campus is the prominent location for health care and social assistance firms in the northern corridor of Greater Perth, with public and private hospitals at the site, along with an emergency department, operating theatres and intensive care facilities.

QEII Medical Centre, Photo by Dean Chrisholm. Source: Courtesy of QEII Medical Centre Trust.

QEII Medical Centre, Photo by Robert Johnson. Source: Courtesy of QEII Medical Centre Trust.

Joondalup has attracted State Government investment to further develop health facilities. For example, the North Metro TAFE Health and Wellness Training Centre underwent refurbishment using an $11 million investment to support the delivery of diverse, high-quality training programs. The redeveloped facilities intend to offer extra courses, particularly at Certificate IV and Diploma levels, which will be of high demand, given the projected employment growth in health care and social assistance in Greater Perth and WA more broadly in the coming years.

Leading health research and education centred in Joondalup is being developed through collaborations between the health facilities there and Edith Cowan University (ECU). Examples include:

- The ECU Health and Wellness Institute has

extensive national and international linkages allowing for cross-disciplinary expertise.

- The ECU/Genesis Cancer Care and Exercise Clinic is the only onsite exercise therapy clinic in Australia designed to complement radiation and chemo therapies.
- The Interprofessional Ambulatory Care Unit is located at ECU Joondalup and is supported by the Commonwealth Government. This facility promotes chronic disease self-management through an interprofessional learning environment. Undergraduates from all health disciplines at Edith Cowan University and The University of Western Australia can take clinical placements at the facility.

Joondalup Health Campus. Source: Project Directors Australia, 2017.

Murdoch-Kardinya

Fiona Stanley Hospital and St John of God Hospital are located in Murdoch near Murdoch University and South Metropolitan TAFE. Together, this cluster of medical facilities and knowledge brings smaller firms to the area to benefit from co-location.


Fiona Stanley Hospital. Source: Courtesy of South Metropolitan Health Service.

As reported in FACTSheet No.11, plans are underway for Australia's first Medihotel in 2018, with the facility expected to open adjacent to Fiona Stanley Hospital by 2021. The 60-room Medihotel is intended to provide support for the nearby Fiona Stanley and St John of God hospitals by freeing up hospital beds so more patients can be treated and waitlists can be shortened. This will be the first stage of the Murdoch Health and Knowledge Precinct, which will be developed over 10 to 15 years across stages. The planned vision for this precinct is likely to continue to attract health care firms to the area in the coming years.

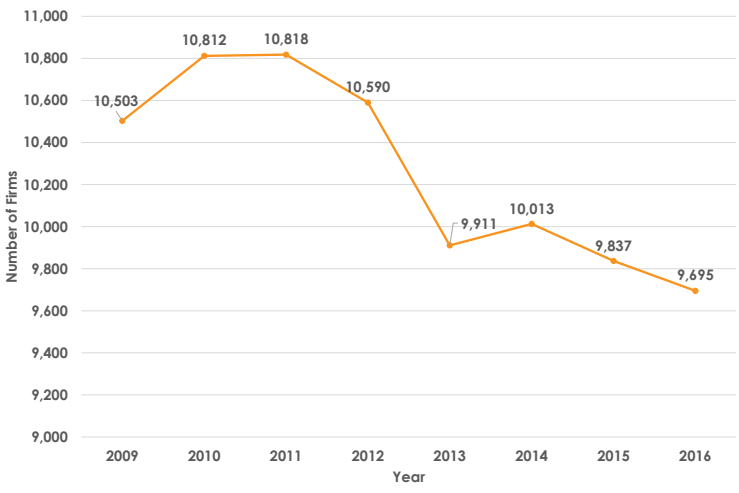
Retail Trade

Since its earliest days, the retail industry has been important to Greater Perth, but there is strong evidence that digital disruption and new technologies are impacting the traditional retail outlet. Retail trade is struggling worldwide, particularly in the categories of grocery, household, clothing and footwear items (PwC, 2017). Traditional retailers globally are situated in highly competitive environments and face pressure to deal with shifting factors, for example customer preferences towards online shopping and demands for technological advancement. For some retailers, their long-term survival is under threat, especially as household consumption growth is weaker compared to the days of 2003 to 2007, annual consumption growth averaged 6.6%, and 2010 to 2012, annual consumption growth averaged 5.3% (St George Bank, 2016).

The number of Greater Perth retail trade firms peaked in 2011, before sharply declining in 2012 to 2013. There was a short-lived recovery before the trend returned to decline in 2014, see Figure 45. The bigger, higher turnover firms dominate the retail landscape now. The percentage of firms with an annual turnover of more than $2m increased from 16.4% in 2009 to 18.1% in 2016, while the percentage of firms turning over less than $50K declined from 18.0% in 2009 to 15.5% in 2016 (Australian Bureau of Statistics, 2010-2017c).

The proportions of firms which employ 5-19, 20-199 and 200+ employees each experienced a decline. This suggests that businesses are hiring fewer people and the industry has contracting staff levels. The most consistent top five locations, having the greatest number of retail firms, are: Perth City, Fremantle, Madeley-Darch-Lansdale, Osborne Park Industrial and Subiaco-Shenton Park.

FIGURE 45: THE NUMBER OF FIRMS IN THE RETAIL TRADE INDUSTRY IN GREATER PERTH, 2009 TO 2016



Source: Australian Bureau of Statistics, 2012b; 2017e.

TABLE 31: THE NUMBER OF FIRMS IN EACH ANNUAL TURNOVER PERFORMANCE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Zero to less than $50k	$50k to less than $100k	$100k to less than $200k	$200k to less than $500k	$500k to less than $2m	$2m or more
2009	1,885	939	1,200	1,967	2,793	1,719
2010	2,024	1,091	1,184	1,932	2,828	1,753
2011	2,068	1,032	1,249	1,903	2,775	1,791
2012	2,007	1,042	1,212	1,837	2,670	1,822
2013	1,662	931	1,143	1,792	2,567	1,816
2014	1,593	995	1,232	1,796	2,598	1,837
2015	1,574	943	1,230	1,802	2,483	1,756
2016	1,503	998	1,270	1,784	2,444	1,757

Source: Australian Bureau of Statistics, 2012b; 2017e.

TABLE 32: THE NUMBER OF FIRMS IN EACH EMPLOYEE SIZE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Non-employing	1-4 Employees	5-19 Employees	20-199 Employees	200+ Employees
2009	4,212	2,800	2,459	1,005	27
2010	4,490	2,790	2,512	984	36
2011	4,577	2,731	2,496	978	36
2012	4,504	2,688	2,360	1,011	27
2013	4,081	3,170	2,006	625	3
2014	4,146	3,179	2,034	643	0
2015	4,127	3,105	2,024	593	6
2016	4,035	3,092	2,018	580	6

