

ECONOMIC, SOCIAL AND ENVIRONMENTAL PROFILE: INNER METRO REGION

APRIL 2019

PREPARED FOR:
INFRASTRUCTURE VICTORIA



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SGS Economics and Planning Pty Ltd
ACN 007 437 729
www.sgsep.com.au
Offices in Canberra, Hobart, Melbourne, Sydney

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ABBREVIATIONS

Abbreviation	Description
AAGR	Average annual growth rate
ABS	Australian Bureau of Statistics
ACSC	Ambulatory Care Sensitive Conditions
AEDC	Australian Early Development Census
ANZSCO	Australian and New Zealand Standard Classification of Occupations
ANZSIC	Australian and New Zealand Standard Industrial Classification
ARI	Annual Recurrence Interval
ASR	Age Standardised Rate
BMO	Bushfire Management Overlay
CBD	Central Business District
CMA	Catchment Management Authority
DBSCAN	Density-based spatial clustering of applications with noise
DEDJTR	Department of Economic Development, Jobs, Transport and Resources
DELWP	Department of Environment, Land, Water and Planning
DHHS	Department of Health and Human Services
DOTe	Dropping off the Edge (Jesuit Social Services Report)
DPH	Dwellings per hectare

EJD	Economic Jobs Density
EPA	Environment Protection Authority Victoria
ESE	Economic, Social and Environmental
FER	Functional Economic Region
GP	General Practitioner (Medical doctor)
GRP	Gross Regional Product
GVA	Gross Value Added
HA	Hectare
HACC	Home and Community Care Services
HEX	SGS 30-hectare grid model
IT	Information Technology
IV	Infrastructure Victoria
LGA	Local Government Area
LQ	Location Quotient
MAC	Metropolitan Activity Centre
MVCC	Moonee Valley City Council
NEIC	National Economic and Innovation Cluster
NIEIR	National Institute of Economic and industry Research
POW	Place of Work
PSP	Precinct Structure Plan
PTV	Public Transport Victoria
PUR	Place of Usual Residence

SA	Statistical Area
SEIFA	Social and Economic Index for Areas
SSIP	State Significant Industrial Precinct
UGB	Urban Growth Boundary
VIF	Victoria in Future Report
VLUIS	Victorian Land Use Information System
VPA	Victorian Planning Authority
WHO	World Health Organisation
WTP	Water Treatment Plant

EXECUTIVE SUMMARY

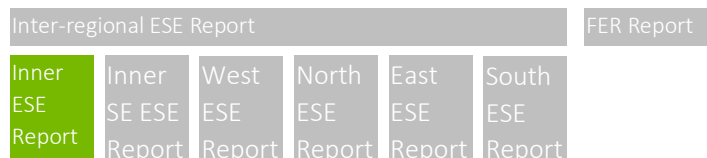
Context

Infrastructure Victoria (IV) is building its understanding of the regional and local trends that influence metropolitan Melbourne's regions. This will:

- inform the 2020 update of the 30-year infrastructure strategy, including IV's ability to spatially target infrastructure investment
- build on the analysis of regional Victoria completed earlier in 2018.

This **Inner Metro Region Economic, Social and Environmental (ESE)** report is one of six for each region of Melbourne, supported by an Inter-regional ESE report and a Functional Economic Region (FER) Report that looks beyond administrative boundaries to analyse how Melbourne, as a whole, functions as an economic region.

REPORT PACKAGE

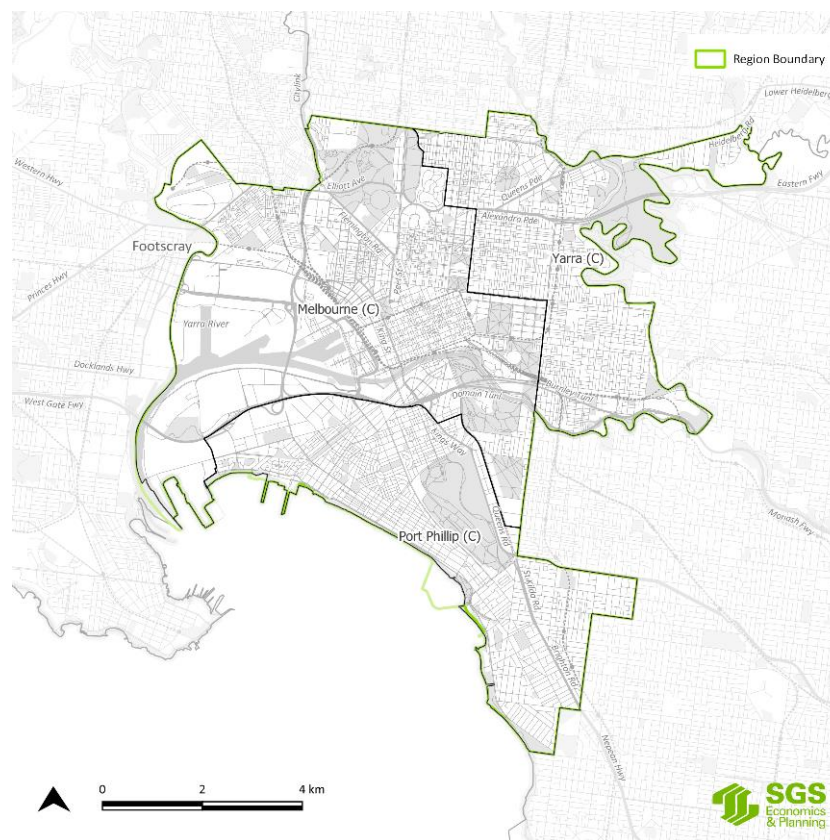


This ESE report looks at overarching drivers of change and how they affect the Inner Metro Region. It measures performance against a range of indicators at varying geographic scales and identifies key characteristics, trends, challenges and opportunities within and across the region. It does not investigate nor provide recommendations on investments or solutions to address these matters.

Inner Metro Region

The Inner Metro Region comprises three local government areas (LGAs): Melbourne, Yarra and Port Phillip (context map below).

The region is made up of Melbourne's central business district (CBD) and dense well established inner suburbs bounded by the beaches of Port Phillip Bay and the Yarra River to the east. Inner Metro Region Context Map



Source: SGS Economics and Planning 2018

Inner Metro Region summary

HEADLINE STATISTICS

	Number	%
Population	349,981	100%
0-14	34,945	10%
15-39	196,469	56%
40-64	84,506	25%
65+	31,713	9%
Jobs	698,002	100%
Knowledge	349,451	51%
HealthEdu	100,944	14%
Population	158,557	22%
Industrial	89,050	13%
Land	19,000m ²	100%
Residential	3,000	16%
Employment	1,000	5%
Park/Rural	12,000	63%
Other	3,000	16%

Attributes

- The Inner Metro Region is a **dense, highly utilised region**. It contains a mix of employment, housing and recreational uses. The region includes some long-standing assets such as the Melbourne Cricket Ground (MCG) and Royal Melbourne Hospital along with pockets of major renewal development including Fishermans Bend, City North and Arden.
- The Inner Metro Region contains a **high and growing concentration of employment** anchored by the CBD and supported by surrounding precincts. Major employment areas include Docklands, Southbank, Parkville and the Port of Melbourne, while employment is growing in all inner areas, especially in knowledge-intensive industries.
- The Inner Metro Region is also defined by a large and growing population dominated by young students and highly skilled professionals. The proportion of older people and families is also growing.
- The Inner Metro Region is an **integrated, multi-modal transport hub** – it is serviced by the major gateways at the Port of Melbourne and Dynon rail freight terminals, Flinders Street and Southern Cross stations, and other stations and the tram and bus network. Major freeways and arterial roads also provide car and freight connectivity. The growing bike and pedestrian network is heavily utilised.
- The region contains some of the most **significant social and health infrastructure** in the State. The national employment and innovation cluster (NEIC) at Parkville recognises the role that parts of the suburbs of Melbourne, North Melbourne, East Melbourne, Carlton and Fitzroy will continue to play as a pre-eminent health and innovative research cluster in Victoria. This includes medical specialisations such as paediatrics (Royal Children’s Hospital) and cancer research (Peter MacCallum Cancer Centre).
- The region’s **open space areas are integral to its liveability**, with places like the Southbank and North Bank, Albert Park, Royal Park, the City of Port Phillip foreshore and urban renewal sites such as Fishermans Bend creating places for interaction, recreation and activity. **Major sporting precincts and cultural sites** bring people together for events and attract visitors.
- **Environmental features** have been modified from their natural state. Numerous parks and gardens contain heritage and cultural values. Sports facilities such as the MCG provide recreational benefits for the local population and tourists. There is access to key water assets such as the Yarra River and Port Phillip Bay.
- **Key tourist destinations** include Melbourne Museum, the Arts Centre, National Gallery of Victoria, the Immigration Museum, Queen Victoria and South Melbourne Markets, the Royal Botanic Gardens, the Shrine of Remembrance, St Kilda Pier, Station Pier, Palais Theatre, the Melbourne Sports and Aquatic Centre, Abbotsford Convent and the Collingwood Children’s Farm.

Strengths

- The region is serviced by a well-connected public, private and freight transport network.
- The number of population-serving and knowledge-intensive businesses is growing.
- The region benefits from a diverse employment base and a large and highly skilled working-age population,
- Fishermans Bend and Parkville NEICs will accommodate substantial employment and industry growth.
- Overall, the population is increasing, young, diverse and socio-economically advantaged.
- Urban renewal areas provide capacity for growth and potential to support the increase in skilled, creative and knowledge-intensive industries.
- Residential intensification has largely provided new apartments and townhouses.
- The region has a larger proportion of social housing than metropolitan Melbourne.
- The region is well serviced by health, social and community infrastructure.
- Residents can access a mix of open space, including sportsfields and organised recreation assets, which are likely to reach capacity as the population grows.

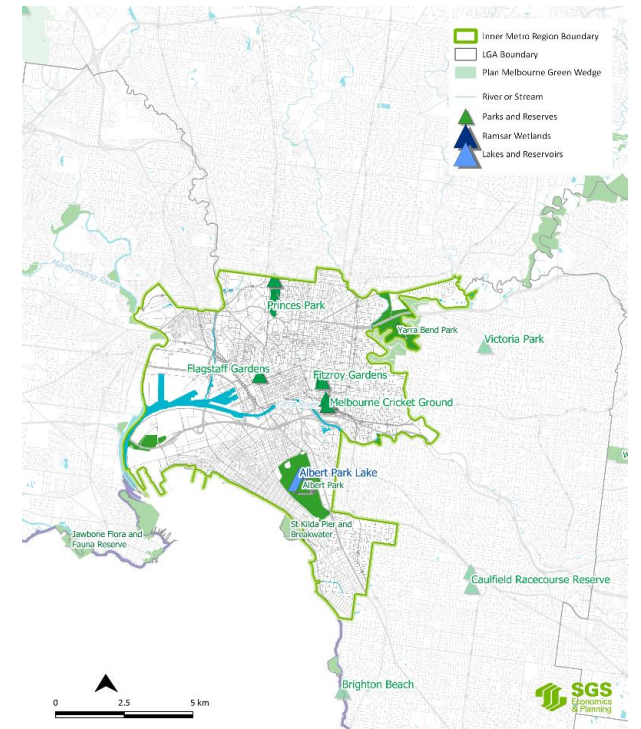
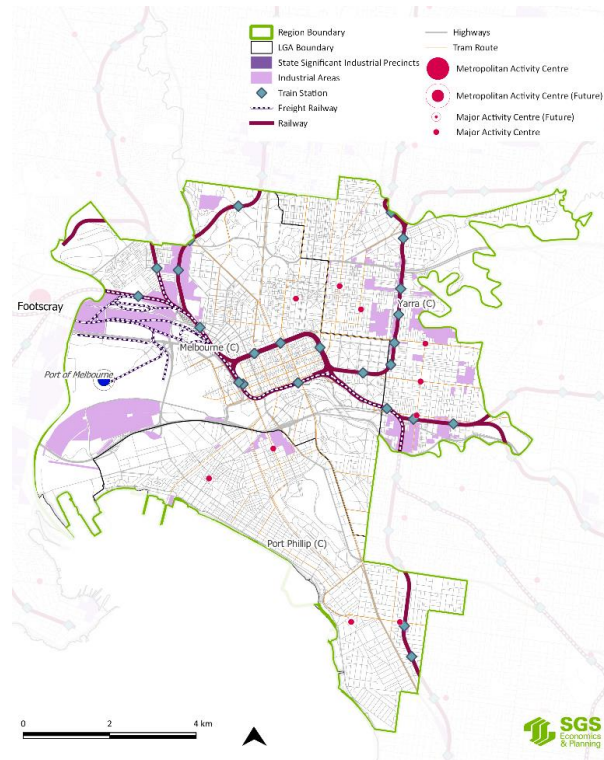
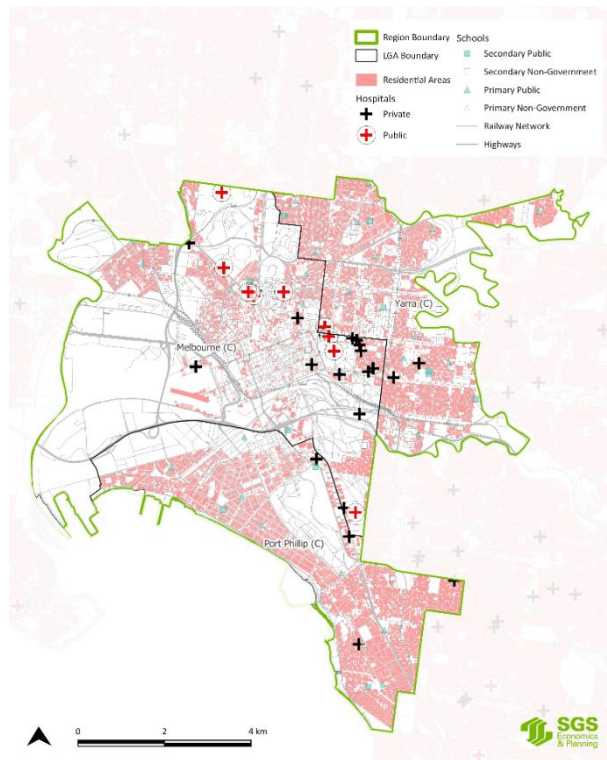
Challenges

- Planning for infrastructure and services and maintaining amenity must keep pace with population growth and change.
- Commercial locations need to be protected for future employment and economic activity.
- As well as high and increasing housing unaffordability in the City of Melbourne, there are areas of concentrated disadvantage, high rates of crime and a large homeless population.
- Early childhood health and development outcomes are poor.
- Waterway and bay health should be maintained or enhanced.
- Risks and impacts of hazards associated with climate change include sea level rise and heat vulnerability.
- Pockets of disadvantage are caused by high concentrations of social housing in some areas.

Key insights

- Melbourne CBD has an important metropolitan, Victorian and national role as an economic and cultural hub.
- NEICs can enhance the region's reputation for creative and knowledge-intensive industries.
- Transport infrastructure, particularly the rail and tram network, is key to regional accessibility.
- The major renewal sites will continue to increase housing supply.
- The diverse range of open space will reach capacity as the resident population grows.

ID ENVIRONMENTAL STRUCTURE



Inner Metro Region Economic, Social and Environmental Profile summary

Indicator	Likely impact of drivers of change	Description
ECONOMIC		
Economic performance	Favourable	The Inner Metro Region has a strong economy, driven by growth in employment and gross regional product (GRP) in the City of Melbourne. This is supported by employment clusters including the Hoddle Grid, Parkville NEIC and Fishermans Bend NEIC. The Central City is the largest employment location, supporting over 240,000 jobs, followed by Carlton-Lygon Street and St Kilda Road. Knowledge-intensive jobs comprise the greatest share of employment in the Central City and St Kilda, while health and education jobs dominate in Carlton-Lygon Street. The City of Melbourne has the highest international exports with a substantial increase in the value of exports since 1997, while exports from Port Phillip and Yarra LGAs are consistent, but relatively low. Population-serving businesses and knowledge-intensive businesses have grown, with industrial businesses experiencing marginal growth between 2009 and 2017. Gross value add (GVA) in the knowledge-intensive sector is higher than other sectors in the Inner Metro Region. Capital investment in the City of Melbourne increased from under \$2,000m in 1996 to over \$15,000m in 2016. Yarra and Port Phillip LGAs have experienced little growth in investment. The region has a large working-age population. Workforce participation rates are high, but variable, broadly reflecting areas of disadvantage. More socio-economically advantaged areas of Yarra and Port Phillip LGAs have higher participation rates, while more disadvantaged areas, including the CBD, have lower participation rates.
Economic wellbeing	Favourable	Household income is higher in the Inner Metro Region than metropolitan Melbourne and Victoria, albeit lower in the City of Melbourne than Yarra or Port Phillip LGAs. Yarra and Port Phillip LGAs have low rates of unemployment, while unemployment in Melbourne LGA is much higher than the metropolitan average, reflecting the higher rates of homelessness and relative socio-economic disadvantage. Residents predominantly work within the region. The next most common work destination for Inner Metro Region residents are surrounding inner and middle ring suburbs. For those who work in the region, most also live in the region; however, a substantial number of workers also travel to the region from the outer growth suburb of Wyndham. In 2015, the region's highest number of business and freight trips were to and from the City of Melbourne. Areas with a high concentration of jobs are frequent locations of business trip origins and destinations. A much larger proportion of the regional population does not own a car compared with the metropolitan average. This is pronounced in the City of Melbourne and reflects the quality of the public transport, cycling and walking networks in the region. The region has a high rate of internet access.

Indicator	Likely impact of drivers of change	Description
Employment and skills	Favourable	<p>The Inner Metro Region had a large share of the population employed in Skill Level 1 jobs where 1 is highest skill level and 5 is lowest skill level in 2016. Skill Level 1 jobs constituted the largest growth in every LGA in the Inner Metro Region, consistent with metropolitan trends.</p> <p>Knowledge-intensive industries represent the greatest share of employment in the Inner Metro Region. All industries grew between 1996 and 2016, with the greatest increases in knowledge-intensive industries and little change in industrial jobs. The Inner Metro Region has a concentration of jobs in financial and insurance service and information, media and telecommunications that is twice that of metropolitan Melbourne. Other industries with a higher than average concentration of jobs in the region include mining; professional, scientific and technical services; arts and recreation services; electricity, water, gas and waste services; and public administration and safety. The high concentration of knowledge-intensive industries reflects the region's location at the core of the metropolitan area and the confluence of transport networks.</p>

SOCIAL

Population demographics	Favourable	<p>The Inner Metro Region's annual growth rate is almost twice that of metropolitan Melbourne and Victoria, in line with broader trends of rapid urbanisation. The City of Melbourne is absorbing most of this population growth, with both the largest population and highest average annual growth rate in the region. Population forecasts show that this will continue, particularly in major urban renewal precincts (Docklands, Fishermans Bend and Arden-Macaulay), the Hoddle Grid, Parkville and St Kilda Road. The number of children in the Inner Metro Region is high, particularly in the City of Port Phillip.</p> <p>The large and growing proportion of people of working age is counter to broader demographic trends that indicate higher proportions of people aged 65 and over.</p> <p>Most people living in the region now also lived there in 2011. Overall, most migration-driven population increases are internal (inter and intra-state). However, the City of Melbourne experienced a divergent pattern of migration, with most current residents moving there from overseas in the past five years.</p> <p>The cultural composition of Yarra and Port Phillip LGAs largely reflect Victorian and metropolitan averages. The City of Melbourne has a larger proportion of residents born in South East Asia.</p>
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Indicator	Likely impact of drivers of change	Description
Housing diversity -		<p>The composition of housing stock is more diverse in the Inner Metro Region than metropolitan Melbourne and Victoria. Flats are the most prominent housing type in the region, with a 100 per cent increase in the number of flats between 2011 and 2016 in all three LGAs.</p> <p>This reflects broader policy and development trends towards an intensification of residential development. Separate houses represent less than 15 per cent of all housing across the three LGAs. The proportion decreased in each LGA between 2011 and 2016, most significantly in Port Phillip LGA. High-density dwellings were the most common form of development during this period. Included in this higher density is purpose-built student accommodation precincts that cater for the growing international student population. As the housing choices of international students are not captured in a reliable data source, the likely growth in housing demand related to international students can be seen in the high education commencements - these increased in Victoria from 40,303 in 2015 to 60,397 in 2018¹. Melbourne University alone saw an increase in international students from 11,705 in 2013 to 19,995 in 2017² and RMIT international student enrolments increased from 11,000 to 14,725 over the same period.</p>
Housing stress	Adverse	<p>Housing stress is increasing, due to ongoing increases in house and apartment/unit prices. Rates of rental and mortgage stress are lower than the metropolitan average in Yarra and Port Phillip LGAs while in the City of Melbourne the proportion of households in rental or mortgage stress is almost 10 percentage points higher than the metropolitan average. The region has a larger proportion of social housing than metropolitan Melbourne and a large homeless population.</p>
Disadvantage	Adverse	<p>The Inner Metro Region, while highly advantaged, contains areas of disadvantage, including concentrations of social housing (including social housing towers in Fitzroy, Collingwood and Flemington) and industrial areas where resident populations are low and the quality of housing poor.</p> <p>Concentrations of moderate disadvantage in the CBD and adjacent areas to the north reflect the high proportion of student households, which typically have a low annual income.</p>

¹ Australian Government Department of Education and Training (2018) International Student Data

² Melbourne University (2017) Annual Report

Indicator	Likely impact of drivers of change	Description
Youth engagement	Adverse	The Inner Metro Region has an above-average proportion of 20 to 24-year olds with Year 12 or higher qualifications, reflecting the relative level of socio-economic advantage of the area. The majority of Year 12 completers have undertaken a bachelor's degree and the proportion of young people undertaking a bachelor's degree is substantially higher than the Victorian average due to the concentration of tertiary institutions and the large proportion of student housing. Levels of youth engagement are increasing; however, the City of Yarra maintains a lower rate than the metropolitan average. Youth participation in full-time work declined in each LGA from 2011 to 2016, most notably in the City of Port Phillip. Levels of youth labour force participation are below the metropolitan and Victorian average. This trend corresponds to the high tertiary education receiving rate.
Population health	Adverse	Residents have good access to health care services and general practitioners. The accessibility of these services may be reflected in the lower than average number of ACSC separations, HACC clients, incidence of type 2 diabetes and higher number of registered mental health clients. The relative affluence of the Inner Metro Region may also contribute to the higher rates of reported access to health care services, with residents able to pay more to reach higher quality services. The number of drug and alcohol clients is generally higher yet has decreased over time. Female life expectancy is higher than for males. Life expectancy for males is lower than the metropolitan average in Yarra and Port Phillip LGAs, while life expectancy for females is lower in Port Phillip LGA. Melbourne LGA has a higher than average life expectancy for both sexes.
Early childhood outcomes	Adverse	Early childhood outcomes are poor despite the region's relative socio-economic advantage. The region generally has a higher rate of low birth weight babies, lower rates of immunisations and a higher proportion of children who are developmentally vulnerable. However, child protection substantiations are broadly equivalent to metropolitan and Victorian rates.
Crime	Adverse	Crime rates in the Inner Metro Region are higher than metropolitan and State levels. The high offence rate is attributed to the concentration of people and activities in the Inner Metro Region, particularly in the City of Melbourne.
Wellbeing	Adverse	The Inner Metro Region reports equivalent levels of subjective wellbeing compared to those reported for Victoria. All LGAs report a greater sense of safety walking home after dark than the metropolitan average, despite higher rates of crime. This is most likely due to streets more active streets throughout the day and night. The Inner Metro Region has a high and increasing rate of volunteering compared to the metropolitan and State average.

Indicator	Likely impact of drivers of change	Description
ENVIRONMENTAL		
Environmental assets	Adverse	The City of Melbourne has the largest total area of open space in the region; the cities of Port Phillip and Yarra have approximately half of the total open space of the City of Melbourne. There are, however, important linear open spaces along the Yarra River in the City of Yarra, and along the coast in the City of Port Phillip. Many streets and laneways in the Inner Metro Region are used for festivals and events. Green open space is a larger share of open space than mixed open space in City of Melbourne. The opposite is true for the cities of Port Phillip and Yarra. The highest type of open space in the region is sportsfields and organised recreation, which is classified as mixed open space. Land use in the region is varied. There are higher shares of residential land in the cities of Port Phillip and Yarra than in the City of Melbourne. There is little difference between the share of conservation and parks in each LGAs.
Environmental condition	Adverse	All LGAs are close to the metropolitan average for tree canopy coverage. There is a low proportion of river reaches (section of river between a beginning and ending point) that are in good/excellent condition. The proportion of reaches in good/excellent condition in the Maribyrnong River Basin is lower than the metropolitan average; the proportion in the Yarra River Basin is higher than the metropolitan average. The proportion of reaches in good/excellent condition is declining. Port Phillip Bay is healthy in general, although there are examples of poor bay health. Safe daily levels of pollution were exceeded in Richmond. Safe yearly levels of pollution have not been exceeded in Richmond.
Environmental risks and hazards	Adverse	Some areas in Yarra and Melbourne LGAs are at risk of flooding during a 1 in 100-year flood event. It is predicted that residential land use is primarily at risk. Areas of the City of Melbourne along the Yarra River, and coastal areas in the City of Port Phillip, are at most risk of sea level rise and storm surge; again, residential land is at most risk. All LGAs have urban heat islands. Areas more affected by urban heat islands include those in the west of City of Melbourne. Areas less affected include those along the Yarra River and Albert Park. All areas include populations that are vulnerable to heat. Areas in the Melbourne CBD near the Yarra River have concentrations of contaminated groundwater.
Environmental flows	Adverse	Most populated areas in the region have access to a diverse range of open space. Residents in the City of Port Phillip visit green space more than residents in the Cities of Melbourne and Yarra. South East Water and Yarra Valley Water consider multiple scenarios when forecasting supply and demand of water. In the worst-case scenario, augmentations to either system will be needed to service the region in the next 15-20 years. Relative to other areas of metropolitan Melbourne, LGAs in this region have a low number of small-scale solar installations since 2001. The large number of apartments in the region may affect the number of small-scale solar installations. There are no open landfills in the region. The total volume of kerbside garbage is largest in the City of Melbourne. There is an increasing trend in the quantity of kerbside garbage in the region since 2002.

1. INTRODUCTION

To support the update of Infrastructure Victoria’s 30-year Infrastructure Strategy, this report overviews the economic, social and environmental characteristics of the Western Metro Region.

1.1 Project purpose

This project will help Infrastructure Victoria:

Prepare for the 2020 Strategy update and provide a rich economic, social and environmental evidence-base at a regional level within metropolitan Melbourne. This will assist IV to understand relative regional strengths and challenges across the metropolitan area and (combined with the existing work done by others) across the state.

This report is one of six regional economic, social and environmental (ESE) profiles (see Figure 1) that will “identify the ESE strengths and challenges of Melbourne’s regions on a geographical basis.”

As well as the six regional profiles, the project also includes:

- a metropolitan Functional Economic Region (FER) profile, highlighting the strengths and challenges of metropolitan Melbourne’s economy as a network
- a metropolitan inter-regional report that provides regional indicators against IV’s 10 objectives to identify relative strengths and challenges within the metropolitan area.

FIGURE 1: REPORT PACKAGE



1.2 Report structure and approach

The report covers ESE domains that reflect Infrastructure Victoria’s 10 objectives:

1. Prepare for population change (Social)
2. Foster healthy, safe and inclusive communities (Social)
3. Reduce disadvantage (Social)
4. Enable workforce participation (Economic)
5. Lift productivity (Economic)
6. Drive Victoria’s changing globally integrated economy (Economic)
7. Promote sustainable production and consumption (Environmental)
8. Protect and enhance natural environments (Environmental)
9. Advance climate change mitigation and adaption (Environmental)
10. Build resilience to shocks (Environmental, Social and Economic)

The report is structured as follows:

- Chapter 2: The various geographies used for the project
- Chapter 3: The major drivers of change that are affecting Australian cities and regions, and which will impact metropolitan Melbourne’s and the Inner Metro Region’s growth and development
- Chapters 4 to 6: Economic, social and environmental indicators

1.3 Inner Metro Region

The Inner Metro Region comprises three local government areas (LGAs): Melbourne, Port Phillip and Yarra, accounting for 7,826 hectares, 0.8 per cent of the total land area of metropolitan Melbourne.

The region extends from Flemington Racecourse and Kensington to the coastline of Port Phillip Bay between Port Melbourne and Elwood and includes the historic inner-city suburbs of Carlton, Clifton Hill and Fairfield.

The Inner Metro Region is geographically compact compared to other metropolitan regions. It is the urban centre of Melbourne – home to the central business district (CBD), world-class sporting and cultural facilities, and high-density residential, commercial and heritage precincts. It has by far the most commercial activity of any of Melbourne’s metropolitan regions.

The Inner Metro Region is home to areas designated as major urban renewal precincts including the Docklands, Fishermans Bend (Lorimer, Montague, Sandridge and Wirraway), Arden-Macaulay, Dynon and the Flinders Street Station to Richmond Station corridor.

The region also contains two national employment and innovation clusters (NEICs) recognised in *Plan Melbourne*: Parkville NEIC has strengths in education, health, research, professional and technical industries, and Fishermans Bend NEIC has emerging specialisations in aerospace, defence research, manufacturing, and transport and logistics industries.

The region includes the Port of Melbourne, recognised as a key transport gateway in *Plan Melbourne*, as well as health and education precincts including the St Vincent’s and Epworth Hospitals and Australian Catholic University Precinct in the suburb of East Melbourne and the Alfred Medical Research and Education Precinct in Prahran.

The Inner Metro Region is Victoria’s cultural heartland. It hosts the Australian Open Tennis, the Formula 1 Grand Prix and the Spring Racing Carnival. It also has a

vibrant arts precinct at Southbank and retail, food and entertainment precincts in Prahran, St Kilda, the inner north and Richmond. Despite its high level of development and densification, the region is home to many sites of environmental significance including stretches of the lower Yarra and Maribyrnong rivers and iconic coastal assets in Port Phillip Bay including the protected little penguin colony in St Kilda.

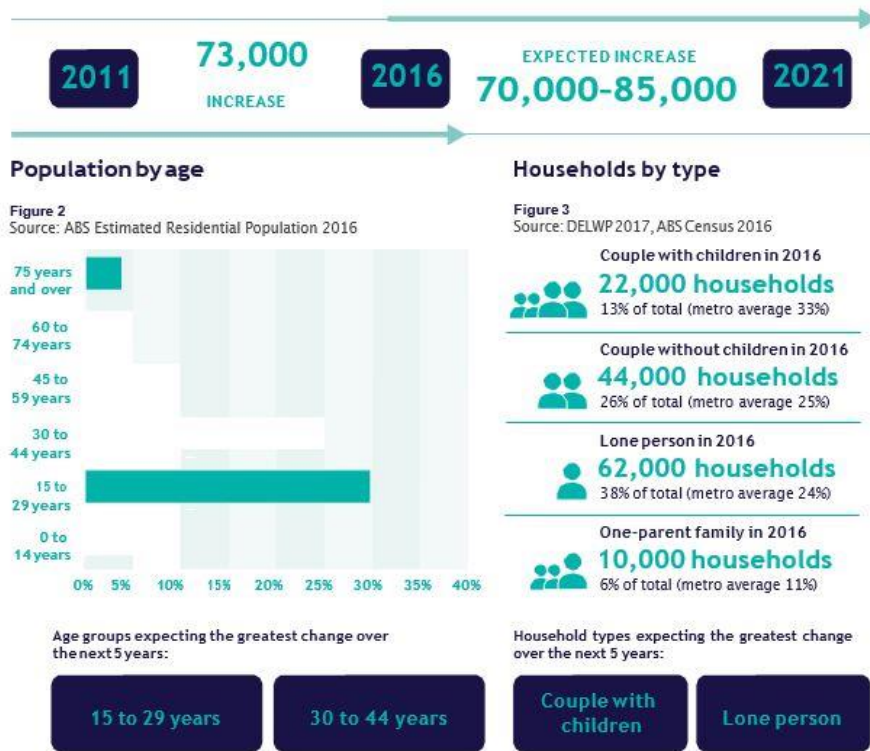
The population of the Inner Metro Region increased by more than 73,000 people over the five years to 2016, to reach almost 350,000. City of Melbourne absorbed 62 per cent of the total increase in population over this period. The region is expected to grow by at least 20 per cent in the next five years, compared with the metropolitan Melbourne average of approximately 12 per cent.

Growth will focus on major urban renewal precincts, including Docklands, Fishermans Bend and Arden-Macaulay, along with high and medium, density residential growth areas.

There were approximately 698,000 jobs in the region in 2016, with the largest number in professional, scientific and technical services, retail, and accommodation and food services. In the five years to 2016, businesses including administrative and support services, utilities services, construction, accommodation and food, and real estate services experienced the strongest growth.

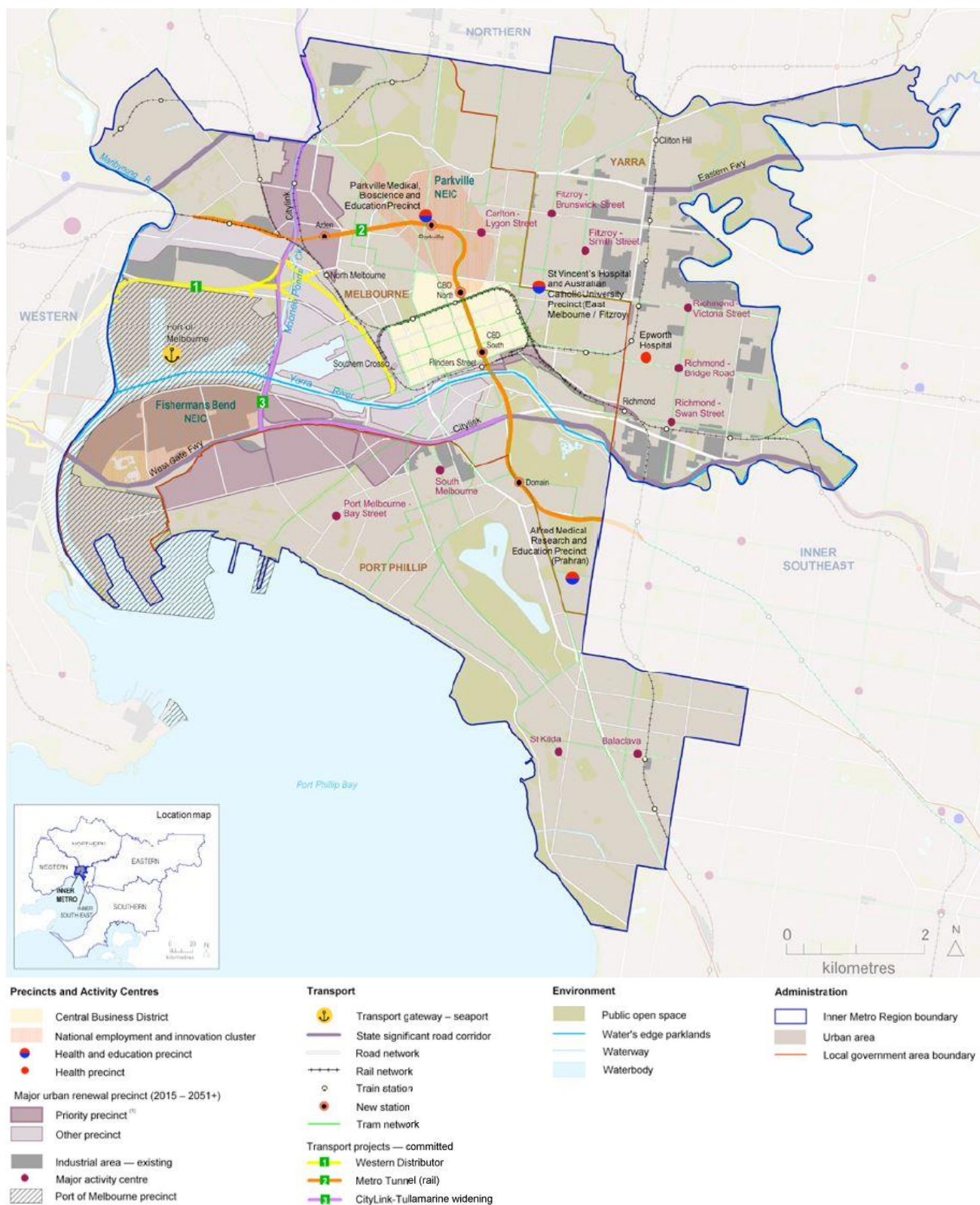
Melbourne CBD will continue to be metropolitan Melbourne’s largest concentration of employment. It has some of Australia’s largest and most globally connected financial and professional services businesses (particularly in the CBD, Docklands, Southbank and St Kilda Road). Its highly diverse economic base includes jobs in health and medical research, education, retail, creative industries, tourism and port-related activities.

FIGURE 2: POPULATION OVERVIEW (2016)



Source: Five Year Plan for Jobs, Services and Infrastructure 2017-2021 (Initial Investment Report), State Government of Victoria (2017).

FIGURE 3: INNER METRO REGION CONTEXT MAP



Source: Plan Melbourne - State Government of Victoria (2017)

2. GEOGRAPHIES AND CATEGORIES

A range of reporting geographies are used to help understand how the Inner Metro region functions.

Urban areas contain a mix of residential, economic, industrial, recreation, education, health and other spaces. The distribution of activity within these spaces, and the way people move within and between them, contributes to the demand for various types of infrastructure.

While standard local government and ABS defined areas are useful, consideration of different types of areas and the activities they accommodate can provide a more nuanced understanding of an area.

2.1 Key reporting geographies

Analysis against a range of geographies, as presented in Table 1, use definitions based on SGS's knowledge of urban development patterns.

The analysis has primarily been based around LGAs (due to data limitations) and location typologies. Figure 4 identifies the reporting geographies for the Inner Metro Region.

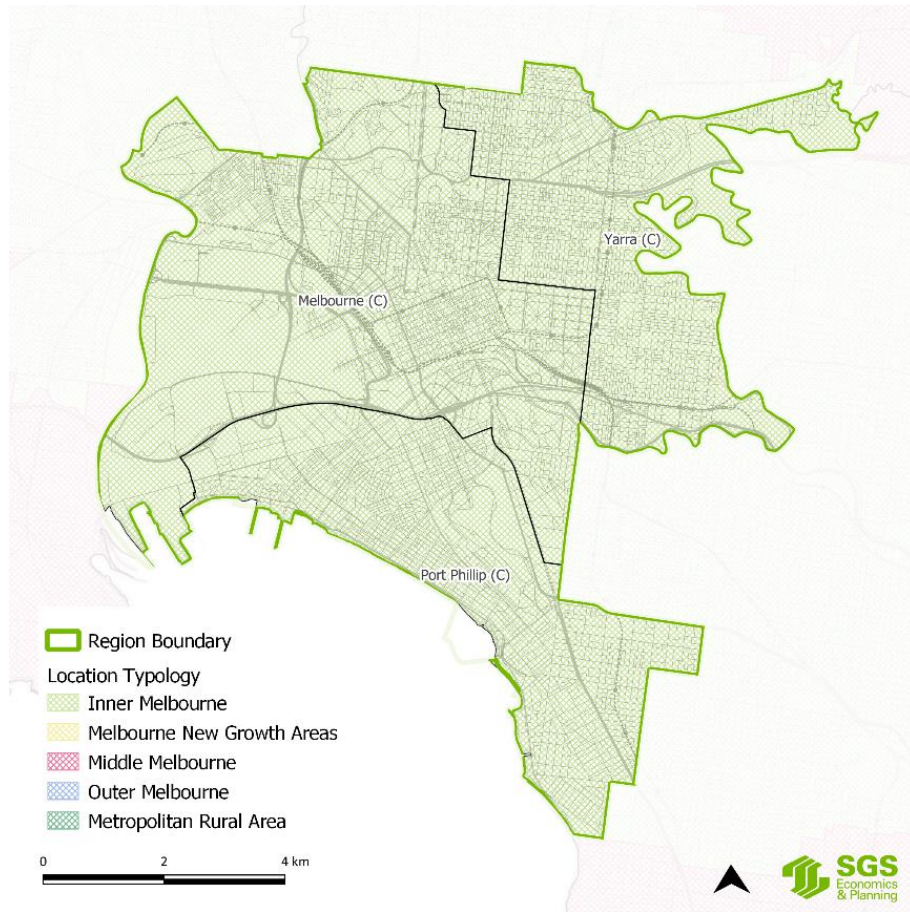
Different economic regions are used in the FER report.

TABLE 1: SUMMARY OF REPORTING GEOGRAPHIES

Region	Approach to defining
Planning subregions	<i>Plan Melbourne</i> regions: groups of LGAs
Location typology (Figure 4)	<ul style="list-style-type: none"> Inner: combination of tram network coverage, and 8km from CBD (e.g. does not include full extent of 86 tram to Bundoora, and extends further in to west where there is limited tram network) Middle: areas within the Western Ring Road, and other areas between Outer and Inner Outer: established outer suburbs within the Urban Growth Boundary Melbourne New Growth Areas: areas covered by Precinct Structure Plans (PSPs) Metropolitan Rural Areas: non-PSP areas within metropolitan Melbourne
Current planning areas	The current defined planning and other geographies, including activity centres, NEIC boundaries, State significant industrial precincts (SSIPs) as per <i>Plan Melbourne</i>
Economic locations	Based on current planning areas plus cluster analysis, includes economic nodes not yet designated and areas already designated, with limited employment (i.e. future planned centres). Draws on: <ul style="list-style-type: none"> existing employment land- based on ABS Mesh Block Land Use Categories: Commercial, Hospital/Medical, Industrial job density for 2016 by four broad industries categories clustering analysis based on DBSCAN algorithm
Standard ABS geographies	<ul style="list-style-type: none"> LGAs: local government areas (Figure 4) SA2: areas that represent a community that interacts socially and economically (generally 3,000-25,000 people) SA3: areas with similar regional characteristics, administrative boundaries or labour markets (generally 30,000-130,000 people) SA4: Used for output of labour force survey data, reflect labour markets within each State/Territory (generally 100,000+ people, sometimes 300,000-500,000 people in metropolitan areas)
SGS HEX Grid	<ul style="list-style-type: none"> 30ha grid

Source: SGS Economics and Planning, 2018

FIGURE 4: INNER METRO REGION LGAS AND LOCATION TYPOLOGIES



Source: SGS Economics and Planning, 2018.

2.2 Economic classifications

The 19 ANZSIC (1 digit) industry classifications have been aggregated into four broad industry classifications. Creative industries are classified as knowledge-intensive. The tourism industry straddles a number of standard industry classifications. The contribution of tourism is often indirect, generating output and creating jobs in sectors such as retail trade, arts and recreation services, accommodation and food services in particular.

TABLE 2 BROAD INDUSTRY CATEGORIES

Category	ANZSIC 2006 1 digit industry
Knowledge-intensive	<ul style="list-style-type: none"> ▪ Information media and telecommunications ▪ Financial and insurance services ▪ Rental, hiring and real estate services ▪ Professional, scientific and technical services ▪ Administrative and support services ▪ Public administration and safety
Health and education	<ul style="list-style-type: none"> ▪ Education ▪ Health care and social assistance.
Population-serving	<ul style="list-style-type: none"> ▪ Retail trade ▪ Accommodation and food services ▪ Arts and recreation services ▪ Construction ▪ Other services
Industrial	<ul style="list-style-type: none"> ▪ Agriculture, forestry and fishing ▪ Mining ▪ Manufacturing ▪ Electricity, gas, water and waste services ▪ Wholesale trade ▪ Transport postal and warehousing

3. DRIVERS OF CHANGE

3.1 Overview

Global megatrends are shifting the way people live and work, with implications for business and life in metropolitan Melbourne and in the Inner Metro Region.

Three key drivers of change have been identified:

- **Economic structural change:** The economy is continuing to shift towards creative and services-led sectors, and these sectors are consolidating in and around the CBD and major economic nodes. The creative sector is generally defined as encompassing economic activities that are concerned with the exploitation of knowledge and information. Technology is influencing the way people work, changing all types of jobs. These trends present opportunities for the Inner Metro Region, at the confluence of major transport networks, with access highly skilled workers and education and research institutions, and strong economic performance in knowledge-intensive industries. However, this challenges more traditional industrial areas that provide necessary urban services yet face pressure for redevelopment due to the high land prices of the inner-city areas. Traditional industries are typically those that are described as low-tech, less-research intensive, and are generally low skill.
- **Rapid urbanisation:** Australian population growth concentrates in major urban centres, particularly the State capitals of Melbourne and Sydney. Sustained population growth has resulted in rapid levels of urban expansion and infill development, especially within the CBD and adjoining major urban renewal precincts in the Inner Metro Region. The Inner Metro Region is the fastest growing region in metropolitan Melbourne, and rapid growth requires a balance between housing provision and the need to protect the region's valued character and amenity. High land prices increase pressure to rezone remaining pockets of employment land not available for new housing development and create challenges in ensuring the provision of a variety of uses in areas zoned for mixed use.
- **Impacts of climate changes:** As rapid urbanisation continues, the effects of urban heat islands, decreasing tree canopy cover and scarce water resources will be felt by many. The high population density and limited land resources pose challenges, including how best to manage the threat and impacts of sea level rise, with an extensive coastline and areas of low-lying land. Access to resources such as water, land and energy will affect how and where businesses and people locate and operate.