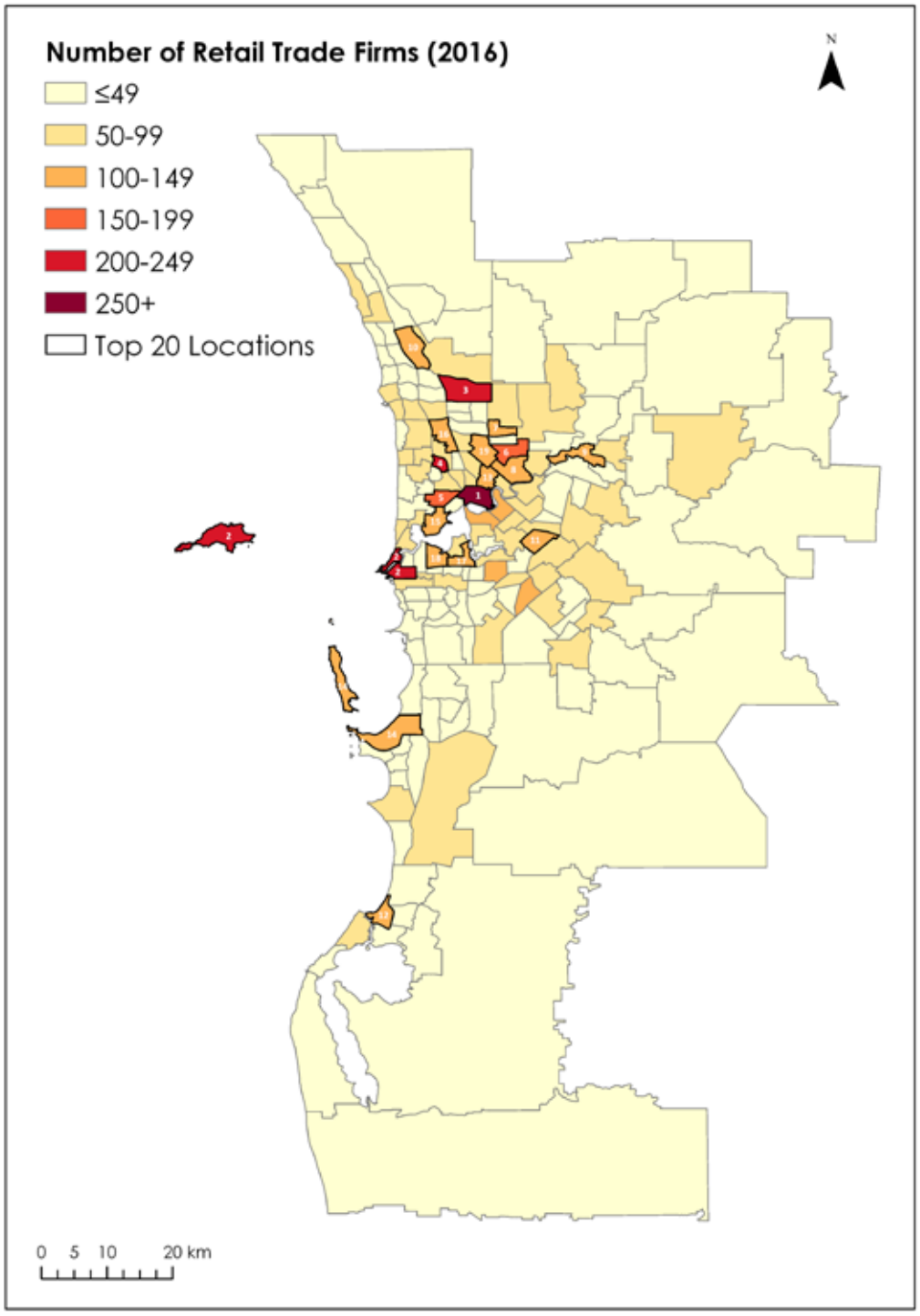
Source: Australian Bureau of Statistics, 2012b; 2017e.

From 2009 to 2016, the Perth City area had the highest number of retail firms, even though the total number of retail firms in the Perth City declined over this period. Since 2009, Perth City has been under pressure from new retail supply outside of the CBD. Businesses have found it attractive to move from CBD locations to elsewhere in Greater Perth. This shift was noticeable after the deregulation of Sunday trading hours in August 2012. Prior to this, suburban shopping centres were restricted from trading on Sundays, while the Perth City could trade. Suburban shopping centres can now trade seven days a week and there has been identifiable retail performance decline in the Perth City.

In 2015, WA had the highest CBD retail vacancy rate in Australia at 3.5% (Tsagalis, 2015). This was linked to the greater appeal of larger and improved shopping centres with extended trading hours, free parking and weather-protection, e.g., Lakeside Joondalup (Tsagalis, 2015).

High Perth CBD retail vacancy rates have also been linked to developments that temporarily increase vacancies. Examples of such developments include Forrest Chase, Raine Square and Plaza Arcade. In these cases, new retailers are set to

FIGURE 46: THE NUMBER OF RETAIL TRADE FIRMS IN EACH STATISTICAL AREA LEVEL 2 OF GREATER PERTH WITH THE TOP 20 LOCATIONS HIGHLIGHTED, 2016



Source: Australian Bureau of Statistics, 2017e.

move in but there is a period of high vacancies before this happens.

Furthermore, Perth CBD retailers consider retail rents to be generally expensive, despite prime retail accommodation in Perth City being more affordable than any other CBD in Australia (City of Perth, 2016).

The City of Fremantle is the second largest retail location in Greater Perth. It has several distinct retail localities: the West End, Victoria Quay, Fremantle Markets, South Fremantle and Wray Avenue Precinct. Despite having large anchor retailers, significant businesses have left Fremantle, most notably Myer. Some retail interest has been sparked through the pop-up retail phenomenon and several retail incubators exist that provide the resources for small businesses to grow successfully.

Subiaco-Shenton Park was the third most important retail centre in 2016. This is despite redevelopment and infrastructure renewal along Rokeby Road and several operators leaving the precinct due to high rents. In 2015, the retail vacancy rate along Rokeby Road was a high 15% (Tsagalis, 2015). Higher vacancy rates could continue, particularly due to football moving to the new Stadium in 2018 and Subiaco's strip retail nature, which traditionally tends to be less appealing to international retailers.

There is evidence to suggest stronger spending of housing retail goods, which is linked to the growth activity in building and construction.

The transport, postal and warehousing industry has shown strong growth post-2013.

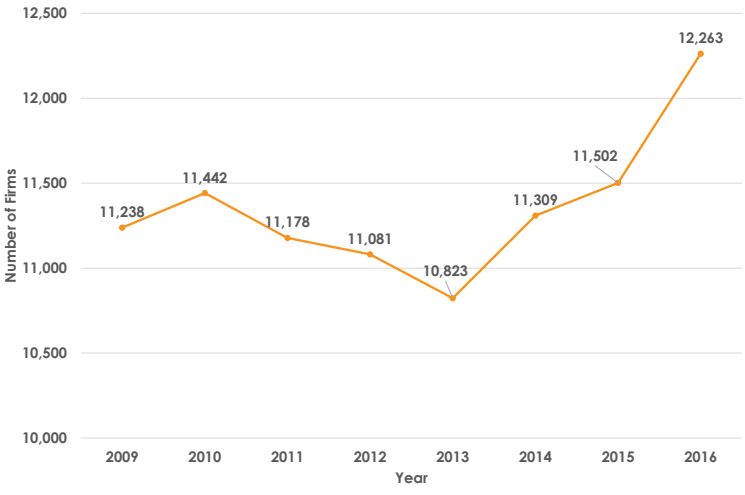
The majority of these firms appear to be self-employed contractors, with most firms turning over less than $50k per year. This suggests internet retail is likely to be eroding the role of the suburban retail outlet.

TABLE 33: CHANGES IN RETAIL SPENDING PATTERNS, FOR YEAR ENDING MARCH QUARTER 2016

Declining consumption		Increased spending	
Cigarettes and tobacco	-10.8%	Health	5.7%
Vehicle purchases	-11.8%	Communications	6.3%
Alcoholic beverages	-2.1%	Education	5.1%
Liquor	-7.4%	Furniture, floor coverings and textile goods	7.9%
Specialised Foods	-4.2%	Electrical and electronic goods	6.2%
Cafes, restaurants and catering services	-4.0%	Building and gardening supplies	6.6%

Source: St George Bank, 2016.

FIGURE 47: THE NUMBER OF FIRMS IN THE TRANSPORT, POSTAL AND WAREHOUSING INDUSTRY IN GREATER PERTH, 2009 TO 2016



Source: Australian Bureau of Statistics, 2012b; 2017e.

TABLE 34: THE NUMBER OF FIRMS IN EACH ANNUAL TURNOVER PERFORMANCE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Zero to less than $50k	$50k to less than $100k	$100k to less than $200k	$200k to less than $500k	$500k to less than $2m	$2m or more
2009	3,973	2,706	1,937	1,408	803	411
2010	4,339	2,758	1,900	1,287	752	406
2011	4,053	2,771	1,803	1,448	712	391
2012	3,901	2,843	1,831	1,357	733	416
2013	3,498	2,730	1,800	1,463	823	473
2014	3,711	2,882	1,809	1,548	809	452
2015	3,740	2,979	1,818	1,609	883	492
2016	4,750	2,812	1,832	1,549	798	473

Source: Australian Bureau of Statistics, 2012b; 2017e.