3.2 Economic structural change

Growth in new jobs

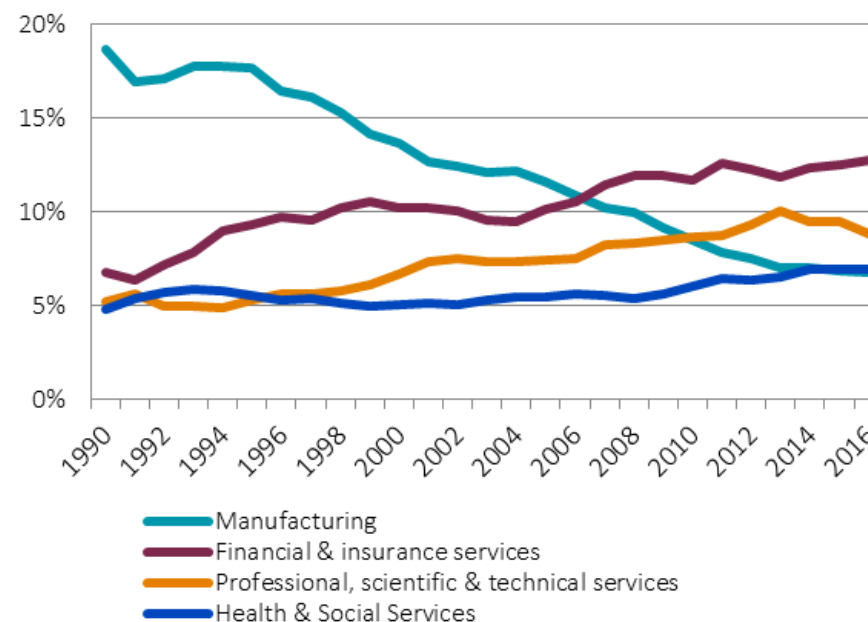
Metropolitan Melbourne’s economy, like that of many other cities, has undergone change over the past few decades. Previously dominated by manufacturing and industrial activities, it has transformed into one more reliant on knowledge-intensive activities and services (Figure 5). These professional services include a range of business functions involving finance, design, engineering, architecture, IT, marketing, law, accounting, universities and research and development institutions.

Despite this, manufacturing and other primary industries will remain and must be highly innovative to prosper. This will demand, directly or indirectly, heavy involvement by professional services. Likewise, population-serving sectors like retail, health and hospitality will require access to analytical and creative services if they are to boost productivity and continue to innovate.

Knowledge-intensive activities require access to diverse skills and client bases to specialise and build resilience. They also need to attract and retain highly skilled/specialised labour. For these reasons they typically locate (or agglomerate) in highly accessible, high amenity and diverse environments.

The massing and clustering of professional services improves businesses’ ability to innovate, boosting their productivity and, in turn, that of their customers. Agglomeration benefits are one of the main attractions for the growing professional services industries to locate in and surrounding the Melbourne CBD and near major institutional and economic nodes.

FIGURE 5: SHARE OF MELBOURNE'S GDP, SELECTED INDUSTRIES (1990-2016)



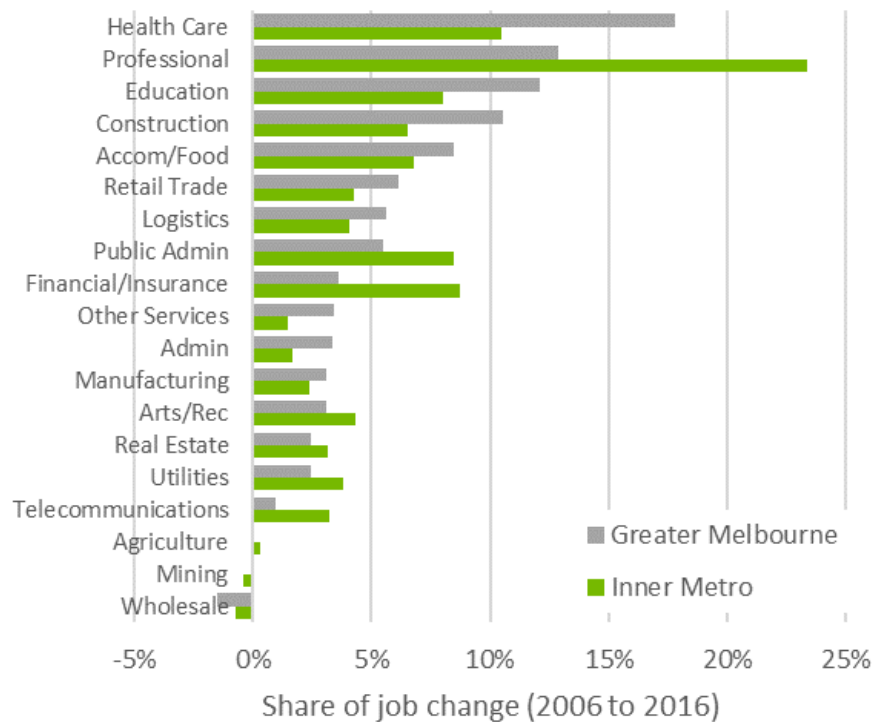
Source: SGS Economics and Planning

The Inner Metro Region had 698,000 jobs in 2016 and added 329,000 over the last two decades. This represents 38 per cent of metropolitan Melbourne’s job growth over that period.

Figure 6 presents the share of jobs growth over the last decade by industry for the Inner Metro Region and metropolitan Melbourne. This further illustrates the structural change occurring in the economy where many of the top industries are services based – health care, professional, education, retail, accommodation and food, and public administration.

The region's industry profile is consistent with this overarching trend, where the largest employing industries are professional services, health care, and education. Growth in professional services, public administration and financial services has far outpaced that of metropolitan Melbourne, showing strong engagement with this new knowledge services-led economy (see Figure 6).

FIGURE 6: SHARE OF EMPLOYMENT GROWTH (2006-2016)

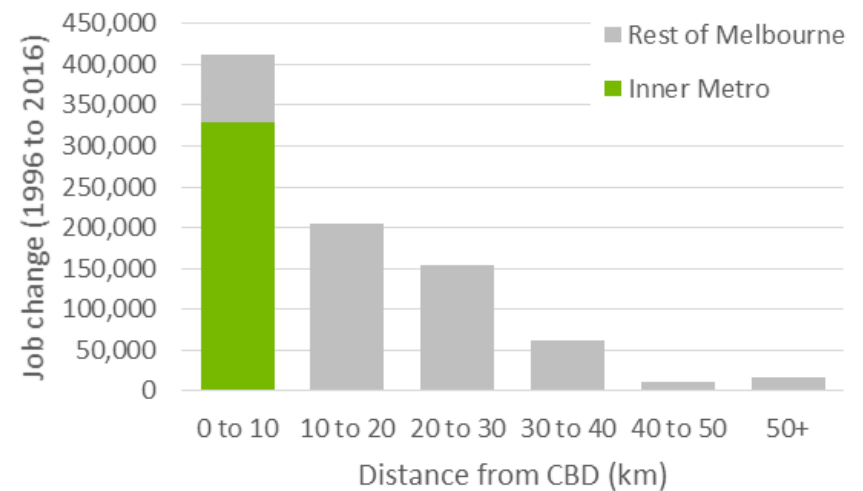


Source: SGS Economics and Planning, derived from NIEIR (2018)

The changing industry structure has a direct spatial implication for metropolitan Melbourne and the Inner Metro Region. Figure 7 provides an overview, presenting the change in jobs (1996 to 2016) by distance to the CBD. Employment location is investigated in Section 4.2.

Figure 7 illustrates that employment growth in the Inner Metro Region has been geographically concentrated, likely reflecting flexible land use planning controls that support higher employment densities in the Hoddle Grid, Docklands, Southbank and St Kilda Road North. Emerging urban renewal precincts and areas undergoing restructure will provide employment locations close to the CBD.

FIGURE 7: EMPLOYMENT GROWTH BY DISTANCE TO CBD



Source: SGS Economics and Planning, derived from NIEIR (2018)

Automation and the changing nature of work

Technology is changing all types of jobs and how people work. Automation is an ongoing process with continual technological development that will impact all sectors of the economy.

Jobs that will be difficult to automate include those that require human thinking, creativity and problem solving and high levels of skills training, as well as those that require human touch and highly developed vocational skills. The next wave of jobs likely to be automated are not necessarily lower-skilled manufacturing, but routine white-collar jobs such as call centre workers, legal clerks, accountants and retail workers.

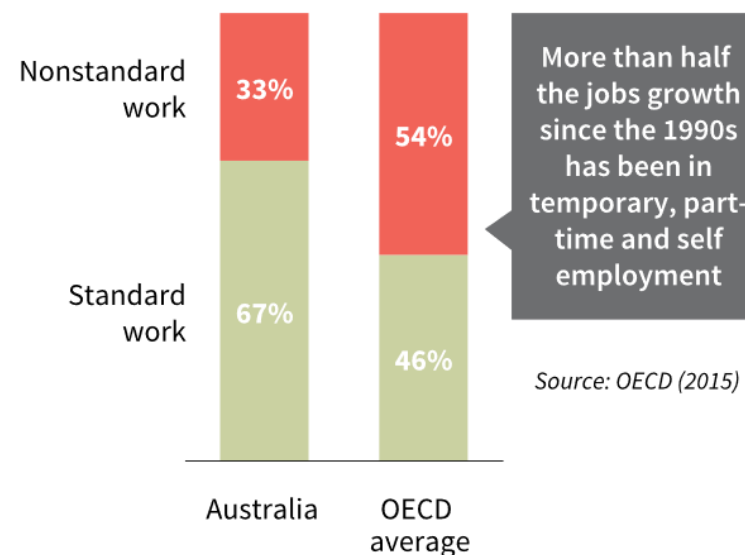
'Task-biased technical change' is the leading framework for analysing the impact of technology on work.³ It is used to measure the intensity of *abstract*, *routine* and *manual* tasks across different occupations. While abstract and manual tasks are hard to automate, routine tasks can be easily broken down and codified into a computer program because they follow precise, well-understood procedures. These trends cannot be neatly aligned to the structural shifts in the industry composition of metropolitan Melbourne's economy. These issues are further investigated in the FER report.

There has been a gradual increase in non-standard or alternative working arrangements (see Figure 8) such as self-employment, temporary agency work, seasonal work, independent contracting, fixed term contracts and on call work (*Independent Inquiry into Insecure Work*, 2012). Increasingly people are also piecing their incomes together from a portfolio of activities, including platforms like Air Tasker, Freelancer, Uber, WeWork, Deliveroo and Airbnb.⁴

³ TBTC first proposed by Autor, et al. (2003) and further by Goos and Manning (2007), Autor, Katz and Kearney (2006, 2008), and Acemoglu and Autor (2011).

⁴ McKinsey and Company (2016), *Independent Work: Choice, necessity, and the gig economy*. Accessed 23 October from:

FIGURE 8: PERCENTAGE OF JOBS GROWTH IN NON-STANDARD AND STANDARD WORK (1990-2015)



Source: FYA, 2015.

While these patterns will see changes in skills level and education required to participate, as a region with an already highly skilled and educated population, the Inner Metro Region is unlikely to be substantially impacted.

<https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/Employment%20and%20Growth/Independent%20work%20Choice%20necessity%20and%20the%20gig%20economy/Independent-Work-Choice-necessity-and-the-gig-economy-Executive-Summary.ashx>

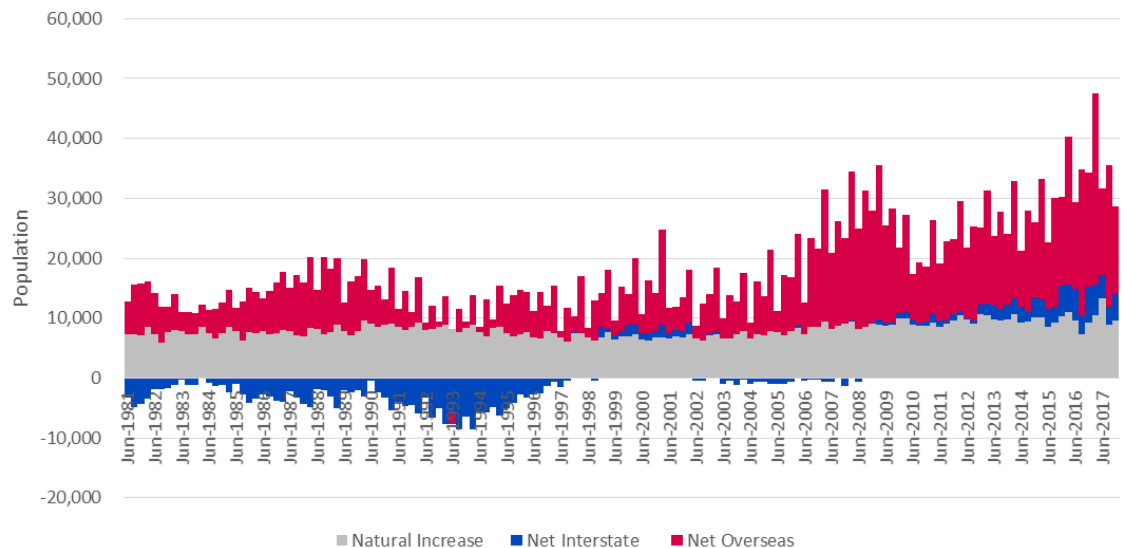
3.3 Rapid urbanisation and demographic shifts

People are choosing to live in urban environments to access jobs and a higher standard of living. Australia is one of the most urbanised countries in the world and population growth is expected to continue in the capital cities (PWC, 2015).

In terms of population growth, metropolitan Melbourne has been the fastest growing capital city in Australia since 2012. Factors driving the population boom include strong economic growth, a high standard of living, high amenity lifestyle and good infrastructure.

Figure 9 presents the components of population growth for Victoria over the last three decades. While natural increases in population have remained stable, both net overseas and net interstate migration have increased. In the 1980s and 90s, Victoria experienced a net outflow of interstate migrants, largely to Queensland and Western Australia. This trend has since reversed largely driven by strong economic opportunities available in Melbourne and Sydney. Over this period, there has also been a rise in overseas migration driven by the above factors and increases in national intake level.

FIGURE 9: COMPONENTS OF POPULATION GROWTH, VICTORIA



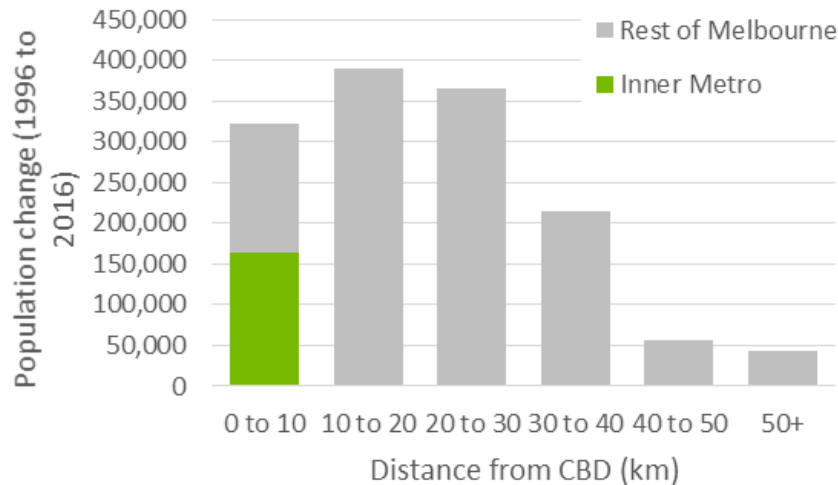
Source: ABS Regional Population Growth (Cat. 3218.0)

Population growth has been accommodated in urban growth areas around the fringe of metropolitan Melbourne, as well as the renewal of established parts of the city. Figure 10 shows a more dispersed pattern of residential settlement than in the case of employment growth (seen in Figure 7 earlier).

The Inner Metro Region was home to 350,000 people in 2016 and added 105,000 people over the last two decades. This represents 11 per cent of metropolitan Melbourne’s population growth over that period.

Much of the population growth has been accommodated in the Hoddle Grid and adjacent urban renewal precincts, including Docklands and Southbank. Infill development has occurred in established areas across the region and key transport corridors.

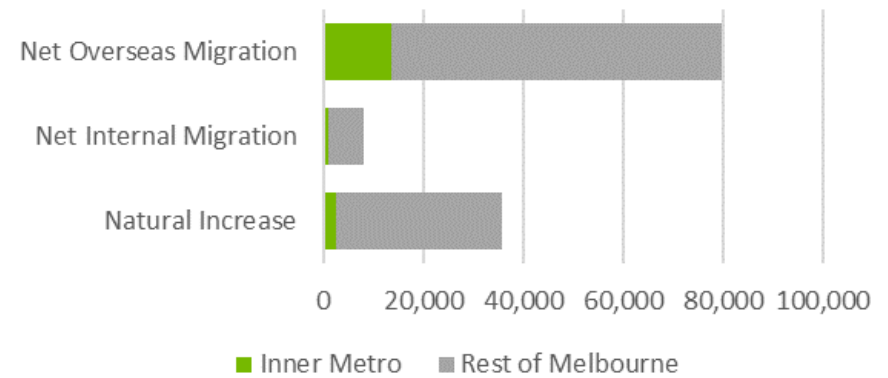
FIGURE 10: POPULATION GROWTH BY DISTANCE TO CBD (1996-2016)



Source: SGS based on ABS Census, 2016.

Figure 11, presenting the components of population growth for metropolitan Melbourne and the Inner Metro Region in 2017, illustrates the impact net overseas migration has on demographic change. The Inner Metro Region captured 17 per cent of Melbourne overseas migration and seven per cent of the natural increase. Historically, the Inner Metro Region has attracted overseas migrants, resulting in a diverse multicultural population (further detailed in Section 5).

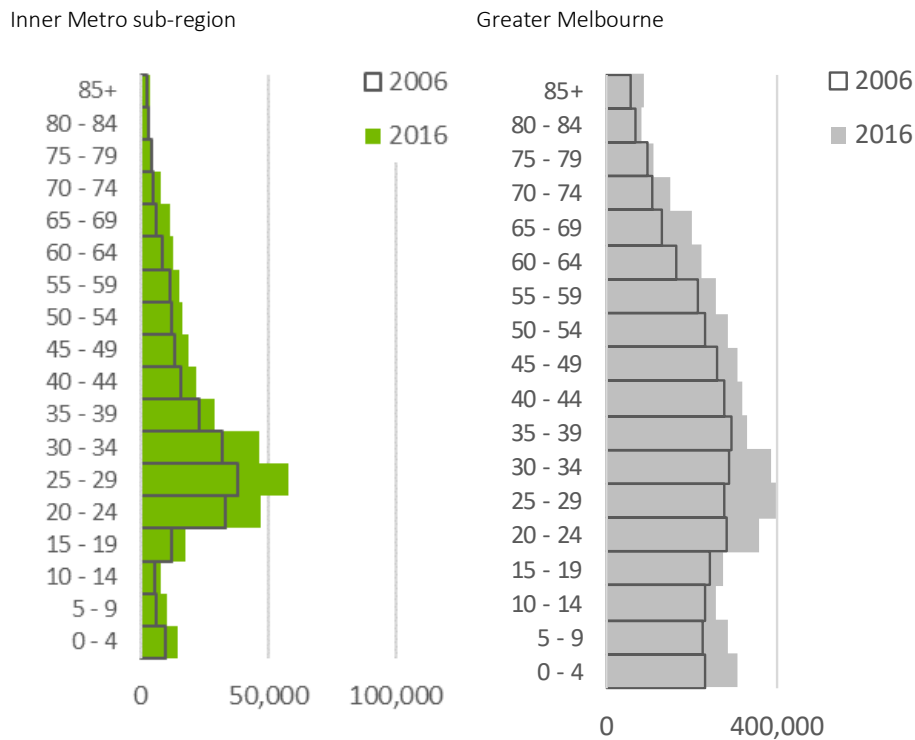
FIGURE 11: COMPONENTS OF POPULATION GROWTH (2017)



Source: ABS Regional Population Growth (Cat. 3218.0)

Figure 12 presents a population pyramid for the Inner Metro Region and metropolitan Melbourne from 2006 to 2016. It shows that growth has occurred across all age groups in Inner Metro Region. However, there are significant increases for young adults, which reflects the concentration of employment and lifestyle opportunities available (see Section 4.3).

FIGURE 12: POPULATION AGE STRUCTURE (2006 AND 2016)



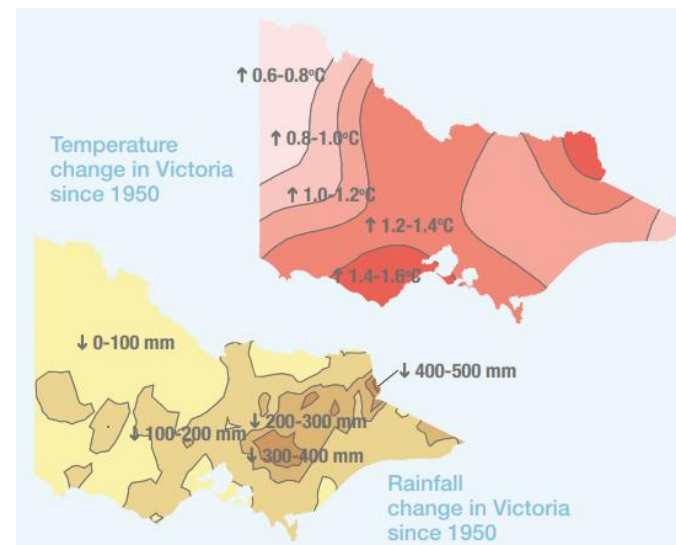
Source: SGS based on ABS, 2016

3.4 Climate change

Climate change has resulted from decades of unsustainable human activity. Its effects are largely attributed to emissions from the use of non-renewable energy sources. As most people now live in urban centres, cities and urban activities are the greatest contributors to climate change.

Consequently, global climates are becoming increasingly volatile and extreme, and the impacts of climate change are felt in all areas. Climate change in Australia manifests as temperature rises and increased incidences and intensity of extreme weather events. In other instances, it displays as higher incidences of nuisance flooding, or unpredictable bushfire behaviour. For Victoria this includes heatwaves, fires, droughts, storms and floods. Historical temperature and rainfall changes, as illustrated in Figure 13, show the influence of climate change in Victoria.

FIGURE 13: TEMPERATURE AND RAINFALL CHANGE (1950-2015)



Source: Climate Ready Victoria 2015

This has consequences for the natural environment, including a decrease in species diversity and abundance, vegetation structure and genetic loss. Climate change also has implications on the safety and livelihoods of communities. This includes risks for infrastructure as well as primary production, tourism, health and the community (Climate Ready Victoria, 2015).

Key risks to infrastructure from climate change include increasing sea levels, fire weather, flooding, hot days, heat waves and storm surges. These damage infrastructure, increase maintenance costs and disrupt services (Climate Ready Victoria 2015).

Extreme temperatures increase the likelihood of damage or loss of energy infrastructure which could limit supply of energy, or exacerbate capacity issues during peak times. Heatwaves may also degrade structures, buckle train tracks or cause overheating at water purification plants.

Droughts may result in faster degradation of bridges, roads and tunnels from changing groundwater levels, shifting foundations of buildings or cracking of underground pipes. Increasing water insecurity may have implications for the integrity of ecological systems and biodiversity, economic production and consumption, and the health and wellbeing of communities.

Infrastructure near the coast may be impacted by sea level rises and coastal erosion, causing corrosion of pipes through salt water intrusion, roads to be washed away, ports flooded and degraded, flooding of exchange stations, sub stations, manholes and underground pits (Commissioner of Environmental Sustainability Victoria, 2013).

For the Inner Metro Region, this will mean:

- risks to vulnerable population of extreme heat, particularly in dense areas or areas with limited vegetation and relief from heat
- risks of inundation to coastal areas as a result of sea level rise
- decreased health of waterways and vegetation and declines in biodiversity.

4. ECONOMIC

ECONOMIC INDICATORS

The Infrastructure Victoria economic indicators that underpin this section are:

- Employment location
- Economic location
- GRP
- GVA by industry
- Exports
- Business formation
- Effective job density
- Capital investment
- Labour productivity
- Participation rate
- Unemployment
- Change in working age population
- Household income
- Public transport
- Travel origins and destinations
- Freight and road networks
- Freight and business trips
- Households with vehicles
- Access to internet
- Skill levels
- Employment concentration of industries
- Location quotient
-

REGIONAL OVERVIEW

The economic profile of the Inner Metro Region is characterised by:

- a high and growing concentration of employment
- an integrated, multi-modal transport hub
- significant education and health infrastructure.

ECONOMIC STRENGTHS

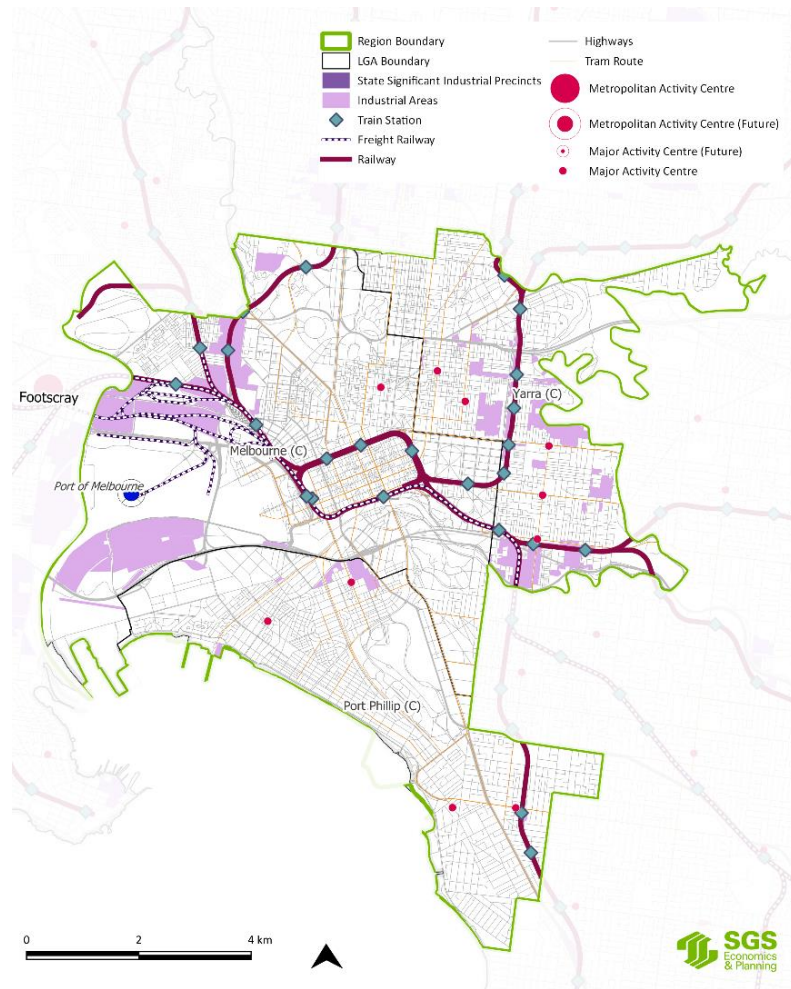
- A diverse economic base and capacity to support highly skill, creative, knowledge-intensive sectors.
- A well-connected public, private and freight transport network.
- A strong visitor economy as a result of the diverse tourism attractions.

ECONOMIC CHALLENGES

- Potential conflicts between commercial/industrial areas from residential encroachment, including the Port of Melbourne.
- Affordable housing for key workers becoming more limited.

4.1 Overview and key economic features

FIGURE 14: KEY ECONOMIC FEATURES – INNER METRO REGION



Source: SGS Economics and Planning, 2018

The Inner Metro Region contains the highest concentration of employment in the State. It generated \$105.4 billion in GRP in 2016, representing an estimated 35 per cent of metropolitan Melbourne’s GRP in 2016. It is anchored by major employment areas beyond the CBD, including Parkville NEIC and the emerging NEIC at Fishermans Bend.

Parkville NEIC focuses on education, health, research, professional and technical industries and employs more than 40,000 people. Fishermans Bend NEIC has a strong specialisation in aerospace, defence research, manufacturing, transport and logistics industries and currently provides approximately 12,200 jobs.

Significant health and education facilities can be found at St Vincent’s and Epworth hospitals and Australian Catholic University Precinct in the suburb of East Melbourne and the Alfred Medical Research and Education Precinct in Prahran, Parkville Biomedical Precinct in the Parkville NEIC, University of Melbourne, RMIT and Victoria University.

The mix of affordable commercial investment opportunities close to the CBD allows businesses to cluster and attract skilled workers while also helping to grow specialised employment clusters to diversify metropolitan Melbourne’s commercial offering.

This includes the creative sectors in suburbs including Docklands, South Melbourne, Richmond and Cremorne; regionally significant employment areas such as Gipps Street, Collingwood and West Melbourne; and the NEICs. Other hubs of employment and economic activity include Brunswick Street, Smith Street, Swan Street, Bridge Road, Victoria Street, Acland Street, Bay Street, Carlisle Street and Clarendon Street.

The Inner Metro Region is an integrated, multi-modal transport hub – the gateway to the city for workers, visitors and goods. It is serviced by the Port of Melbourne and major gateways such as Flinders Street and Southern Cross passenger rail stations and the Dynon rail freight terminals. The major freeways that converge in the inner city include CityLink and the West Gate Freeway.

4.2 Economic performance

Table 3 and Figure 16 presents current and recent growth in employment.

- City of Melbourne absorbed the most amount of total regional growth in employment (80.6 per cent) between 1996 and 2016.
- City of Yarra captured the least, accommodating 7.8 per cent.

Figure 15 shows the concentration of employment across the Inner Metro Region.

- There is a concentration of jobs in the Hoddle Grid and precincts immediately adjacent, including Southbank, City North and St Kilda Road. The density of jobs across the remainder of the region decreases when moving outwards from this core.
- The established suburbs of South Melbourne, Fitzroy, Collingwood, Cremorne and Richmond also have considerable concentrations of employment.

Figure 16 shows total jobs growth between 2011 and 2016.

- Patterns of recent jobs growth largely reflect existing employment concentrations, with the Hoddle Grid, Southbank and Docklands capturing the greatest amount of employment.
- Some growth occurred in Parkville, reflecting the completion of the Peter MacCallum Cancer Centre and designation of Parkville NEIC.

Figure 17 shows employment concentration by industry classification.

- Population-serving industries represent the most prominent industry, concentrated in the Hoddle Grid but also distributed consistently in established areas across the region.
- Knowledge-intensive industries show a similar pattern of distribution to population-serving industries.
- Health and education employment show concentrations in the Hoddle Grid and in areas adjacent key health and education precincts including:
 - Parkville NEIC
 - St Vincent's Hospital/Australian Catholic University Precinct

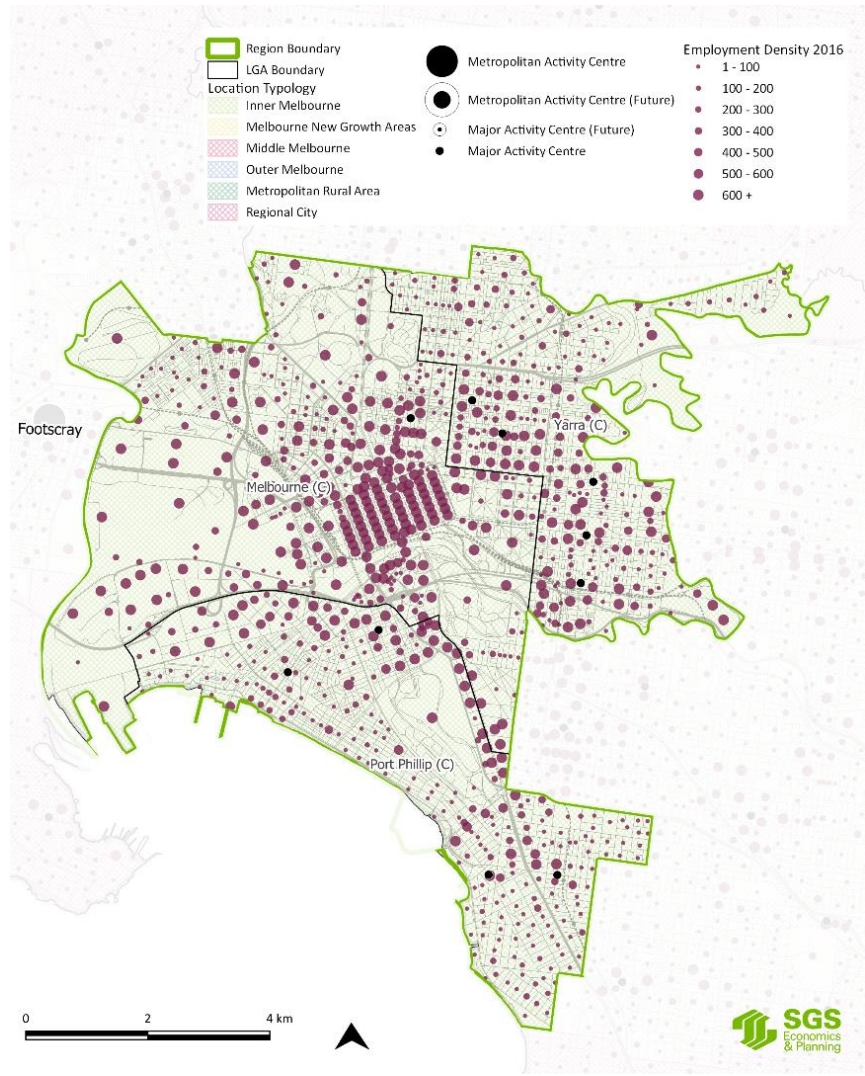
- Alfred Medical and Research Precinct
- Epworth Hospital.
- There is a smaller concentration of industrial employment in the Inner Metro Region in designated industrial areas including Fishermans Bend, South Melbourne, Collingwood, Cremorne and West Melbourne.
- The Hoddle Grid has the highest concentration of industrial employment.

TABLE 3: EMPLOYMENT BY LGA AND LOCATION TYPOLOGY (1996-2016)

	1996	2016	Change	% regional	1996-16 AAGR
					LGA
Melbourne	249,296	514,603	265,307	80.6%	3.7%
Port Phillip	64,416	89,993	25,576	7.8%	1.7%
Yarra	55,619	93,943	38,324	11.6%	2.7%
Inner Metro Region	369,331	698,538	329,207	100.0%	3.2%
Victoria	2,045,773	3,032,148	986,375	-	2.0%

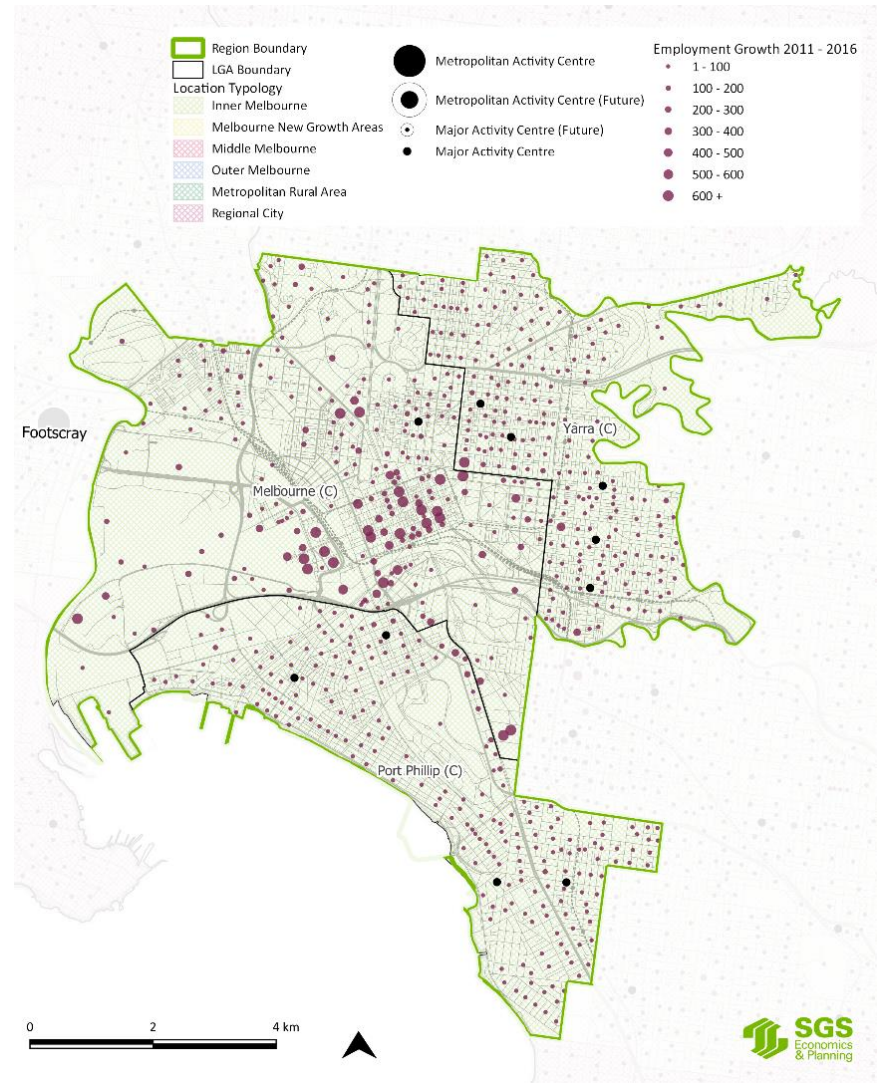
Source: SGS Economics and Planning, 2018

FIGURE 15: EMPLOYMENT DENSITY (2016)



Source: SGS Economics and Planning, 2018

FIGURE 16: EMPLOYMENT GROWTH (2011-2016)



Source: SGS Economics and Planning, 2018

FIGURE 17: EMPLOYMENT BY INDUSTRY SECTOR (2016)

Industrial

Knowledge-Intensive



Health and Education

Population-Serving



Source: SGS Economics and Planning, 2018

Economic locations

Economic locations are areas with a dense cluster of economic and employment activity. These clusters have unique economic profiles, which reflect the attributes and endowments of their catchment area workforces and historic legacy, and different levels of development maturity. The locations capture many places of state significance identified in *Plan Melbourne*, including NEICs, state significant industrial precincts (SSIPs) and metropolitan activity centres (MACs). While they do overlap with the *Plan Melbourne* locations, the boundaries are not identical. They also capture clusters that are not in *Plan Melbourne*.

Economic locations are employment clusters with a minimum of 5,000 jobs within a one-kilometre radius. See Table 1 for further information.

The economic locations driving production and employment in the Inner Metro Region are shown in Figure 18. Table 4 lists the number of jobs and industry breakdowns for each economic location.

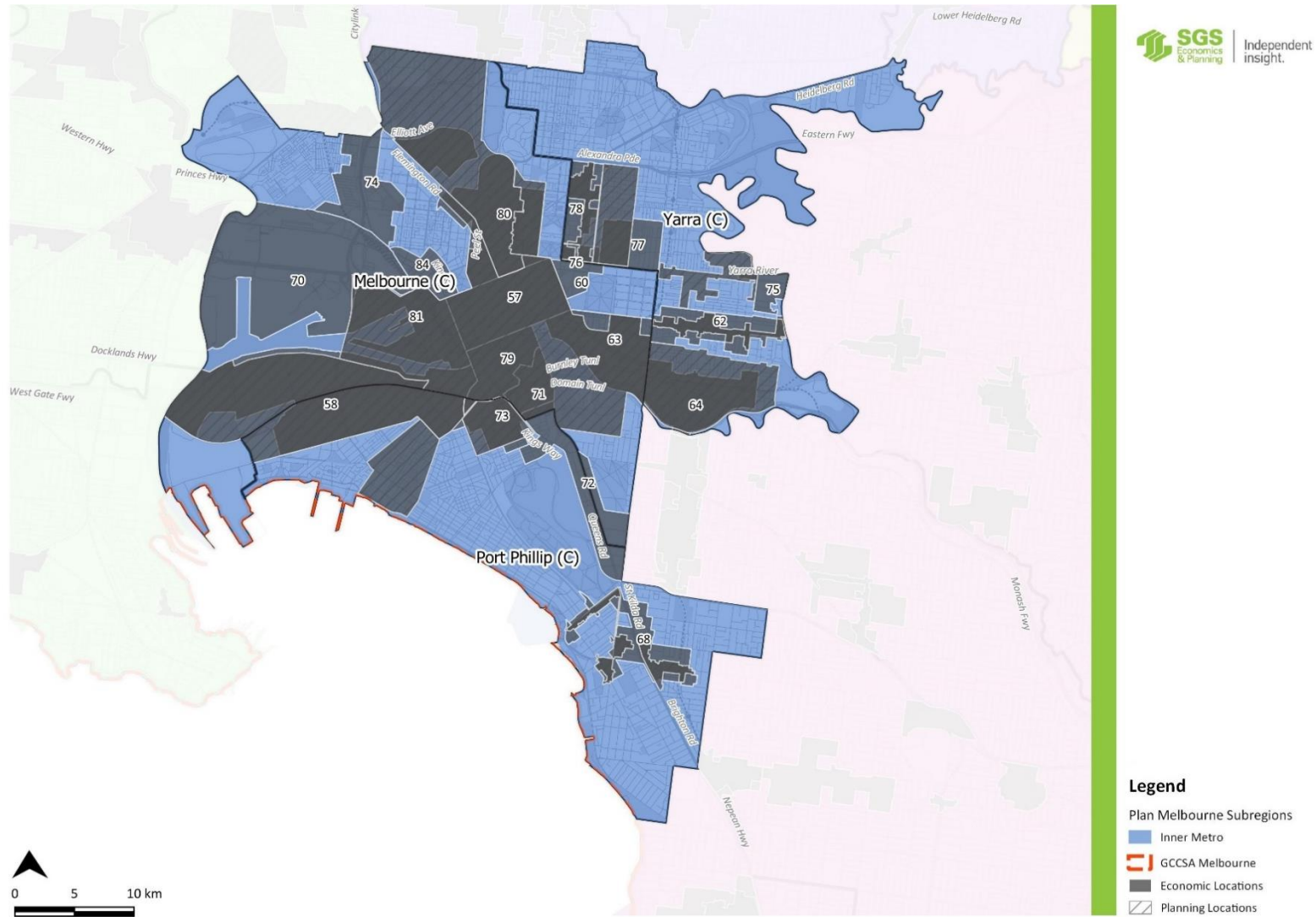
The Central City is by far the largest employment location, supporting over 240,000 jobs, 69 per cent of which are knowledge-intensive.

The next largest clusters are Docklands (cluster ID 81) with 65,395 jobs 70 per cent of which are knowledge-intensive; Carlton-Lygon Street (cluster ID 80) with 55,813 jobs, 50 per cent of which are health and education; and St Kilda Road (cluster ID 72) with 50,616 jobs (52 per cent knowledge-intensive).

Figure 18 shows where economic locations overlap with *Plan Melbourne* locations.

Economic cluster not identified in *Plan Melbourne* are Melbourne Docks, Arden and Macaulay and West Melbourne.

FIGURE 18: ECONOMIC LOCATIONS



Source: SGS Economics and Planning, 2018

TABLE 4: ECONOMIC LOCATIONS BY INDUSTRY (2016)

Cluster id	Economic locations	LGA	Knowledge Intensive	Industrial	Population Serving	Health & Education	Total jobs
57	Melbourne Central City	Melbourne	69%	9%	16%	5%	240,297
58	Fishermans Bend	Port Phillip/ Melbourne	30%	37%	29%	4%	37,810
60	East Melbourne	Melbourne	63%	5%	7%	24%	9,988
62	Richmond-Bridge Road	Yarra	27%	7%	27%	40%	10,510
63	Melbourne Sports Precinct	Melbourne	25%	3%	67%	6%	5,890
64	Richmond-Swan Street	Yarra	38%	19%	37%	6%	18,945
68	Balaclava	Port Phillip	37%	7%	39%	17%	8,943
70	Melbourne Docks	Melbourne	7%	84%	9%	0%	4,355
71	Southbank - Arts Precinct	Melbourne	51%	8%	31%	9%	6,189
72	St Kilda Road	Melbourne/ Port Phillip	52%	11%	16%	21%	50,616
73	South Melbourne	Port Phillip	48%	12%	33%	7%	12,279
74	Arden and Macaulay	Melbourne	29%	26%	37%	8%	7,189
75	Victoria Street	Yarra	30%	25%	39%	5%	3,020
76	Victoria Parade	Melbourne/ Yarra	6%	1%	5%	89%	6,301
77	Fitzroy-Smith Street	Yarra	32%	25%	28%	14%	11,585
78	Fitzroy-Brunswick Street	Yarra	25%	8%	38%	28%	5,780
79	Southbank	Melbourne	37%	23%	39%	1%	36,359
80	Carlton-Lygon Street	Melbourne	29%	2%	19%	50%	55,813
81	Docklands	Melbourne	70%	14%	14%	1%	65,395
84	West Melbourne	Melbourne	49%	10%	24%	17%	4,709

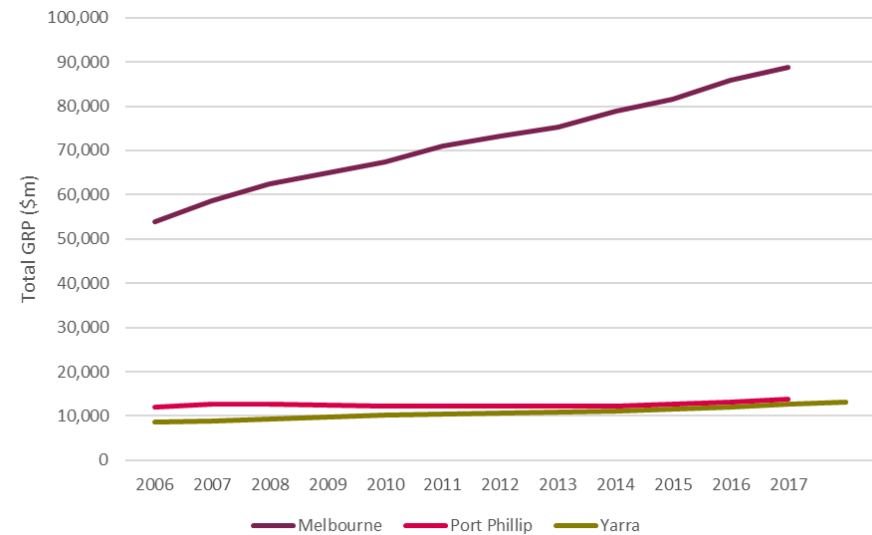
Source: SGS Economics and Planning, 2018

Gross regional product (GRP)

Gross regional product (GRP) measures the total quantity of economic production (goods and services in dollar terms) within a region. The GRP of a metropolitan area is a good measure of the size of its economic output, but not necessarily its value added or productivity (gross value added and labour productivity are discussed separately). This section discusses GRP measured at place of work by LGA.

- From 2006 to 2017, City of Melbourne consistently reported the highest GRP in the region; its GRP increased substantially over this time. City of Melbourne's strong economy is supported by employment growth and employment clusters including the Hoddle Grid, Parkville NEIC and Fishermans Bend NEIC.
- Yarra and Port Phillip LGAs report a lower GRP, with only modest growth experienced between 2006 and 2017. This is due to the high proportion of residential use in these municipalities and reflects the relatively shallow employment growth in these areas.

FIGURE 19: TOTAL GRP (2006-2017)



Source: NIEIR 2018

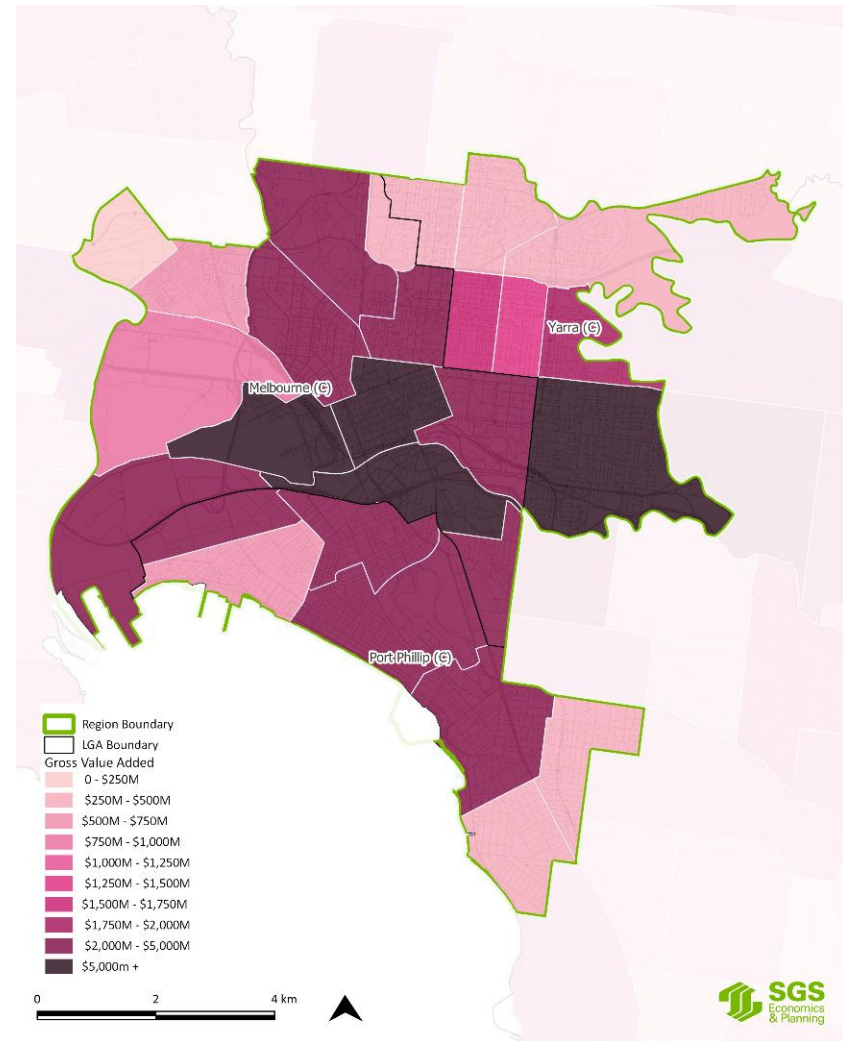
Gross value added (GVA) by industry

Gross value added (GVA) represents the total value added for all goods and services produced within a region. The difference between GRP and GVA is similar to the difference between the sales revenue and profits of a single firm. For example, a region may have a high level of output (GRP) but low value added (GVA), meaning that a large quantity of resources was used in the production process.

Figure 20 illustrates the total GVA across the Inner Metro Region.

- High levels of GVA are clustered in the core of the region and in Richmond/Cremorne. GVA reduces towards the outer areas, reflecting industry and employment concentrations.
- GVA is low in areas primarily zoned for residential uses.

FIGURE 20: TOTAL GVA (2016)



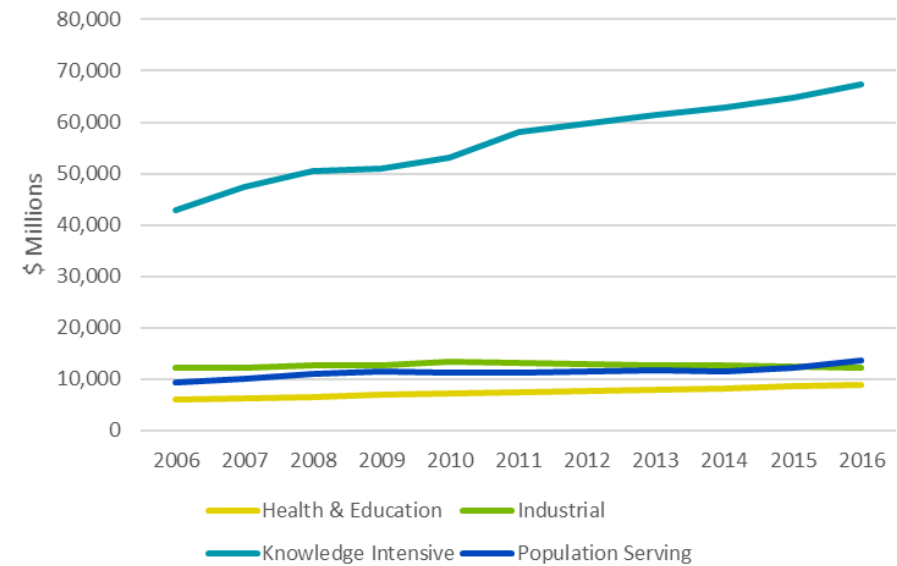
Source: SGS Economics and Planning, derived from various ABS datasets

Key industries of employment with high GVA across the Inner Metro Region are:

- **Health and education:** Parkville NEIC, Epworth Health Precinct, St Vincent’s Hospital/Australian Catholic University Precinct, Alfred Medical and Research Precinct, Alfred Medical and Research Precinct
- **Industrial:** Burnley South, Richmond East, Abbotsford Carlton United Brewery site, Church Street South, Gipps Street.
- **Population-serving:** Hoddle Grid, Southbank, Docklands, St Kilda Road.
- **Knowledge-intensive:** Parkville NEIC, South Melbourne Media Cluster, Cremorne.
- Figure 21 presents the breakdown of historic GVA by the four industry classifications in the Inner Metro Region.
- GVA in the knowledge-intensive sector is higher than other sectors. GVA in the knowledge-intensive sector has increased between 2006 and 2016. Little change in GVA has occurred in the other sectors.

See section 2 for a description of industry classifications.

FIGURE 21: GVA BREAKDOWN BY INDUSTRY CLASSIFICATION (2006-2016)



Source: NIEIR 2018

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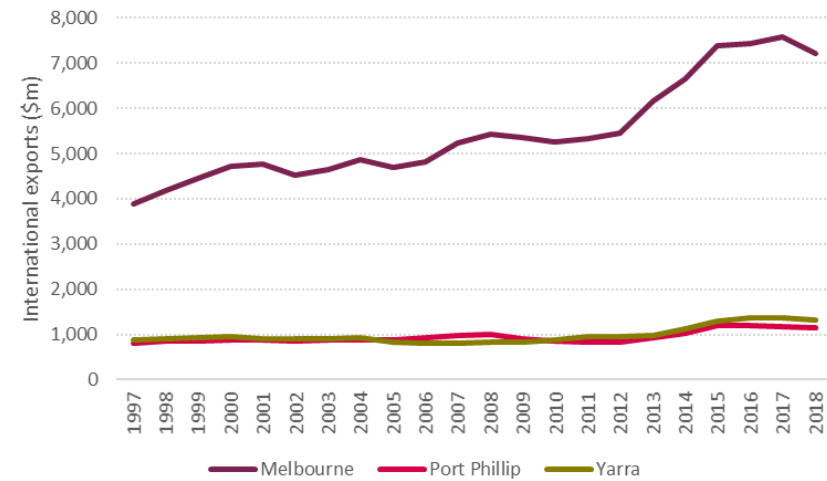
Exports

Exports are goods transfers between countries and are essential to a country's economy. High international exports contribute to the growth of a region and help boost employment.

Figure 22 and Figure 23 show international exports by LGA and by industry, respectively.

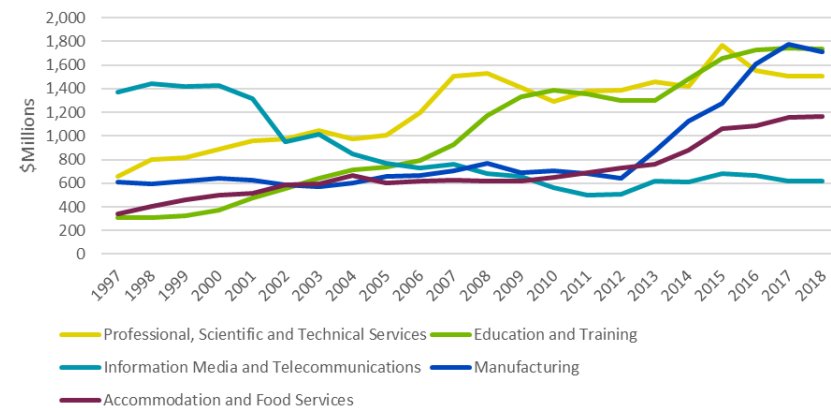
- City of Melbourne has the highest international exports for the Inner Metro Region, significantly higher than that of Port Phillip and Yarra LGAs.
- City of Melbourne has experienced significant growth in exports, rising from under \$4,000m in 1997 to over \$7,000m in 2017. A slight decrease occurred in exports between 2017 and 2018.
- Port Phillip and Yarra LGAs have maintained a consistent level of exports at around \$2,000m.
- International exports are increasing across all industry categories except information, media and technology, which is decreasing.
- Exports in education and training, and manufacturing are highest, with exports in manufacturing increasing rapidly since 2012.

FIGURE 22: INTERNATIONAL EXPORTS BY LGA (1997-2018)



Source: NIEIR 2018

FIGURE 23: TOP 5 INTERNATIONAL EXPORTS BY INDUSTRY (1997-2018)



Source: NIEIR 2018

Business formation

- Business formation is the registration and de-registration of businesses by different industries. To measure the growth of business in the Inner Metro Region, the four industry classifications are used.
- The highest growth is seen in health and education sector in every municipality in the Inner Metro Region, attributed to increased demand from the growing population.
- This grew by 45.7 per cent in the City of Melbourne. Business formation in the growing health and education sector may reflect the growth in international students.
- Population-serving businesses and knowledge-intensive businesses also increased.
- Industrial businesses increased marginally between 2009 and 2017 in Melbourne and Yarra LGAs, and decreased by 6.4 per cent in Port Phillip LGA.
- Growth in the knowledge-intensive businesses and decline in industrial businesses reflects broader economic shifts from an industrial-based economy to a knowledge-based economy.
- Table 6 shows that the high growth in the knowledge-intensive sector occurred despite an already high number of businesses in this sector in the region, reflecting its ongoing strength.

TABLE 5: BUSINESS FORMATION (GROWTH RATE) BY INDUSTRY (2009-2017)

LGA	Health and Education	Industrial	Knowledge-intensive	Population-serving
Melbourne	45.7%	2.5%	33.4%	29.7%
Port Phillip	39.4%	-6.4%	23.3%	33.6%
Yarra	38.5%	1.4%	28.9%	20.7%
Metro Melbourne	45.3%	6.1%	25.4%	18.9%
Victoria	42.2%	1.2%	24.3%	15.2%

Source: ABS Counts of Australian Businesses, including Entries and Exits 2009 and 2017

TABLE 6: BUSINESS FORMATION (COUNT) BY INDUSTRY (2009-2017)

LGA	Health & Education	Industrial	Knowledge-intensive	Population-serving
2009				
Melbourne	1,917	3,810	17,710	6,194
Port Phillip	1,010	1,830	9,066	3,681
Yarra	1,041	1,726	5,754	3,280
2017				
Melbourne	2,794	3,907	23,622	8,031
Port Phillip	1,408	1,713	11,181	4,916
Yarra	1,441	1,750	7,419	3,958

Source: ABS Counts of Australian Businesses, including Entries and Exits 2009 and 2017

Effective job density (EJD)

Effective job density (EJD) is a measure of a location's concentration of jobs based on their accessibility, which is closely linked to the transport networks and infrastructure. High EJD can be a result of having a large pool of employment nearby or being well connected to more distant employment.

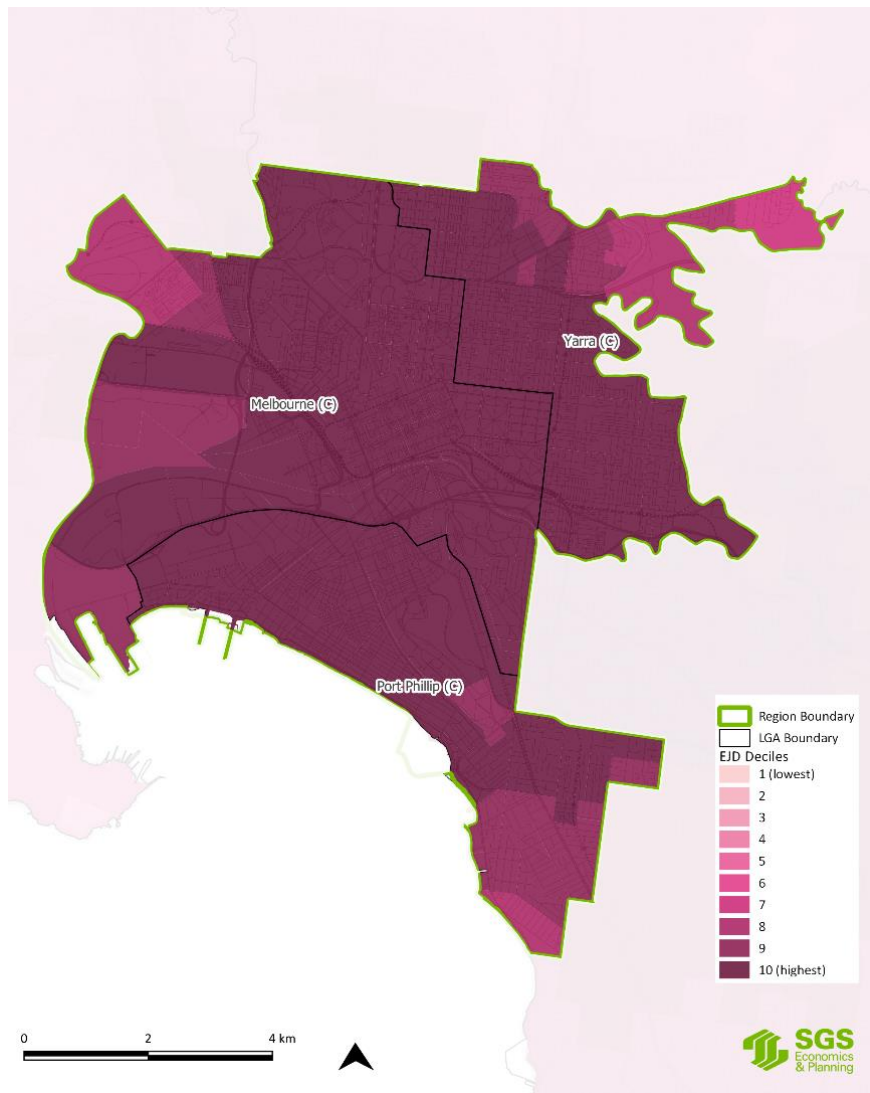
This indicator helps to understand how accessible a city is, how employment is distributed and whether residents enjoy a range of employment opportunities. People who live in areas with higher EJD have a greater chance of matching their skills and aspirations to available jobs, creating opportunities for increased skill development and job satisfaction.

An area with fewer jobs can also have high EJD by locating close to another area with high EJD.

Higher EJD is also an indicator of increased agglomeration, which is the economic benefit caused by interaction and technical spill overs between firms. This is particularly relevant to knowledge-intensive industries.

- All areas throughout the Inner Metro Region have the highest possible level of EJD. This reflects the compact form of the region, the large concentration of jobs, and the quality and coverage of public and private transport networks.
- Figure 25 shows EJD by sector. Each of the four industry classifications have a high EJD in the Inner Metro Region. The very southern and north-eastern extents of the region have a slightly lower EJD for the industrial and health and education sectors. This is still very high overall.

FIGURE 24: EFFECTIVE JOB DENSITY (2018)



Source: SGS Economics and Planning, 2018.

FIGURE 25: EFFECTIVE JOB DENSITY BY SECTOR (2018)



Source: SGS Economics and Planning, 2018.

Capital investment

Capital Investment refers to funds invested in enterprise. High levels of investment indicate a growing economy as firms are investing more funds into their businesses

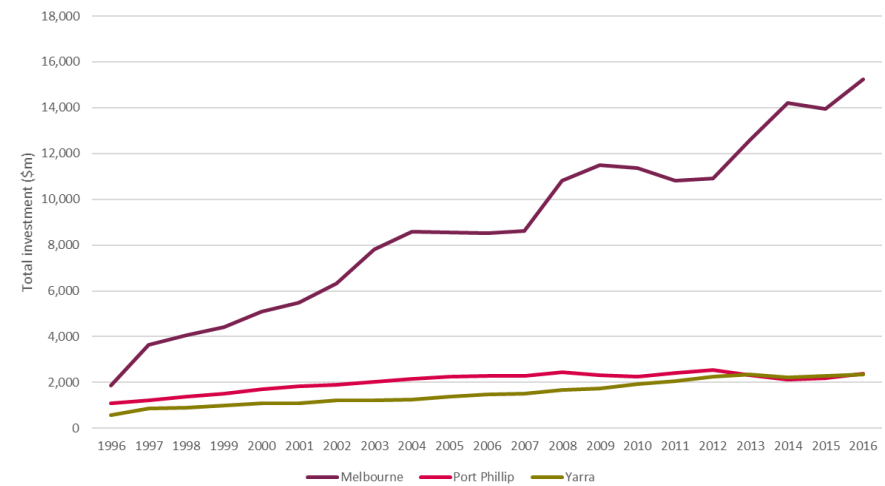
Figure 26 shows the City of Melbourne’s growth in capital investment, from below \$2,000m in 1996 to over \$15,000m in 2016.

- Yarra and Port Phillip LGAs experienced little investment growth, with total investment largely sustained around \$2,000m between 1996 and 2016

Figure 28 illustrates the breakdown of capital investment by LGA and the proportional changes from 1996 to 2017.

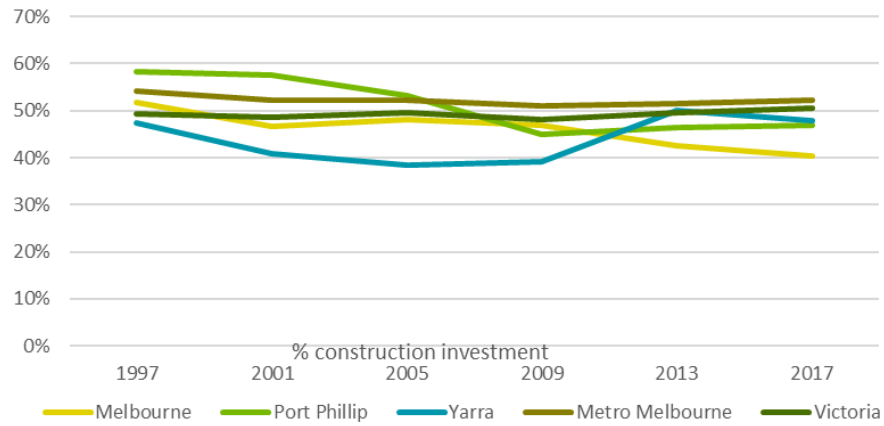
- Aside from a sharp decline in construction investment and sharp increase in equipment investment between 1996 and 1997, construction and equipment investment maintained at around 50 per cent to 2017.

FIGURE 26: TOTAL INVESTMENT (1996-2016)



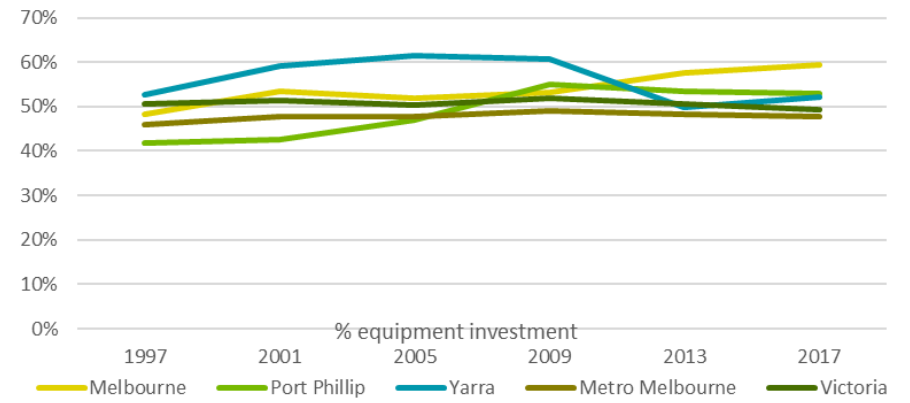
Source: NIEIR 2018

FIGURE 27: CONSTRUCTION INVESTMENT (1996-2017)



Source: NIEIR 2018

FIGURE 28: EQUIPMENT INVESTMENT (1996-2017)



Source: NIEIR 2018

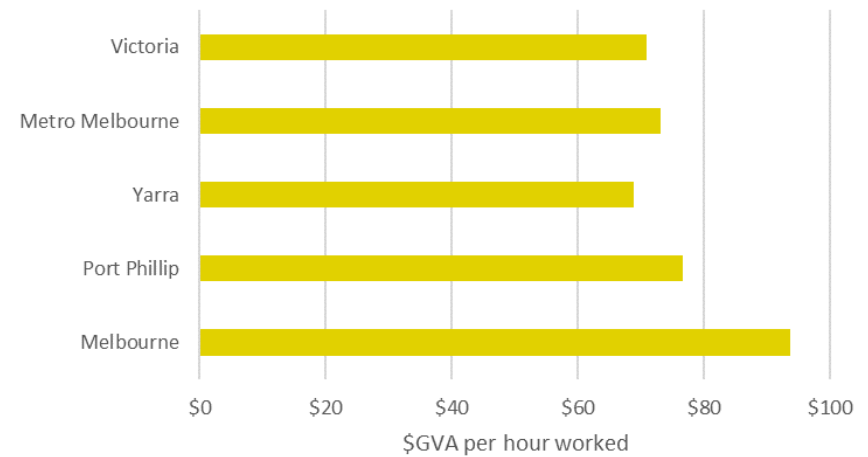
Labour productivity

Labour productivity is a measure of efficiency of labour, expressed as the GVA generated per hour worked. Variations in labour productivity relate to factors such as worker skills, quality of capital, infrastructure availability and adoption of technology

A location's productivity informs how efficient and effective its workers are at producing goods and services.

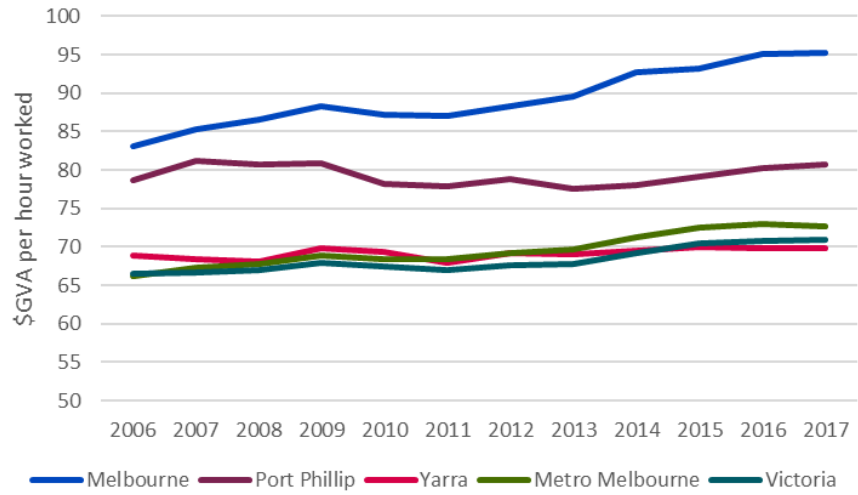
- Melbourne and Port Phillip LGAs have higher labour productivity than the Victorian and metropolitan average, likely due to growth in high skill, knowledge-intensive industries and decline of the industrial sectors.
- Labour productivity has grown most in the City of Melbourne, from below \$85 per hour worked to \$95 per hour worked between 2006 and 2016.
- City of Yarra's level of labour productivity is below state and metropolitan Melbourne average as population-serving jobs typically have lower labour productivity levels.
- Marginal growth in labour productivity has occurred in Yarra and Port Phillip LGAs.
- Figure 31 shows labour productivity is highest in the Hoddle Grid and Docklands, and lowest in primarily residential areas towards the outer extent of the region.

FIGURE 29: LABOUR PRODUCTIVITY BY LGA (2016)



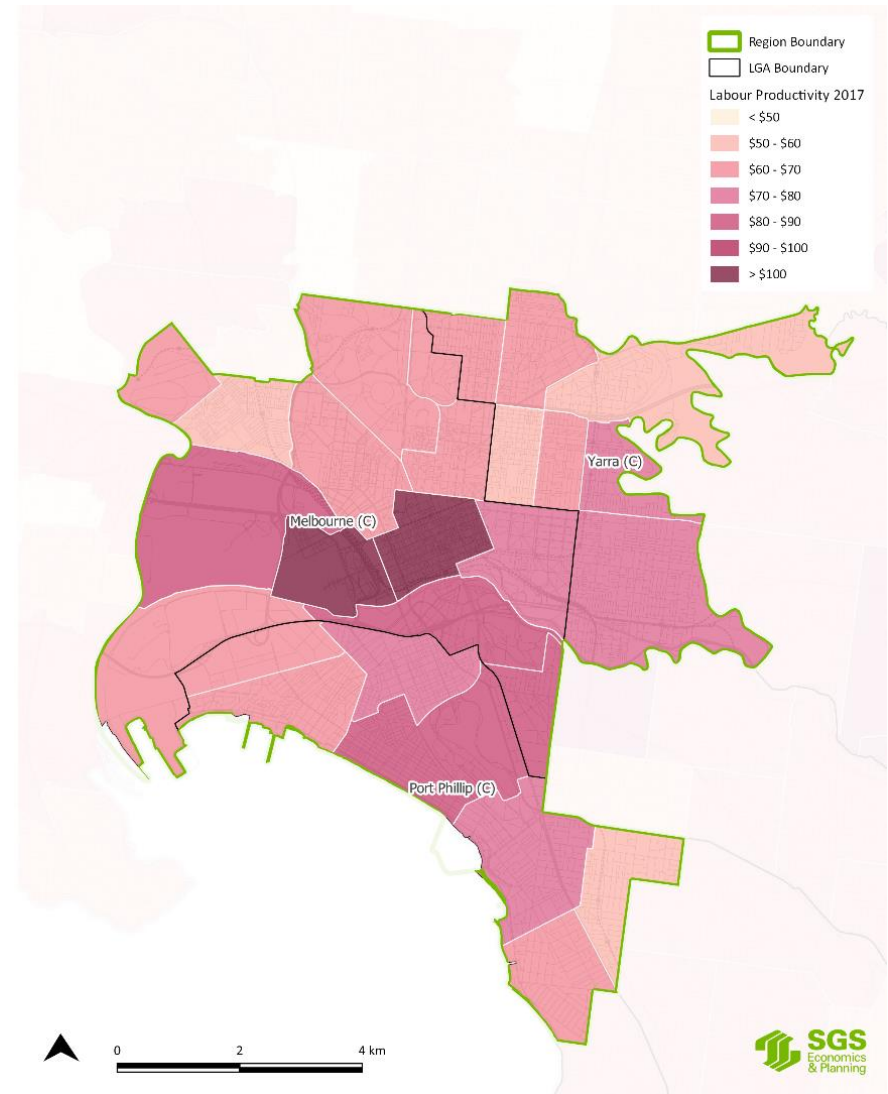
Source: NIEIR 2018

FIGURE 30: LABOUR PRODUCTIVITY (2006-2017)



Source: NIEIR 2018

FIGURE 31: LABOUR PRODUCTIVITY (2016)



Source: ABS Census 2016

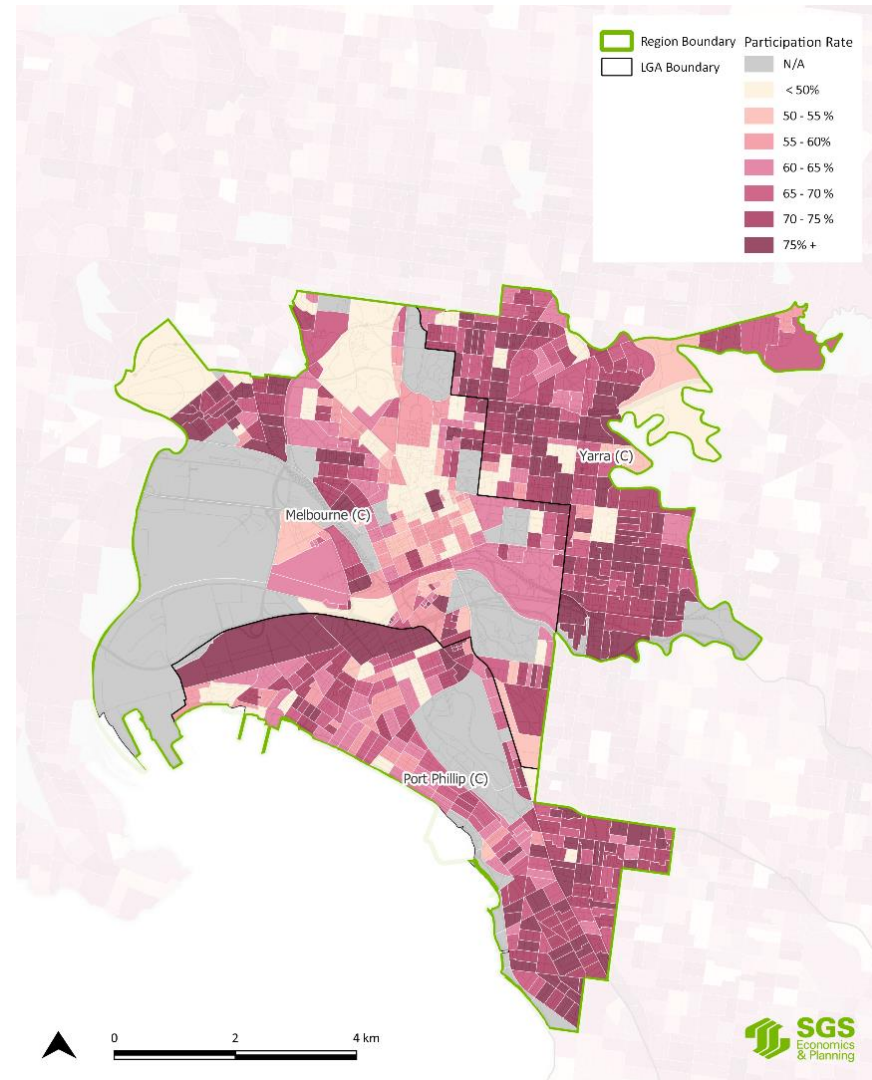
Participation rate

The participation rate is a measure of the proportion of the population active in the economy's labour force. It refers to the number of people either employed, underemployed or are actively looking for work as a percentage of the total working-age population. The participation rate informs understanding of labour utilisation and dependency, and the strength of the local economy.

As a benchmark, participation rates for Victoria and metropolitan Melbourne are 56 per cent and 62 per cent respectively.

- Participation rates vary across the Inner Metro Region.
- The more socio-economically advantaged areas of Yarra and Port Phillip LGAs have higher participation rates, while the more disadvantaged areas, including the CBD, have lower participation rates.
- Lower participation rates in the CBD and Parkville NEIC reflect the number of students in these areas who may be studying, but not in the labour force.

FIGURE 32: PARTICIPATION RATE BY SA1 (2016)



Source: ABS Census 2016

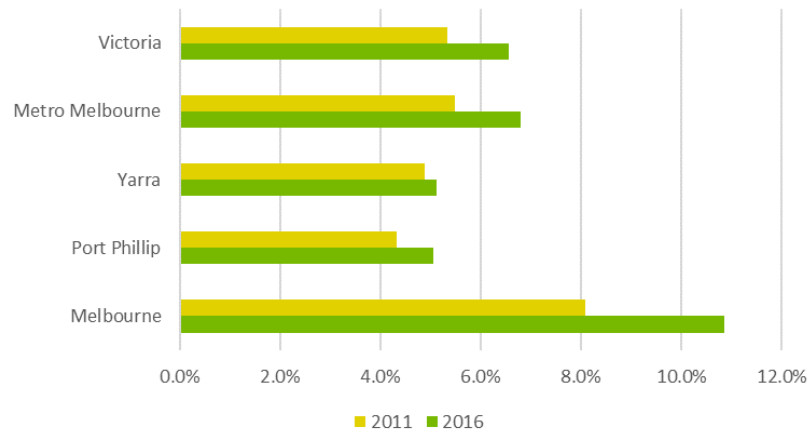
Unemployment

The unemployment rate is a measure of the people in the labour force actively looking for work.

Figure 33 shows the change in the unemployment rate from 2011 to 2016, while Figure 34 shows the spatial distribution of unemployment rates in 2016.

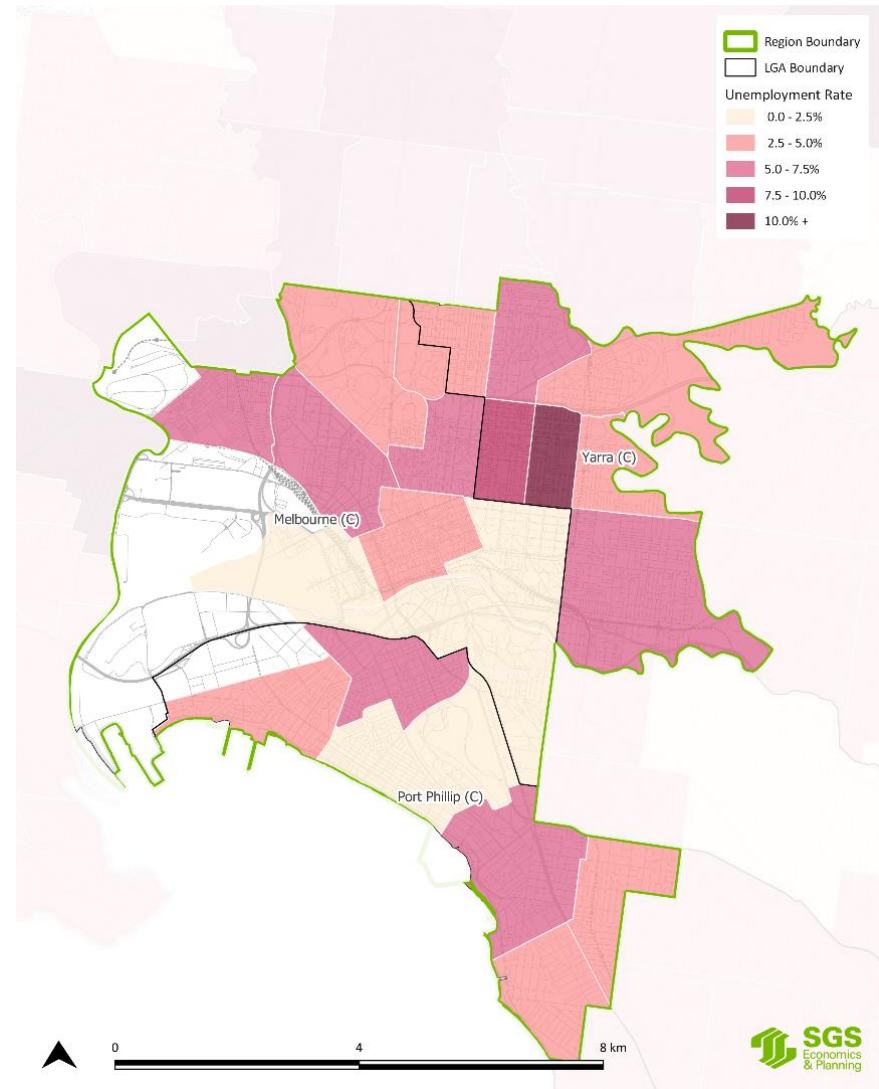
- The rate of unemployment has increased in all LGAs in the region between 2011 and 2016, in line with trends across Victoria.
- The most significant increases were seen in City of Melbourne, corresponding with its lower participation rates in 2011 and 2016. The rate of unemployment in City of Melbourne is above that of Victoria and metropolitan Melbourne and is likely correlated with the high rates of homelessness and socio-economic disadvantage, and low rates of youth engagement.
- Yarra and Port Phillip LGAs have low rates of unemployment, reflecting their relative socio-economic advantage.

FIGURE 33: UNEMPLOYMENT RATE BY LGA (2011-2016)



Source:
ABS
Census
2011
and
2016.

FIGURE 34: UNEMPLOYMENT RATE (2016)



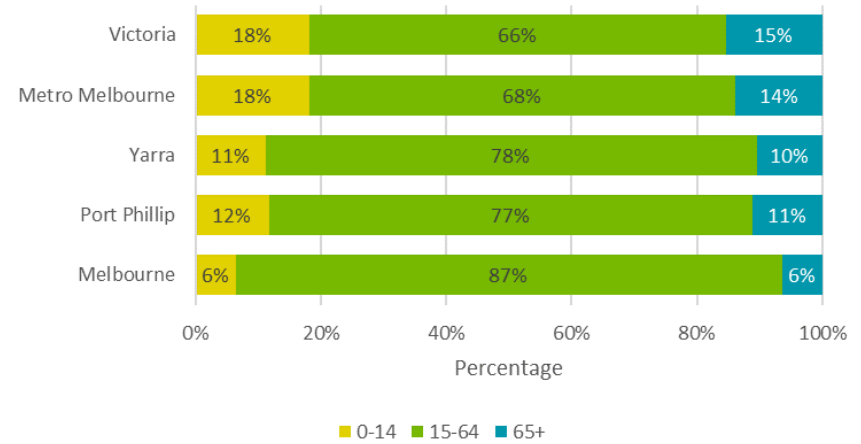
Source: Australian Government, Department of Jobs and Small Business 2018

Change in working age population

Working age population is defined as the population aged between 15 and 64. The proportion of working age population in an area provides an insight into its labour force composition. Figure 35 shows the proportion of the population of each LGA that is of working age.

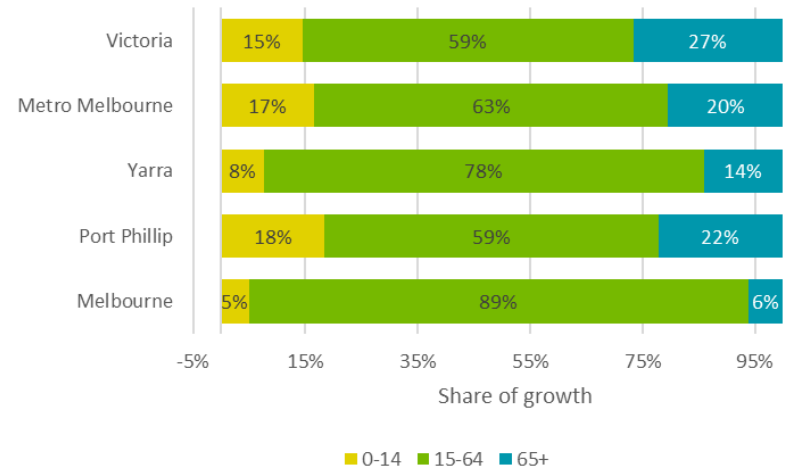
- The proportion of residents of working age in City of Melbourne is higher than the Victorian and metropolitan Melbourne average. Port Phillip and Yarra LGAs also have a higher than average proportion of working age population, albeit lower than the City of Melbourne.
- Figure 36 shows the structural changes to the working and non-working age groups in the Inner Metro Region. The biggest shifts were in Port Phillip and Yarra LGAs.
- City of Melbourne displayed the largest percentage increase of people aged 15 to 64.
- These measures have some limitations. While there are still a greater number of older Australians who are not in the labour force, as people are living and working longer, the number of people who work past 65 is increasing

FIGURE 35: AGE GROUP POPULATION DISTRIBUTION (2016)



Source: ABS Census 2016, SGS Economics and Planning, 2018

FIGURE 36: SHARE OF POPULATION CHANGE BY AGE (2011-2016)



Source: ABS Census 2011 and 2016, SGS Economics and Planning, 2018

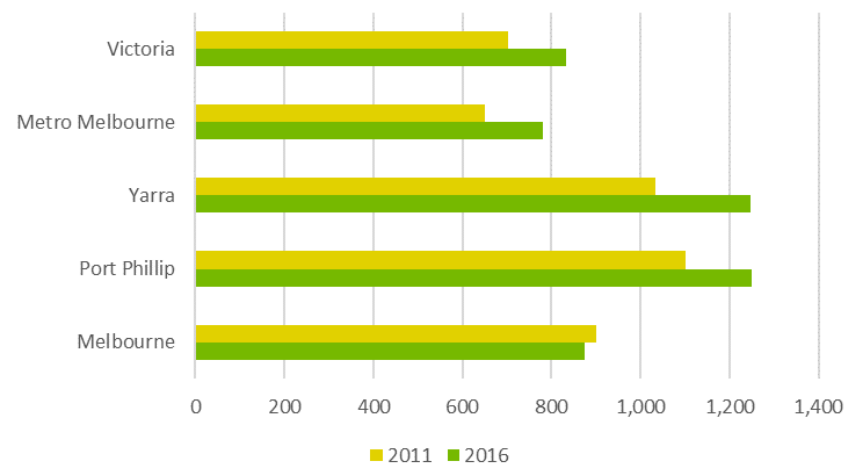
4.3 Economic wellbeing of residents

Household income

Figure 37 and Figure 38 show the equivalised⁵ total weekly household income by LGA in the Inner Metro Region between 2011 and 2016.

- The equivalised total weekly income in the Inner Metro Region increased between 2011 and 2016 in Yarra and Port Phillip LGAs in line with metropolitan Melbourne and Victoria, possibly due to increasing employment in higher paying knowledge-intensive industries.
- The higher weekly income in Yarra and Port Phillip LGAs reflects the areas higher level of socio-economic advantage.
- Household income in City of Melbourne is only slightly above the State and metropolitan average and decreased between 2011 and 2016 by approximately three per cent.

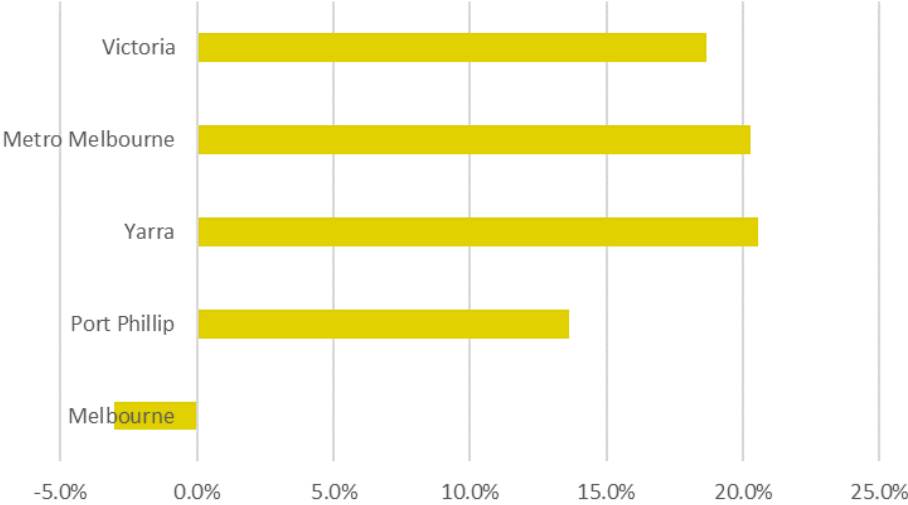
FIGURE 37: MEDIAN TOTAL WEEKLY HOUSEHOLD INCOME (EQUIVALISED) (2011-2016)



Source: ABS Census 2011 and 2016

⁵ Equivalised total household income is household income adjusted to facilitate comparison of income levels between households of differing size and composition, reflecting that a larger household would normally need more income than a smaller household to achieve the same standard of living.

FIGURE 38: CHANGE IN MEDIAN TOTAL WEEKLY HOUSEHOLD INCOME (EQUIVALISED) (2011-2016)



Source: ABS Census 2011 and 2016

Public transport

Access to public transport, service frequency and service coverage moves people to necessary services and facilities, and work.

Figure 39 shows that:

- the Inner Metro Region is well serviced by all modes of public transport (train, tram and bus)
- the predominantly radial public transport network allows for easy access to the Hoddle Grid
- orbital connections are limited and primary serviced by bus.