TABLE 35: THE NUMBER OF FIRMS IN EACH EMPLOYEE SIZE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Non-employing	1-4 Employees	5-19 Employees	20-199 Employees	200+ Employees
2009	8,593	1,865	505	263	12
2010	8,801	1,846	567	213	15
2011	8,650	1,766	527	223	12
2012	8,582	1,736	551	203	9
2013	8,268	1,905	463	172	15
2014	8,630	1,953	491	200	0
2015	8,762	2,130	466	181	6
2016	9,526	2,072	486	167	6

Source: Australian Bureau of Statistics, 2012b; 2017e.

Manufacturing

Manufacturing has had a mixed history in Perth. Post-World War II, government policies and subsidies underwrote manufacturing. By 1970 however, most of those low-skilled businesses had closed or moved back to the bigger population centres on the eastern seaboard, in the case of vehicle manufacturing, or offshore with more affordable labour and efficient logistics networks. Manufacturing has largely only met local demand, and industry performance over the past two decades has been variable.

Currently, the status of this industry is more complex than it looks. While there has been a decline in traditional manufacturing operations, which are generally large scale with low-skilled workers, there is an emerging manufacturing sector, 'advanced manufacturing', which is smaller, sophisticated and high-tech.

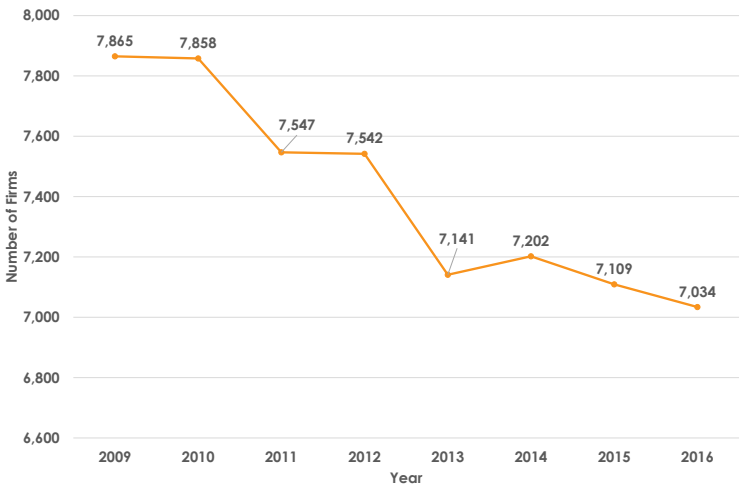
Over the past decade, the number of manufacturing firms in Greater Perth declined from 2009 to 2016, Figure 48, with just one period at the height of the boom, 2013-2014, with a positive increase in the number of firms.

There have been periods of stability. For example, between 2009-2010 and 2011-2012, the change in manufacturing firms was less than ten. The decline in firms might be due to the more difficult financial environment in terms of accessing finance. Constrained financial conditions make it more difficult for firms to grow and invest. Since many manufacturing firms in WA are small to medium in employment and production, it is challenging for them to survive (Chamber of Commerce and Industry of Western Australia, 2015).

The Chamber of Commerce and Industry of WA (CCIWA) identified that another contributing factor for the potential vulnerability of manufacturing is the ageing population phenomenon, exacerbating labour shortages or leading to worker skill and knowledge gaps. In addition, technological advancements in manufacturing are imposing new skills requirements and ensuring an appropriately educated workforce is potentially a challenge in the future.

It is clear manufacturing has benefitted from the expansion of the resources sector in the early 2000s.

FIGURE 48: TOTAL NUMBER OF MANUFACTURING FIRMS IN GREATER PERTH, 2009 TO 2016



Source: Australian Bureau of Statistics, 2012b; 2017e.

TABLE 36: THE NUMBER OF FIRMS IN EACH ANNUAL TURNOVER PERFORMANCE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Zero to less than $50k	$50k to less than $100k	$100k to less than $200k	$200k to less than $500k	$500k to less than $2m	$2m or more
2009	1,499	1,108	1,197	1,385	1,589	1,087
2010	1,531	1,138	1,140	1,402	1,581	1,066
2011	1,462	1,037	1,133	1,326	1,548	1,041
2012	1,496	923	1,020	1,421	1,563	1,119
2013	1,268	814	1,001	1,329	1,541	1,154
2014	1,324	891	998	1,311	1,571	1,104
2015	1,255	860	1,064	1,316	1,550	1,088
2016	1,222	806	1,088	1,268	1,520	1,047

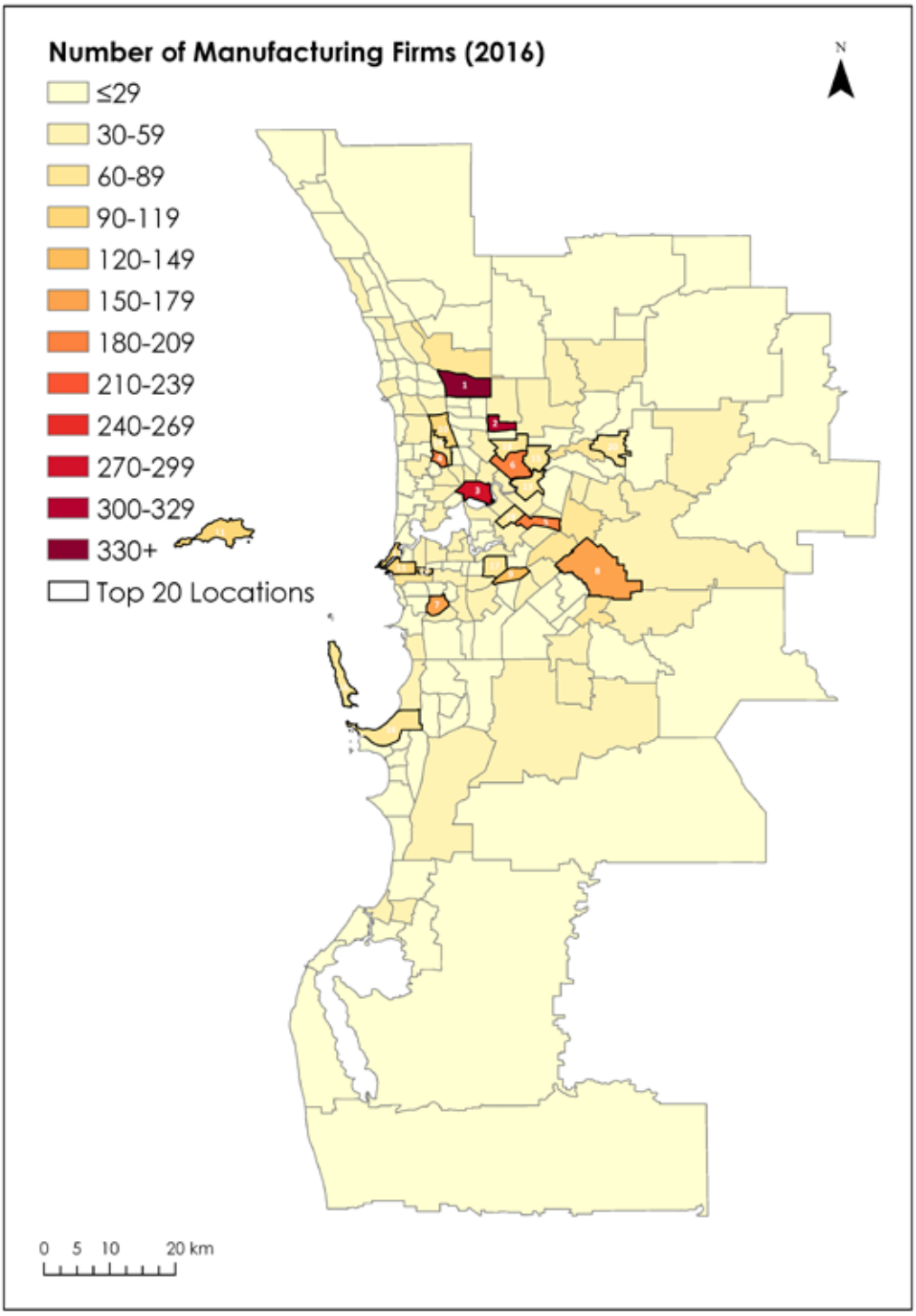
Source: Australian Bureau of Statistics, 2012b; 2017e.

TABLE 37: THE NUMBER OF FIRMS IN EACH EMPLOYEE SIZE CATEGORY IN EACH YEAR, 2009 TO 2016

Year	Non-employing	1-4 Employees	5-19 Employees	20-199 Employees	200+ Employees
2009	3,550	1,860	1,527	911	17
2010	3,548	1,875	1,512	890	33
2011	3,430	1,849	1,530	723	15
2012	3,314	1,834	1,556	811	27
2013	2,967	2,005	1,593	542	34
2014	3,106	2,016	1,575	544	9
2015	3,105	1,982	1,497	539	9
2016	3,043	1,957	1,467	520	9

Source: Australian Bureau of Statistics, 2012b; 2017e.

FIGURE 49: THE NUMBER OF MANUFACTURING FIRMS IN EACH STATISTICAL AREA LEVEL 2 OF GREATER PERTH WITH THE TOP 20 LOCATIONS HIGHLIGHTED, 2016



Source: Australian Bureau of Statistics, 2017e.

TABLE 38: CONCENTRATION OF MANUFACTURING FIRMS BY GREATER PERTH LOCATION, 2016

Rank (2016)	SA2	Number of Firms
1	Madeley - Darch - Landsdale	346
2	Malaga	329
3	Perth City	287
4	Osborne Park Industrial	182
5	Welshpool	181
6	Bayswater - Embleton - Bedford	180
7	Bibra Industrial	167
8	Maddington - Orange Grove - Martin	162
9	Canning Vale Commercial	123
10	Balcatta - Hamersley	109
11	Fremantle	104
12	O'Connor (WA)	92
13	Belmont - Ascot - Redcliffe	81
14	Stirling - Osborne Park	80
15	Bassendean - Eden Hill - Ashfield	78
16	Rockingham	76
16	Willetton	76
16	Morley	76
19	East Victoria Park - Carlisle	72
20	Swan View - Greenmount - Midvale	68

Source: Australian Bureau of Statistics, 2012b; 2017e.

The importance of the resources industries is evident with the emergence of a highly skilled advanced manufacturing service and support sector, with specialised knowledge and expertise in engineering and other areas related to energy and minerals.

An example is Perth CBD-based Minnovare Pty Ltd which developed Azimuth Aligner, a leading drill rig alignment technology for mining and construction which produces faster, cheaper and more accurate drilling for drill rigs.

The sectors where manufacturing is maintaining market presence include: primary metal products, predominantly alumina production; downstream processing of oil and gas including chemicals and fertilisers; niche high-quality food and beverage products; and machinery and equipment production, primarily directed at the agriculture and resources industries (CCI WA, 2015). The manufacturing areas that are growing include:

- New technologies to do with automation and remote work;
- Increased digitisation of procedures and systems to improve productivity and lower production costs; and
- Specialised knowledge and machinery geared towards the mining and agricultural industries.

There are emerging links between the manufacturing and the professional and technical services industries, particularly with the introduction of sophisticated technologies in automation and process engineering. Thus, while the labour force is shrinking, the productivity capacity grows. In line

with higher skilled and higher productivity trends, the number of large manufacturing firms with more than 200 employees, declined over time, as did firms with 20-199 employees.

Based on the number of manufacturing firms, the top locations for this industry for 2009 and 2016 are identified in Table 39.

TABLE 39: TOP LOCATIONS FOR MANUFACTURING FIRMS, 2009 AND 2016

	2009		2016
1	Malaga	1	Madeley-Darch-Landsdale
2	Perth City	2	Malaga
3	Madeley-Darch-Landsdale	3	Perth City
4	Welshpool	4	Osborne Park Industrial
5	Bayswater-Embleton-Bedford	5	Welshpool

Source: Australian Bureau of Statistics, 2012b; 2017e.

Food processing

Food processing is classified as part of the manufacturing industry. The main metropolitan food production areas, Wanneroo, Kwinana, Swan, Armadale and Kalamunda, are all under increasing threat of urbanisation. Many traditional food industries that were based in the Perth metropolitan area are transitioning to the peri-urban Peel Food Zone or to regional WA.

Innovation in agriculture and agribusiness is increasingly prominent in the Peel region. The emphasis on high-end, high-value agriculture and food production is driving innovation, investment and research, particularly through the establishment of the Peel Food Zone and the Peel Peri-Urban Strategic Economic and Environmental Initiative (PSEEI).

The future of WA manufacturing needs innovation through research and development (R&D) to compete in a global market. Low levels of R&D investment in Western Australia have led to an industry structure of small businesses with a weak ability to spend capital on R&D and non-production activities. In 2014, Western Australian manufacturers spent only 2.9% of the industry's output in 2011-12 on R&D, or $348 million (CCI WA, 2015). This is lower than the national benchmark of 4.3% of industry output, or $4.5 billion (CCI WA, 2015).

Photo by Colin Wimbridge, *Passion for Perth* Photographic Competition. Source: Committee for Perth, 2016.

Tomatoes, Carabooda Market Garden, Carabooda. Source: Courtesy of City of Wanneroo.

Perth Airport T1. Source: Courtesy of Perth Airport Pty Ltd.

CONCLUSION

Since World War II, Greater Perth has transformed from a small city on the nation's western edge with a modest economy, largely dependent on agriculture and mining for export income and wealth generation. Without a large population base, Perth struggled to maintain an industry base and until the 1970s, Commonwealth grants were an important source of infrastructure and development funding.

Even though the population of Perth has more than quadrupled since World War II and it is now a globally connected city, with a vibrant social life, the resources and agriculture industries continue to play a significant role in the Perth economy. The 1960s mineral boom and the most recent boom, which began in about 2001 and lasted more than a decade, were the catalyst for extraordinary population growth and urban development in Greater Perth. Strategic policies and investment by the public and private sectors have propelled Greater Perth to be an attractive place to live, work and visit.

Significantly, the industries which have driven economic development in Perth are not the biggest employers. Until 10 years ago, retail was the most important employer in Perth but now the services industry dominates. This report shows that tourism, health, education and the creative industries are all emerging, not only as important employment industries in the future but also as industries which will propel future growth. Innovators and industries that harness creativity, the knowledge economy and with global connections, are likely to be at the forefront of Greater Perth's economy in the future.

Perth has become a hub for capital investment, corporate management and control, and flows of labour. An ageing population however presents a challenge for the Greater Perth economy in the future, but a challenge which can be met with proactive policy and strategy. Perth has historically attracted a significant proportion of its population from elsewhere and it is important that it continues to draw working aged people for workforce renewal, and to maintain its vibrancy and currency.

In the past 70 years, Perth's business orientation has shifted to Asia. The proximity to Asia, and in particular, its geographic location in the same time zone as some of Australia's most important trading partners is advantageous. For the emerging industries such as tourism, education and training, Asia is likely to be an important business link.

This FACTBase Special Report shows that despite exponential economic and social growth over a relatively short period, the economy of Greater Perth has performed well on a range of indicators, and has demonstrated resilience, despite considerable global economic disruption over the same period. Taking a long-term view, there are few signs to show that the Greater Perth economy is one that teeters from boom to bust. This report provides the evidence for why the Perth economy has been a success, and with the right policy settings will continue to do so into the future.

REFERENCES

APPLEYARD, R. 1979. 'Go West young man: WA 150 options for the future. In: FIRKINS, P. (ed.) A History of Commerce and Industry in Western Australia.Perth: University of Western Australia Press.

ATKINS, M. T. 2017. The geography of ageing in the city: An analysis of population dynamics and policy responses in Perth Western Australia. PhD, The University of Western Australia.