FIGURE 39: PUBLIC TRANSPORT ROUTES (2017)

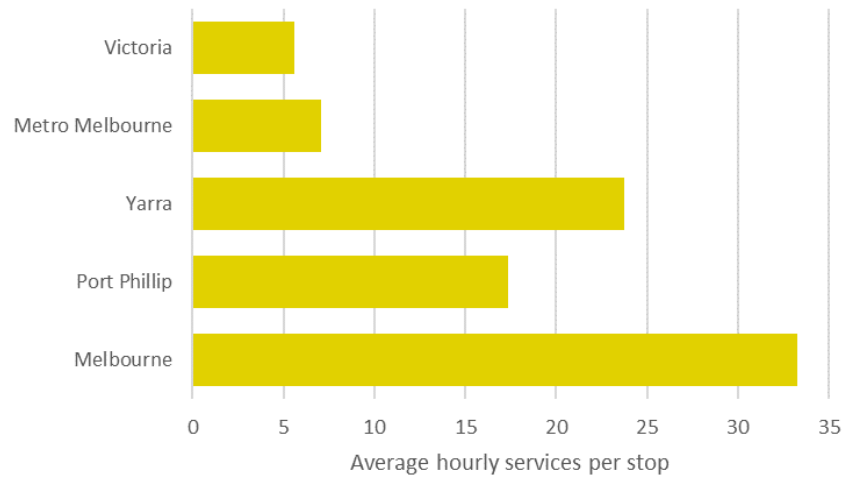


Source: Public Transport Victoria 2017

Figure 41 illustrates public transport service levels, reflecting service frequency and effective access the transport service provides.

- All LGAs have a higher average number of hourly services than metropolitan Melbourne.
- City of Melbourne has the highest average of hourly public transport services, reflecting its position as the transport hub of metropolitan Melbourne and Victoria.

FIGURE 40: AVERAGE HOURLY SERVICES PER STOP (2017)



Source: Public Transport Victoria 2017

FIGURE 41 PUBLIC TRANSPORT SERVICE LEVELS (2017)



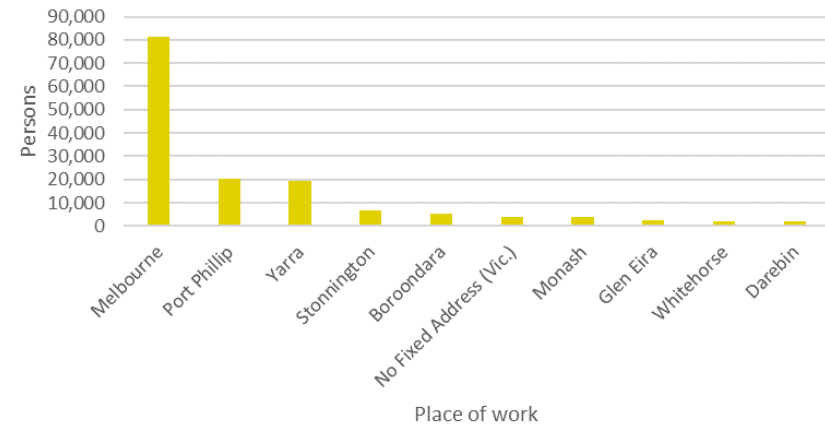
Source: Public Transport Victoria 2017

Travel origins and destinations

Travel origins and destinations refer to journey to work origins and destinations. Figure 42 illustrates the 10 most common work destinations for residents in the Inner Metro Region, and Figure 43 shows the 10 most common place of usual residence of people working in the Inner Metro Region.

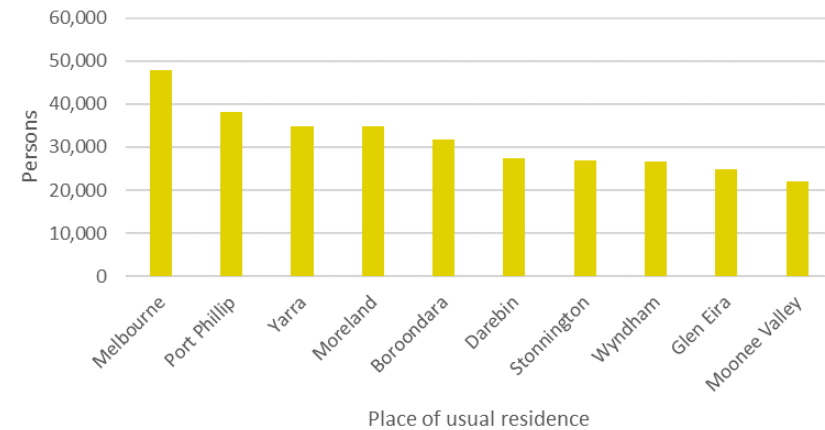
- Inner Metro Region residents predominantly work in the region, with over 80,000 regional residents working in the City of Melbourne, and approximately 20,000 working in Yarra and Port Phillip LGAs.
- The next most common work destination for residents of the Inner Metro Region are the inner and middle ring areas of Stonnington, Boroondara, Monash, Glen Eira, Whitehorse and Darebin LGAs.
- The top-three residential locations for people who work in the Inner Metro Region are Melbourne, Port Phillip and Yarra LGAs.
- A large number of people who work in the region are from inner and middle ring suburbs with access to Melbourne CBD (Moreland, Boroondara, Darebin, Stonnington LGAs).
- A substantial number of workers travel to the region from the outer growth suburb of Wyndham, potentially reflecting the quality and frequency of public transport services between it and the Inner Metro Region.

FIGURE 42: TOP 10 WORK DESTINATIONS (PLACE OF WORK) BY LGA (2016)



Source: ABS Census 2016

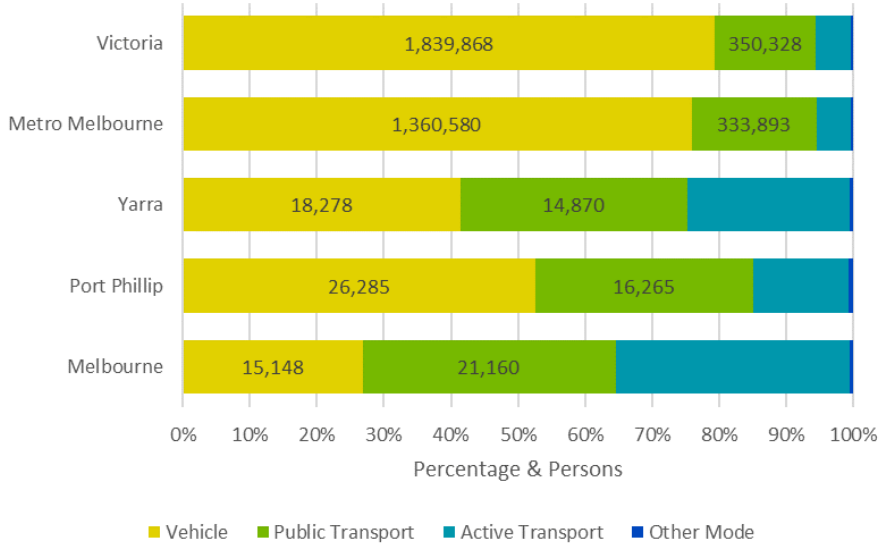
FIGURE 43: TOP 10 WORKER ORIGINS BY LGA (2016)



Source: ABS Census 2016

Figure 44 shows that a larger number of people travel to work by public or active transport than by private vehicle in the Inner Metro Region compared to metropolitan Melbourne. Public transport is the most common way to get to work in all LGAs.

FIGURE 44: MODES OF JOURNEY TO WORK (2016)



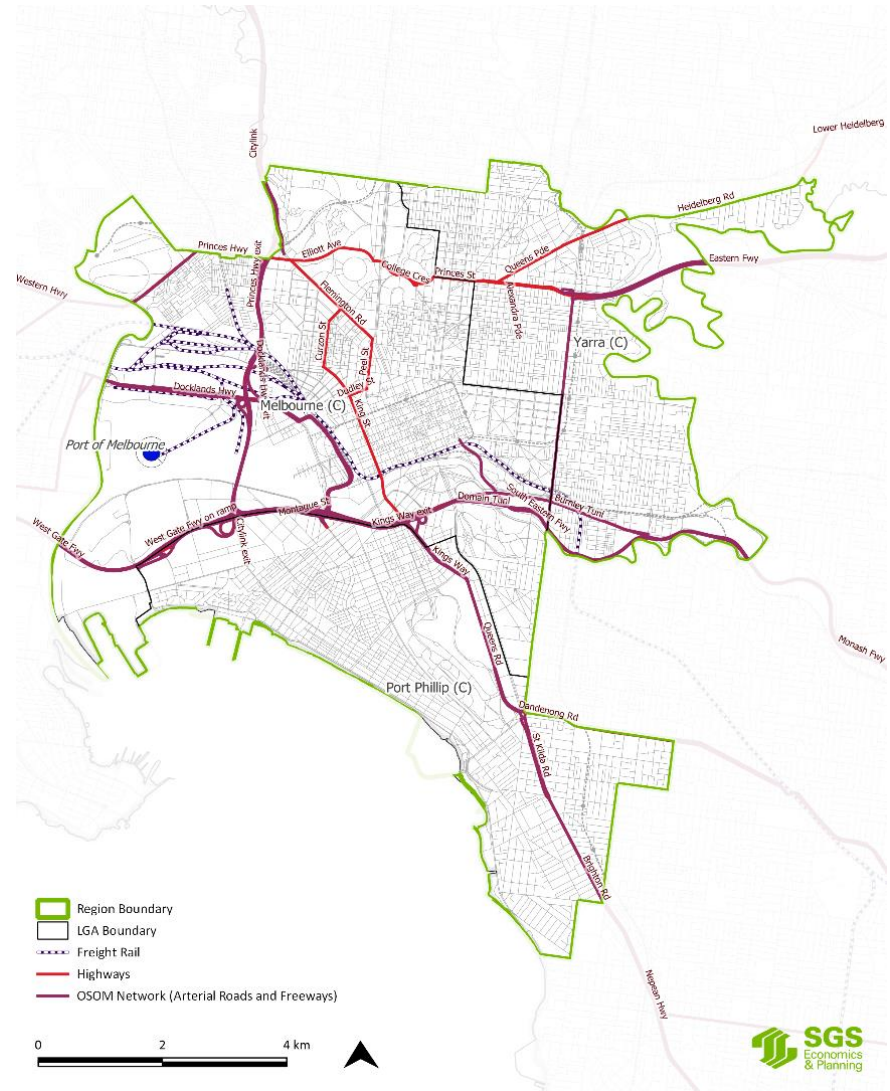
Source: ABS Census 2016

Freight and road networks

The rail and road network, made up of arterial roads and freeways, supports local, regional, interstate and overseas movement of goods.

Figure 45 shows the freight and road network in the Inner Metro Region and its comprehensive grid of arterial roads that primarily service Melbourne CBD and Port of Melbourne.

FIGURE 45: FREIGHT AND ROAD NETWORKS



Source: SGS Economics and Planning 2018

Freight and business trips

Table 7 illustrates the origins and destinations of freight and business trips by LGA.

- In 2015, business and freight trips to and from City of Melbourne represented the greatest number in the Inner Metro Region, reflecting the high concentration of jobs and employment in Melbourne CBD and the location of the Port of Melbourne.

TABLE 7: ORIGINS AND DESTINATIONS OF TRIPS BY TYPE AND LGA (2015)

LGA	Freight		Business	
	2015 Origin	2015 Destination	2015 Origin	2015 Destination
Melbourne	20,536	31,553	20,402	26,073
Port Phillip	5,272	12,339	5,356	10,576
Yarra	2,355	11,187	2,430	9,908

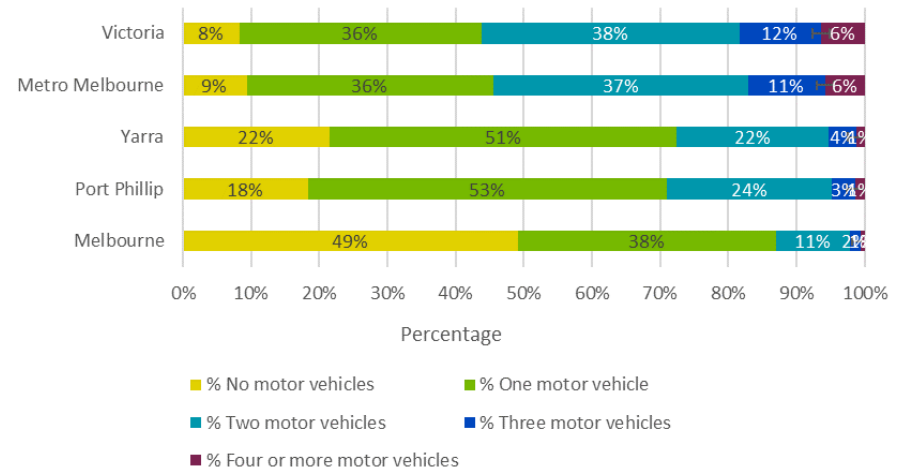
Source: MABM (KMPG) 2018

Households with vehicles

The average number of vehicles owned by a household correlates with the number of transport modes available in an area. Households in areas with less transport options tend to own more motor vehicles and vice versa. Figure 46 illustrates the breakdown of the number of motor vehicles owned by households across the Inner Metro Region in 2016. Figure 47 shows the share of change in vehicle ownership between 2011 and 2016.

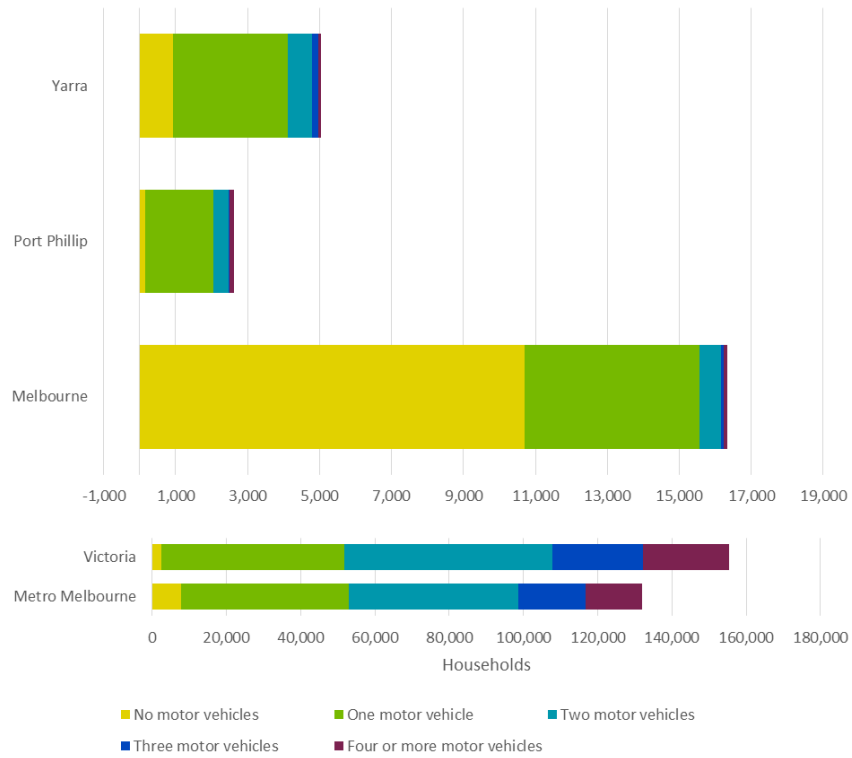
- Most households in Yarra and Port Phillip LGAs own one car, while most households in Melbourne LGA have no car.
- A larger proportion of households in the Inner Metro Region have no motor vehicle (from 18 per cent in Port Phillip LGA to 49 per cent in Melbourne LGA) relative to the Victorian and metropolitan average (eight and nine per cent). This reflects the mixed-use nature of the region where health, community, employment, cultural and recreational needs can largely be serviced locally, and the high quality and coverage of public transport, walking and cycling networks.
- Between 2011 and 2016 the largest change in vehicle ownership in Yarra and Port Phillip LGAs was an increase in the number of households with one vehicle, while in Melbourne LGA the greatest change occurred in the number of households that do not own a vehicle.
- Figure 48 is a spatial representation of the proportion of workers who travel to work by private vehicle. This shows a radial pattern of journey to work by car, in which the proportion of households living within or close to the Hoddle Grid who travel by car is low, while those living further from the Hoddle Grid are more likely to travel by car to work.

FIGURE 46: PERCENTAGE OF HOUSEHOLDS WITH MOTOR VEHICLES (2016)



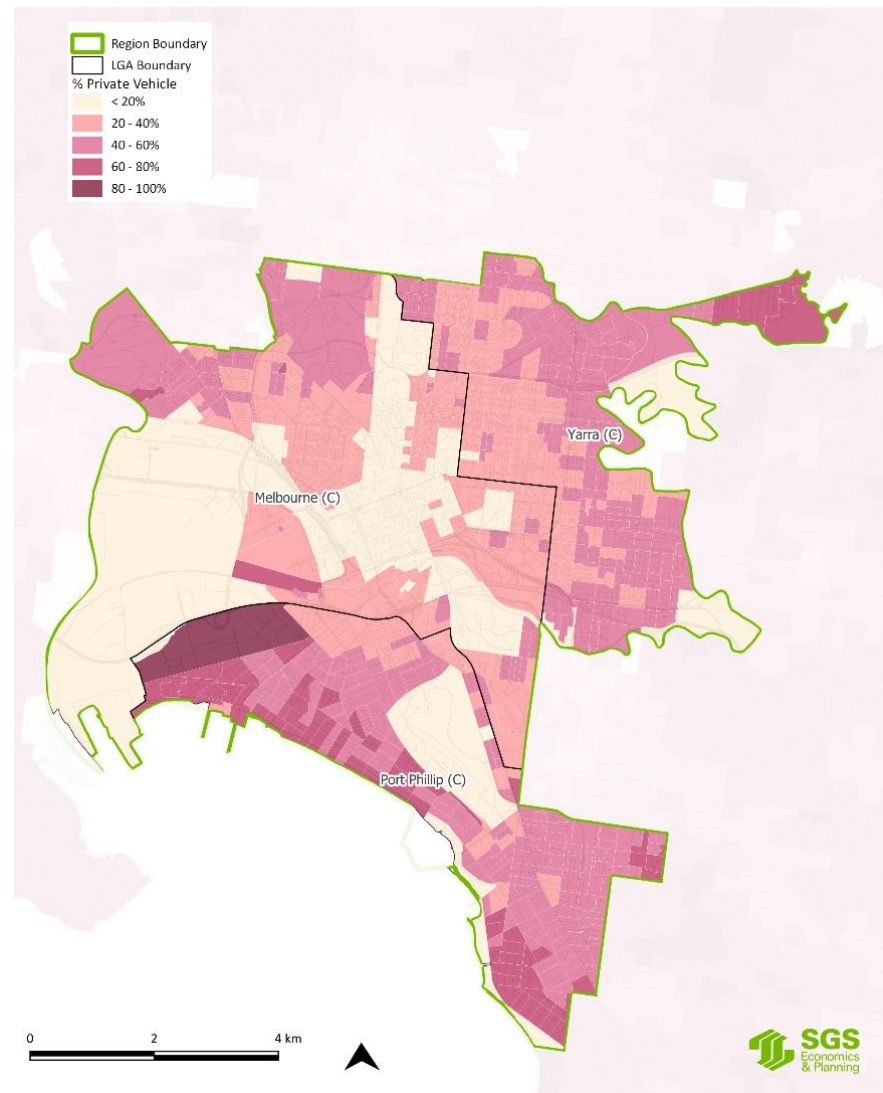
Source: ABS Census 2016

FIGURE 47: CHANGE IN HOUSEHOLDS WITH MOTOR VEHICLES (2011-2016)



Source: ABS Census 2011 and 2016

FIGURE 48: JOURNEY TO WORK BY PRIVATE VEHICLES (2016)



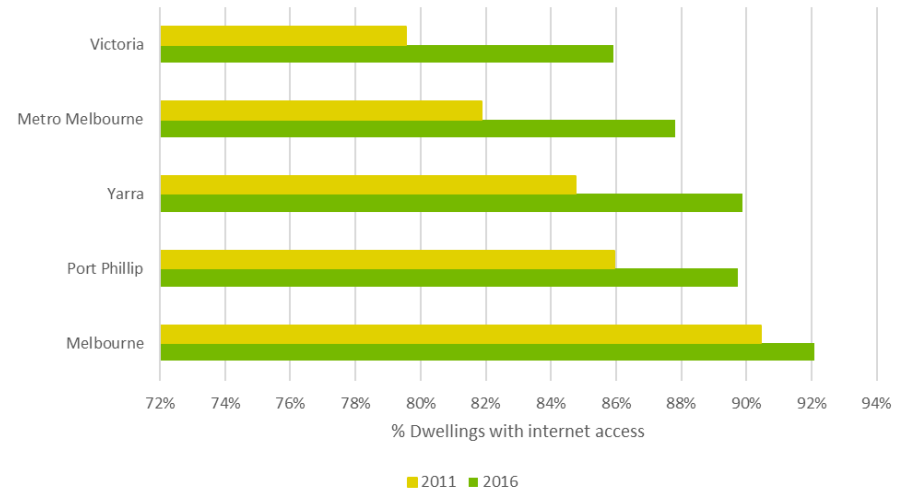
Source: ABS Census 2016

Access to internet

Access to internet indicates the level of access to and engagement with digital media and communication by households.

- The percentage of dwellings with internet access is high across the Inner Metro Region and higher in all LGAs compared to the Victorian and metropolitan average.
- Proportions generally increased from 2011 to 2016, in line with a broader, state-wide trends.
- The increase in the proportion of households with internet access was most pronounced in the City of Yarra LGA and least pronounced in the City of Melbourne.

FIGURE 49: DWELLINGS WITH INTERNET ACCESS (2011-2016)



Source: ABS Census 2011 and 2016

▪

4.5 Employment and skills

Skill levels

The Australian and New Zealand Standard Classification of Occupations (ANZSCO) classifies employment skill levels into five categories, with Skill Level 1 being the highest level of skill and Skill Level 5 the lowest (Table 8).

TABLE 8: SKILL LEVEL DESCRIPTIONS

Skill Level	Skill Level Description
Skill Level 1	Occupations at Skill Level 1 have a level of skill commensurate with a bachelor's degree or higher qualification. At least five years of relevant experience may substitute for the formal qualification.
Skill Level 2	Occupations at Skill Level 2 have a level of skill commensurate with either an Associate Degree, Advanced Diploma or Diploma. At least three years of relevant experience may substitute for the formal qualifications listed above.
Skill Level 3	Occupations at Skill Level 3 have a level of skill commensurate with a Certificate IV or Certificate III including at least two years of on-the-job training. At least three years of relevant experience may substitute for the formal qualifications listed above.
Skill Level 4	Occupations at Skill Level 4 have a level of skill commensurate with Certificate II or III. At least one year of relevant experience may substitute for the formal qualifications listed above.
Skill Level 5	Occupations at Skill Level 5 have a level of skill commensurate with Certificate I or compulsory secondary education. In some instances, no formal qualification or on-the-job training may be required.

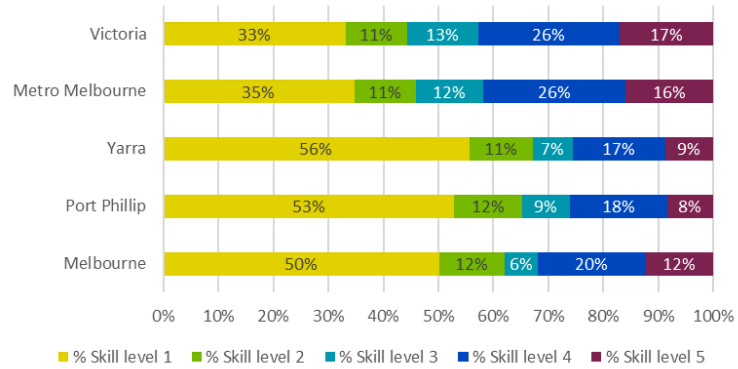
Source: ANZSCO

Figure 50 shows the percentage of resident workers with each skill level for each of the LGAs in the Inner Metro Region in 2016. For the additional resident workers in each LGA (between 2011 and 2016), Figure 51 presents the share of change in each skill level.

- All LGAs had a larger proportion of population employed in Skill Level 1 jobs in 2016 than metropolitan Melbourne and Victoria, ranging from 50 per cent in Melbourne LGA to 56 per cent in Yarra LGA.
- The proportion of people in Skill Level 2 and Skill Level 3 jobs is largely comparable with Victoria and metropolitan Melbourne, while the percentage of people in City of Port Phillip working in Skill Level 5 jobs is lower.

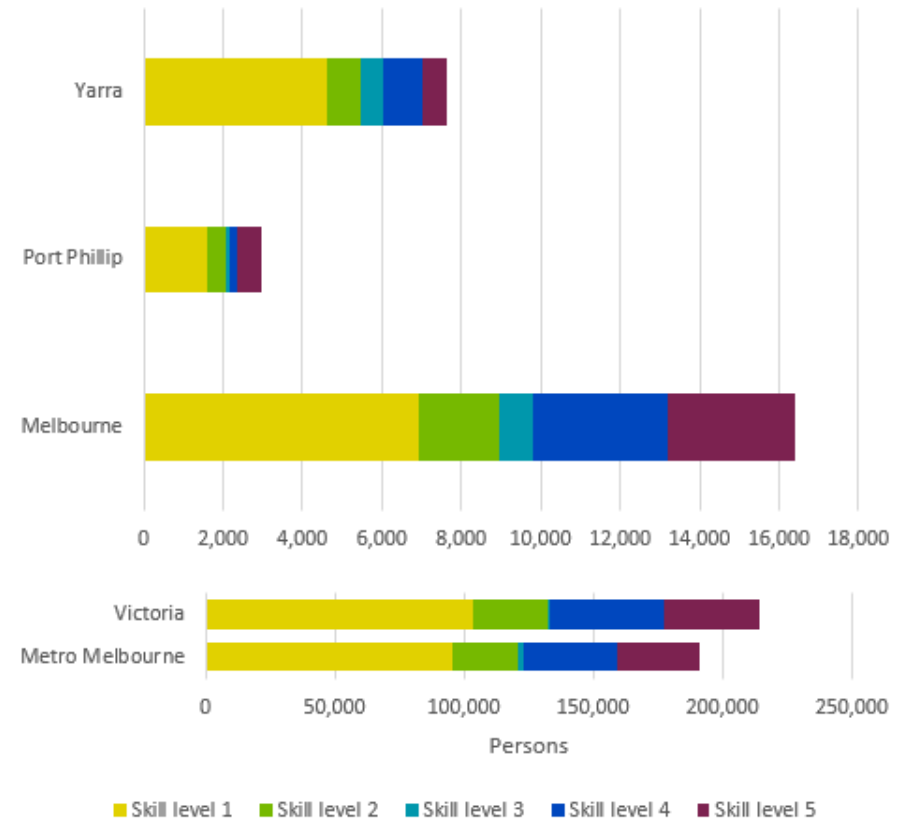
Skill Level 1 jobs constituted the largest growth in every LGA, consistent with metropolitan trends. This can be partly explained by the Australian immigration policy, which focuses on skilled migration.

FIGURE 50: SKILL LEVELS AS PERCENTAGE OF TOTAL WORKING POPULATION (PLACE OF USUAL RESIDENCE) (2016)



Source: ABS Census 2016

FIGURE 51: SHARE OF CHANGE IN SKILL LEVELS (PLACE OF USUAL RESIDENCE) (2011-2016)



Source: ABS Census 2011 and 2016

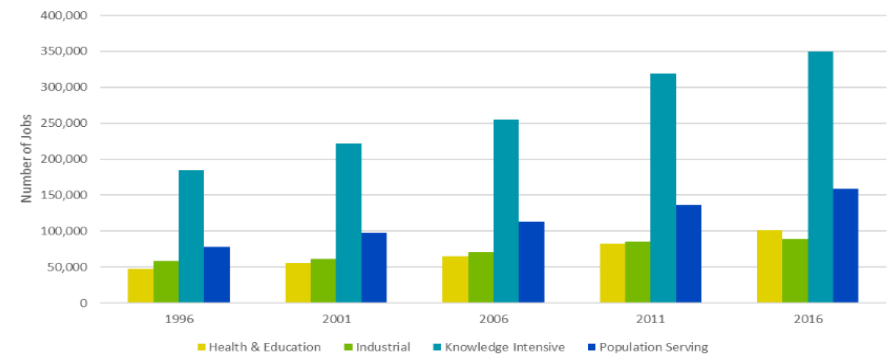
Employment concentration of industries

Figure 52 shows the historic change in the number of jobs in the four industry classifications.

Figure 53 illustrates the changes in the share of each classification in the Inner Metro Region between 1996 and 2016.

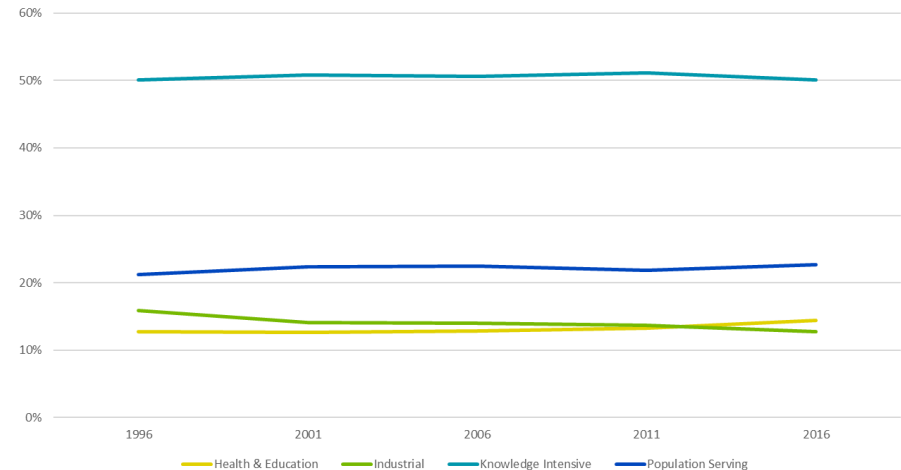
- Knowledge-intensive industries represent the greatest share of employment in the Inner Metro Region.
- The number of jobs in all four classifications increased between 1996 and 2016.
- The greatest increase over this time was in the knowledge-intensive sector. The lowest increase in total number of jobs was in the industrial sector.
- The total share of employment across all classifications has remained relatively consistent between 1996 and 2016.
- While health and education represent the second smallest share of employment in the Inner Metro Region, total employment share is increasing. Industrial industries are decreasing. These patterns reflect broader economic trends, as well as the concentration of hospitals and health and medical research facilities within the Inner Metro Region.

FIGURE 52: CHANGE IN NUMBER OF JOBS BY INDUSTRY CLASSIFICATION (1996-2016)



Source: SGS Economics and Planning, 2018.

FIGURE 53: SHARE OF EMPLOYMENT BY INDUSTRY (1996-2016)



Source: SGS Economics and Planning, 2018.

Location quotient

Location quotient (LQ) measures the relative concentration of industries in an area compared to a benchmark region. In this report, metropolitan Melbourne is the benchmark against which the Inner Metro Region is compared.

An LQ of less than 1 means an industry is underrepresented in the Inner Metro Region compared to metropolitan Melbourne. An LQ that is greater than 1 means that the Inner Metro Region has a higher concentration of that industry compared to metropolitan Melbourne. LQs in the Inner Metro Region are broken down into 19 industries, presented in Figure 54.

Figure 55 presents the LQ for the broad industry classifications within the Inner Metro Region.

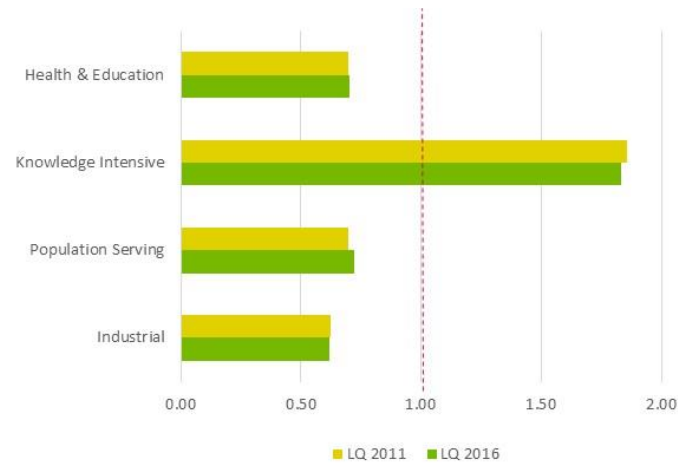
- The Inner Metro Region has a concentration of financial and insurance services and Information, media and telecommunications industries at twice that of metropolitan Melbourne. Other industries with a higher than average concentration in the region include mining; professional, scientific and technical services; arts and recreation services; electricity, water, gas and waste services, and public administration and safety.
- While industries such as retail trade; healthcare and social assistance; and education and training are underrepresented (with LQs below 1) relative to metropolitan Melbourne, it does not mean they are not important to the Inner Metro region. Rather, this result is partially driven by the exceptionally high representation of the industries listed above.
- The LQs of financial and insurance services and information; media and telecommunications; and professional, scientific and technical services each increased marginally between 2011 and 2016.
- Mining decreased in its relative concentration between 2011 and 2016.
- The region is underrepresented in agriculture, forestry and fishing; and manufacturing due to its urban location.
- The knowledge-intensive sector is the only sector to have a LQ greater than 1. The relative concentration of this sector in the region decreased slightly between 2011 and 2016.
- The relative concentration of knowledge-intensive industries reflects the positioning of the region at the core of the metropolitan area and at the confluence of the city's transport networks.

FIGURE 54: LOCATION QUOTIENT BY INDUSTRY (2011-2016)



Source: SGS Economics and Planning, 2018

FIGURE 55: LOCATION QUOTIENT BY SECTOR (2011-2016)



Source: SGS Economics and Planning, 2018.

5. SOCIAL

SOCIAL INDICATORS

The Infrastructure Victoria social indicators that underpin this section are:

- Recent population growth
- Population by age group over time
- Age dependency
- Migration
- Cultural mix
- Housing price
- Housing typology
- SEIFA – Index of Relative Disadvantage
- DOTE index
- Education levels
- Engagement with work or study
- Hospital inpatient separations
- Access to Community Care Services
- Mental health and drug use
- Home and Community Care Services
- Ambulatory Care Sensitive Conditions
- Access to general practitioners
- Type 2 diabetes
- Life expectancy at birth
- Birth weight
- Immunisation
- Child protection substantiations
- Development vulnerability
- Crime
- Wellbeing

REGIONAL OVERVIEW

The social profile of the Inner Metro Region is characterised by key social considerations:

- New migrant communities, particularly within the City of Melbourne, where there is a large proportion of residents from South East Asia.
- Highly socio-economically advantaged population, but with pockets of extreme disadvantage.
- A high proportion of people of working age

SOCIAL STRENGTHS

- A growing, diverse and socio-economically advantaged population
- Diverse housing stock for a range of household types
- Well serviced by health services

SOCIAL CHALLENGES

- Pace of population growth resulting in challenges to maintain the region's character and infrastructure to keep pace with growth
- High and increasing level of housing unaffordability, areas of concentrated disadvantage, high rates of crime and a large homeless population
- Poor early childhood outcomes.

5.1 Overview and key features

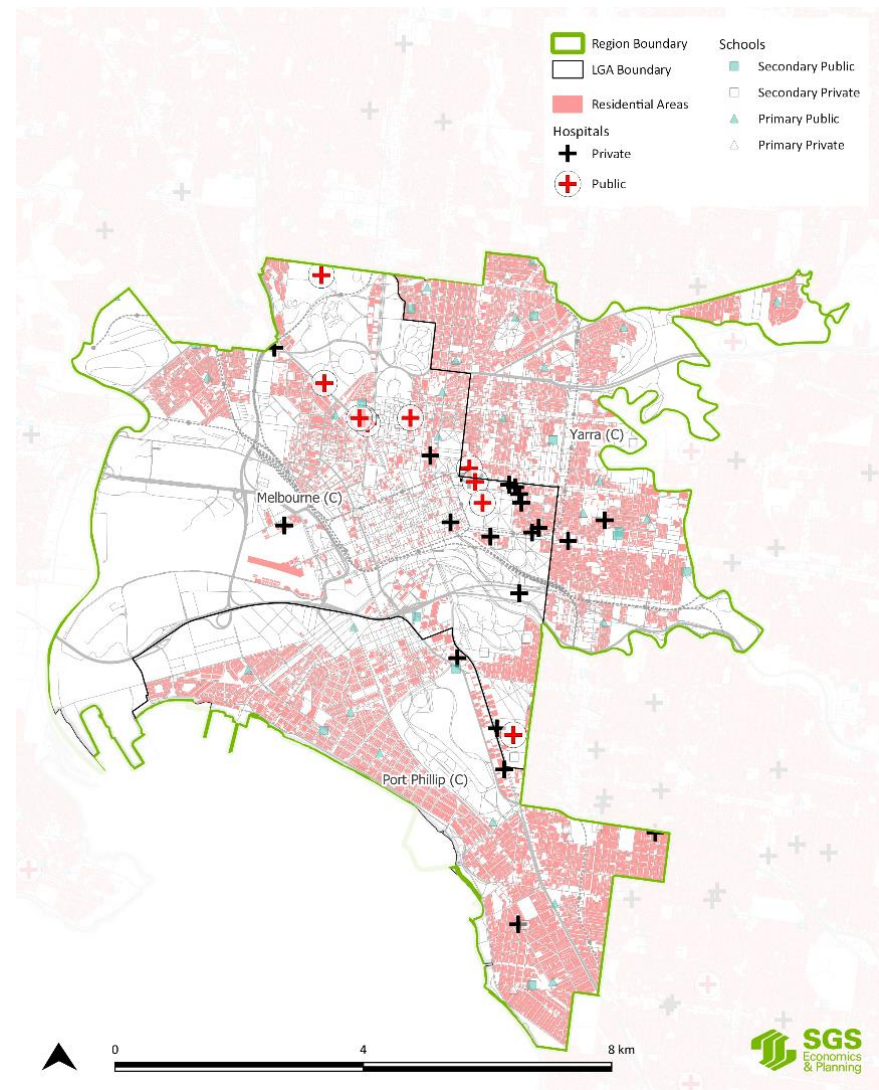
The Wurundjeri and Bunurong people of the Kulin Nation are the Traditional Owners of the lands that now make up the Inner Metro Region of Melbourne.

Post-European settlement, the Inner Metro Region became metropolitan Melbourne’s historic heart of civic, political and economic life, shaped by the Hoddle Grid, green spaces, Yarra River and transport network, including the Port of Melbourne. In comparison to other regions, it is more compact, acting as the city and State’s urban centre – including the CBD, major sport and entertainment areas and urban renewal areas.

This has informed the current profile of land use in the Inner Metro Region, which is broadly characterised by:

- a concentration of mixed use and employment land in the core of the region – centered on the CBD – and surrounded by historic, established areas
- areas of former industrial land that are transitioning to high amenity residential and employment precincts
- pockets of industrial land to support urban servicing and manufacturing uses
- civic and cultural precincts close to the CBD.

FIGURE 56: URBAN STRUCTURE



Source: Source: SGS Economics and Planning, 2018

5.2 Population demographics

Recent population growth

Table 9 shows the 2016 population and growth since 2011.

- The average annual population growth rate for the Inner Metro Region is higher than metropolitan Melbourne and Victoria at 4.8 per cent compared with 2.5 per cent and 2.2 per cent respectively.
- City of Melbourne supports the largest population, accounting for 42 per cent of the region's 2016 total population and 65 per cent of the region's total growth between 2011 and 2016. It also experienced the highest rate of annual average growth at 8.1 per cent.
- Figure 57 overleaf shows population density in 2016, with the population concentrated in the Hoddle Grid, Southbank, City North and St Kilda Road. Established areas of Yarra and Port Phillip LGAs have a more consistent distribution of population.

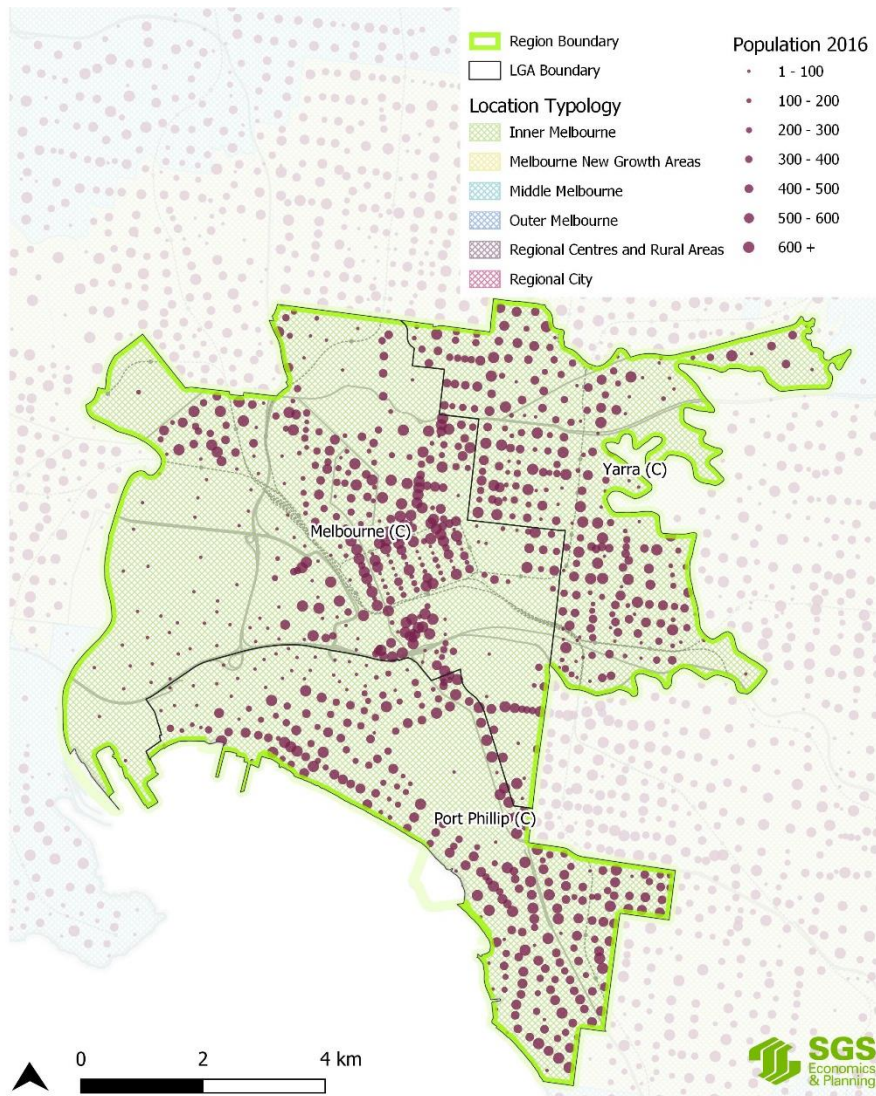
Figure 58, overleaf, shows existing and projected population density.

TABLE 9: POPULATION (2011-2016)

LGAs	2011	2016	2011-16		
			AAGR	Change	% Regional
Melbourne	100,178	147,980	8.1%	47,803	64.9%
Port Phillip	97,267	108,554	2.2%	11,286	15.3%
Yarra	78,898	93,447	3.4%	14,549	19.8%
Inner Metro Region	276,343	349,981	4.8%	73,638	100.0%
Metro Melbourne	4,108,837	4,653,078	2.5%		544,241
Victoria	5,537,817	6,179,249	2.2%	641,432	

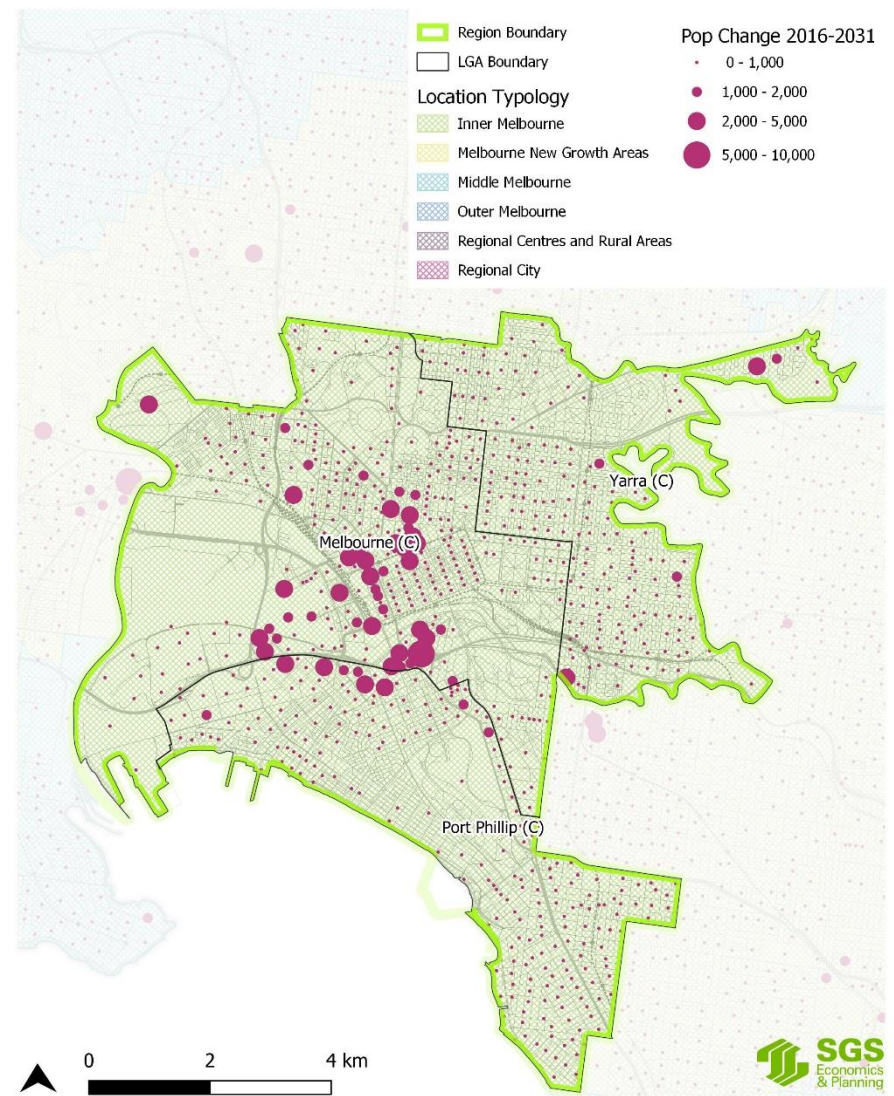
Source: SGS Economics and Planning, 2018 Note: The difference between the region totals of location typology and LGAs reflect different data grouping techniques to group small area data into target geographies.

FIGURE 57: POPULATION DENSITY (2016)



Source: SGS Economics and Planning, based on Victoria in Future 2016 and SALUP17, TfV

FIGURE 58: PROJECTED POPULATION CHANGE (2011 -2031)



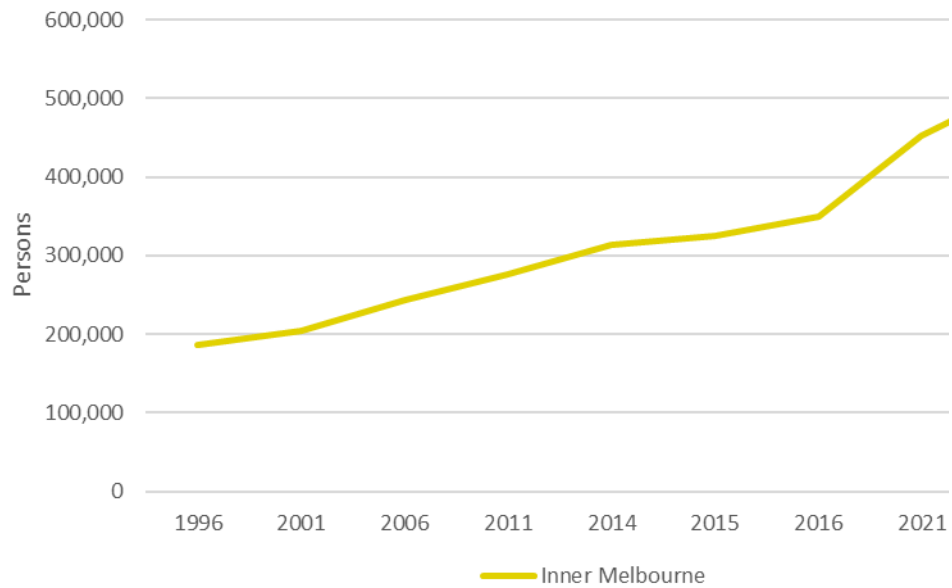
Source: SGS Economics and Planning, based on Victoria in Future 2016 and SALUP17, TfV

Forecast population growth

Figure 59 presents recent and forecast population growth by location typology.

- Population forecasts to 2031 show a sustained level of strong population growth across the Inner Metro Region.

FIGURE 59: FORECAST POPULATION CHANGE (1996-2031)



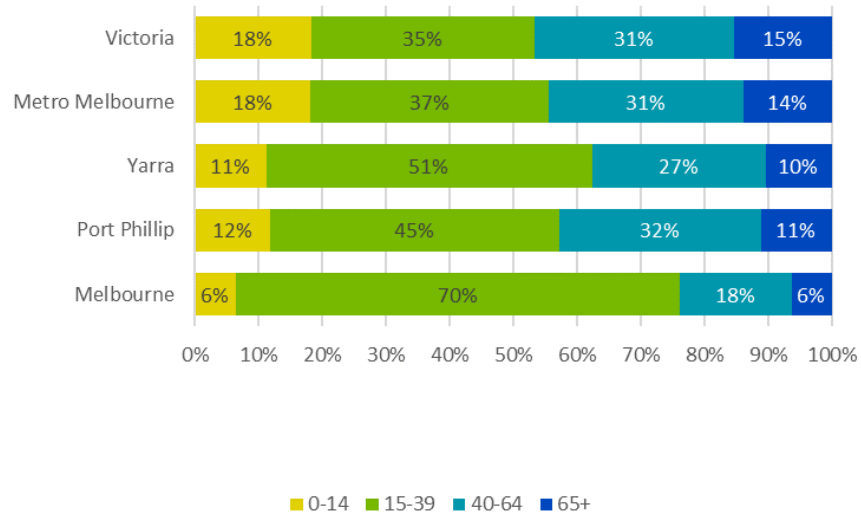
Source: SGS Economics and Planning, based on Victoria in Future 2018 and ABS (cat. 3218.0)

Population by age groups over time

Figure 60 indicates:

- The age profile of the Inner Metro Region varies from that of metropolitan Melbourne and Victoria, with City of Melbourne showing the greatest divergence.
- 88 per cent of the population of City of Melbourne is of working age (15 to 64).
- Yarra and Port Phillip LGAs have similar age profiles, including a larger proportion of people aged 15 to 39 than Victoria and metropolitan Melbourne, and a lower proportion of people aged under 14 and over 65.

FIGURE 60: PROPORTION OF POPULATION BY AGE GROUP (2016)

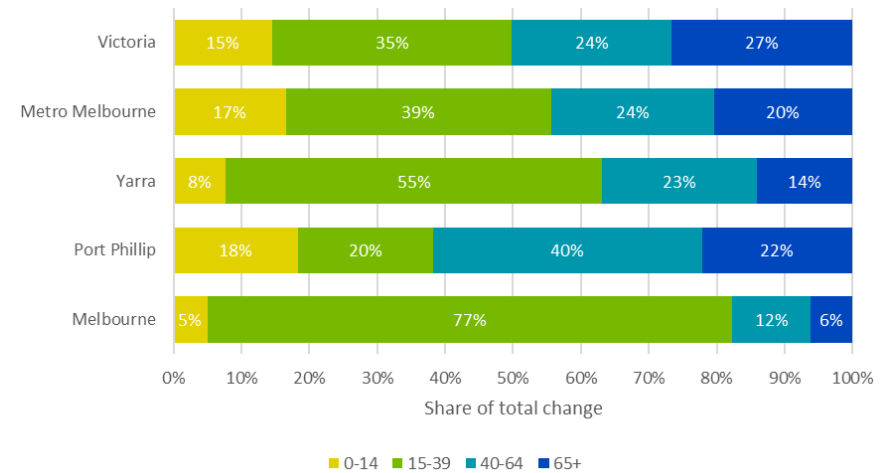


Source: ABS Census 2011 and 2016

The change in population by age group between 2011 and 2016 (Figure 61) shows:

- The proportion of people in each age group increased between 2011 and 2016.
- A large share of population growth in Yarra and Melbourne LGAs was driven by the working age cohort (15 to 64), exceeding the metropolitan average.
- People aged 40 to 64 represented the largest growth in age group in City of Port Phillip.
- Growth trends in the Inner Metro Region diverge from national, state and broader metropolitan trends, with the growth in the proportion of young people greater than growth in the proportion people over 65.

FIGURE 61: SHARE OF POPULATION CHANGE BY AGE (2011-2016)



Source: ABS Census 2011 and 2016

Table 10 and Figure 62 show total change by age group from 2006 to 2016.

- The greatest increase in population occurred in the City of Melbourne. The average annual growth rate was similar for all age groups except the 40 to 64 age group, where the growth rate of 4.7 per cent was almost two percentage points lower.
- City of Yarra experienced a lower rate of growth than the metropolitan average across all age groups. Growth in the number of people aged over 65 was slightly higher, indicating a trend towards an older population in this LGA. The smaller absolute number of people aged over 65 in the City of Yarra will contribute to the higher observed growth rate.
- City of Port Phillip's growth rates varied, with a high growth rate for people under 14, albeit from a comparatively low base. The number of people aged 15 to 39 experienced little change over time from a high starting number.
- Total change in population in Yarra and Port Phillip LGAs was comparable.

TABLE 10: AVERAGE ANNUAL POPULATION GROWTH RATES BY AGE GROUPS OVER TIME (2006-2016)

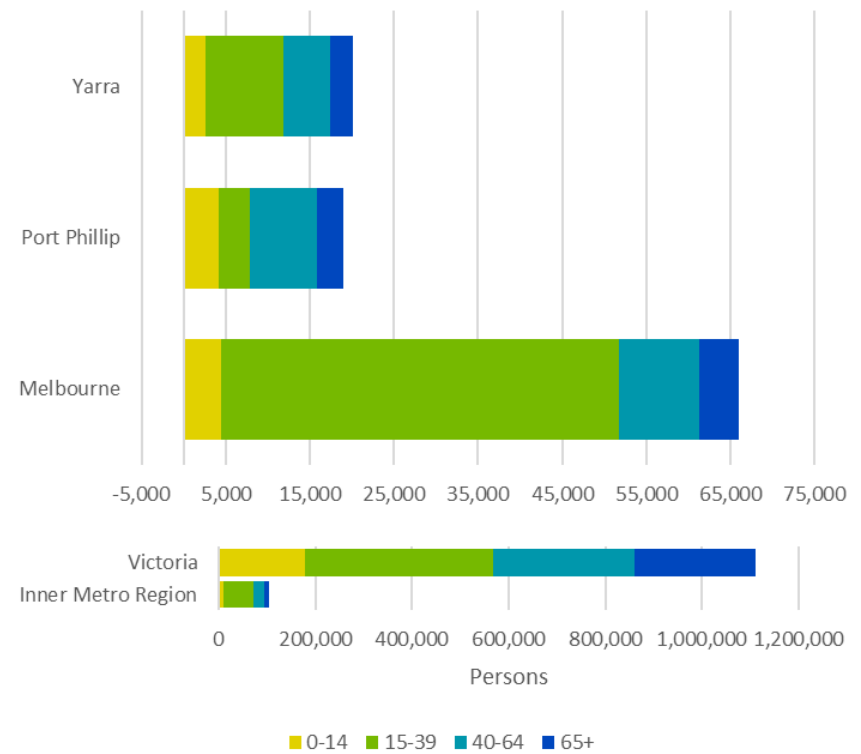
LGA	2016				AAGR 2006-2016			
	0-14	15-39	40-64	65+	0-14	15-39	40-64	65+
Melbourne	9,608	100,957	25,822	9,709	6.3%	6.5%	4.7%	6.6%
Port Phillip	12,818	49,640	33,785	12,384	4.0%	0.8%	2.7%	3.0%
Yarra	10,503	47,872	24,899	9,620	2.9%	2.2%	2.5%	3.4%
Inner Metro Region	34,945	198,469	84,506	31,713	3.9%	3.7%	3.2%	4.1%
Victoria	1,140,064	2,200,757	1,903,876	928,475	1.7%	2.0%	1.7%	3.2%

Source: ABS ERP 2006, 2016

Figure 62 shows the population growth by age group between 2006 and 2016.

- The City of Yarra and the City of Port Phillip experienced similar growth in population size. The City of Yarra had more growth in 15 to 39 year olds while Port Phillip had more in 40-64 year olds and children aged 0 to 14.
- The City of Melbourne experienced significant growth in population with the most growth in people aged 15 to 39.

FIGURE 62: POPULATION GROWTH BY AGE GROUP (2006–2016)



Source: ABS ERP 2006 and 2016

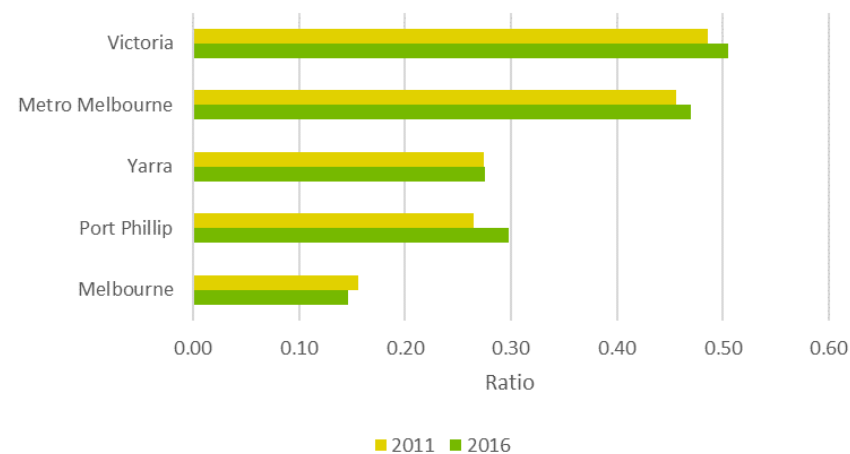
Age dependency ratio

Age dependency is the ratio between the population not in the labour force (typically the age groups 0 to 14 and 65+) and the population in the labour force (age group 15 to 64). A lower dependency ratio means there is less reliance on each working age person.

The dependency ratio helps to understand a location's economic potential as well as its welfare and service needs.

- Age dependency across the Inner Metro Region is lower than metropolitan Melbourne and Victoria.
- It increased most in Port Phillip LGA between 2011 and 2016, reflective of the increase in people aged 65+ and 0 to 14 and slower growth in the number of people aged 15 to 39.
- City of Melbourne experienced a decrease in age dependency as the proportion of people aged between 15 and 64 increased by 80 per cent.

FIGURE 63: AGE DEPENDENCY RATIO (2011-2016)



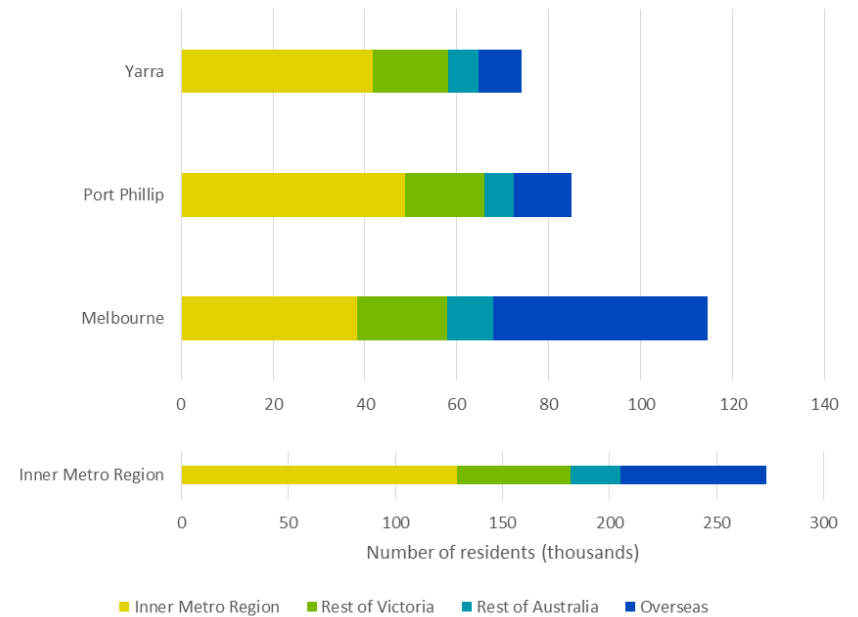
Source: ABS Census 2011 and 2016

Population migration flow

Figure 64 shows the place of origin of residents who moved to the Inner Metro Region between 2011 and 2016.

- Most residents in the Inner Metro Region in 2016 also lived there in 2011, followed by those who lived overseas five years ago. People who previously lived interstate represent the smallest proportion of the resident population.
- Yarra and Port Phillip LGAs show similar patterns of recent resident migration. In each, most residents were living within the same municipality.
- City of Melbourne has a divergent pattern of migration, with most residents moving to the municipality from overseas within the past five years.
- When excluding international migrants, the City of Melbourne’s resident population shows a similar migration patterns to Yarra and Port Phillip LGAs, with most internal migrants arriving from the rest of Victoria.

FIGURE 64: REGION OF ORIGIN FOR CURRENT RESIDENTS BY LGA (2016)



Source: ABS Census 2016

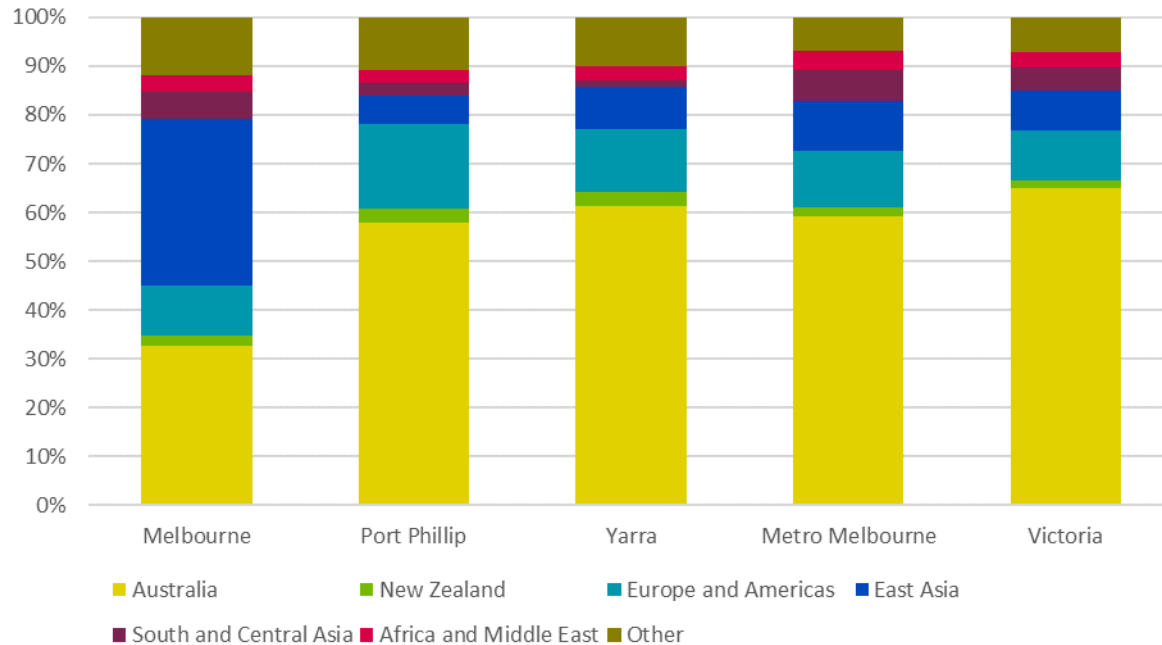
Cultural mix

Cultural mix is measured by the place of birth of the population as presented in Figure 65.

- The cultural make up of Yarra and Port Phillip LGAs are similar to metropolitan Melbourne, with Australia the most common country of birth.

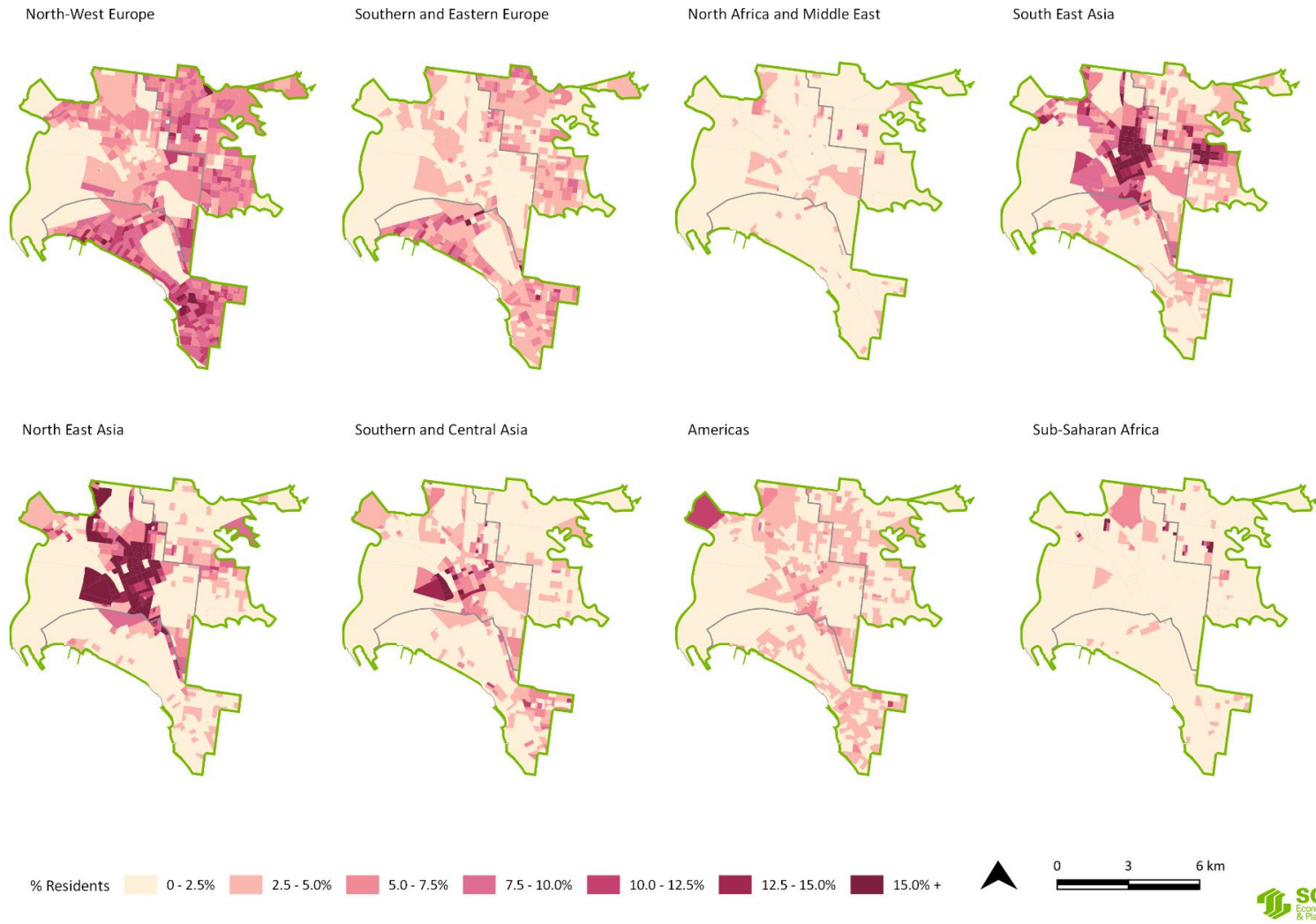
- The City of Melbourne has a higher proportion of people of East Asian origin and a significantly lower proportion of people born in Australia. This is likely due to the concentration of tertiary institutions in the Melbourne LGA, where East Asian students comprise a high share of enrolments.
- Representation of the other places of birth in Melbourne LGA are largely in line with Yarra and Port Phillip LGAs.

FIGURE 65: PLACE OF BIRTH AS A PERCENTAGE OF TOTAL POPULATION (2016)



Source: ABS Census 2016

FIGURE 66: PLACE OF BIRTH (2016)



Source: ABS 2016 Census

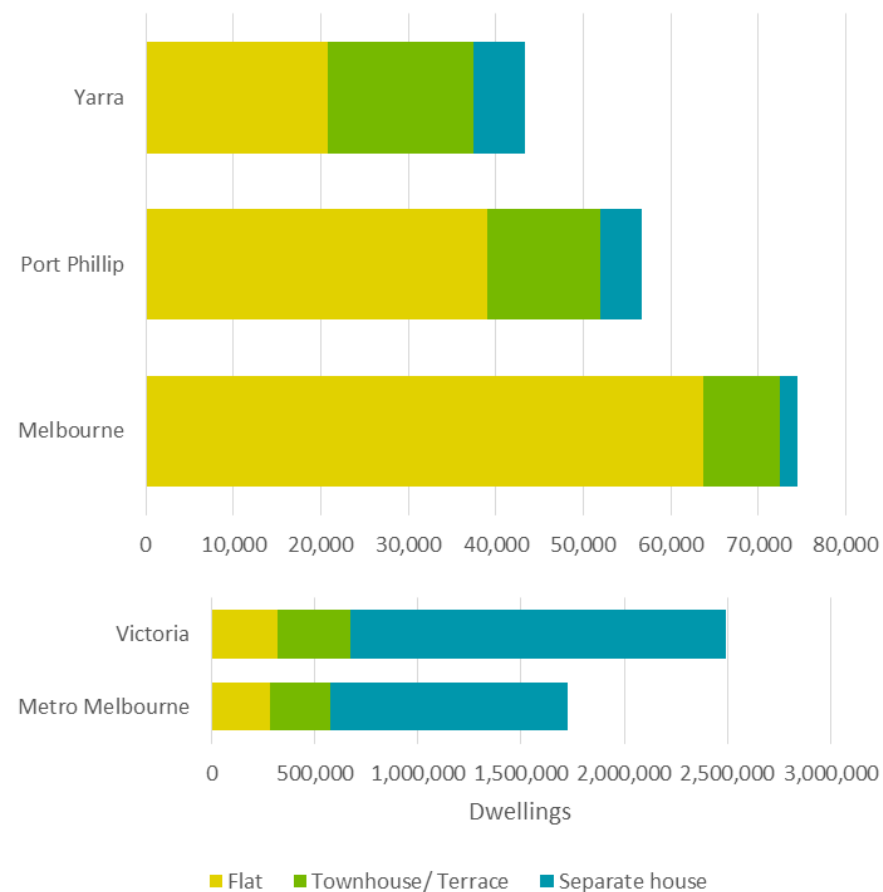
5.3 Housing diversity

Dwelling typology and activity

A greater diversity of housing in a location provides greater choice to households. It is influenced by changes in the property market, land available for residential development, and housing policy and regulations.

- The composition of housing stock across the Inner Metro Region is different to metropolitan Melbourne and Victoria, with flats the most prominent form of housing.
- The proportion of flats varies. They account for approximately 85 per cent of Melbourne LGA's housing stock, 78 per cent of Port Phillip LGA's housing, and 48 per cent of housing in Yarra LGA.
- Townhouses are the second most prominent form of housing.
- Separate houses represent less than 15 per cent of all housing.

FIGURE 67: DWELLING TYPE BY LGA (2016)



Source: ABS Census 2016

▪

Site density is one measure of housing diversity. It is derived from DELWP's Housing Development Data and is different to a gross or net density measure. It is based on the land (or lot) associated with each newly constructed dwelling only and does not include surrounding open space, roads, footpaths or other land required to support that residential use. While site density can provide some indication of the types of dwellings in an area, different dwelling types have overlapping site density ranges – for example a detached house on a small lot could have a higher site density than a development of large townhouses.

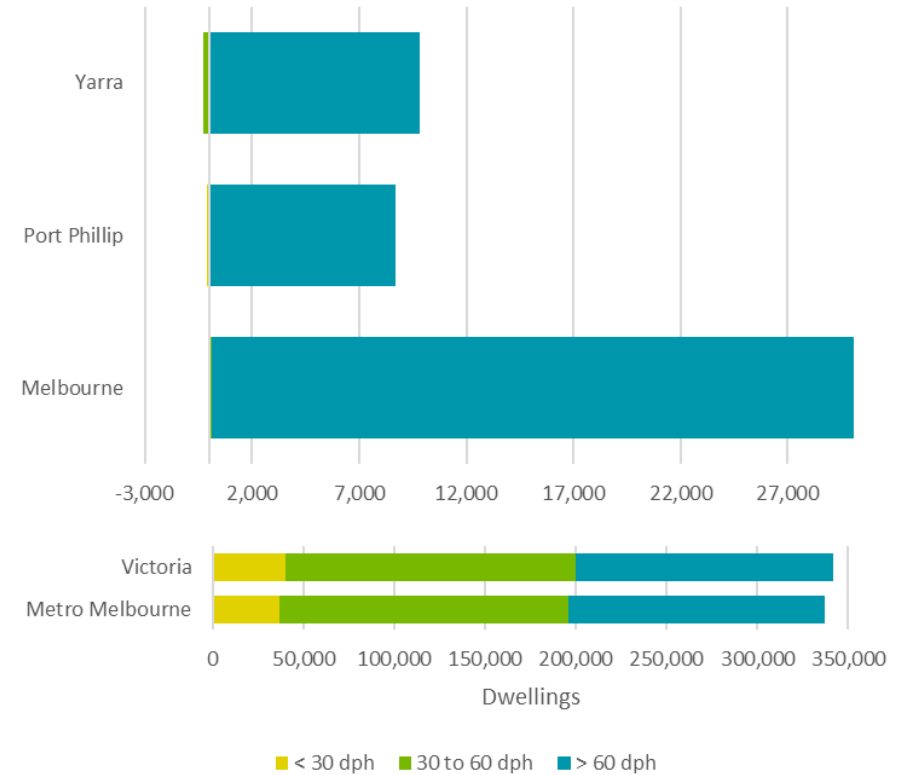
Site density is grouped in three broad ranges:

- **High site density** - greater than 60 dwellings per hectare (DPH)
- **Medium site density** - between 30 and 60 DPH
- **Low site density** - less than 30 DPH

Figure 68 shows the net change in site density between 2005 and 2015. A negative number indicates there were fewer dwellings at a certain site density range in 2015 compared to 2005, possibly because a dwelling has been demolished or a site was subdivided or redeveloped to a higher density. For example, if one lower density dwelling is replaced by four higher density townhouses this would be measured as a reduction in lower site density and an increase in higher site density.

- The greatest increase in total dwellings occurred in City of Melbourne.
- High density dwellings were the most common form of development.
- City of Yarra experienced a net reduction in the number of low density dwellings.

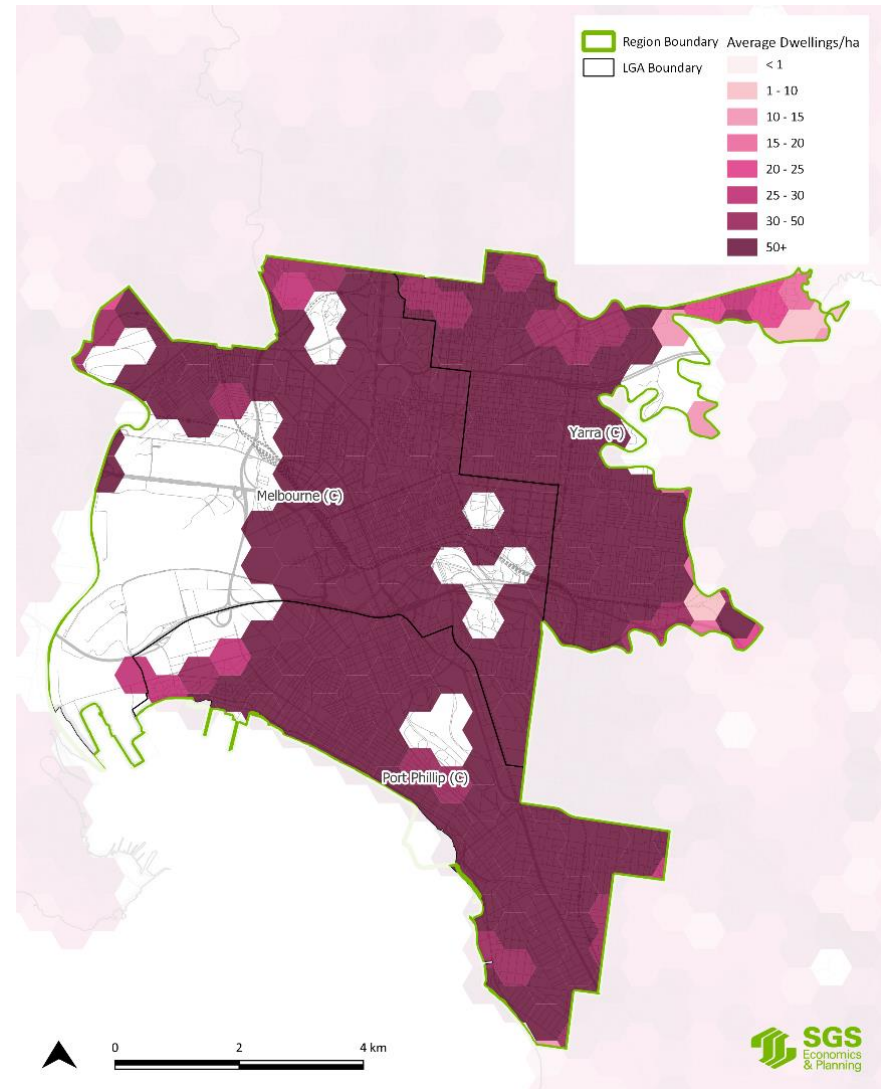
FIGURE 68: CHANGE IN DWELLINGS BY SITE DENSITY (2005-2015)



Source: DELWP Housing Development Data 2006 and 2016

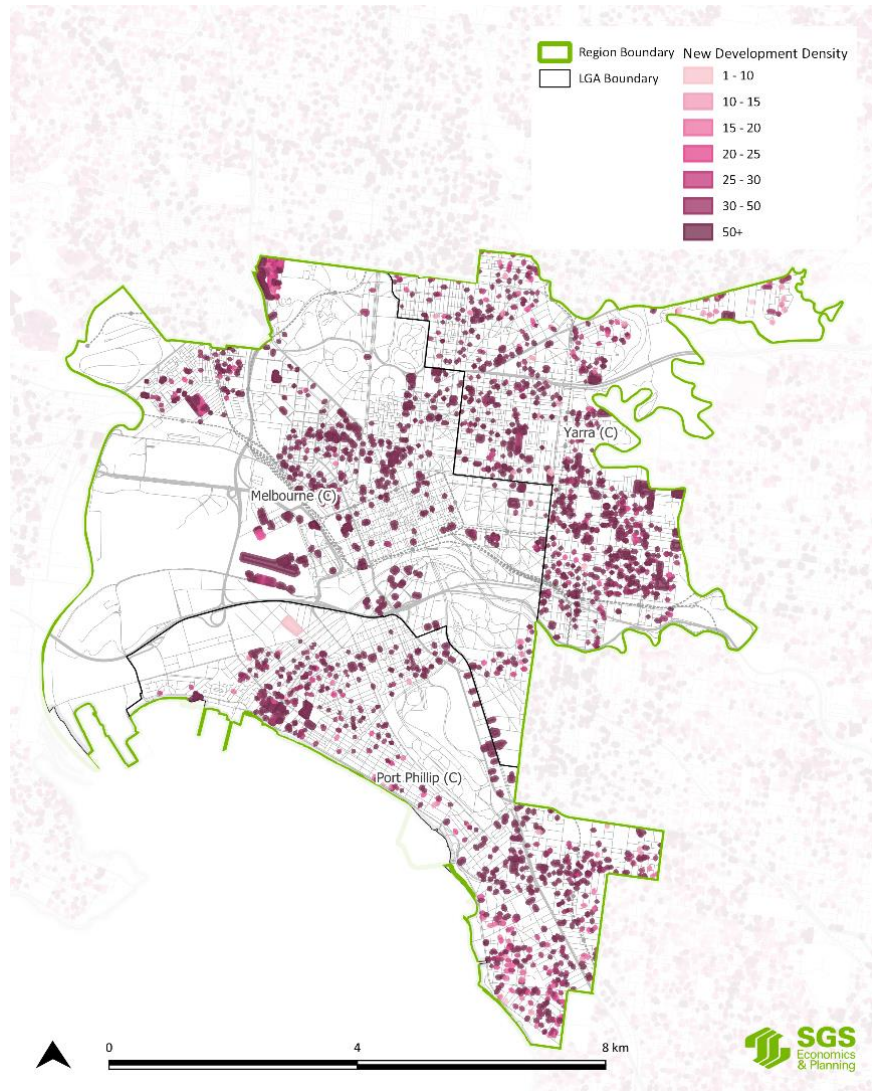
- Figure 69 and Figure 70 show that development over the past 10 years has delivered residential dwellings at high densities across the region.
- The greatest number of medium-density developments were in the southern areas of Port Phillip LGA.
- The most significant high-density development occurred in Docklands, with City North and Parkville and more established suburbs of Richmond and St Kilda seeing an increase in the number of high-density developments.
- Figure 70 shows that development between 2011 and 2016 delivered dwellings at a density that is higher than what has traditionally been constructed in the region.

FIGURE 69: AVERAGE DWELLING DENSITY (2016)



Source: DELWP Housing Development Data 2016

FIGURE 70: DEVELOPMENT DENSITY OF NEW PROJECTS (2005-2016)



Source: DELWP Housing Development Data 2005 and 2016

FIGURE 71: DENSITY PROFILE OF NEW DWELLINGS (2005-2016)

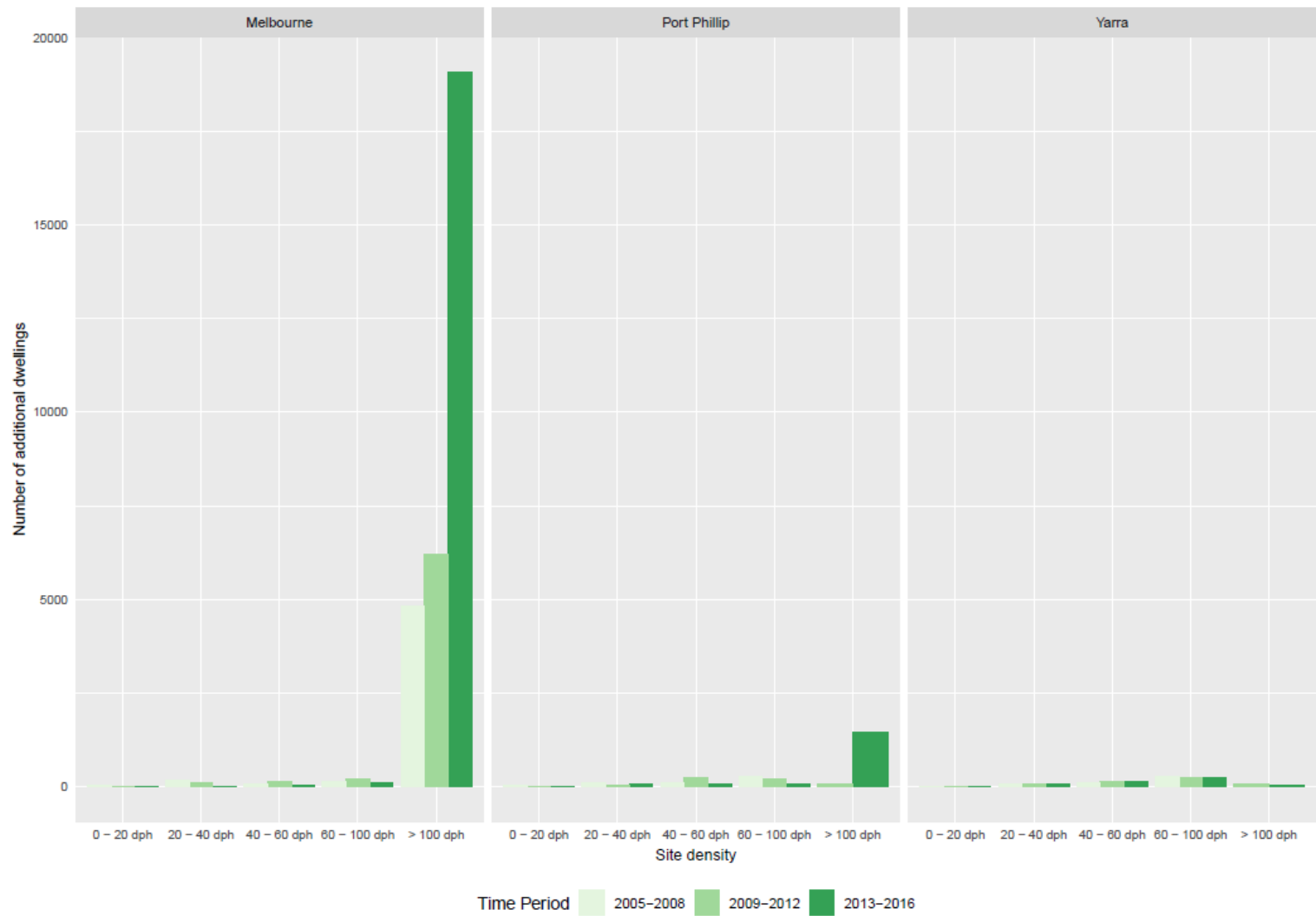


Figure 71 shows the site densities for new dwellings in each LGA between 2005 and 2008; 2009 and 2012; and 2013 and 2016.

- The City of Melbourne has consistently had the majority of their development occur at higher site density, greater than 100 DPH, with a significant increase in dwellings in this category between 2013 and 2016.

Source: DELWP Housing Development Data 2006 and 2016

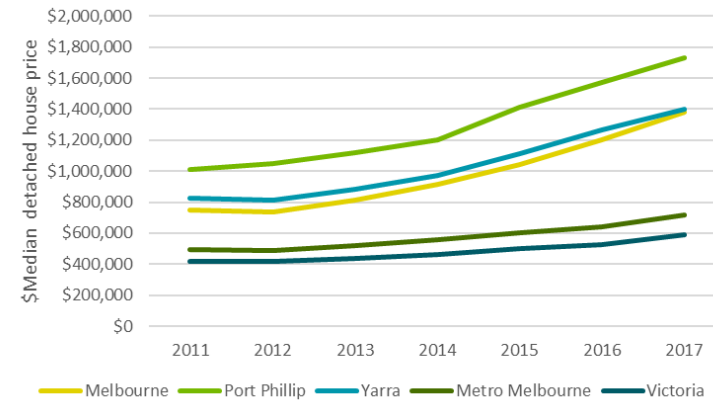
5.4 Housing prices and stress

Housing price

Figure 72 and Figure 73 show recent house price trends across the Inner Metro Region.

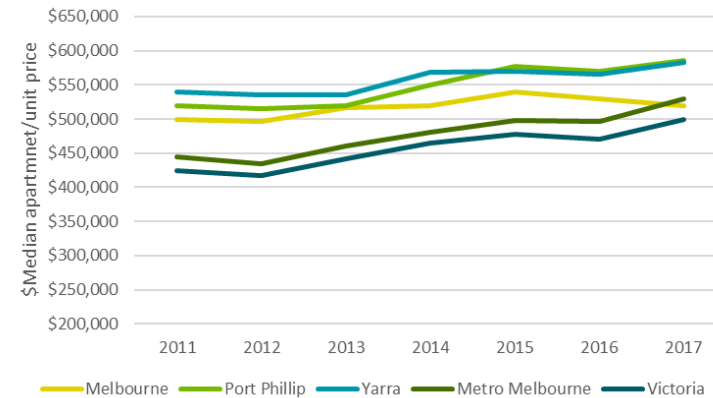
- The median prices for detached houses in the Inner Metro Region shows a consistent upward trend between 2011 and 2017, with Port Phillip LGA maintaining the highest median house price, approximately \$200,000 greater than Yarra and Melbourne LGAs.
- While showing an overall increase in price over time, median prices for apartments and units have fluctuated.
- The price of apartments/units in Melbourne LGA is below that of Yarra and Port Phillip LGAs, with prices decreasing between 2015 and 2017. This is contrary to recent price increases in Port Phillip and Yarra LGAs and reflects the substantial volume of apartments and unit stock in the municipality.
- The price of apartments and units in Port Phillip LGA has overtaken Yarra LGA to become the most expensive in the region.

FIGURE 72: MEDIAN DETACHED HOUSE PRICE (2011-2017)



Source: DELWP, 2017

FIGURE 73: MEDIAN APARTMENT/UNIT PRICE (2011-2017)



Source: DELWP, 2017

Housing stress

Housing stress measures the balance between household income and housing expenditure. It can present as either rental stress or mortgage stress.

Households in rental stress are those which:

- are low income, defined as falling within the bottom 40th percentile of the household income distribution of Victoria
- spend at least 30 per cent of their household income on rent.

Households in mortgage stress are those which:

- are low income, defined as falling within the bottom 40th percentile of the household income distribution of Victoria
- spend at least 30 per cent of their household income on mortgage payments.

Figure 74 and Figure 75 present mortgage and housing stress by LGA.

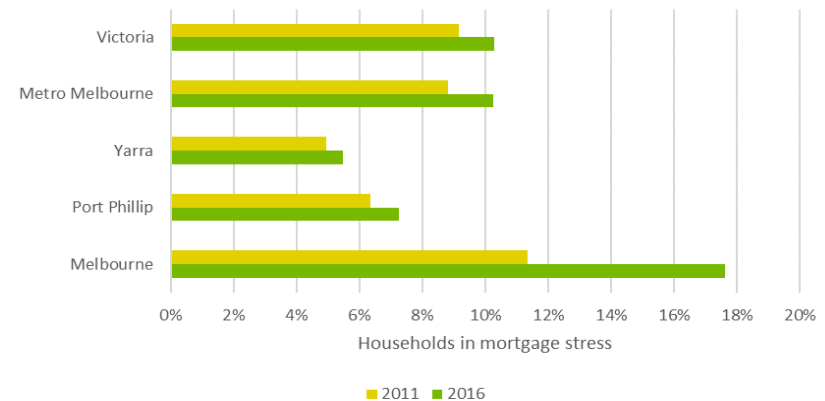
- Households in Yarra and Port Phillip LGAs experience rates of mortgage and rent stress that are lower than Victoria and metropolitan Melbourne, with Yarra LGA having the lowest overall.
- Melbourne LGA has a high rate of both rental and mortgage stress, exceeding Victoria and metropolitan Melbourne. This suggests that the property market in Melbourne LGA is less affordable than the property market overall.
- Increases in rent and mortgage stress were significantly higher in the City of Melbourne than the metropolitan Melbourne and Victorian average.

Figure 76 and Figure 77 illustrate the distribution of households with mortgage stress and rental stress in the Inner Metro Region.