AUSTRALIAN BUREAU OF STATISTICS 1962. Census of Commonwealth of Australia. Canberra: Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 1972. Census of Commonwealth of Australia. Canberra: Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 1982. Census of Commonwealth of Australia. Canberra: Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2001a. A century of mining (Cat. 1301.0). Canberra: Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2001b. A century of population change in Western Australia: Cat. 1367.5. Canberra: Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2001c. Year Book of Australia: Household income and distribution. Canberra Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2002. 2001 Census of Population and Housing, Basic Community Profile (No. 2001.0). Canberra. Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2007. 2006 Census of Population and Housing, Basic Community Profile (No. 2001.0). Canberra. Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2012a. 2011 Census of Population and Housing. Canberra. Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2012b. Counts of Australian Businesses, including Entries and Exits, Jun 2007 to Jun 2011 (No. 8165.0). Canberra: Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2014. Western Australia at a glance (Cat. 1306.5). Canberra: Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2015a. Australian Demographic Statistics, Dec 2014 (Cat. 3101.0). Canberra: Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2015b. Counts of Australian Businesses, including Entries and Exits, Jun 2010 to Jun 2014 (No. 8165.0). Canberra: Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2016a. Greater Perth: Region data summary. Canberra: Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2016b. Life tables, States, Territories and Australia, 2013-2015 (Cat. 3302.0.55.001). Canberra: Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2017a. 2016 Census of Population and Housing, Basic Community Profile (No. 2001.0). Canberra: Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2017b. Annual Gross State Product – All States (Cat. 5220.0). Canberra. Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2017c. Building Approvals, Australia (Cat. 8731.0). Canberra: Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2017d. Consumer Price Index – Groups and Index Numbers by Capital Cities. (Cat. 6401.0). Canberra. Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2017e. Counts of Australian Businesses. (Cat. 8165.0). Canberra. Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2017f. Labour Force Survey – Times Series Report. (Cat. 6202.0). Canberra. Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2017g. Regional Summary Statistics. (Cat. 1410.0). Canberra. Australian Bureau of Statistics.

AUSTRALIAN BUREAU OF STATISTICS 2017h. Residential Property Price Indexes: Eight Capital Cities. (Cat. 6416.0). Canberra. Australian Bureau of Statistics.

BATTELLINO, R. 2010. Mining booms and the Australian economy: Address to the Sydney Institute. Reserve Bank Bulletin. Canberra: Reserve Bank of Australia.

BLACK, D. 1981. Liberals triumphant – The politics of development 1947-1980. In: STANNAGE, C. T. (ed.) A New History of Western Australia. Perth: University of Western Australia Press.

BRAND, D. 1959. State development policy speech. In: COUNCIL, L. (ed.). Perth: Battye Library.

BUREAU OF RESOURCES AND ENERGY ECONOMICS 2012. Resources and Energy Quarterly—March quarter 2012. Canberra: Bureau of Resources and Energy Economics.

CAUNT, H. 2013. Memory and the migrant story: a comparison of two studies of British migrants arriving in Western Australia in the 1960s. PhD, The University of Western Australia.

CASSELLS, R., DUNCAN, A. & GAO, G. 2014a. Sharing the Boom: The distribution of income and wealth in WA. Focus on Western Australia Report Series. Bankwest Curtin Economics Centre.

CASSELLS, R., DUNCAN, A., GAO, G., JAMES, A., LEONG, K., MARKKANEN, S. & ROWLEY, S. 2014b. Housing Affordability: The real costs of housing in WA. Focus on Western Australia Series. Perth: Bankwest Curtin Economics Centre.

CHAMBER OF COMMERCE AND INDUSTRY OF WESTERN AUSTRALIA (CCIWA) 2015. Future of Manufacturing: A visions for WA. Perth: Chamber of Commerce and Industry of Western Australia.

CITY OF PERTH 2016. Perth City Snapshot 2016. Available from: https://www.perth.wa.gov.au/sites/default/files/documents/Perth%20City%20Snapshot%202016_0.pdf. [25 August 2017].

CITY OF PERTH 2007. Perth's Creative Industries – An Analysis 2007, City of Perth, Department of Culture and the Arts, Department of Industry and Resources, and Department of the Premier and Cabinet. Available from: http://www.cci.edu.au/sites/default/files/alawrence/Perth%27s_creative_industries.pdf. [12 September 2017].

COMMITTEE FOR PERTH 2014. What We Thought Would Kill Us, Case Study 4: Perth Arena. Available from: https://www.committeeforperth.com.au/assets/documents/What-wethought-would-kill-us-Perth-Arena-FINAL-electronic.pdf. [8 November 2017].

COMMITTEE FOR PERTH 2017. Keys Facts About Perth and Western Australia FACTSheet No. 11, The University of Western Australia and Committee for Perth. Available from: https://www.committeeforperth.com.au/assets/documents/FACTSheet-11-Key-Facts-About-Perth-and-WA-September-2017.pdf. [18 September 2017].

COMMONWEALTH BUREAU OFCENSUS AND STATISTICS 1947. Census of The Commonwealth of Australia, Commonwealth Bureau of Census And Statistics, Canberra.

COMMONWEALTH BUREAU OF CENSUS AND STATISTICS 1954. Census of The Commonwealth of Australia, Commonwealth Bureau of Census And Statistics, Canberra.

COMMONWEALTH BUREAU OF CENSUS AND STATISTICS 1955. Statistical Register of Western Australia 1955. Perth. Commonwealth Bureau of Census and Statistics.

COMMONWEALTH BUREAU OF CENSUS AND STATISTICS 1961. Census of The Commonwealth of Australia, Commonwealth Bureau of Census And Statistics, Canberra.

COMMONWEALTH BUREAU OF CENSUS AND STATISTICS 1966. Census of The Commonwealth of Australia, Commonwealth Bureau of Census And Statistics, Canberra.

COMMONWEALTH BUREAU OF CENSUS AND STATISTICS 1971. Census of The Commonwealth of Australia, Commonwealth Bureau of Census And Statistics, Canberra.

COMMONWEALTH BUREAU OF CENSUS AND STATISTICS 1981. Census of The Commonwealth of Australia, Commonwealth Bureau of Census And Statistics, Canberra.

COSTELLO, G. & ROWLEY, S. 2010. The impact of land supply on housing affordability in the Perth metropolitan region. Pacific Rim Property Research Journal, 16, 5-22.

DAVIS, G. 2011. 'What We Thought Would Kill Us', Case Study 2: The Evolution of Perth's Passenger Rail. Committee for Perth, Perth.

DAVIS, G. 2016. The Relationship between Transport, Spatial Form and Economic Growth. A comparison and analysis of Sydney, Melbourne and Perth. FACTBase Bulletin 51. Perth: The University of Western Australia and the Committee for Perth.

DAVIS, G. 2017a. Sizing and mapping higher education and vocational education and training in Perth and Peel. FACTBase Bulletin 52. Perth: The University of Western Australia and the Committee for Perth.

DAVIS, G. 2017b. Sizing Tourism in Western Australia. FACTBase Bulletin 55. Perth: The University of Western Australia and the Committee for Perth.

DAVIS, G. 2017c. Sizing Ageing in Western Australia. FACTBase Bulletin 56. Perth: The University of Western Australia and the Committee for Perth.

DELOITTE 2013. Positioning for Prosperity: Catching the next wave. Sydney: Deloitte.

DELOITTE ACCESS ECONOMICS 2016. The value of international education to Australia. Canberra: Australian Government Department of Education and Training.

DEPARTMENT OF CULTURE AND THE ARTS 2013. Creative Industries Statistical Analysis for Western Australia, Government of Western Australia.

DEPARTMENT OF LOCAL GOVERNMENT, SPORT AND CULTURAL INDUSTRIES 2017. Community Sporting and Recreation Facilities Fund (CSRFF), Government of Western Australia. Available from: https://www.dsr.wa.gov.au/funding/facilities-(csrff). [15 September 2017].

DEPARTMENT OF MINES AND PETROLEUM 2011. Western Australian Mineral and Petroleum Statistics Digest 2010, Government of Western Australia. Available from: http://www.dmp.wa.gov.au/Documents/About-Us-Careers/AboutUs-StatisticsDigest_2010.pdf. [5 October 2017].

DEPARTMENT OF MINES AND PETROLEUM 2015. Western Australian Mineral and Petroleum Statistics Digest 2014-15. Government of Western Australia. Available from: http://www.dmp.wa.gov.au/Documents/About-Us-Careers/Stats_Digest_2014-15.pdf.

DEPARTMENT OF MINES, INDUSTRY REGULATION AND SAFETY 2017. 2016-17 Economic indicators resources data. Government of Western Australia. Available from: http://www.dmp.wa.gov.au/About-Us-Careers/Latest-Statistics-Release-4081.aspx#toc_17812.

DEPARTMENT OF SPORT AND RECREATION 2009. More Than Winning: The real value of sport and recreation in Western Australia, Department of Sport and Recreation Western Australia. Available from: https://www.dsr.wa.gov.au/support-and-advice/researchand-policies/more-thanwinning. [13 September 2017].