- The Inner Metro Region contains areas where more than 13 per cent of the resident population is in mortgage stress.
- Mortgage stress is pronounced in the CBD and several adjacent suburbs, including areas of Parkville, Carlton, Southbank and Docklands.

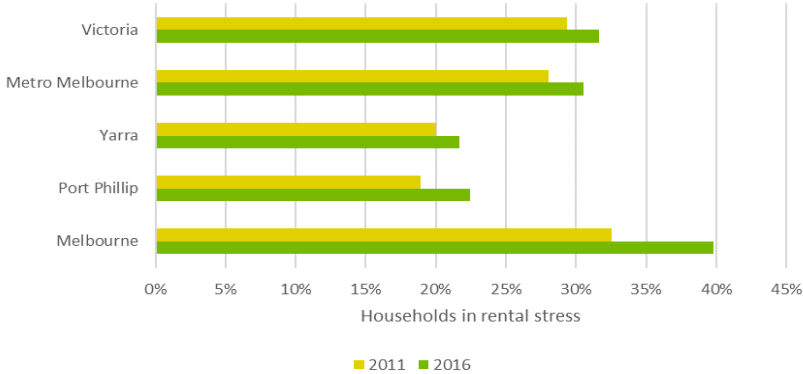
- A smaller percentage of households face rental stress, with concentrations in Melbourne CBD and surrounding areas, including Southbank, Docklands, West Melbourne, Parkville, Carlton, South Yarra and Fitzroy/Fitzroy North.

FIGURE 74: LOW INCOME HOUSEHOLDS IN MORTGAGE STRESS (PERCENTAGE OF HOUSEHOLDS WITH A MORTGAGE) (2011-2016)



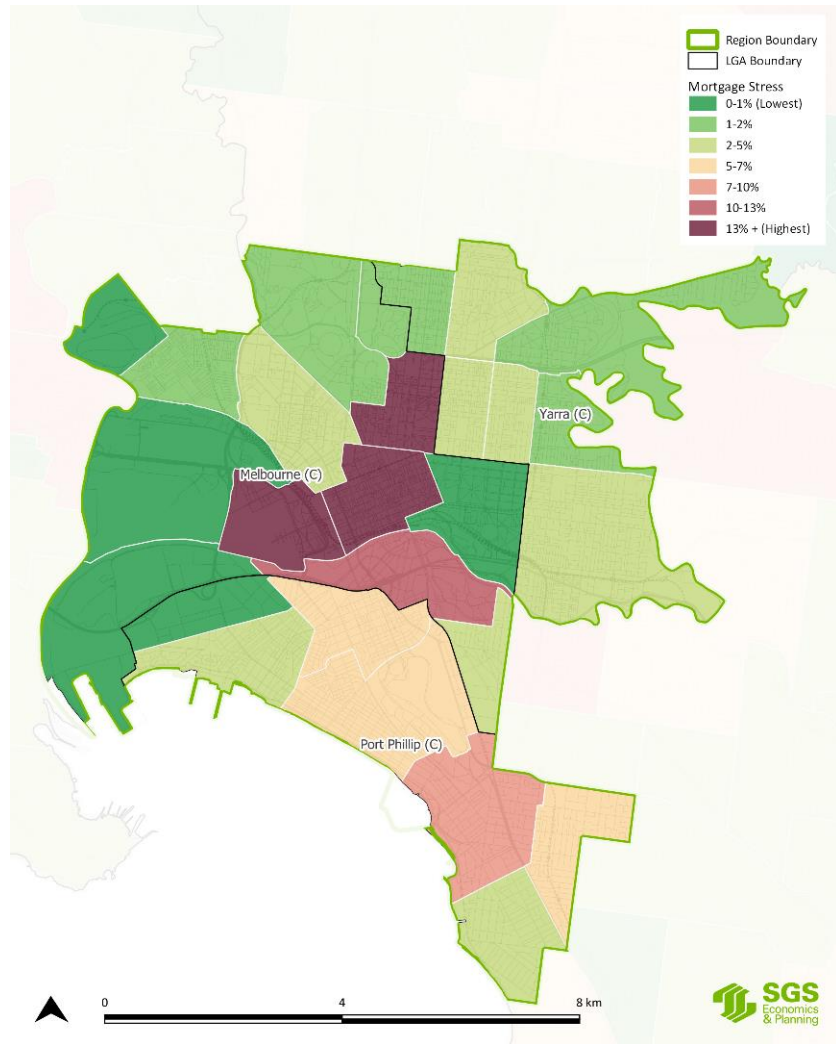
Source: ABS Census 2011 and 2016

FIGURE 75: LOW INCOME HOUSEHOLDS IN RENTAL STRESS (PERCENTAGE OF TOTAL HOUSEHOLDS RENTING) (2011-2016)



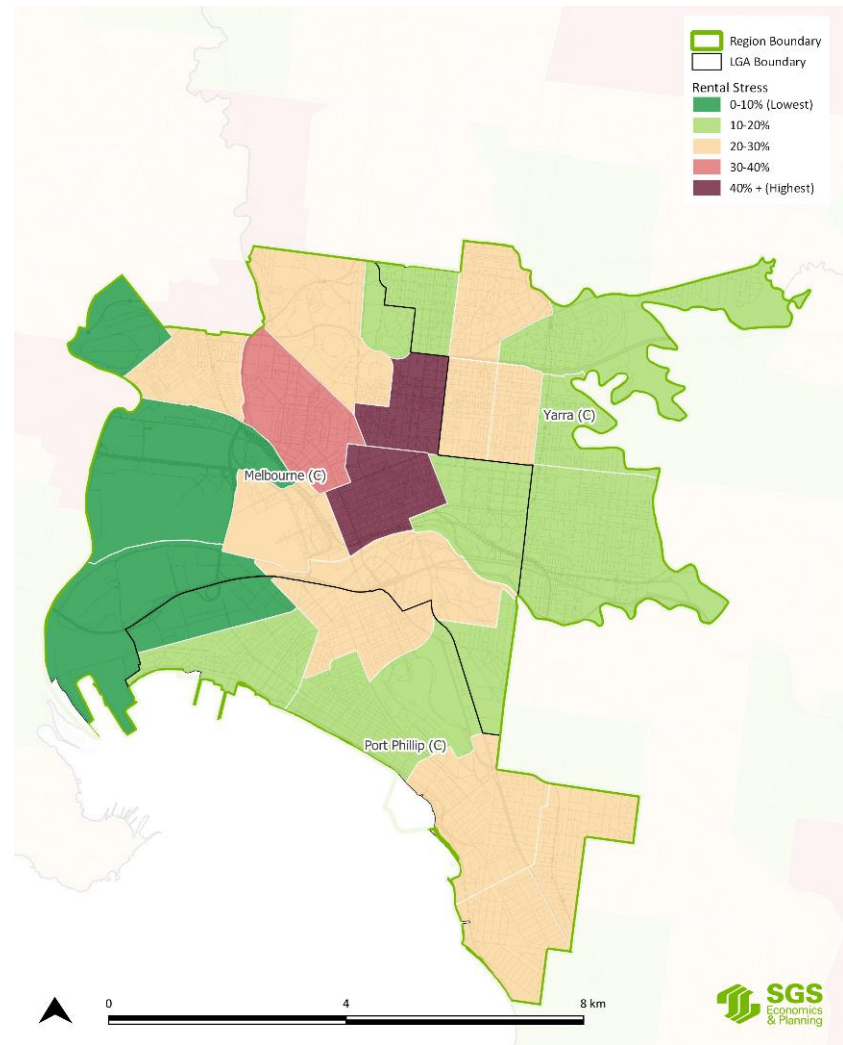
Source: ABS Census 2011 and 2016

FIGURE 76: HOUSEHOLDS IN MORTGAGE STRESS 2016 (PERCENTAGE OF TOTAL HOUSEHOLDS WITH MORTGAGE)



Source: ABS Census 2016

FIGURE 77: HOUSEHOLDS IN RENTAL STRESS 2016 (PERCENTAGE OF TOTAL HOUSEHOLDS RENTING)

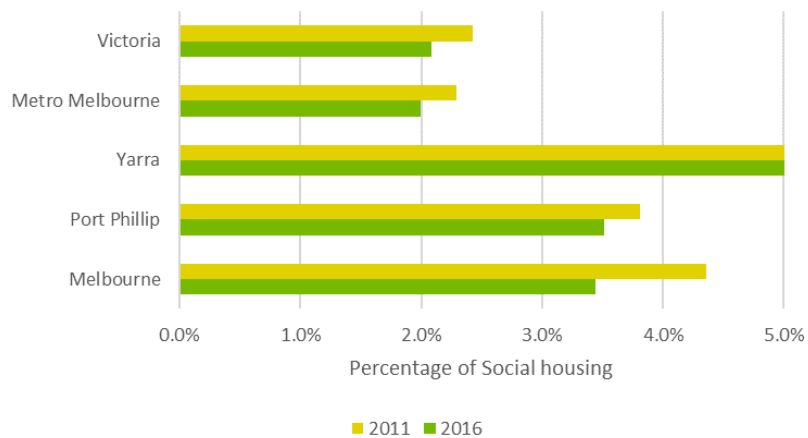


Source: ABS Census 2016

Figure 78 and Figure 79 show recent trends in social housing (as a proportion of total dwellings) and homelessness (as a proportion of the total population).⁶

- The proportion of social housing is highest in the City of Yarra.
- The City of Melbourne has the least social housing as a proportion of total housing stock. This is reflective of the pace of housing development in the City of Melbourne as well as changing patterns of investment in social housing.
- The percentage of social housing in all municipalities decreased between 2011 and 2016 and this change was most pronounced in the City of Melbourne.

FIGURE 78: SOCIAL HOUSING (PERCENTAGE OF TOTAL DWELLINGS) (2011 AND 2016)

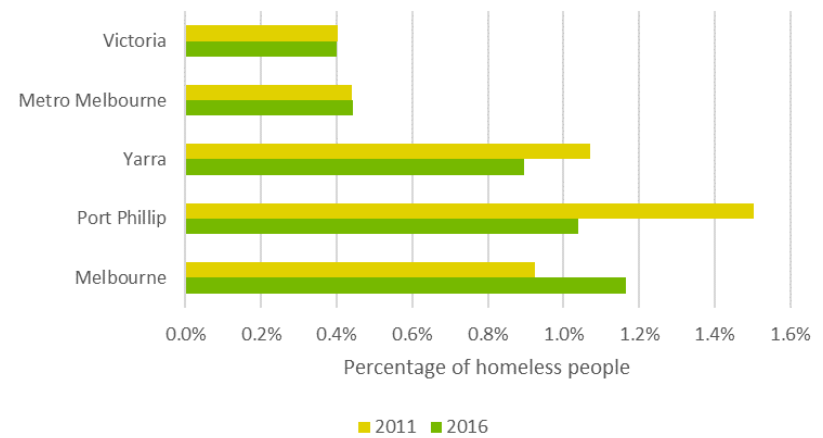


Source: ABS Census 2011 and 2016

⁶ Homelessness is defined as living in an inadequate dwelling, having no tenure, when initial tenure is short and not extendable, or tenure does not allow people to have control of, and access to, space for social relations. ABS 2012

- Rates of homelessness are higher in all LGAs in the Inner Metro Region than the metro Melbourne and Victorian average. There was a drop in the rate of homelessness in Port Phillip and Yarra LGAs, but an increase in the City of Melbourne between 2011 and 2016.

FIGURE 79: HOMELESS PEOPLE (PERCENTAGE OF TOTAL POPULATION) (2011 AND 2016)



Source: ABS Census 2011 and 2016

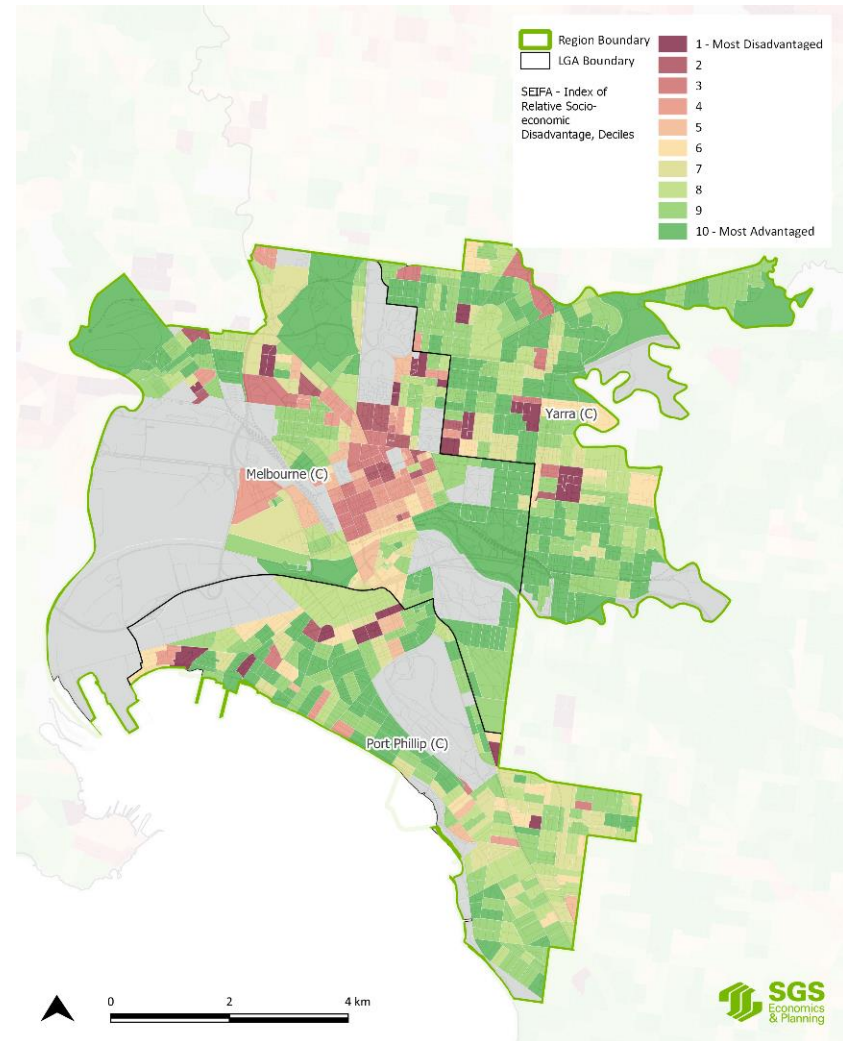
5.5 Disadvantage

SEIFA - Index of Relative Socio Economic Disadvantage

Figure 80 shows the SEIFA Index of Relative Socio-Economic Disadvantage across the Inner Metro Region. It illustrates the rate of advantage and disadvantage relative to the national average and considers occupation, education, housing, health status, English language proficiency, marital status, health and disability status, household composition, internet access and household income.

- The Inner Metro Region, while highly advantaged, contains small areas of significant disadvantage around concentrations of social housing (including social housing towers in the suburbs of Fitzroy, Collingwood and Flemington) and industrial areas where resident populations and housing quality are lower.
- Concentrations of moderate disadvantage in the CBD and adjacent areas to the north may be reflect higher proportions of student households, which typically have a low annual income.

FIGURE 80: SEIFA INDEX OF RELATIVE SOCIO-ECONOMIC DISADVANTAGE (2016)



Source: ABS Census 2016

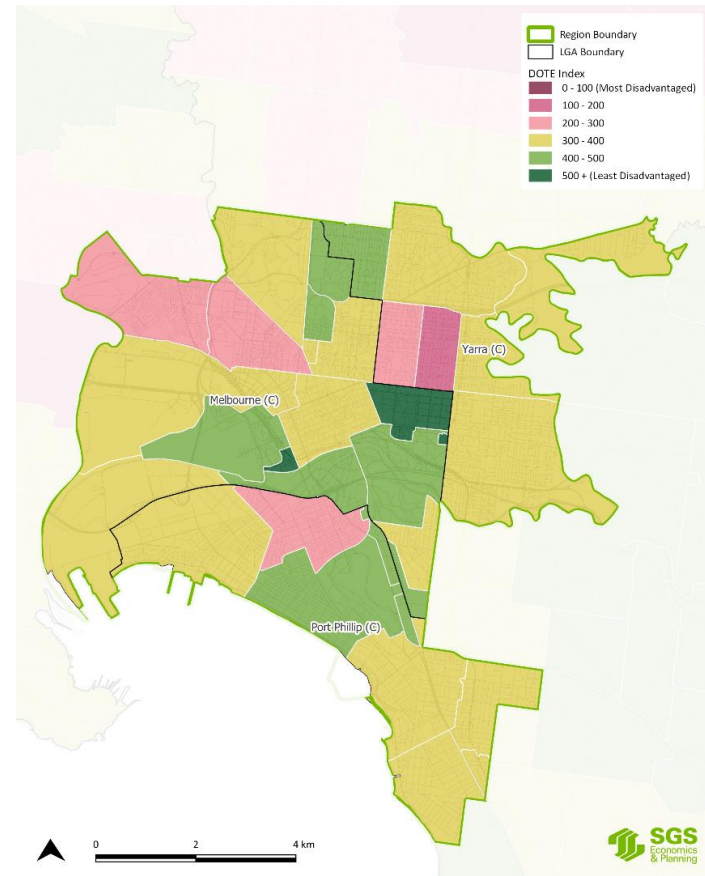
DOTE index

Jesuit Social Services and Catholic Social Services Australia have developed the Dropping Off the Edge (DOTE) Index to measure disadvantage levels.

The indicators utilised in the DOTE Index overlap with some (income, educational attainment, job type and employment status) used in SEIFA. The DOTE Index differs in its utilisation of indicators that measure specific aspects of disadvantage rather than variables that reflect disadvantage. In addition to several SEIFA variables, the DOTE Index also includes indicators relating to child maltreatment, prison admissions, criminal court convictions, domestic/family violence and psychiatric hospital admissions.⁷

- The DOTE Index Average Rank shows that the Inner Metro Region has a small number of postcodes showing a moderate to high level of disadvantage.
- Disadvantage is associated with areas that contain a high concentration of social housing, including social housing towers in Fitzroy, Collingwood and Flemington. This is relatively consistent within the SEIFA Index.
- Overall, the region shows low levels of disadvantage.

FIGURE 81: AVERAGE RANK, DOTE INDEX (2015)



Source: Jesuit Social Services and the Catholic Social Services Australia 2015 (note that 2015 data is latest available)

⁷ Catholic Social Services Australia (2015), Dropping Off the Edge: Persistent Communal Disadvantage in Australia, pp.10. Accessed 6 September 2018 from: http://k46cs13u1432b9asz49wnhcx-wpengine.netdna-ssl.com/wp-content/uploads/0001_dote_2015.pdf

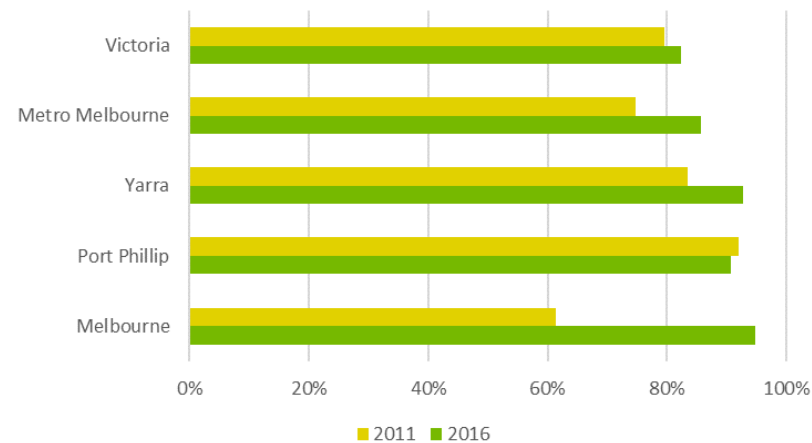
5.6 Youth engagement with work or study

Education levels

Education levels correlate to skill level, especially among people in the younger working age groups. The On Track survey by the Department of Education shows the study or work plans of high school completers six months after they finish high school completion.

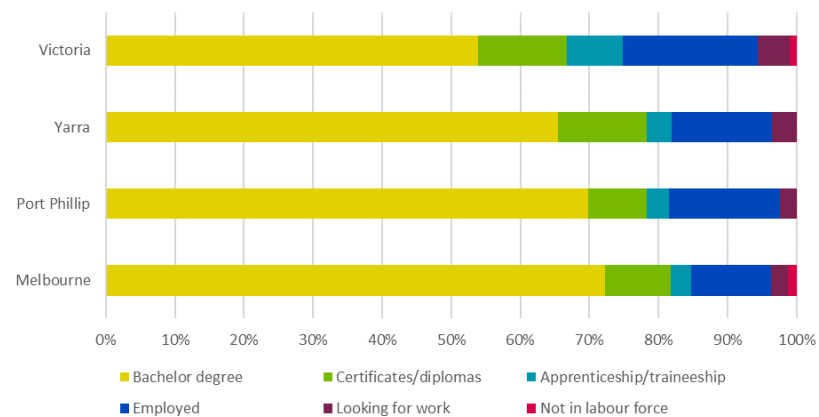
- Figure 82 shows that all municipalities in the Inner Metro Region have a higher proportion of people aged 20 to 24 with Year 12 or higher qualifications than the metropolitan and Victorian average.
- The number of young people with secondary or post-secondary qualifications has increased in the City of Melbourne. The significant growth of people aged 20 to 24 with Year 12 or higher education in the City of Melbourne can be explained by the increasing number of tertiary students.
- Most Year 12 completers in the Inner Metro Region have proceeded to undertake a bachelor degree. This proportion substantially higher than across Victoria, due to the region's concentration of tertiary institutions and housing stock catering to students.

FIGURE 82: PERCENTAGE OF PEOPLE AGED 20 TO 24 WITH YEAR 12 OR HIGHER QUALIFICATION (2011-2016)



Source: ABS Census 2011 and 2016

FIGURE 83: DESTINATIONS OF 2017 YEAR 12 OR EQUIVALENT COMPLETERS (2017)



Source: On Track, Department of Education, 2017

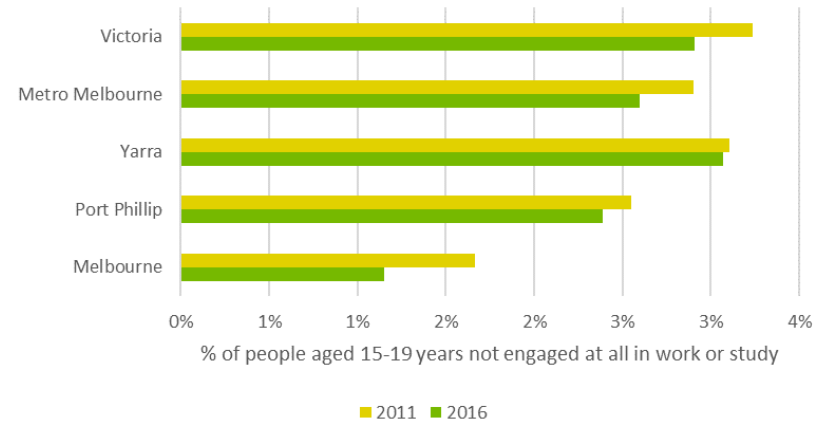
Engagement with work or study

Youth engagement in work or study can signify an area’s level of education resources and the level of skills generally required to be employed in the local job markets.

Youth disengagement with work or study can stem from taking time off from studies, travel, illness and disability, or family commitments. The youth disengagement rate can also inform investments in education and professional training services.

- While there was a decline in youth disengagement in the Inner Metro Region from 2011 to 2016, youth disengagement in the City of Yarra is above the State average (Figure 84).
- Youth participation in full-time work also decreased in each municipality, most notably in the City of Port Phillip. Levels of youth labour force participation are below that of metropolitan Melbourne and Victoria. This trend corresponds to high rates of school leavers going on to tertiary education.

FIGURE 84: YOUTH DISENGAGEMENT (2011-2016)



Source: ABS Census 2011 and 2016

FIGURE 85: YOUTH LABOUR PARTICIPATION (2011-2016)



Source: ABS Census 2011 and 2016

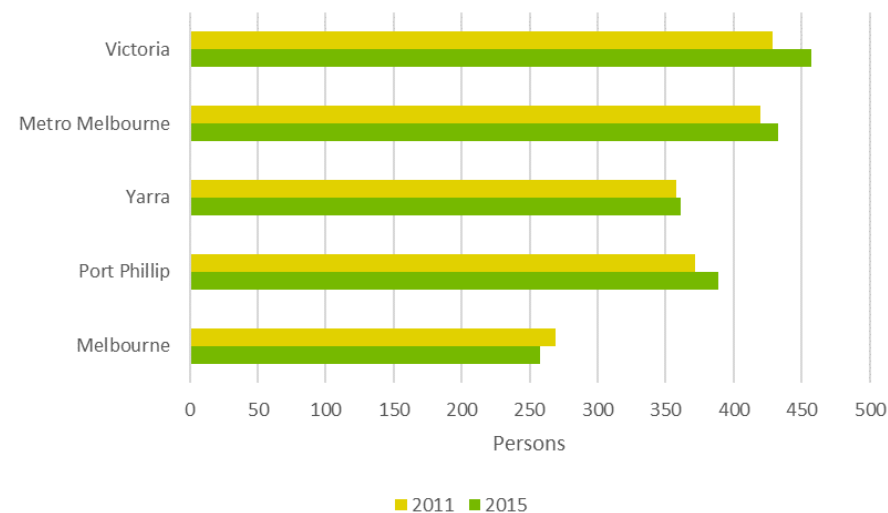
5.7 Population health

Hospital inpatient separations

Inpatient separations are a measure of the number of instances a patient leaves a hospital because of death, discharge, sign-out against medical advice or transfer. It is a common measure of the utilisation rate of hospital services.

- The number of inpatient separations is lower in the Inner Metro Region than the metropolitan average. This reflects the relative socio-economic advantage of the area.
- Melbourne LGA has a lower rate of inpatient separations than Yarra and Port Phillip LGAs. It is also the only municipality in which the rate of inpatient separations is decreasing. This may be linked to its increase in the proportion of young people.

FIGURE 86: INPATIENT SEPARATIONS PER 1,000 POPULATION (2011-2015)



Source: DHHS Local Government Area Statistical Profiles, 2011 and 2015 (note that 2015 data is latest available)

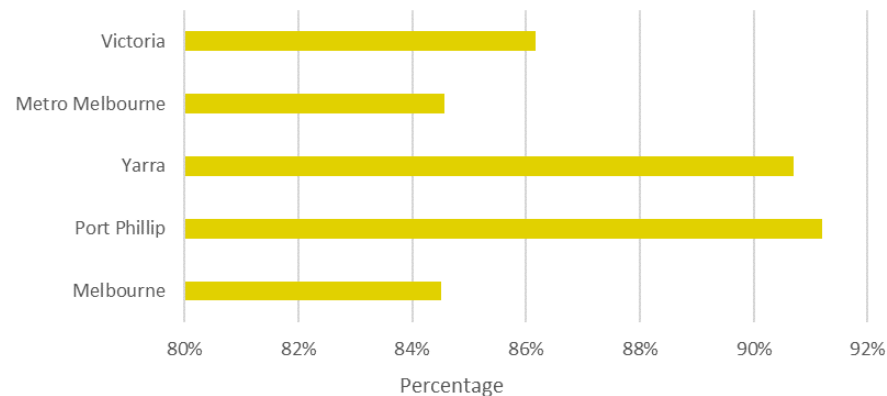
Access to community and health care services

Community health services are provided to the community alongside general health practitioners and are privately funded services that support primary health services in Victoria.

The scope of community health services can also include human services such as drug and alcohol rehabilitation, post-acute care and disability care. The level of access to community and health care services helps illustrate a region's social advantages and disadvantages.

- Over 90 per cent of residents who live in Port Phillip and Yarra LGAs reported that they could definitely access community services and resources, well above the metropolitan average. The lower percentage of people who could definitely access services and resources in Melbourne LGA is closer to the average rate of access in metropolitan Melbourne.
- The lower rates of access in the City of Melbourne could be linked to the rate of development and population increases, and relative disadvantage in some areas of the municipality.

FIGURE 87: PERCENTAGE OF PEOPLE WHO COULD DEFINITELY ACCESS COMMUNITY SERVICES AND RESOURCES BY LGA (2015)



Source: DHHS Local Government Area Statistical Profiles, 2015 (note that 2015 data is latest available)

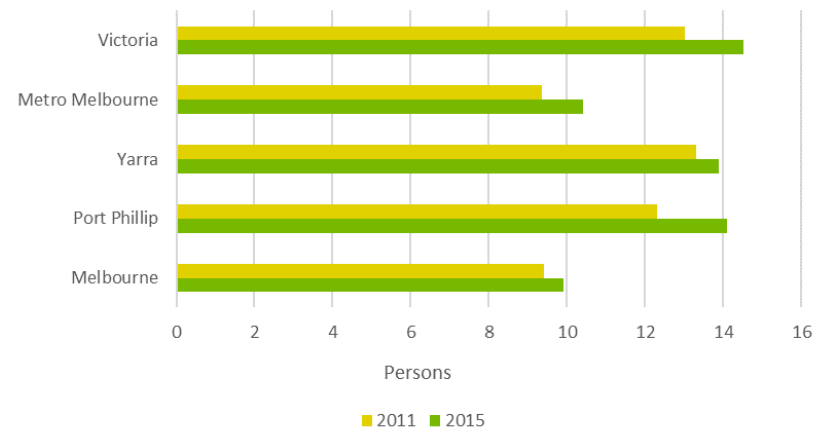
Mental health and drug and alcohol use

Drug and alcohol use and/or poor mental health can lead to adverse health and wellbeing outcomes (Figure 89 and Figure 90).

There are limitations to this data. A shortage of services may hide the extent of true demand and the dataset only includes public patients. More affluent areas are likely to have mental health and drug and alcohol patients seeking private care; conversely, the availability of more services may mean higher demand. High utilisation of services might also reflect the availability of a service, a high quality service, and/or a highly accessible service.

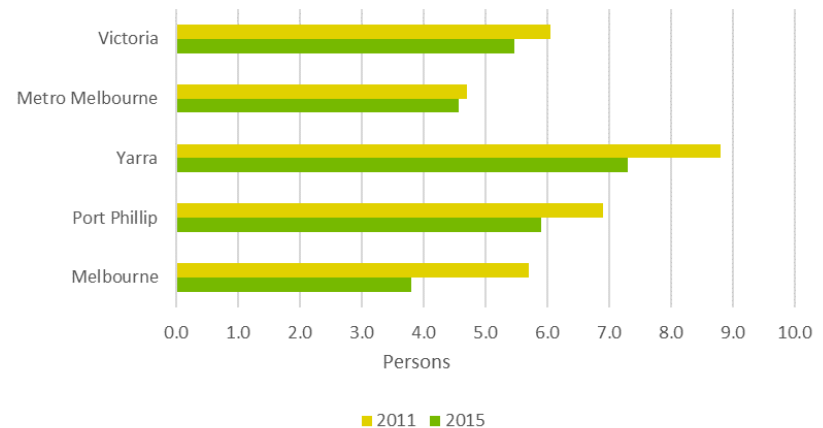
- Yarra and Port Phillip LGAs have a higher number of registered mental health and drug and alcohol clients per 1,000 population than the metropolitan average.
- While the proportion of mental health clients in all three municipalities increased between 2011 and 2016, the proportion of drug and alcohol clients decreased.
- These patterns are in line with broader trends across Victoria.
- The higher proportions of mental health and drug and alcohol clients in Yarra and Port Phillip LGAs does not appear to correlate to the region's overall socio-economic status; however, there are pockets within these municipalities where socio-economic disadvantage is concentrated, including several large social housing estates.

FIGURE 88: REGISTERED MENTAL HEALTH CLIENTS PER 1,000 PEOPLE BY LGA (2011-2015)



Source: DHHS Local Government Area Statistical Profiles 2011 and 2015 (note that 2015 data is latest available)

FIGURE 89: DRUGS AND ALCOHOL CLIENTS PER 1,000 PEOPLE (2011-2015)



Source: DHHS Local Government Area Statistical Profiles 2011 and 2015 (note that 2015 data is latest available)

Home and Community Care Services (HACC)⁸

Home and Community Care (HACC) services provide outreach services to allow people aged 65 and over and people with a disability to live in their communities for longer. Services may include centre-based day respite, transport, basic in-home services and social support.

The HACC ‘target population’ indicates the number of people eligible to receive services from a HACC program funded by the Victorian or Australian Government and usually delivered by local government. To determine service levels, a needs assistance measure examines the proportion of ‘older and frail people with moderate, severe or profound disabilities’. The size and location of the target population in Victoria is estimated from responses to Census questions on ‘need for assistance’ with self-care, mobility or communication, counted at an LGA geography.⁹

The rate per 1,000 indicates a relative need of service provision and is used to compare the relative extent of HACC provision in each LGA compared to the population. Because of multiple occasions of service, a given LGA may show more people receiving a HACC service in a year than the count of individuals in the HACC target population.¹⁰

- Table 11 shows all LGAs in the Inner Metro Region have a lower number of HACC clients than the Victorian average. Only the City of Yarra has a lower number than the metropolitan average.
- The number of HACC clients appears to be inconsistent with the proportion of people aged over 65 in each LGA, with high numbers in the City of Melbourne despite its lower proportion of people aged over 65.

⁸ On 1 July 2016 funding and management of HACC services for older people were replaced by Commonwealth Home Support Programme (CHSP) and by HACC Program for Younger People (HACC PYP). The use of former HACC data will therefore not set a future benchmark to measure progress.

- Likewise, Port Phillip LGA has a higher number of HACC clients compared with Yarra LGA, despite its similar proportion of people aged 65 or over.

TABLE 11: HACC CLIENTS (2015)

	HACC clients aged 65+/1,000 head 2015
Melbourne	724.8
Port Phillip	860.3
Yarra	567.7
<i>Metropolitan Melbourne</i>	<i>688.5</i>
<i>Victoria</i>	<i>973.3</i>

Source: DHHS Local Government Area Statistical Profiles, 2015 (note that 2015 data is latest available)

⁹ The target population is adjusted by removing those living in residential aged care or DVA card holders.

¹⁰ Department of Health and Human Services, *Data item definitions: 2015 local government area profiles*, ‘Home and Community Care (HACC) clients’, November 2015.

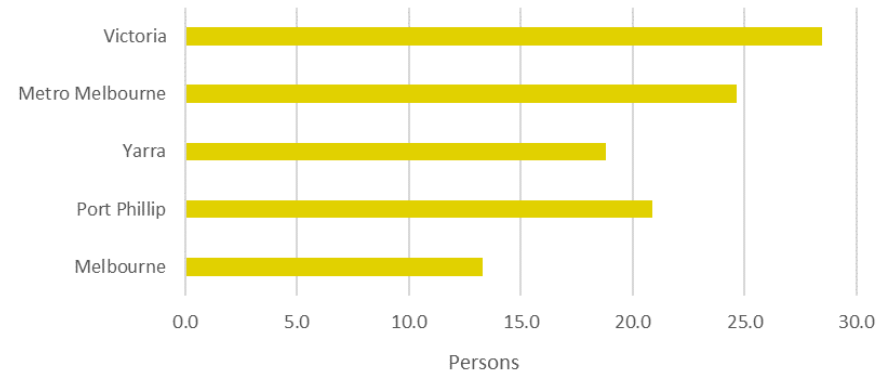
Ambulatory Care Sensitive Conditions (ACSC)

Ambulatory Care Sensitive Conditions (ACSC) describe conditions for which hospitalisation could be avoided through public health interventions and early disease management, usually delivered in an ambulatory setting such as primary care.

High rates of hospital admissions for ACSCs may provide indirect evidence of problems with patient access to primary healthcare, inadequate skills and resources, or disconnection with specialist services.¹¹

- The number of ACSC clients per 1,000 population is below the metropolitan average.
- Port Phillip LGA has the highest number of hospital separations for ACSCs while Melbourne LGA has the lowest.
- The lower than average number of ACSC separations in the Inner Metro Region may reflect the higher levels of access to community and health care services shown in Figure 90.

FIGURE 90: ACSC (PPH) SEPARATIONS FOR ALL CONDITIONS PER 1,000 POPULATION (2015)



Source: DHHS Local Government Area Statistical Profiles, 2015 (note that 2015 data is latest available)

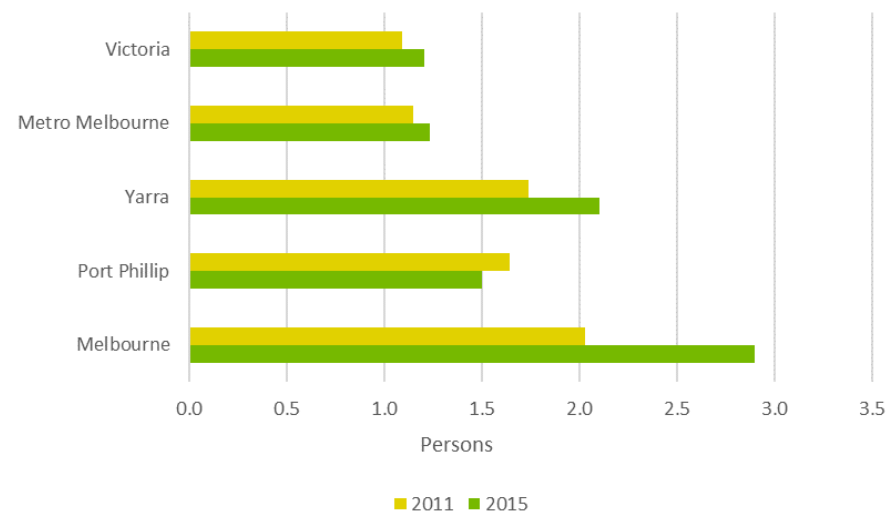
¹¹ Source: Victorian Admitted Episode Dataset (VAED), Department of Health and Human Services; Estimated Resident Population (ERP, Australian Bureau of Statistics (ABS).

Access to general practitioners (GPs)

Access to general practitioners (GPs) contributes to a region's community services and resident wellbeing. It also helps describe an area's level of healthcare resources.

- Residents in the Inner Metro Region have good access to GP services, particularly those who live in the City of Melbourne.
- The number of GPs per 1,000 people increased between 2011 and 2016 in Melbourne and Yarra LGAs but decreased in Port Phillip LGA.
- The number of GPs per 1,000 people increased in the City of Melbourne despite the municipality's population growth.

FIGURE 91: NUMBER OF GENERAL PRACTITIONERS PER 1,000 PEOPLE BY LGA (2011-2015)



Source: DHHS Local Government Area Statistical Profiles, 2015 (note that 2015 data is latest available)

Type 2 diabetes

People with diabetes are at greater risk of chronic health conditions and its occurrence is closely linked with the prevalence of obesity. The number of diabetes cases in the population indicates a higher risk of chronic health conditions, including cardiovascular disease, blindness, amputation, kidney disease and depression.

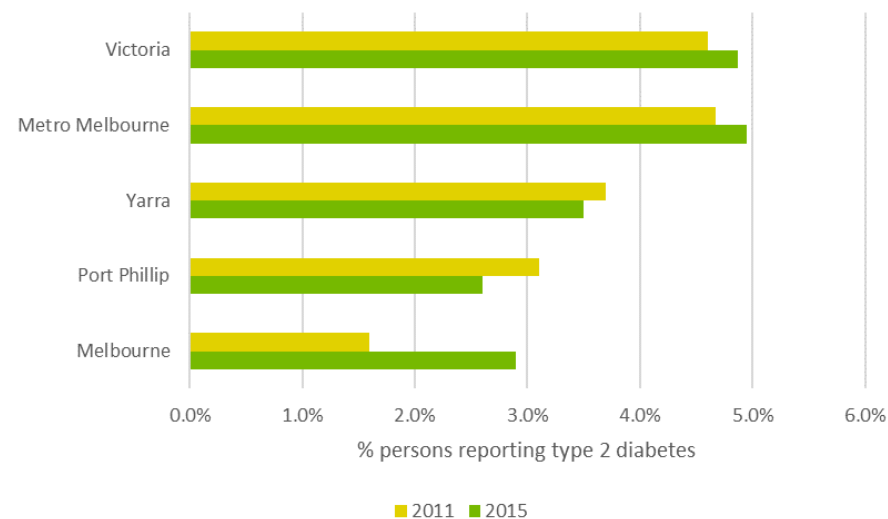
People from the most socioeconomically disadvantaged areas are more likely to have Type 2 diabetes. Males in the lowest socioeconomic group were almost twice as likely to report Type 2 diabetes as those in the highest socioeconomic group. For females, the rate in the lowest socioeconomic group is 2.5 times that in the highest socioeconomic group.¹²

The number of new cases of diabetes helps to predict future needs for health services and to evaluate the effectiveness of prevention programs.

- The prevalence of type 2 diabetes is low in the Inner Metro Region compared with the metropolitan and State average.
- The percentage of people reporting diabetes decreased in Yarra and Port Phillip LGAs between 2011 and 2016, and increased in Melbourne LGA.

▪

FIGURE 92: INCIDENCE OF TYPE 2 DIABETES BY LGA (2011-2015)



Source: DHHS Local Government Statistical Area Profiles 2011 and 2015 (note that 2015 data is latest available)

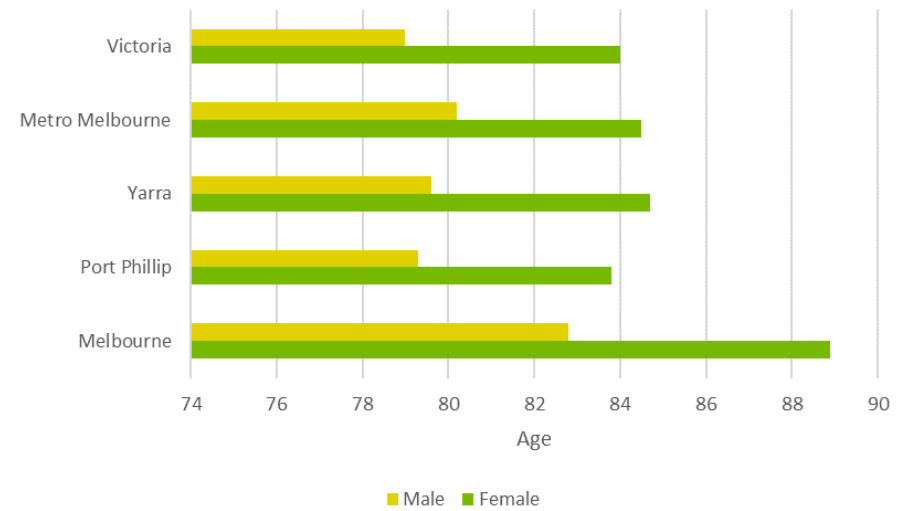
¹² AIHW 2002

Life expectancy at birth

Life expectancy at birth is an indicator of living standards, lifestyle and education factors, as well as access to quality health services.

- Life expectancy is higher for females than males in the Inner Metro Region. This is consistent with trends across Victoria and metropolitan Melbourne.
- Life expectancy for females in Melbourne and Yarra LGAs is higher than the Victorian and metropolitan Melbourne average, but not in Port Phillip LGA.
- Life expectancy for males is higher than the Victorian average for Yarra and Melbourne LGAs. Melbourne LGA's male life expectancy rate is also higher than that of metropolitan Melbourne.
- High life expectancy in the City of Melbourne exists despite the municipality's pockets of socio-economic disadvantage.

FIGURE 93: LIFE EXPECTANCY AT BIRTH (2015)



Source: DHHS Local Government Statistical Area Profiles, 2015 (note that 2015 data is latest available)

5.8 Early childhood outcomes

The importance of the early years of childhood development is clear, with early life experiences affecting lifelong health and wellbeing in several ways.

Birth weight and immunisation

Birth weight is the bodyweight of a newborn at birth. It can be affected by the mother’s health during pregnancy, pharmaceutical consumption or lifestyle. Birth weight is theorised to correlate to obesity and diabetes.

The Australian Childhood Immunisation Register (ACIR) provides information about vaccine coverage at 12 months, 24 months and six years of age. The immunisation rate is measured as children who have received all the standard immunisations appropriate to their age.

- The percentage of low birth weight babies is higher than the Victorian and metropolitan average in Melbourne LGA and lower in Yarra and Port Phillip LGAs.
- Only the City of Melbourne has a lower percentage of children fully immunised at one year of age compared with the Victorian and metropolitan average. All municipalities have a lower than average immunisation rate at two years of age.

TABLE 12: LOW BIRTH WEIGHT AND IMMUNISATION RATE BY LGA (2015)

	% low birth weight babies 2012-14	% children fully immunised at 12 months of age 2015	% children fully immunised at 24 months of age 2015
Melbourne	7.1%	88.9%	86.6%
Port Phillip	5.7%	92.4%	87.4%
Yarra	5.4%	92.3%	89.1%
<i>Metropolitan Melbourne</i>	6.3%	92.0%	89.5%
<i>Victoria</i>	6.3%	92.2%	89.7%

Source: Social Health Atlases, 2015 (note that 2015 data is latest available)

Child protection substantiations

Child protection substantiations refer to children who receive child protection services including those subject to an investigation of notification, on a care and protection order, and/or are in out-of-home care.

- The Inner Metro Region's child protection substantiation rate is below the Victorian average.
- The City of Yarra is the only municipality where the number of substantiations is lower than the metropolitan average. Melbourne LGA has an equivalent level, while Port Phillip LGA is higher.

TABLE 13: CHILD PROTECTION SUBSTANTIATIONS (2015)

	Child protection substantiations/1,000 head
Melbourne	9
Port Phillip	11
Yarra	7
Metropolitan Melbourne	9
Victoria	12

Source: Social Health Atlases, 2015 (note that 2015 data is latest available)

Developmental vulnerability

The Australian Early Development Centre (AEDC) identifies five domains of early childhood development, measured at the commencement of primary school:

- physical health and wellbeing
- social competence
- emotional maturity
- language and cognitive skills (school-based)
- communication skills and general knowledge

Patterns of childhood vulnerability according to the AEDC domains largely follow that of the rate of child protections.