DEPARTMENT OF STATE DEVELOPMENT 2015. Western Australian Economic Profile 2014. Perth: Department of State Development.

DEPARTMENT OF TREASURY 2014. The structure of the Western Australian economy. Perth: Government of Western Australia.

GEHL ARCHITECTS 2009. Public Spaces Public Life Perth 2009. City of Perth and the Department for Planning and Infrastructure. Available from: https://www.planning.wa.gov.au/publications/1141.aspx.

GHOSH, R. 1981. Economic development and population growth in Western Australia since 1945. In: STANNAGE, C. T. (ed.) A New History of Western Australia. Nedlands: University of Western Australia Press.

FRINGE WORLD 2017. FRINGE WORLD Festival 2017 Impact Report. Available from: https://www.fringeworld.com.au/.

HASLAM MCKENZIE, F. 2016. Boom: Boon or doom? In: BIERMANN, S., OLARU, D. & PAUL, V. (eds.) Planning Boomtown and Beyond. Perth: UWA Publishing.

HIGGS, P, CUNNINGHAM, S, PAGAN, J 2007. Australia's Creative Economy: Definitions of the Segments and Sectors, ARC Centre of Excellence for Creative Industries & Innovation (CCI). Available from: http://eprints.qut.edu.au/archive/0008242/.

JOHN CURTIN INSTITUTE OF PUBLIC POLICY (JCIPP) 2016. Western Australia's International Education Sector. Bentley: Curtin University.

KPMG FOR THE MINERALS COUNCIL OF AUSTRALIA 2013. Analysis of the long distancecommuter workforce across Australia. Canberra: Minerals Council of Australia.

LEE, D. 2013. Reluctant relaxation: The end of the iron ore export embargo and the origins of Australia's mining boom, 1960–1966. History Australia, 10, 149-170.

LEWIS-GRAY, E 2015. Industry Growth Centres and the METS Sector, Department of Industry and Science. Available from: https://www. cmewa.com/policy-andpublications/policy-areas/economic-competitiveness/preview?path=Industry-growthcentres-METS-sector.pdf. [12 July 2017].

MACLACHLAN, I. 2013. Kwinana Industrial Area: agglomeration economies and industrial symbiosis on Western Australia's Cockburn Sound. Australian Geographer, 44(4), 383-400.

MARKHAM, N, BARKER, T, WALKER, J, VAN DALEN, J, KRUGER, M & CACIOPPE, J 2016. Startup Ecosystem Report Western Australia 2015-2016, StartupWA. Available from: http://www.startupwa.org.

MARTINUS, K. & SIGLER, T. 2016. Boomtown globalising: Perth as an internationally connected resource hub. In: BIERMANN, S., OLARU, D. & PAUL, V. (eds.) Planning Boomtown and Beyond. Perth: UWA Publishing.

MEASHAM, T., HASLAM MCKENZIE, F., MOFFAT, K. & FRANKS, D. 2013. An expanded role for the mining sector in Australian society? Rural Society, 22, 184-194.

METROPOLITAN REGION PLANNING AUTHORITY 1970. The corridor plan for Perth. Available from: State Library of Western Australia.

NATIONAL CENTRE FOR VOCATIONAL EDUCATION RESEARCH 2016. Vocational Education and Training (VET) Total VET students and Courses goo.gl/v4fsr9.

OFFICE OF THE CHIEF ECONOMIST 2015. Resources and Energy Quarterly. Canberra Department of Industry and Science.

PEEL DEVELOPMENT COMMISSION 2015. Peel Winter/Spring 2015 Magazine, Peel Development Commission. Available from: http://www.peel.wa.gov.au/wp-content/uploads/2015/09/Peelmagazine-July_15_LR.pdf. [13 July 2017].

PUBLIC SECTOR COMMISSION 2017. State of the sectors. Perth: Government of Western Australia.

PWC 2017a. Economic profileof Greater Perth. Canberra: PwC Geospatial Economic Model (GEM), PwC.

PWC 2017b. 10 Retailer Investments for an Uncertain Future, PwC. Available from: https://www.pwc.com/gx/en/industries/assets/totalretail-2017.pdf. [25 August 2017].

QUICK, GR 2006. Australian Tractors: Indigenous Tractors and Self-propelled Machines in Rural Australia. Kenthurst: Rosenberg Publishing.

QUILLFELDT, A & DONG, J 2014. CBD Retail: The transformation and outlook, Jones Lang LaSalle. Available from: http://www.jll.com.au/australia/en-au/Research/Pulse%20-%20CBD%20Retail%20The%20Transformation%20and%20Outlook%20May%202014.pdf?59b26d94-197a-489d-8441-7d6b73cd78af. [24 August 2017].

REAL ESTATE INSTITUTE OF WESTERN AUSTRALIA 2015. Perth house prices 1974-2013. Perth: Real Estate Institute of Western Australia.

SENATE OF THE AUSTRALIAN PARLIAMENT 2017. Future of Australia's aged care sector workforce. Canberra, The Australian Parliament.

SPILLMAN, K. 1993. A Rich Endowment: Government and Mining in Western Australia 1829-1994, University of Western Australia Press, Perth.

STEPHENSON, G & HEPBURN, J 1955. Plan for the Metropolitan Region, Government of Western Australia. Available from: https://www.planning.wa.gov.au/5485.aspx.

ST GEORGE BANK 2016. State Economic Outlook: WA Economic Outlook, St George Bank. Available from: https://www.stgeorge.com.au/content/dam/stg/downloads/report-centre/WA%20Economic%20Outlook%20June%202016.pdf. [16 August 2017].

TONTS, M., HUDDLESTON, V., MAGINN, P.J., HUDDLESTON, P. & WETZSTEIN, S. 2012. Perth as a global minerals and energy resources hub, a FACTBase Special Report. The University of Western Australia and Committee for Perth, Perth.

TOURISM COUNCIL 2015, Perth Stadium: Economic Game Changer, Tourism Council Western Australia. Available from: http://www.tourismcouncilwa.com.au/sites/default/files/policy-pdfs/TCWA0141-Perth-Stadium-Economic-Game-Changer-Document-FINAL.pdf. [15 September 2017].

TSAGALIS, J. 2015. Property Market Review. Lease Equity. Available from: http://www.gscpa.com.au/gswp/wpcontent/uploads/2015/12/Perths-Changing-Landscape-2015.12.01.pdf. [25 August 2017].

WESTERN AUSTRALIAN PLANNING COMMISSION 2015. Draft Perth and Peel @ 3.5 million Perth: Western Australian Planning Commission.

WESTERN AUSTRALIAN TECHNOLOGY AND INDUSTRY ADVISORY COUNCIL 2000. Drivers and shapers of economic development in Western Australia in the 21st century. Perth: Western Australian Technology and Industry Advisory Council.

WETZSTEIN, S. 2010. Exploring understandings of liveability for Perth: Towards better urban outcomes. FACTBase Bulletin 17. Perth: The University of Western Australia and the Committee for Perth.

YIFCHATEL, O. 1988. The role of the state in metropolitan planning: The case of Perth, Western Australia 1930-1970. Urban Policy and Research, 6, 8-18.

ACKNOWLEDGEMENTS

The authors acknowledge the assistance provided by the following individuals in the preparation of this report:

Ms Mariana Atkins, The University of Western Australia

Mr Lucas Carmody, PwC, Canberra Office

Mr Justin Carroll, PwC, Perth Office

Mr Graham Harvey, UniPrint, The University of Western Australia

Ms Lisa Kazalac, Committee for Perth

Ms Cate Pattison, Researcher and community historian

Ms Georgia Harford-Mills, Committee for Perth

Staff at the Battye State Library

ABOUT THE AUTHORS

Matthew Tonts

Matthew is Pro Vice-Chancellor and Executive Dean, Faculty of Arts, Business, Law and Education at The University of Western Australia. His research is focused on urban and regional development, with much of his recent work concerned with the shifting geography of corporate power, spatial labour markets and economic development and regional policy.

Fiona Haslam McKenzie

Fiona is Professor of Geography and the co-director of the Centre for Regional Development at The University of Western Australia. Her research interests are regional economic development and the analysis of remote, regional and urban socio-economic indicators. She is currently researching the socio-economic impact of different regional workforce arrangements and uneven economic development in Western Australia.

Jessica Legendre

Jessica has a Bachelor of Science majoring in Geography and also Human Geography and Planning from The University of Western Australia. She was the recipient of the Arthur Conacher Prize for Outstanding Geography Student in 2016. She will commence a Master of Urban Planning in 2018.

BIGGER & BETTER BEYOND THE BOOM STEERING COMMITTEE

Steering Committee Chair: Justin Carroll, Managing Partner, PwC

Justin is the Managing Partner of PwC's Perth office. During his 26 years with the firm, he has worked in their Singapore, London and Sydney offices, with a focus on corporate governance, financial reporting assurance and technical accounting advice in both the public and private sectors. Justin was previously the leader of the Perth Assurance practice and continues to lead the audits of several major Western Australian organisations and subsidiaries of large international groups.

Justin is also a director of St John of God Health Care and The University of Notre Dame Australia and chairs the University's Finance, Audit and Risk Committee.

Steering Committee Deputy Chair: Nadia van Dommelen, Partner, PwC

Nadia van Dommelen is a Partner in PwC's Infrastructure and Urban Renewal practice with over 20 years of industry experience focused in project direction of building and infrastructure projects. She has five years' experience in structural design and a further five years' experience working for a pre-eminent global construction contractor.

Nadia is a member of the Development Committee of HeartKids Australia and a volunteer mentor for STEM programs aimed at developing problem solving and other 21st century skills, and inspiring and encouraging uptake of STEM subjects.

She holds a Bachelor of Engineering (Civil and Construction) from Curtin University and is an Affiliate of the Institute of Chartered Accountants, Australia & New Zealand.

David MacLennan, Assistant Director General of Policy and Priority Initiatives, Department of Planning, Lands and Heritage

David MacLennan joined the Department of Planning in March 2015.

He is an experienced public sector leader and served in various roles in the Commonwealth Government in Australia and overseas. This includes diplomatic postings with the Department of Foreign Affairs and Trade (DFAT) in London, Lima, Mexico City and Papua New Guinea.

Prior to joining the Department of Planning, Mr MacLennan held the position of Head of the Political and Economic Branch at the Australian High Commission in London. Prior to that, Mr MacLennan was DFAT's State Director in Western Australia.

He holds a Masters in Management from the Australian National University and a Bachelor

of Arts from The University of Western Australia.

In his current role, Mr MacLennan provides strategic direction for land use and infrastructure planning, policy and projects in Western Australia.

Fred Chaney, Western Australian Planning Commission

Fred Chaney is an architect who has worked in the UK, the Middle East, South East Asia and Australia.

In addition to his work as a practising architect, Fred has held board positions with numerous industry and advocacy groups including the Green Building Council of Australia, the Australian Institute of Architects and the WA Museum Foundation. His recent appointment to the state's peak planning body, the Western Australian Planning Commission, reflects his keen interest in the relationship between planning, environmental outcomes, urban development and economic opportunity.

He is the current Chairman of UWA's Australian Urban Design Research Centre.

Jay Watson, State General Manager, Westpac Banking Corporation

Jay is a career banker, having worked for Westpac for more than 37 years. Jay has been fortunate to have worked in every State and Territory in Australia, and has the benefit of honing his banking skills through diverse geographies and industries.

Jay takes an active interest in the future direction of Western Australia and is active with the Committee for Perth and its present project *Bigger and Better Beyond the Boom*, working to build strategies and recommendations in regards to broadening the economy of WA. Previously he was a member of *Filling the Pool*, a deep dive on gender imbalance and strategies to improve career opportunities for the female workforce.

Additionally, for the past three years he has been involved with Chamber of Commerce WA and its Business Advisory Board.

Liz Ritchie, Regional General Manager, Westpac Banking Corporation

Liz Ritchie has national responsibility for commercial banking in all regional areas of Australia, including a lead role in Westpac's Indigenous partnerships. Prior to joining Westpac, Liz was the State Director for CEDA in Western Australia.

Liz is a passionate spokesperson on gender issues and their impacts on society, and regularly contributes as a conference speaker.

Liz sat on the Committee for Perth's Steering Committee for their ground breaking gender study, *Filling the Pool*. In 2014 and 2015, Liz was also the Co-Chair of Anti-Poverty Week in WA and is heavily engaged in raising awareness and education of widespread disadvantage and poverty. Liz was a 2015 40 Under 40 Winner, recognised for her contribution to business and the community.

David Fisher, Chief Operating Officer, Juniper

David is a highly innovative, results driven and achievement orientated Executive Business Services / Chief Operating Officer (Deputy CEO) ex Group Financial Director, who holds a Bachelor of Accounting Science (Honours) and various other qualifications.
He is recognised by CPA Australia as compatible, supplemented by more than 25 years of post-graduate experience in business, with the ability to demonstrate a track record of success in small to large organisations across Property Management, Intellectual Property, Information Technology and Aged Care Industries.

He is a current member of Chartered Secretaries Australia (CSA), following the completion of a Certificate in Governance for Not-for-Profits and the Graduate Diploma of Applied Corporate Governance.

Rebecca Tomkinson, Executive Director – Aged Care Services, MercyCare

Rebecca has a diverse professional background that includes government relations, strategic policy development, social advocacy and stakeholder management, together with delivering key business growth initiatives in the government and non-government sectors.

Prior to joining MercyCare, she was the Chief Operating Officer for BaptistCare, developed corporate social responsibility initiatives for Bankwest and was Director of Government Relations for UnitingCare Australia.

Ms Tomkinson is a fellow of Leadership WA and has more than 15 years' experience working with private companies and national and local government organisations providing strategic planning advice, managing business development initiatives and building communication and marketing strategies.

Nicholas Ozich, Regional Director – Property and Development, Brookfield

Nick is responsible for the property and development activities of Brookfield Property Partners in Western Australia, currently Perth's largest commercial landlord.

Prior to his current role with Brookfield, Nick worked for Multiplex and Lend Lease both in Australia and the UK, gaining an appreciation for the impact high-quality property developments can have on a city's culture.

Since returning to his hometown of Perth, Nick has been able to put this passion into action, playing a key role in the development of the award winning Brookfield Place precinct, and is currently overseeing a number of large scale office, retail and mixed use developments in Perth's CBD at various stages of construction and planning.

Daniel Simms, Chief Executive Officer, City of Wanneroo

Daniel Simms is the Chief Executive Officer at the City of Wanneroo – Western Australia's fastest growing local government authority. He has extensive experience in local government in both metropolitan and regional Western Australia, working across many disciplines including planning and development, finance and administration, governance and strategic planning.

Daniel holds a Bachelor of Applied Science and a Graduate Diploma in Business in Local Government Management from Deakin University. He is Chairman of the Growth Alliance Perth and Peel Policy Forum, Executive Member of the National Growth Areas Alliance and a member of the Infrastructure Coordinating Committee (Western Australian Planning Commission).

David McCulloch, General Manager, Industry and Investment, Department of Jobs, Tourism, Science and Innovation

David's career has been almost exclusively in international business, investment attraction, exports, major events and industry development. Presently he is General Manager, Industry & Investment, in the Department of Jobs, Tourism, Science and Innovation.

David has responsibility for several priority sectors including energy and mining, and their respective equipment, technology and service sectors. Other sectors include infrastructure, financial services and aviation. He is Western Australia's representative on the National Investment Advisory Board (NIAB) and is Chair of the Resources & Energy Working Group which reports to NIAB.

He managed Western Australia's trade office in Mumbai from January – April 2015, and has been actively involved in the Sister State Agreement recently signed by the Governments of Western Australia and Andhra Pradesh.

Shaun Griffin, Managing Director, Ipsos Australia Pty Ltd

Shaun is an accomplished commercial manager with 20 years' experience working across a range of local, regional and global roles spanning consulting, research, strategy, planning and analytics.

In recent years, Shaun has occupied senior roles in digital, running strategy and digital marketing for businesses in the financial services and consulting sectors.

As General Manager of Ipsos Perth, Shaun is working to help clients understand how to capitalise on the commercial and social opportunities of a post-boom Perth market.

With a diversity of skills and experience across sales, marketing, strategy, analytics, operations, e-commerce and IT, he has a unique understanding of the challenges facing business and government in the digital age.