The percentage of developmentally vulnerable youth is shown in Table 14.

- Early childhood outcomes are poor in the Inner Metro Region against the AEDC domains. Both Yarra and Melbourne LGAs have a higher percentage of children recorded as developmentally vulnerable across two or more domains, or who are vulnerable in the emotional domain, when compared with the Victorian and metropolitan Melbourne average, which are relatively consistent.
- The rate of childhood developmental vulnerability is substantially lower in the City of Port Phillip, which is also lower than the Victorian and metropolitan Melbourne average.

TABLE 14: PERCENTAGE OF DEVELOPMENTALLY VULNERABLE CHILDREN (2015)

	% Children developmentally vulnerable in two or more domains	% Children developmentally vulnerable in emotional domain
Melbourne	12.2%	11.1%
Port Phillip	5.9%	5.9%
Yarra	14.7%	10.8%
<i>Metropolitan Melbourne</i>	<i>9.5%</i>	<i>7.6%</i>
<i>Victoria</i>	<i>9.9%</i>	<i>8.0%</i>

Source: Social Health Atlases, 2015 (note that 2015 data is latest available)

Crime

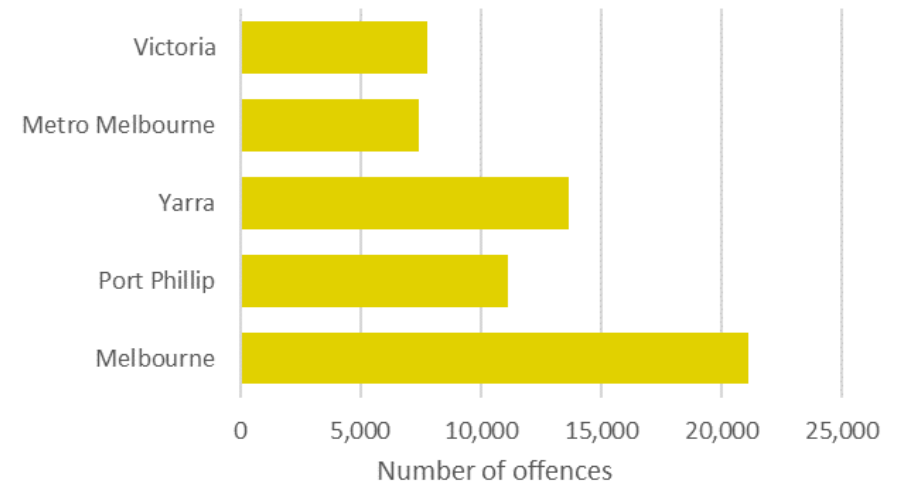
The rate of crime in an area may correlate with its level of socio-economic disadvantage, where a higher crime rate can be associated with higher socio-economic disadvantage and vice versa. Understanding an area's crime rate allows policymakers to allocate policing resources or evaluate other measures that might help to reduce crime rates.

There is a discrepancy between publicly-perceived crime rates and recorded crime statistics. Crime rate incorporates myriad offence types, which could mean varying growth trends between different offences. For instance, the increasing rate of a certain offence can co-exist with an overall dropping crime rate.

The Crime and Statistics Agency provides data on crime statistics. Offence rates are measured with offence counts per 100,000 population during a given period.

- All municipalities within the Inner Metro Region have a substantially higher crime offence rate than Victoria and metropolitan Melbourne.
- The offence rate in Melbourne LGA is almost three times as high, and Yarra LGA's is almost twice as high as that of Victoria.
- The high offence rate is attributed to the concentration of people and activities in the Inner Metro Region.

FIGURE 94: OFFENCE RATES PER 100,000 POPULATION (2018)



Source: Crime Statistics Agency, 2018

Wellbeing

The Self-reported Personal Wellbeing Index or Subjective Wellbeing Index is published in the VicHealth Indicators Survey. It measures not only illness but also people's mental health and their perceptions about their lives.

According to the Victorian Health Promotion Foundation, higher scores on the Subjective Wellbeing Index indicate better mental and physical health, higher productivity and stress-coping abilities, as well as higher engagement with social and humanitarian activities.

'Sense of safety walking alone after dark' is an indicator published by Social Health Atlases to understand how people feel about their community during night time.

Note both datasets have limitations as they are subjective measurements based on self reporting.

- Port Phillip LGA reports a slightly higher rate than the Victorian average, while Melbourne and Yarra LGAs fall slightly below the Victorian average.
- Residents of Yarra, Port Phillip and Melbourne LGAs report a considerably higher level of sense of safety in their areas than reporting rates in Victoria and metropolitan Melbourne more broadly, despite higher rates of crime. This is likely because streets and public spaces in the Inner Metro Region are more frequently active with people and activities throughout the day and night.

TABLE 15: SUBJECTIVE WELLBEING INDEX

LGA	Subjective wellbeing index
Melbourne	76.8
Port Phillip	77.5
Yarra	76.8
Victoria	77.3

Source: VicHealth Indicators Survey, 2015 (note that 2015 data is latest available)

TABLE 16: SENSE OF SAFETY WALKING ALONE AFTER DARK

LGA	ASR (Age Standardised Rate) per 100
Melbourne	59.9
Port Phillip	63.2
Yarra	61.4
Metro Melbourne	51.9
Victoria	53.0

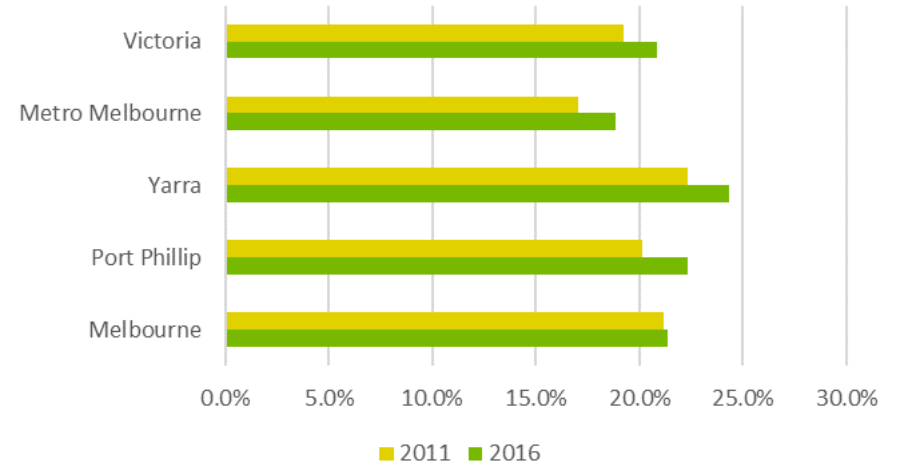
Source: Social Health Atlases, 2018

Volunteering rates reflect an area's level of participation in volunteer work. It is calculated based on the number of people who volunteer among the total population.

Figure 95 shows the percentage of the population who engage in volunteering activities.

- The Inner Metro Region has a higher rate of volunteering than the Victorian and metropolitan Melbourne average.
- The percentage of people volunteering is increasing across the region, albeit slightly slower in the City of Melbourne, in line with broader trends.

FIGURE 95: PERCENTAGE OF POPULATION VOLUNTEERING (2011-2016)



Source: ABS Census 2011 and 2016

6. ENVIRONMENTAL

ENVIRONMENTAL INDICATORS

The Infrastructure Victoria environmental indicators that underpin this section are:

- Open space, including green space
- Land
- Water assets
- Canopy cover
- Stream condition
- Coastal and bay health
- Air quality
- Flood risk
- Sea level rise
- Bush fire
- Urban heat island effect and heat risk
- Contaminated groundwater and other sites
- Access and use of green space
- Visitation to parks
- Water security
- Renewable energy
- Extractives industry
- Waste

REGIONAL OVERVIEW

The environmental profile of the Inner Metro Region is characterised by:

- some of Melbourne's most visited suburban parks including Albert Park and Yarra Bend Park
- access to the Yarra River and Port Phillip Bay
- no open landfill sites
- the Botanical Gardens, a significant urban biodiversity asset.

ENVIRONMENTAL STRENGTHS

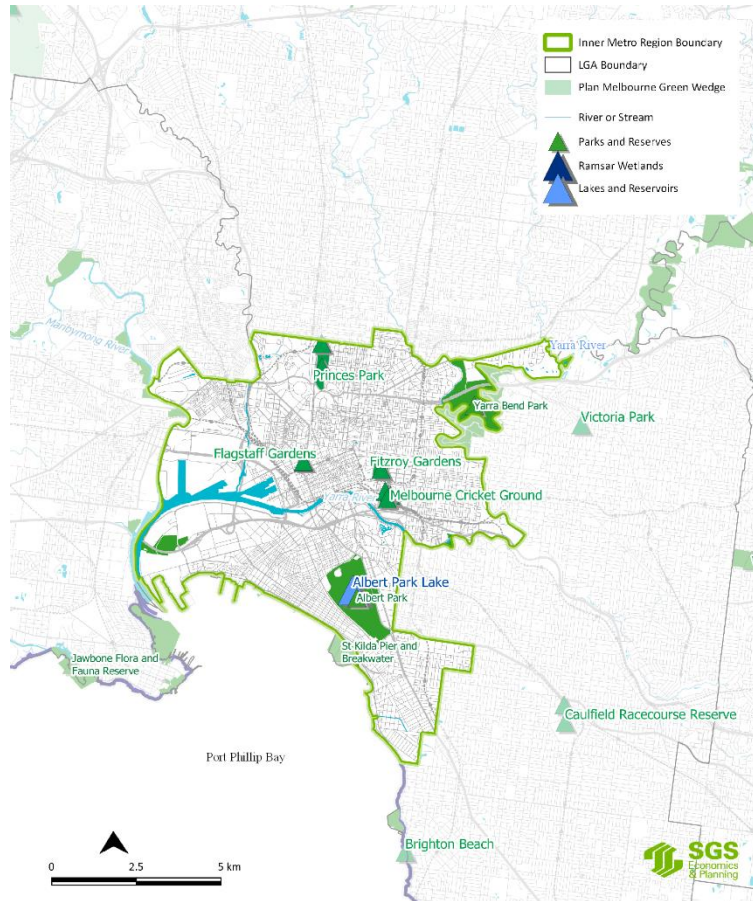
- Access to many parks, including both green (Yarra Bend Park) and mixed assets (Melbourne Cricket Ground).
- Access to several different open space types.
- A population that visits green space regularly.
- Opportunities for amenity benefits along the bay and the river.

ENVIRONMENTAL CHALLENGES

- Limiting risk and impacts of hazards associated with climate change such sea level rise (Port Phillip), flood (along the Yarra River) and heat vulnerability
- Maintaining and/or improving asset condition including tree canopy cover, waterway health, bay health and atmosphere pollution.
- Managing the impact that economic activity has on the environment, including contaminated sites, waste water and physical waste
- Managing dependent relationships with the environment to ensure water and climate security

6.1 Overview and key environmental features

FIGURE 96: KEY ENVIRONMENTAL FEATURES INNER METRO REGION



Source: (Department of Environment, Land, Water and Planning, 2018a) *Map does not cover full portfolio of key environmental assets

Prior to European settlement, the Inner Metro Region was a complex system which included wetlands, grasslands, and woodlands. After European settlement the Inner Metro Region transitioned from its natural state to an urban area.

Figure 96 shows key environmental terrestrial assets within and surrounding the Inner Metro Region (not all the region's environmental terrestrial assets are covered included). The region is home to several parks and reserves, and cultural and tourist areas of significance, including:

- Albert Park
- Melbourne Cricket Ground
- Fitzroy Gardens
- Botanical Gardens
- Princes Park
- Flagstaff Gardens.

The Yarra River runs through the middle of the Inner Metro Region. Port Phillip bay and its beaches, such as St Kilda beach, make up the southern boundary of the region.

6.2 Environmental assets

The stock of environmental assets in the Inner Metro Region underpins the capacity of the region to provide ecosystem services that benefit the metropolitan population.

Open space and green space

The Inner Metro Region includes 1,963 hectares of land defined as open space,¹³ of which approximately 50 per cent can be classified as green space (Victorian Planning Authority, 2017c).¹⁴ Out of the regions in metropolitan Melbourne, it has the second largest share (27 per cent) of open space.

The Victorian Planning Authority (VPA) open space dataset defines open space across 12 categories. A typology of green, mixed and built open space has been applied across the 12 open space categories (see Figure 98 for the groupings of categories into the typology).¹⁵

Figure 97 and Figure 98 show the different types of open space existing across the region in 2017. Accessibility to open space is discussed in Section 6.5. Key points include:

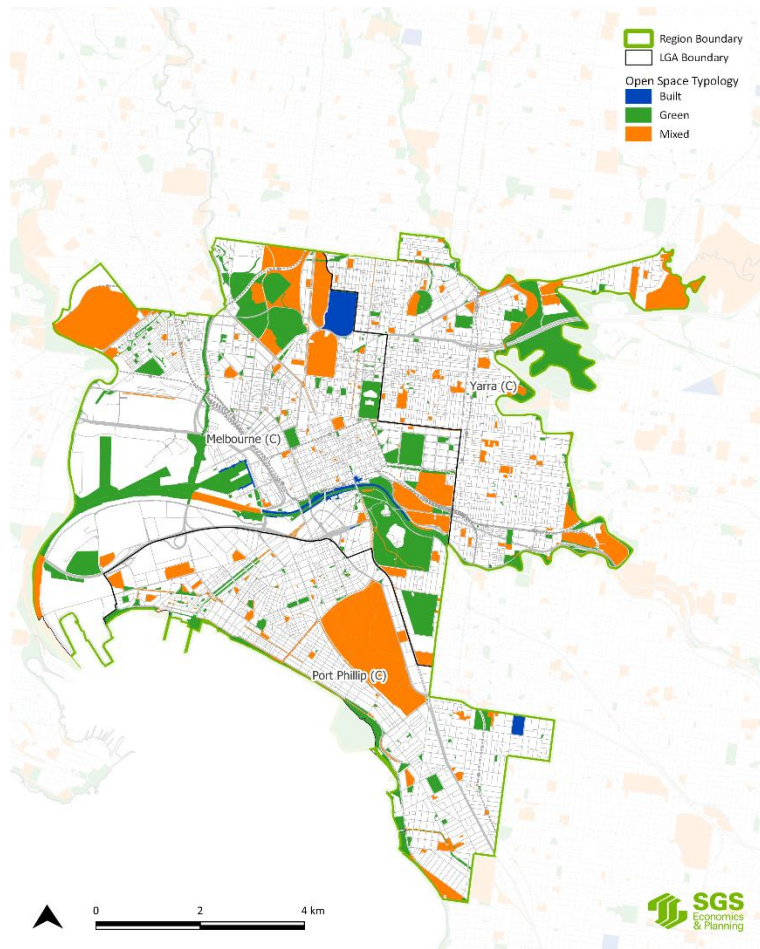
- There is a diverse range of green, mixed and built open space in the region.
- Sportsfields and organised recreation is the key type of mixed space.
- The key type of green space is parks and gardens.
- Built open space exists along the Yarra River.
- Melbourne and Yarra LGAs are among the 10 highest metropolitan LGAs with respect to the percentage of open space relative to total land area.

¹³ Open space is any piece of land that provides some natural or cultural benefit. Green wedge zones that are primarily used for agriculture are not considered as open space because of the potential disamenity arising from agricultural activity.

¹⁴ The interpretation of green space in this report relates to a vegetated variant of open space. Urban vegetation in the form of house gardens/yards and agriculture was not considered to be open space.

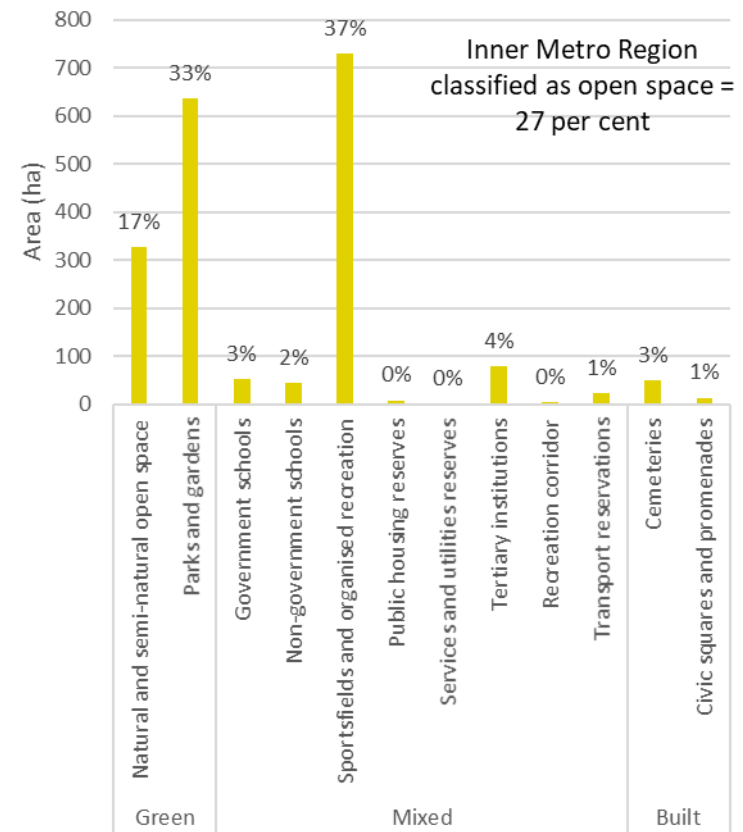
¹⁵ Green space refers to areas that are predominately natural and contain little built infrastructure, mixed space refers to areas that have been altered from their natural state for economic purposes but still contain areas of green space, and built space refers to areas that contain predominately built infrastructure.

FIGURE 97: OPEN SPACE CATEGORIES (2017)



Source: (Victorian Planning Authority, 2017c)

FIGURE 98: EXISTING OPEN SPACE TYPES (2017)



Source: (Victorian Planning Authority, 2017c). *Share of total green space in the region is provided on top of the green space type bars. This graph does not consider proposed open space.

Table 17 and Figure 99 illustrate the VPA open space data by LGA. Table 17 shows the area, in hectares, of open space in each LGA, while Figure 99 shows the share of open space in each LGA that can be attributed to green, mixed and built open space.

- Green space is the dominant open space category in the City of Melbourne.
- Mixed open space is the dominant category in the cities of Port Phillip and Yarra.
- The City of Melbourne has a large amount of open space relative to the cities of Port Phillip and Yarra.
- Despite the large amount of mixed space, a large percentage of it is restricted public land or private land (see Figure 99).

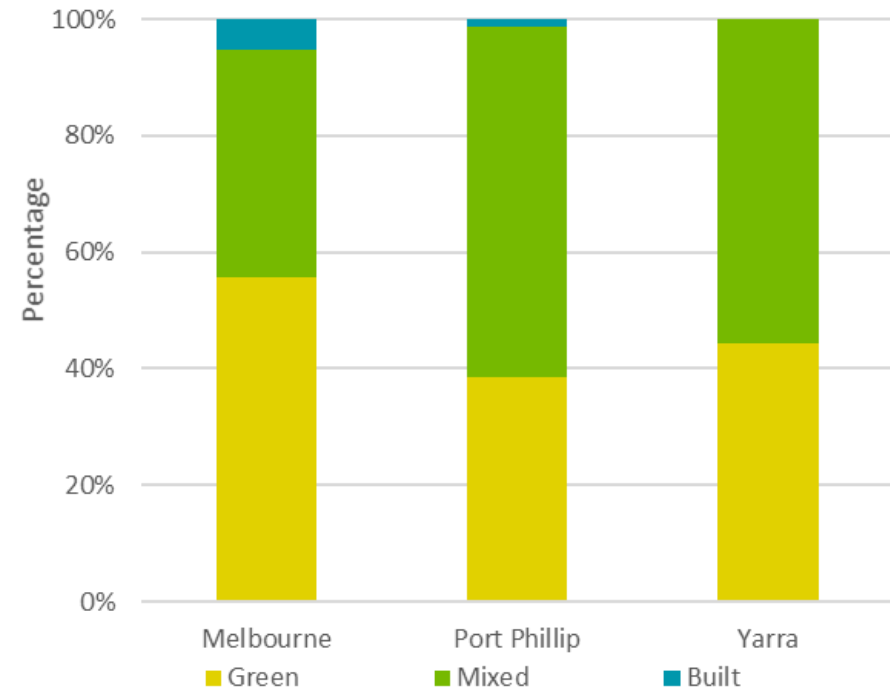
Land use planning and urban design processes will determine future open space in areas that are being developed. Assessment of trends will highlight the extent to which the share of open space is changing with respect to residential development.

TABLE 17: OPEN SPACE TYPE (HA) BY LGA (2017)

LGA	Green	Mixed	Built	Total
Melbourne	587	411	56	1,054
Port Phillip	165	258	6	429
Yarra	213	267	-	480

Source: (Victorian Planning Authority, 2017c). *This graph does not consider proposed open space.

FIGURE 99: OPEN SPACE TYPE BY LGA (2017)



Source: (Victorian Planning Authority, 2017c). *This graph does not consider proposed open space.

The provision of ecosystem services, as defined in Figure 100, varies by environmental asset type and depends on the extent (size) and condition of the asset.

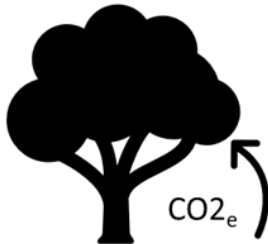
FIGURE 100: ECOSYSTEM SERVICE CLASSIFICATION

Provisioning services



The provision of material or energy outputs by ecosystems.
Examples: food, raw materials such as timber.

Regulating services



Actions related to filtration, purification, regulation and maintenance of air, water, soil, habitat and climate.

Cultural/recreational services



Those relating to the activities of individuals in or associated to nature.
Examples: Recreation, tourism, Aboriginal/cultural/heritage

Source: IDEEA Group

For example, green open space is likely to provide a range of ecosystem services including provisioning services, regulating services (such as mitigation of urban heat island effects) and cultural/recreation services, while mixed open space is likely to be concentrated on cultural/recreation services that have positive effects on health and wellbeing. Built open space is even more likely to be concentrated on cultural/recreation services.

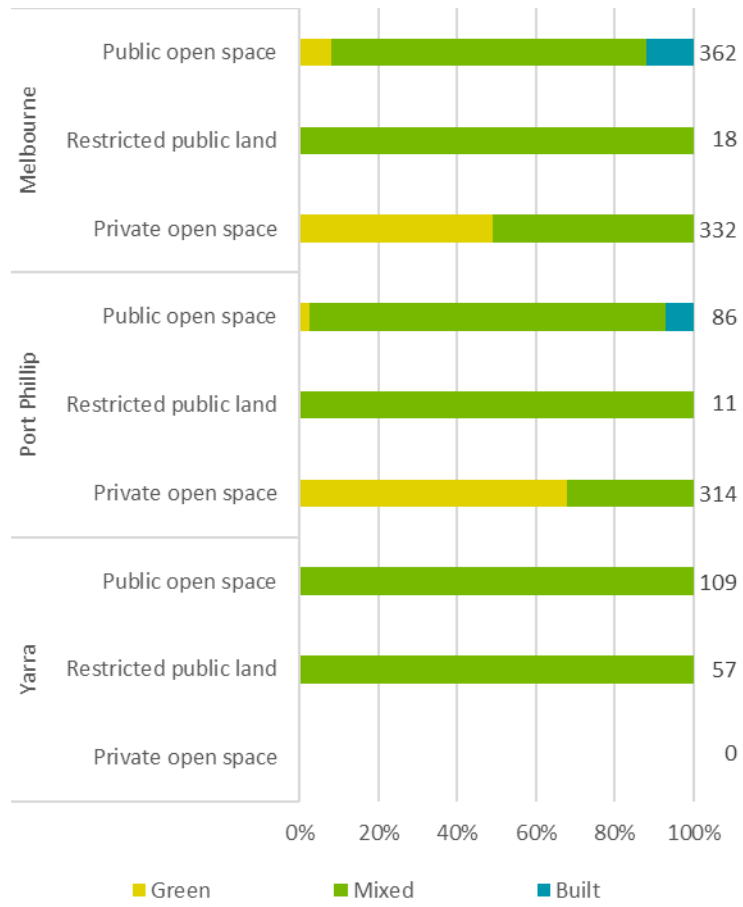
The ability of the environmental assets to provide ecosystem services can be affected by barriers such as accessibility, human activity and degradation. Additional benefits can be realised if assets are made more accessible.

Demand for ecosystem services will continue to rise with population growth. Land is fixed in supply, meaning that under-utilised assets (which can include government and non-government school ovals outside of school hours, as well as other government and some private land) are a source of supply to meet this demand.

Figure 101 illustrates the percentage of open space assets in the region that are either private, restricted or public. A large percentage of green space is public and mixed space is spread across public, private and restricted. The spatial distribution of public, restricted public, and private land is shown in Figure 102.

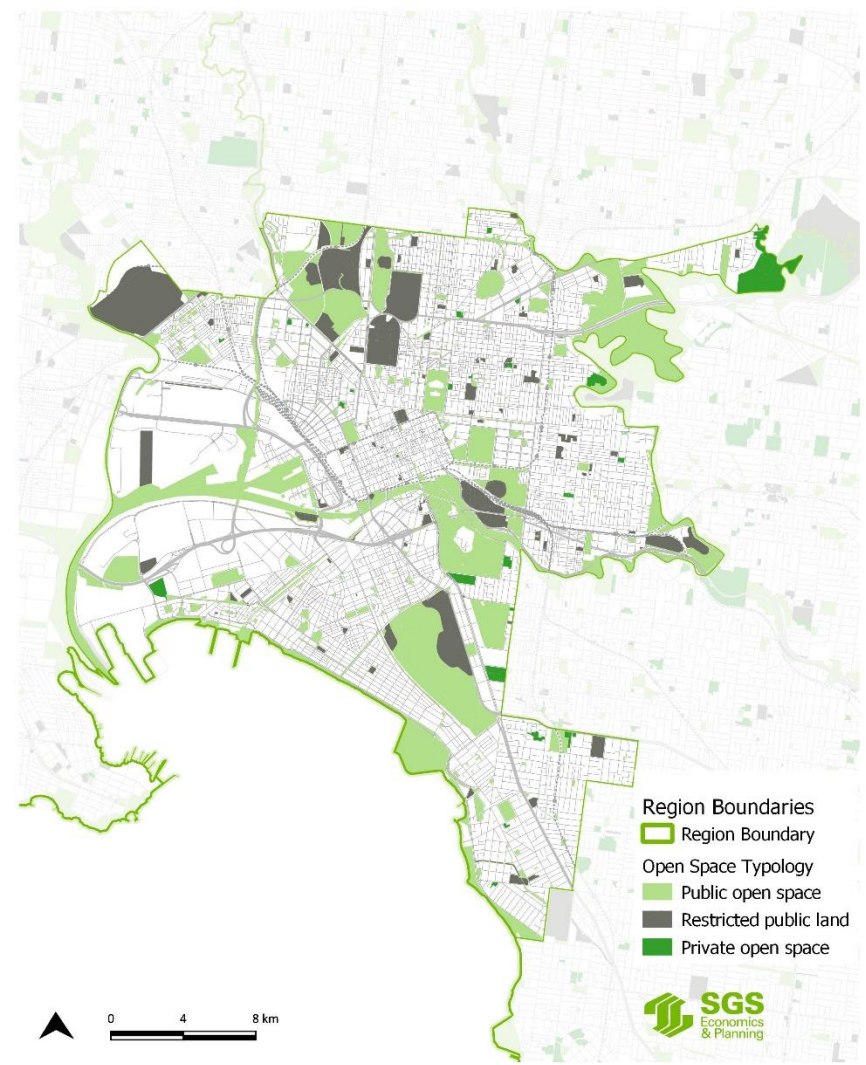
Respectively, Figure 103 and Figure 104 indicate the locations of private and restricted open space in the region. It is evident that government and non-government schools are both accessible to populated areas.

FIGURE 101: OPEN SPACE TYPE BY OWNERSHIP AND LGA (2017)



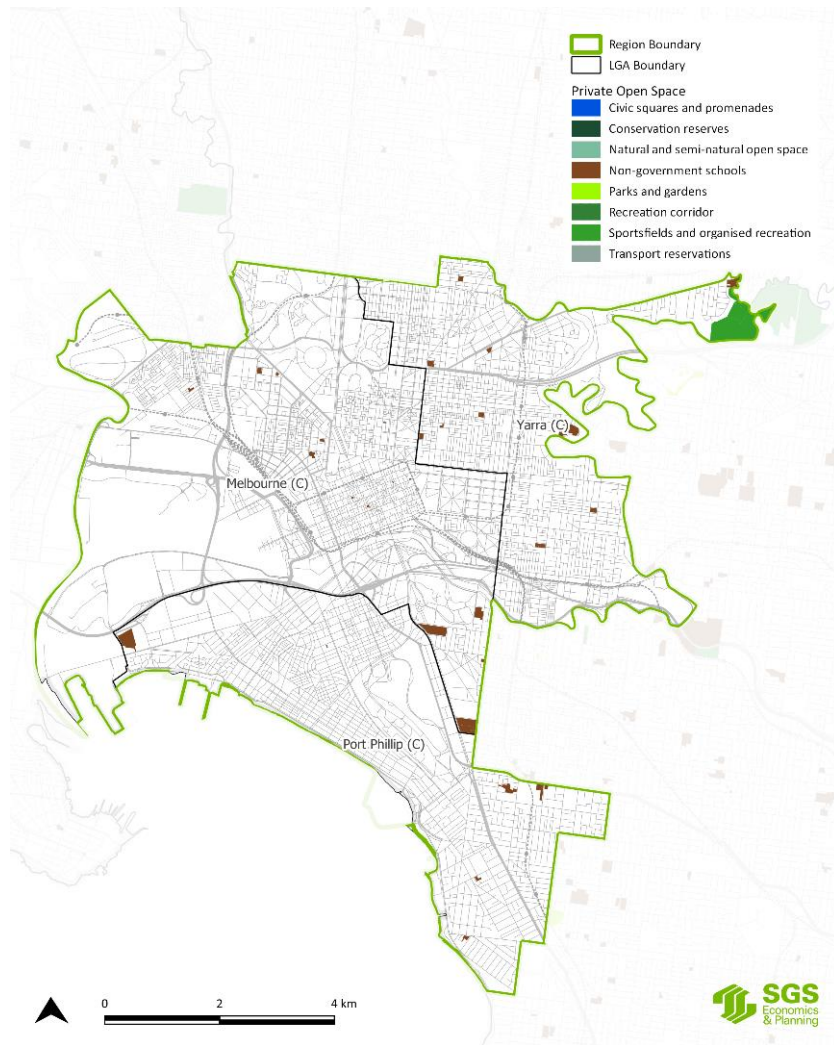
Source: (Victorian Planning Authority, 2017c). *Numbers to the right of bars are hectares

FIGURE 102: OPEN SPACE BY OWNERSHIP (2017)



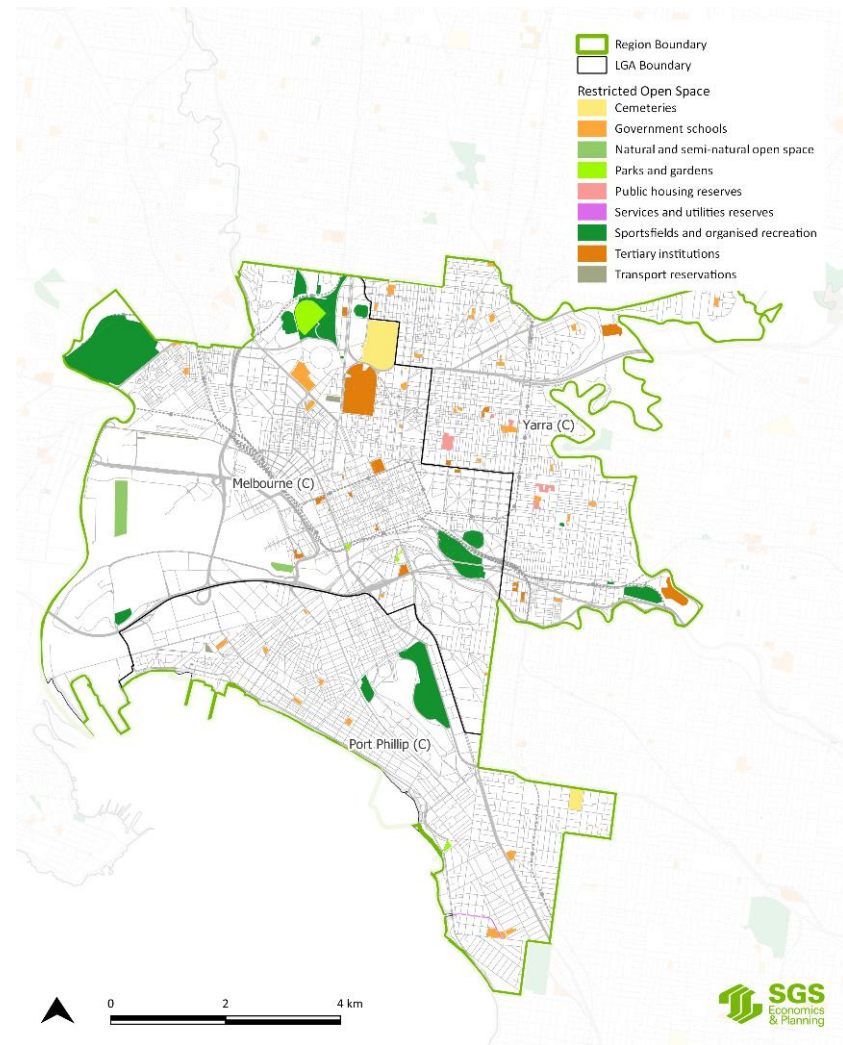
Source: (Victorian Planning Authority, 2017c)

FIGURE 103: LOCATIONS OF PRIVATE OPEN SPACE BY TYPE (2017)



Source: (Victorian Planning Authority, 2017c)

FIGURE 104 LOCATIONS OF RESTRICTED OPEN SPACE BY TYPE (2017)



Source: (Victorian Planning Authority, 2017c)

Land use

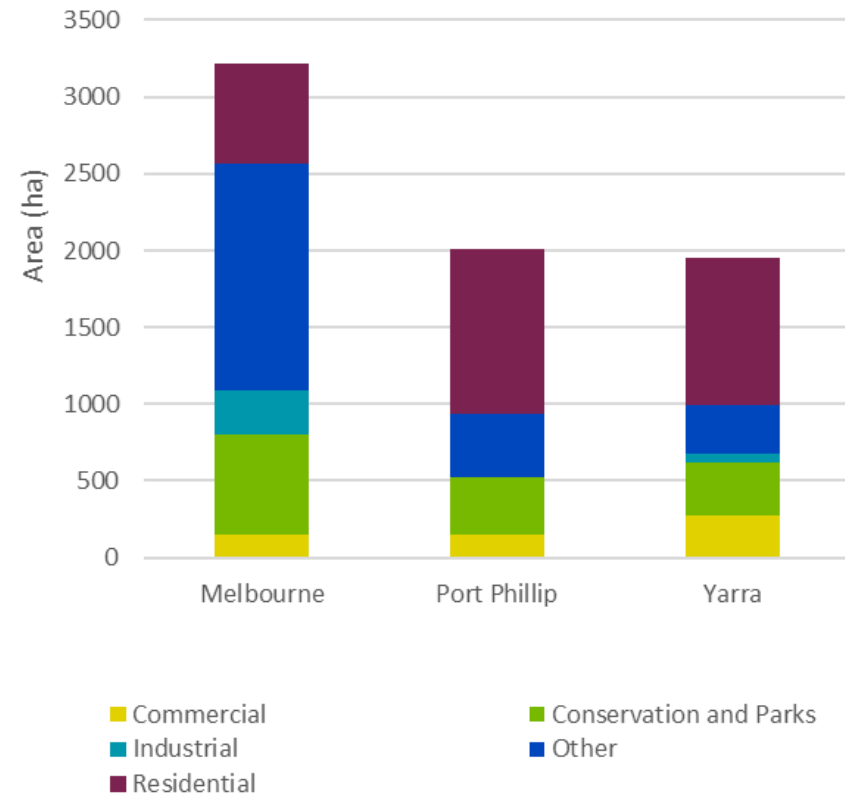
Land use has been characterised using planning zone data. This data is preferred to Victorian Land Use Information System (VLUIS) data as the VLUIS data does not have spatial specificity for inner metropolitan areas. However, the zoning data does have limitations as it represents preferred land use rather than actual land use.

Figure 105 and Table 18 show the distribution of planning zones across the Inner Metro Region. The planning data shows a high proportion of residential land, but also significant areas of commercial, conservation and parks, industrial and other land area types.

'Other' refers to both special purpose planning zones and public land, excluding parks and conservation zones (see the notes below Figure 105 for more information).

The proportion of industrial land is quite high in the City of Melbourne compared to the other LGAs.

FIGURE 105: PLANNING ZONES BY LGA (2016)



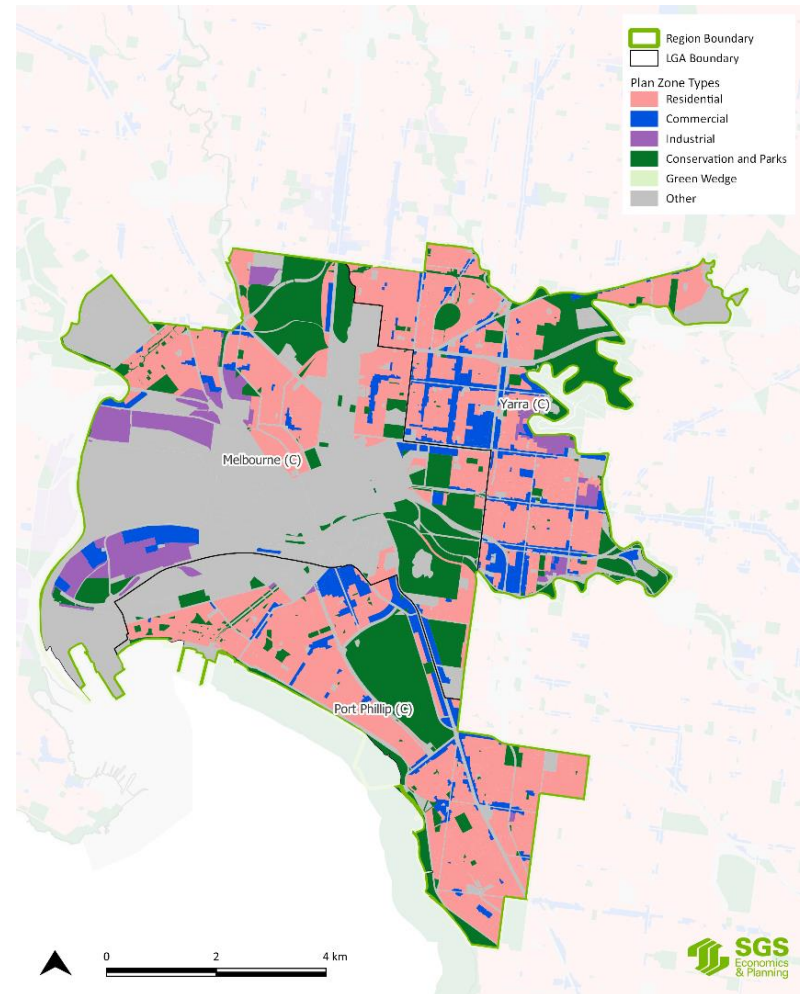
Source: (Department of Environment, Land, Water and Planning, 2018b). *Other includes both special purpose zones and public land zones (excluding parks and conservation). Examples of special purpose zones are activity centre zones and capital city zones. Examples of public land are education zones and health and community zones.

TABLE 18: SHARE OF TOTAL AREA BY DIFFERENT PLANNING ZONE TYPES (2016)

	Melbourne	Port Phillip	Yarra
Commercial	5%	7%	14%
Conservation and Parks	20%	19%	18%
Industrial	9%	0%	3%
Other	46%	20%	16%
Residential	20%	53%	49%
Total	100%	100%	100%

Source: (Department of Environment, Land, Water and Planning, 2018b) *Other includes both special purpose zones and public land zones (excluding parks and conservation). Examples of special purpose zones are activity centre zones and capital city zones. Examples of public land are education zones and health and community zones.

FIGURE 106: PLANNING ZONES (2016)



Source: (Department of Environment, Land, Water and Planning, 2018b) *Other includes both special purpose zones and public land zones (excluding parks and conservation). Examples of special purpose zones are activity centre zones and capital city zones. Examples of public land are education zones and health and community zones.

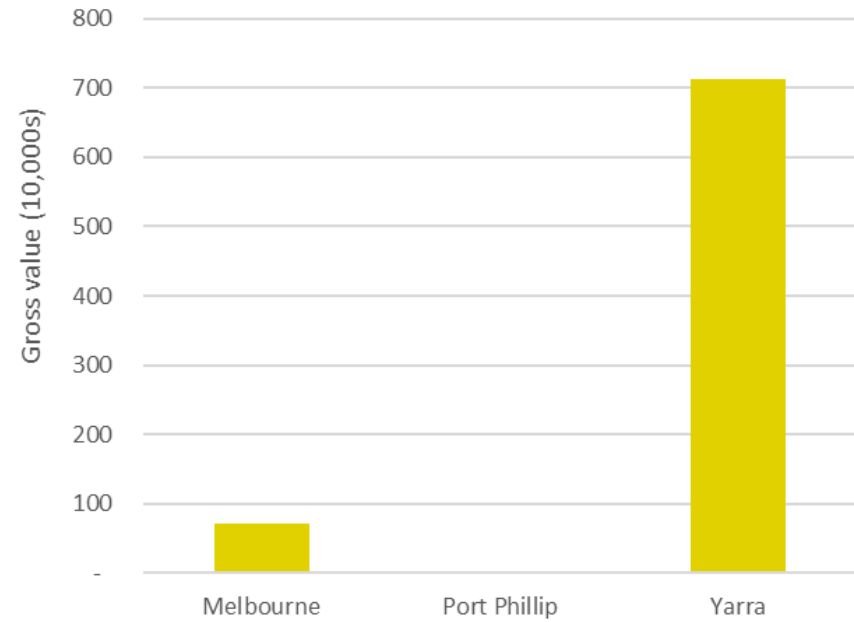
All land within the region is within the UGB. Areas of land that are sensitive from an environmental perspective are those that are included in open space classifications in Figure 106.

The VLUIS data does not adequately describe land use change over time due to the lack of variation in inner urban areas. As a result, this type of analysis cannot be provided for Inner Metro Region.

Figure 107 shows the value of agricultural production in 2015-16. Yarra LGA generates the highest gross value followed by the City of Melbourne.

Table 19 shows the share value contributed by different agricultural products for each LGA. For the City of Yarra, a large share of this is fruit and nuts. This is higher than the metropolitan and Victorian average.

FIGURE 107: VALUE OF AGRICULTURAL PRODUCTS BY LGA (\$10,000)



Source: (ABS, Value of Agricultural Commodities Produced, 2016-2017)

TABLE 19: SHARE OF TOTAL VALUE, BY AGRICULTURAL COMMODITY AND LGA (2016-17)

	Melbourne	Port Phillip	Yarra	Metro	Victoria
Broadacre crops	0%	0%	0%	1%	9%
Fruit and nuts (excluding grapes)	0%	0%	98%	10%	10%
Hay	1%	0%	0%	3%	4%
Livestock products	1%	0%	0%	9%	29%
Livestock slaughtered and other disposals	98%	0%	0%	26%	37%
Nurseries, cut flowers or cultivated turf	0%	0%	2%	19%	4%
Vegetables for human consumption	0%	0%	0%	32%	8%
Total	100%	0%	100%	100%	100%

Source: (ABS, Value of Agricultural Commodities Produced, 2016-2017)

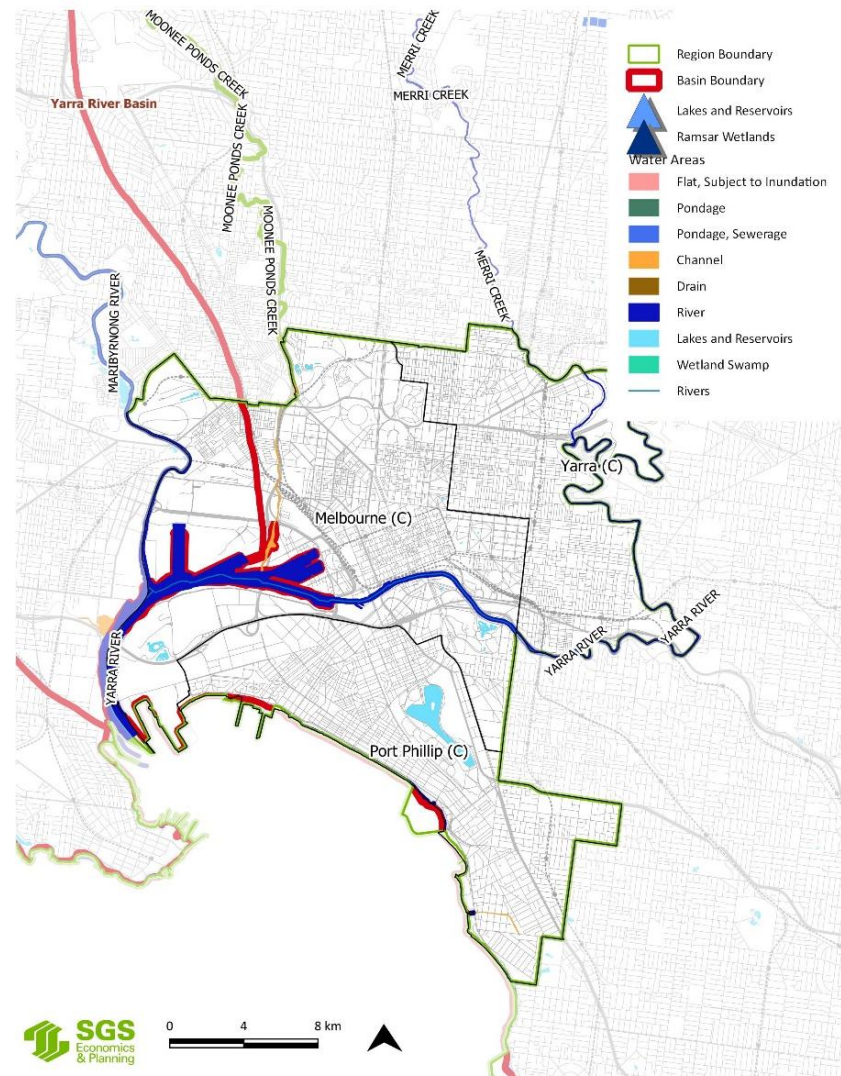
Water and wetlands

Water assets include lakes/reservoirs, rivers, wetlands and marine areas. They contribute to metropolitan Melbourne’s economy and provide space for amenity and recreation.