Andrew Zell, Executive Manager Advocacy and Policy, Real Estate Institute of Western Australia (Inc)

Andy Zell is Executive Manager of Advocacy and Policy at the Real Estate Institute of Western Australia (REIWA), where he is responsible for policy, advocacy, economics, and external relations.

Prior to joining REIWA, Andy spent 11 years in the State public service undertaking a variety of commercial, regulatory and social policy roles across portfolios. His last appointment was with the Housing Authority (now part of the Department of Communities) as Manager of Policy and Evaluation.

Andy is the Chair of the Willetton Primary School Board and Vice-President of the Willetton Football Club. He was previously the Chair of West Australian Music (WAM) and Councillor the WA Branch of the Institute of Public Administration.

Andy completed a Post Graduate Diploma in City Policy from Murdoch University and a Bachelor of Arts in History and Policy from San Francisco State University. He also holds qualifications in project and change management and is an alumni of the Leadership WA Signature Leadership Program.

Mark Stickells, Director of Business Development and Innovation, The University of Western Australia

Mark Stickells is the Director of Business Development and Innovation at The University of Western Australia and leads the development and stewardship of university partnerships with industry, the not-for profit sector, governments and communities.

Mark is an experienced executive and company director with more than 20 years' experience working in joint ventures, R&D and collaborative industry research programs. He has expertise and passion for energy and resource sector innovation and former roles include Director of UWA's Energy and Minerals Institute and Chief Executive of the WA Energy Research Alliance.

Mark has extensive national and international industry and innovation networks and is a highly effective communicator with a deep commitment to diversity, inclusion and innovation. Mark is a Board member or advisor to several UWA ventures and actively engaged in the innovation ecosystem in Perth. Mark is a thought leader and advocate for Perth's regional role as an energy city and innovation hub.

Tony Monaghan, Manager – Corporate Communications, The Brand Agency

Tony is the Manager of Corporate Communications at The Brand Agency. He has more than 28 years' experience as a journalist, political advisor and corporate communications consultant. He worked for ABC TV, Channel 9, Channel 7 and was Head of News for the Mirror Group TV in London. While working for State Government, he was a media advisor, chief of staff and principal policy advisor for the Department of Premier and Cabinet.

Marion Fulker, CEO, Committee for Perth

Marion Fulker is the inaugural Chief Executive of the Committee for Perth Ltd. She took up the position in January 2007 having previously been the Executive Director of the Urban Development Institute of Australia (UDIA) WA Division. Marion is an Adjunct Senior Research Fellow at The University of Western Australia and holds an MBA from Curtin Graduate School of Business. Aside from leading the Committee, Marion is the Chair of the Conservation & Parks Commission and a professional representative on the state's Infrastructure Coordinating Committee.

As an evidenced based organisation, Marion has led a number of landmark Committee for Perth research projects which have resulted in reports such as:

- *Towards a Bright Future* which outlines two scenarios for Perth as a region of 3.5 million people
- *A Cultural Compact*, the 10 year challenge which articulates a vision to make arts and culture part of the everyday lives of Western Australians
- *Filling the Pool,* a gender equality report aimed at growing the number of women participating and progressing in corporate life in Perth
- *Fremantle as a reconnected city* which details the opportunities for the future of the Fremantle region.
- *Get a Move On!*, the Committee's current transport and congestion project.

Lisa Kazalac, Manager, Research & Policy, Committee for Perth

Lisa Kazalac is the Manager of Research and Policy at the Committee for Perth. In her role Lisa oversees the development and publication of research and public policy positions which help to shape the future of Perth and Peel.

Trained as an economist at RMIT University, Lisa graduated with upper second class honours, and has recently graduated from Curtin University with an MBA.

Lisa's career has spanned 10 years in the Victorian public sector, where she developed and oversaw public policy development across a wide range of industries, including: transport infrastructure, social and public housing, regulation of the heavy vehicle industry and social policy issues, including the ageing population.

Lisa moved to WA five years ago and has held two positions in WA's corporate environment with CCIWA and REIWA, leading the advocacy and research agenda for the property industry.

She brings a passion for public policy, evidence-based research and is keen to influence decision makers for a more prosperous WA.

Georgia Harford-Mills, Research Officer, Committee for Perth

Georgia is a Research Officer for the Committee for Perth, joining the organisation in 2014. She holds a Bachelor of Science, Geography and received First Class Honours in Urban and Regional Planning from The University of Western

Australia. In addition, Georgia received the 2015 Patrick Armstrong Prize in Geography for her research thesis.

To date, she has been involved in researching and coordinating a number of Committee for Perth projects including the landmark *Get a Move On!* report and the What We Thought Would Kill Us series. She is also responsible for coordinating the annual FACTBase Research program and the Committee's Working Groups and Project Steering Committees.

COMMITTEE FOR PERTH MEMBERSHIP

GOLD MEMBERS

ANZ
Barminco underground mining excellence
BARRINGTON CONSULTING GROUP The Strategic Perspective
BHP
Curtin University
EY Building a better working world
FMG Fortescue The New Force in Iron Ore
HERBERT SMITH FREEHILLS
insight
Murdoch UNIVERSITY
PerthAirport
RAC For the better
THE UNIVERSITY OF WESTERN AUSTRALIA
Wesfarmers
Westpac
woodside

SILVER MEMBERS

AECOM
ATCO AUSTRALIA
Bendigo Bank Bigger than a bank.
bp
Brightwater
Brookfield
CORRS CHAMBERS WESTGARTH lawyers
CROWN
Deloitte.
Georgiou
GERARD DANIELS
hawaiian
HYATT REGENCY PERTH
Ipsos
Juniper A Uniting Church community
KPMG cutting through complexity
LAMONT'S
mirvac
PERTH CONVENTION AND EXHIBITION CENTRE
pwc
RAAFA
STIRLING CAPITAL
the brand agency
wa super
WATER CORPORATION
WorleyParsons resources & energy

BRONZE MEMBERS

Aboriginal Productions
ACIL Allen Consuling
Amana Living
APP Corporation
Arcadis
Arup
Ashurt
Built
Cannings Purple
Cedar Woods Properties
Churchill Consulting
City of Armadale
City of Canning
City of Fremantle
City of Gosnells
City of Rockingham
City of South Perth
City of Stirling
City of Subiaco
City of Wanneroo
Clifford Chance
Colliers International
Cox Howlett & Bailey Woodland
DBNGP
DEXUS Property Group
FJM Property
Frasers Property
Gold Corporation
Hames Sharley
HASSELL
HopgoodGanim
Jackson McDonald
Jacobs
JAXON
John Holland
Jones Lang LaSalle
Lendlease
Lester Group
Lux Events
Marketforce Advertising
MercyCare
Monadelphous Group
Navitas
North West Shelf Australia LNG
Peet Limited
Perron Investments
Perth Theatre Trust
Programmed Group
Ramsay Health Care
Real Estate Institute of Western Australia
RobertsDay
SAP Australia
Savills Australia
Screenwest
Silver Chain Group
Southern Cross Austereo
St John Ambulance WA
St John of God Health Care
Stockland
Town of Victoria Park
TPG + Place Match
Uber
Urbis
Western Australian Cricket Association
Woods Bagot
WSP

Tonts, M., Haslam McKenzie, F. and Legendre, J. (2017) *Perth as a resilient economy*, a FACTBase Special Report, The University of Western Australia and Committee for Perth, Perth.

Bigger & Better Beyond the Boom is a project of the Committee for Perth and is funded by the following organisations:

Core Funder: pwc

Major Funders: Western Australian Planning Commission; Westpac; The Aged Care Partnership is formed by the following: Amana Living, baptistcare, Brightwater, Juniper, MercyCare, RAMFA, Silver Chain

Supporting Funders: Brookfield; City of Wanneroo; dbp; Department of Jobs, Tourism, Science and Innovation; Ipsos; REIWA; The University of Western Australia

Bigger and Better Beyond the Boom — Perth's economic future as a region of 3.5 million people

Committee for Perth Disclaimer

For further information on the FACTBase project, contact:

Marion Fulker
CEO, Committee for Perth
T: (08) 9481 5699
E: enquiries@committeeforperth.com.au

UniPrint 144655