The key assets are shown in Figure 108. The two main river systems that flow through the region are the Yarra River and the Maribyrnong River, which is not shown on the map as it runs on part of the western boundary. Merri Creek also flows through the region.

Albert Park lake is a significant water asset. The waterfront on the Docklands and Port Phillip Bay provides pleasant areas for tourists. St Kilda Beach is a popular area. There are no wetlands in the region. Boating clubs in Port Melbourne support the marine and local economies.

FIGURE 108: WATER AND WETLANDS (2016)



Source: (Department of Environment, Land, Water and Planning, 2018c; Department of the Environment, 2015)

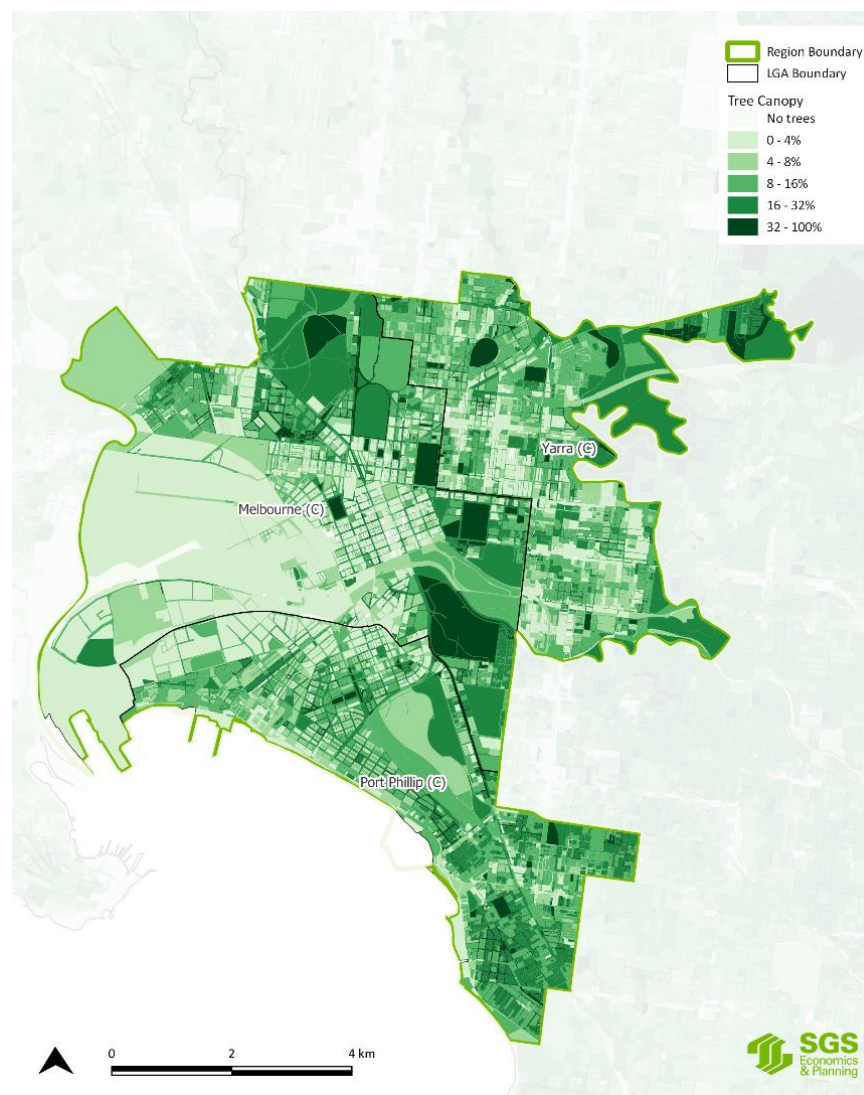
6.3 Environmental condition

The capacity of environmental assets to provide environmental benefits is related to asset condition. Environmental assets that have a higher condition relative to other assets have the capacity to provide a higher quantity of ecosystem services.

Canopy cover

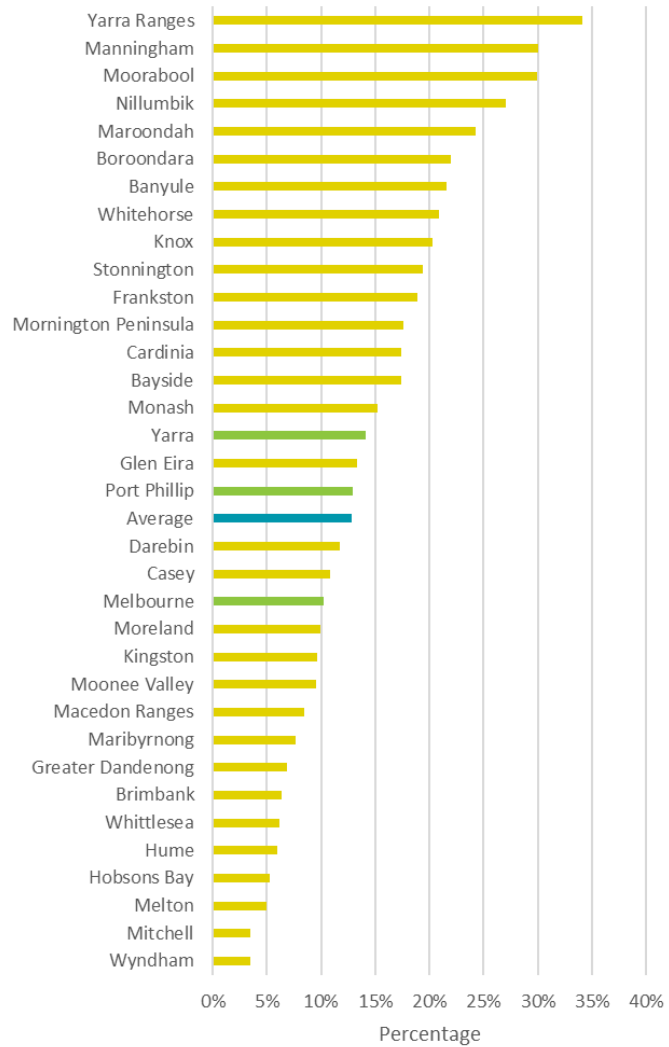
Canopy cover is a measure of the condition of terrestrial ecosystems that relates to connectivity, shade, mature ecosystems and higher biodiversity. Canopy cover affects the capacity of the ecosystem to provide benefits related to regulating services (such as urban heat island mitigation) and cultural services, like recreation. Figure 109 shows the areas of the Inner Metro Region that include measurements of canopy cover. This shows a low tree canopy cover in the west of the region and in some areas in the Yarra LGA and that all LGAs have near average (13 per cent) canopy cover (see Figure 110).

FIGURE 109: TREE CANOPY COVER (2014)



Source: (Clean Air and Urban Landscapes Hub, 2018)

FIGURE 110: TREE CANOPY COVER BY LGA (%), ALL METRO LGAS (2014)

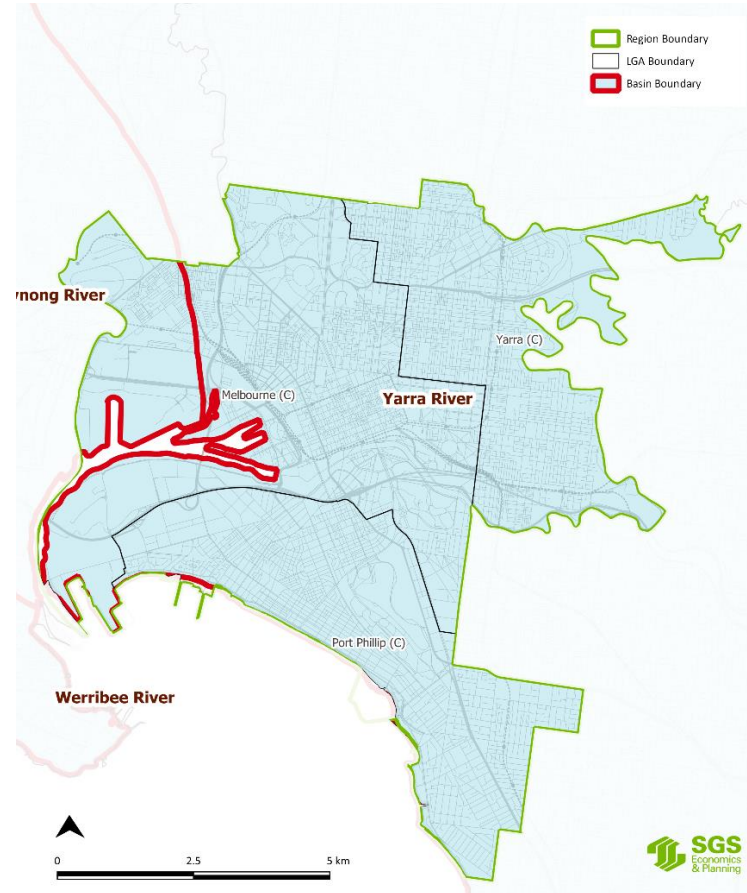


Source: (Clean Air and Urban Landscapes Hub, 2018)

Stream condition

There are two distinct basins in the Inner Metro Region – the Yarra River Basin and the Maribyrnong River Basin. Figure 111 describes the extent of the basins.

FIGURE 111: KEY BASINS (2016)



Source: (Department of Economic Development, Jobs, Transport and Resources, 2015)

Condition of key reaches in each of the basins is measured using the index of stream condition (DELWP 2014). The composite measure considers scores of hydrology, physical form, streamside zone, water quality and aquatic life. Data exists for 1999 to 2010.

The number and percentage of reaches where the index of stream condition for the Maribyrnong and Yarra basins is good or excellent is shown in Table 20 and Figure 112 respectively. It is evident that:

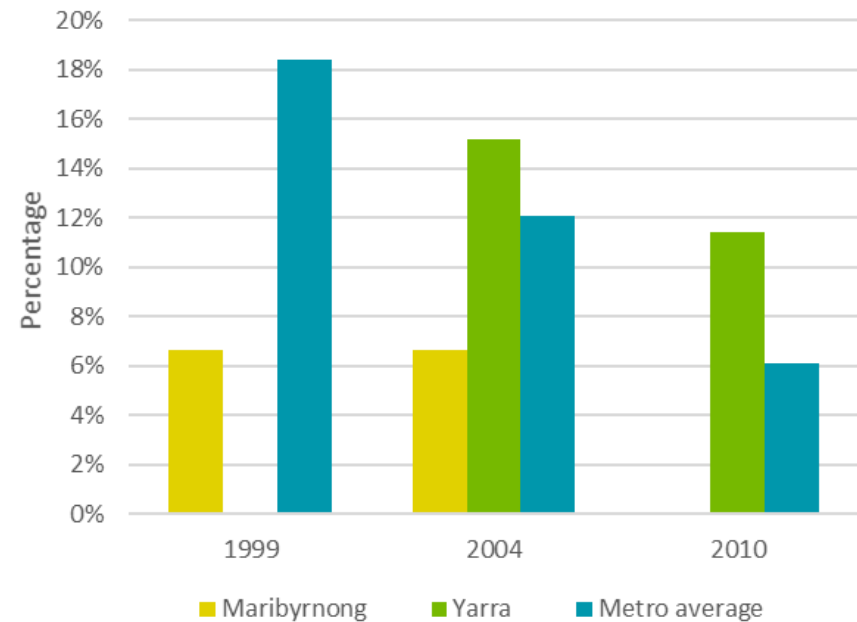
- Good/excellent stream condition is relatively rare in the Yarra and Maribyrnong rivers - most observations are in range of very poor to moderate.
- The Yarra reaches appear in better condition than the metropolitan average.
- There is a downward trend in the percentage of reaches classified as good/excellent condition.
- Lower reaches of the Maribyrnong River have been exposed to industrial activity.

TABLE 20: NUMBER OF REACHES IN GOOD/EXCELLENT CONDITION (1999-2010)

Year	Maribyrnong	Yarra	Metro average
1999	1.00	0.00	3.82
2004	1.00	5.00	3.50
2010	0.00	4.00	2.01

Source: (Department of Environment, Land, Water and Planning, 2014) *Reaches with an environmental condition greater than 70 percent are deemed to be in excellent condition, while reaches with an environmental condition between 51-70% are deemed to be in good condition.

FIGURE 112: PERCENTAGE OF REACHES IN GOOD/EXCELLENT CONDITION (1999-2010)



Source: (Department of Environment, Land, Water and Planning, 2014) *Reaches with an environmental condition greater than 70 percent are deemed to be in excellent condition, while reaches with an environmental condition between 51-70% are deemed to be in good condition.

Coastal and bay health

Bay health can be affected by upstream pollution, which is often elevated during periods of heavy rain. Estuarine and bay systems such as Port Phillip Bay, Western Port and the Gippsland Lakes are subject to reduced water quality, which usually occurs after extreme weather events when high pollutant levels are discharged from rivers and drains. In the past, this has resulted in algal blooms, high turbidity, fish kills and elevated bacteria levels.

The Port Phillip Bay and Western Port generally demonstrate healthy systems. Several indicators were used to assess the bay, as outlined in the *State of the Bays* 2016 report (Commissioner for Environmental Sustainability Victoria, 2016):

- nitrogen cycle
- water quality
- intertidal habitat
- seagrass
- reef habitat and dependent species
- fish
- marine dependent birds.

There have been some signs of poor bay quality in the north-western part of the Port Phillip Bay.

- Signs of stress in reefs and seagrass could be associated with nutrient inputs, most likely from the Western Treatment Plant, the Werribee, Yarra and Maribyrnong rivers and poor light conditions.
- There are reductions in denitrification efficiency in Hobsons Bay, only for a maximum of a month at a time, which may create acute short-term impacts such as algal blooms or beach closures, particularly if the projected nitrogen

load increase is not mitigated. Large storm events can reduce denitrification efficiency¹⁶

- High levels of phytoplankton at the Hobsons Bay site in December 2009 coincided with the break of the millennium drought and a 46 mm rainfall event on 22 November 2009. Port Phillip Bay can experience periods of enhanced plankton activity with significant catchment discharges to the bay (predominantly in the north), and relatively slow flushing rates. Some of the plankton types in the bay can harm aquatic life and even human health (Commissioner for Environmental Sustainability Victoria, 2016).

¹⁶ The denitrification efficiency process generally maintains the nutrients in Port Phillip Bay at an optimal level for biodiversity. Denitrification efficiency lower than 60% in Port Phillip Bay (40% for Hobsons Bay) indicates the denitrification process is disrupted.

Air quality

By burning a range of materials in the production process, economic activity can impact the condition of the atmosphere. Numerous variables can be used to measure air quality including:

- particulate matter 2.5 (PM2.5) – small particles that can be breathed deep into the lungs
- particulate matter 10 (PM10) – larger particles that can irritate the eyes and throat, and affect symptoms for those with existing heart and/or lung conditions
- carbon monoxide (CO) – a colourless gas found in smoke that displaces oxygen in the blood
- nitrogen dioxide (NO₂) and sulphur dioxide (SO₂) – which can affect the throat and lungs.

Safe thresholds differ across the variables and by the length of exposure (that is, daily thresholds and yearly thresholds). The World Health Organisation air quality guidelines suggest an annual mean of 20ug/m³ and a daily mean of 50 ug/m³ as long and short-term thresholds for PM10. The notes under Figure 113 provide information on other thresholds. Annual levels of pollution are presented graphically in this section while daily levels are only discussed in the text.

In the years from 2003 to 2014, air quality was monitored by the EPA at Richmond and RMIT, with the latter only for two years at the beginning of the period. Results for RMIT are not provided in this report.

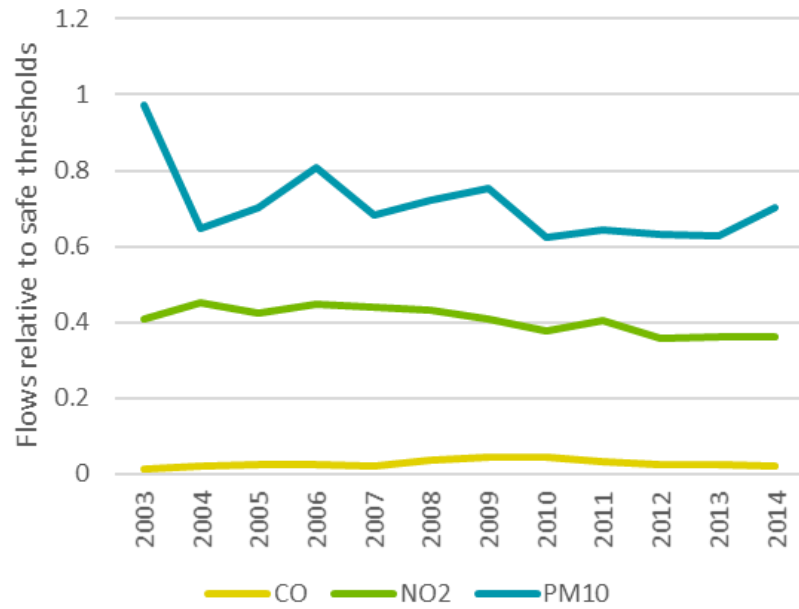
Data is only available for some of the variables. As a result, the data presented in this report is not comprehensive and care should also be taken when interpreting it. Air quality is measured at a point location and there may be variation in air quality across the geography.

Since the beginning of 2003, daily thresholds for PM10 have been exceeded at Richmond. The number of days exceeded has decreased, however. No other flow has exceeded safe thresholds.

Trends in pollution relative to safe thresholds at Richmond is shown in Figure 113. Note that the level of the variable relative to safe thresholds is shown on the y-axis. A value less than 1 means that flows are less than the safe threshold, a value of 1 means that flows are equal to the safe threshold, and a value greater than 1 means that flows have exceeded the safe threshold. The figures also show the variability in the data collected at each site, with numerous variables missing.

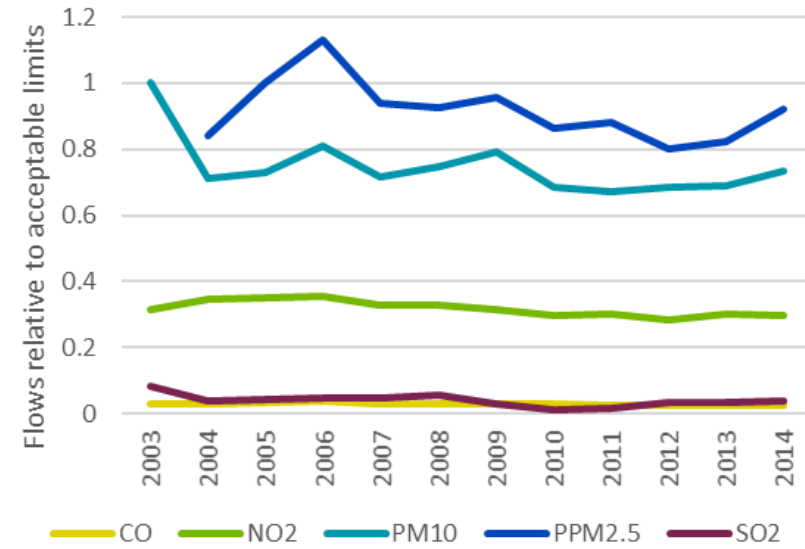
In general, levels of air quality across each of the sites have been relatively low compared to safe long-term thresholds. The exception is for PM10 which is high but slowly decreasing. Air quality at Richmond is similar to the metropolitan average (Figure 114).

Figure 113: LONG TERM AIR QUALITY THRESHOLD, Richmond (2003-2014)



Source: (EPA Victoria, 2014), safe threshold is exceeded if PM2.5>8, PM10>25, O>9, NO2>30, SO2>20

FIGURE 114: LONG TERM AIR QUALITY THRESHOLD, METROPOLITAN AVERAGE (2003-2014)



Source: (EPA Victoria, 2014), safe threshold is exceeded if PM2.5>8, PM10>25, O>9, NO2>30, SO2>20

6.4 Environmental risks and hazards

The Inner Metro Region has been hit by a flood or storm most years since 2009 (Commonwealth of Australia, 2018). With climate change occurring, it is likely that this trend will continue, and the frequency of such events may rise.

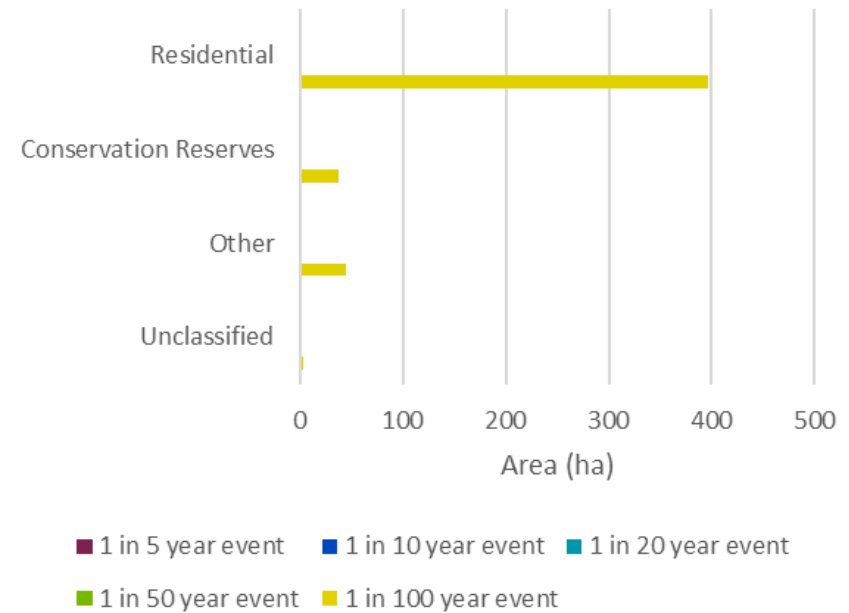
Flood

As the effects of climate change increase, areas are at increased risk of flooding because of more extreme weather events. Figure 115 and Figure 116 shows the projected flood extent for several different probabilistic events. For example, a five-year Average Recurrence Interval (ARI) refers to a one in five-year event, a 10-year ARI refers to a 1 in 10-year event, and so on. The figures show that:

- There is no area at risk of a one in five year, to a 1 in 50 year event.
- In the event of a 1 in 100-year flood, the largest areas of land affected include residential and conservation reserves. Smaller amounts of other land will be affected.
- Affected areas are located near rivers.
- ARIs are based on historical events; therefore, there could be an increasing chance of such events occurring associated with climate change.

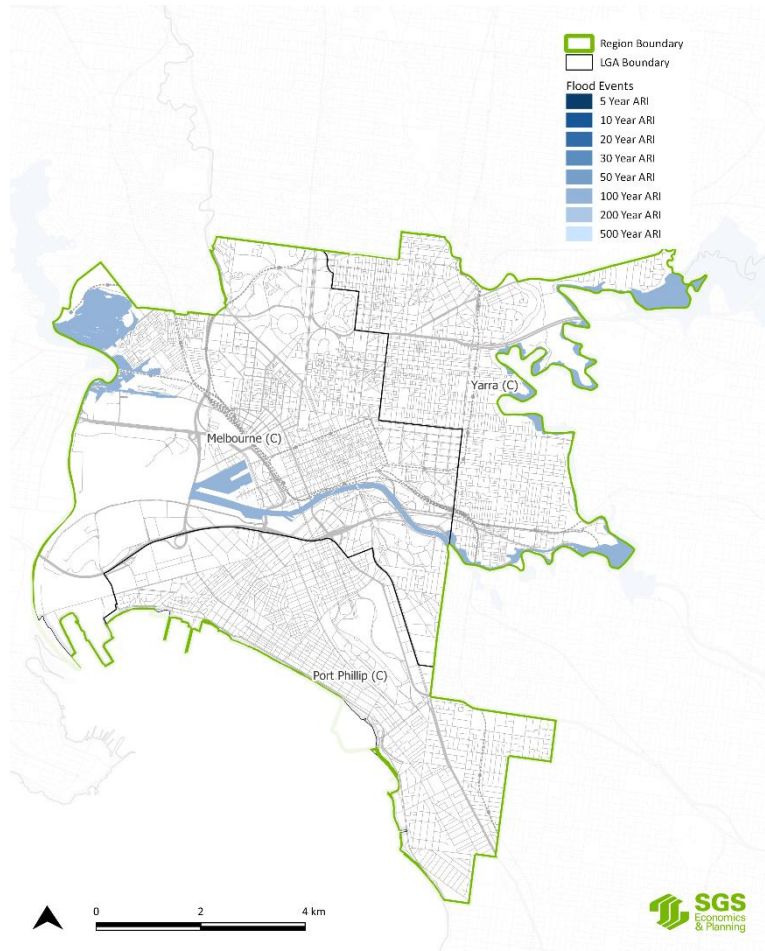
Building applications for properties likely to be affected by flooding are referred to Melbourne Water, which sets conditions on proposed development.

FIGURE 115: LAND AT RISK OF FLOOD (HA), MODELLED, BY LAND USE TYPE (2009)



Source: (Department of Environment, Land, Water and Planning, 2018d) *VLUIS data has been used as hazards are primarily in the outer areas of the region (where the VLUIS data better describes land use). Use of VLUIS data for the region maintains comparability with other regions. Other includes Extractive industries, Community Services, Sport, Heritage and Culture, and Infrastructure and Utilities. Unclassified is land not requiring an active assessment or record for rate, tax or levy purposes. Data used is considered to the latest public dataset available. Nuisance and localised flooding may extend beyond what is shown by the data.

FIGURE 116: MODELLED FLOOD EXTENT (2009)

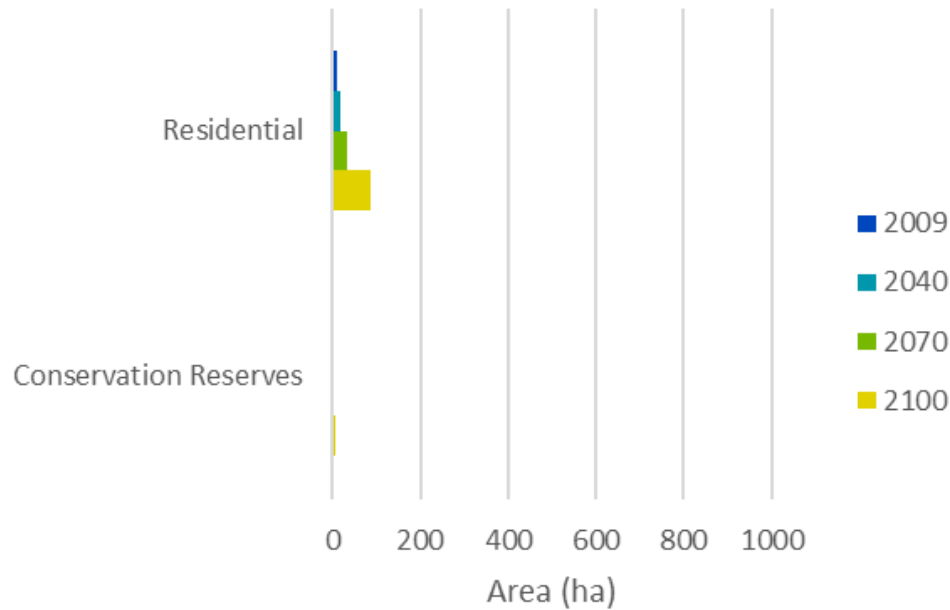


Source: (Department of Environment, Land, Water and Planning, 2018d) * Data used is considered to be the latest public dataset available. Nuisance and localised flooding may extend beyond what is shown by the data.

Sea level rise

Sea level rise is another consequence of climate change. Sea level rise has the potential to impact areas near water bodies that are connected to Port Phillip Bay. This impact is also more threatening when considering storm surges, which are 1 in 100 year events that add to the area of land inundated by sea level rise. Figure 116, Figure 117 , Figure 118 and Figure 119 show:

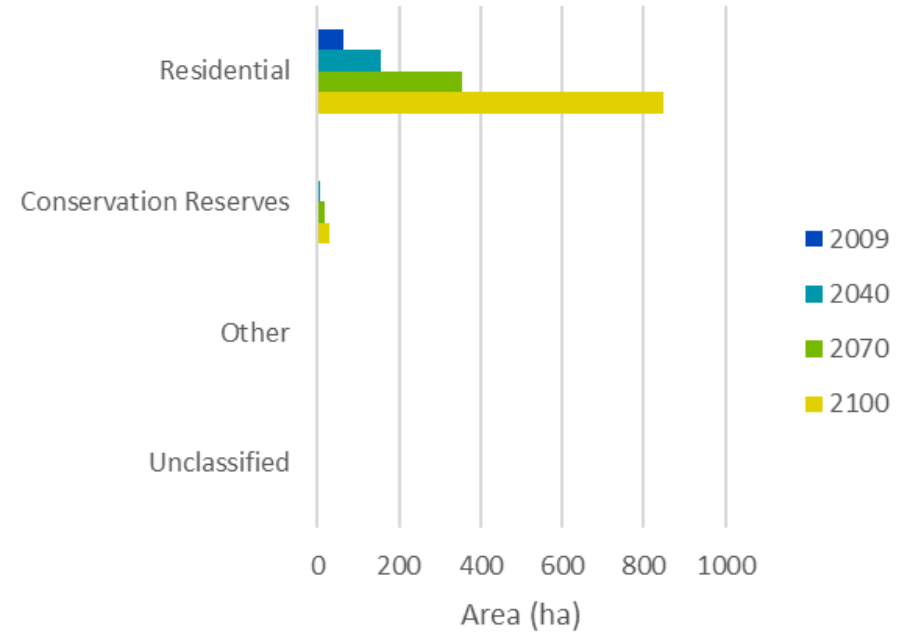
FIGURE 117: PROJECTED AREAS INUNDATED, SEA LEVEL RISE (2009-2100)



Source: (Department of Environment, Land, Water and Planning, 2018e) *VLUIS data has been used as hazards are primarily in the outer areas of the region (where the VLUIS data better describes land use). Use of VLUIS data for the region maintains comparability with other regions. *Data used is considered to the latest public dataset available. Nuisance and localised flooding may extend beyond what is shown by the data.

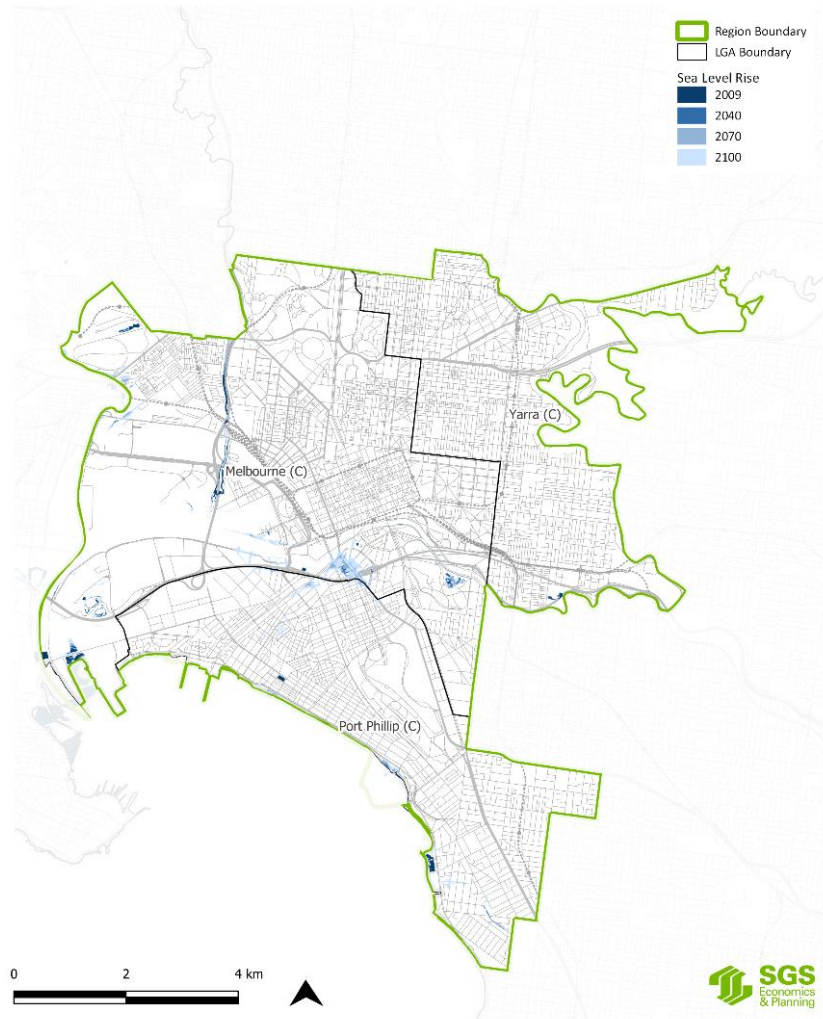
- There is a considerable amount of residential land that will be affected by sea level rise.
- A small amount of conservation reserves will be affected.
- There is a much larger area of land at risk of storm surge.
- Areas at risk of storm surge are located near the Yarra River, for example Southbank, and suburbs that are near the coast such as St Kilda and Elwood

FIGURE 118: PROJECTED AREAS INUNDATED, SEA LEVEL RISE WITH STORM SURGE (2009-2100)



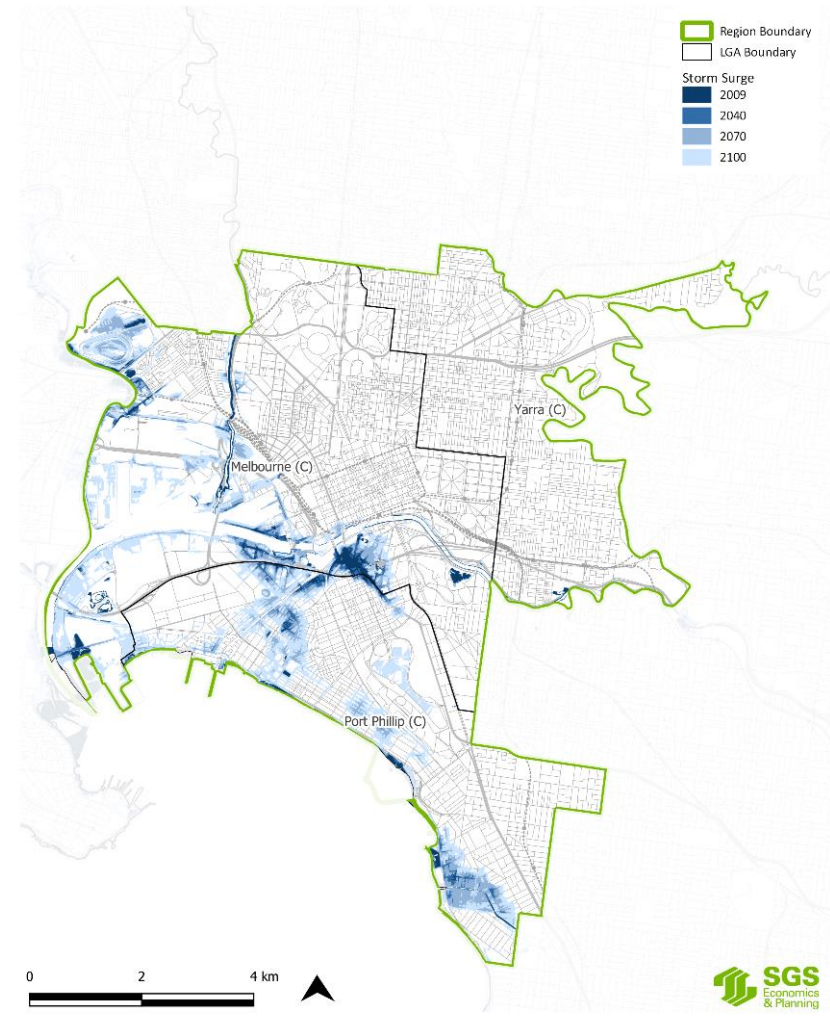
Source: (Department of Environment, Land, Water and Planning, 2018e) *VLUIS data has been used as hazards are primarily in the outer areas of the region (where the VLUIS data better describes land use). Use of VLUIS data for the region maintains comparability with other regions. *Data used is considered to the latest public dataset available. Nuisance and localised flooding may extend beyond what is shown by the data.

FIGURE 119: AREA AFFECTED BY PROJECTED SEA LEVEL RISE (2009-2100)



Source: (Department of Environment, Land, Water and Planning, 2018e) *Data used is considered to be the latest public dataset available. Nuisance and localised flooding may extend beyond what is shown by the data.

FIGURE 120: AREA AFFECTED BY PROJECTED STORM SURGE (2009-2100)



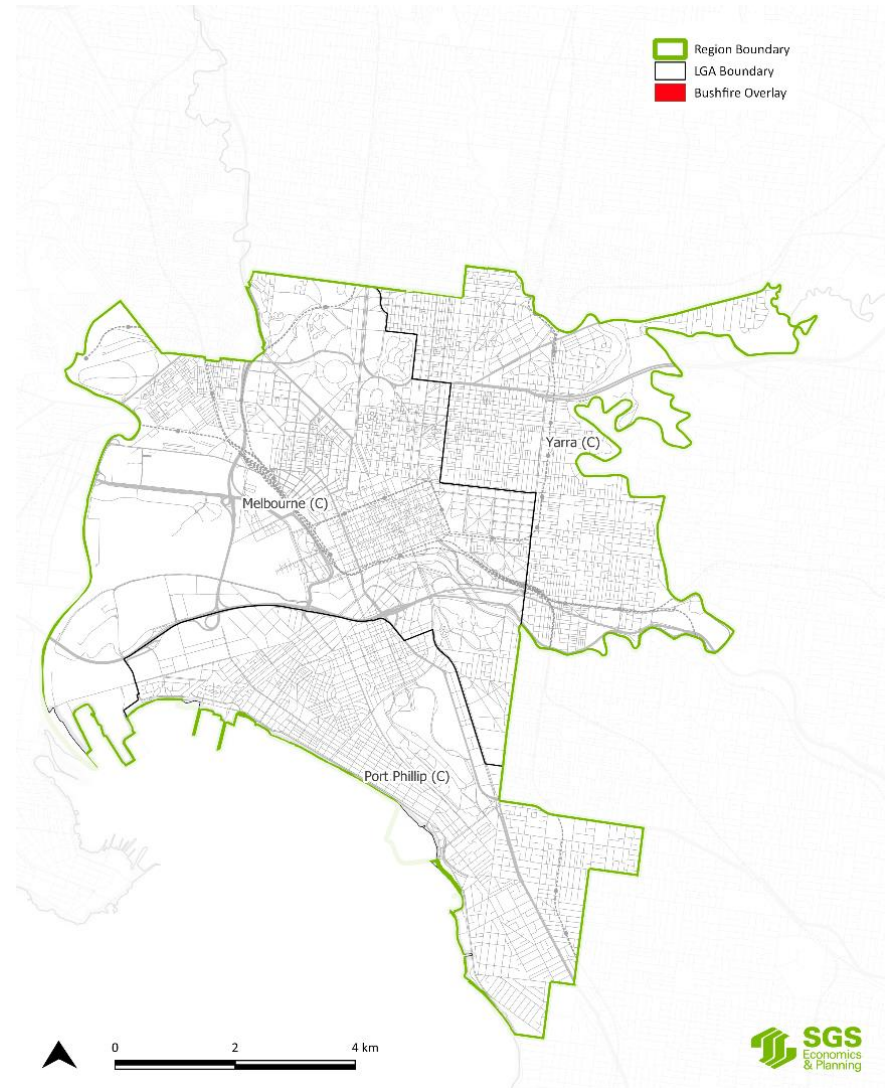
Source: (Department of Environment, Land, Water and Planning, 2018e) *Data used is considered to be the latest public dataset available. Nuisance and localised flooding may extend beyond what is shown by the data.

Bushfire

Bushfire risk is relevant for parts of Melbourne. There are greater risks for areas of classes of vegetation that burn more easily. The Bushfire Management Overlay is a planning control applied to land with the potential to be affected by extreme bushfires. It does not specify which areas are at more risk although it is expected that highlighted areas will be at more risk as climate change occurs.

Figure 121 shows that there is no area at risk of bushfire in the Inner Metro Region.

FIGURE 121: BUSHFIRE RISK OVERLAY (2016)



Source: (Department of Environment, Land, Water and Planning, 2018b)

Urban heat island effect and heat risk

Rising average temperatures and more extreme heat are some of the impacts felt by humans and the environment because of climate change. Further, removing natural environments for infrastructure means heat is absorbed and land temperatures rise.

The urban heat island (UHI) effect measures the deviation of urban temperature relative to a non-urban baseline (Sun et al., 2018). It can affect the longevity of infrastructure, energy demand, health and water quality.

Figure 122 shows the distribution of urban heat islands in the region in 2014. Most areas experience the UHI effect, although areas such as the Botanical Gardens and the precinct close to the MCG have low levels of UHI effect. Urban cooling is experienced at large bodies of water.

Work by Sun et al. (2018) correlates vegetation (including tree canopy data) to UHI effect. Tree cover is a useful predictor of variation and grass and shrub vegetation poor predictors.

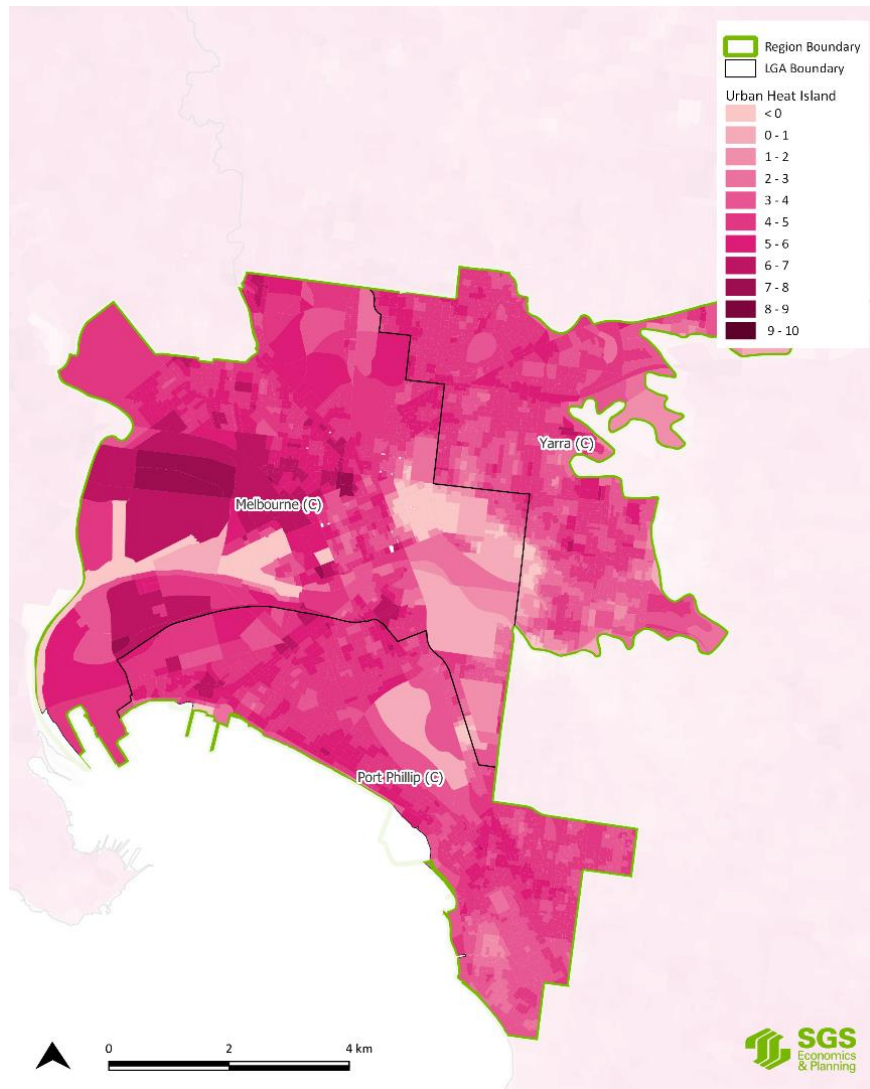
The effect of heat is described by a heat vulnerability index (HVI). The HVI consists of three input layers: heat exposure, sensitivity to heat, and adaptive capability (Sun et al., 2018). Figure 123 shows the spatial variation of the HVI in the region.

- Large areas of vulnerability exist in the north and the central south areas of the region, including Carlton to the north, and Southbank and Albert Park to the south.
- The HVI does not always overlap high UHI areas because other components of the HVI such as sensitivity to heat and adaptive capability can offset urban heat islands (and heat exposure).

Separate to work completed by Sun et al. (2018), Loughlan et al. (2013), describes areas that are vulnerable and how this is related to ambulance callouts on hot days. Loughlan used several environmental, health and demographic variables to develop the vulnerability index for heat stress by post code.

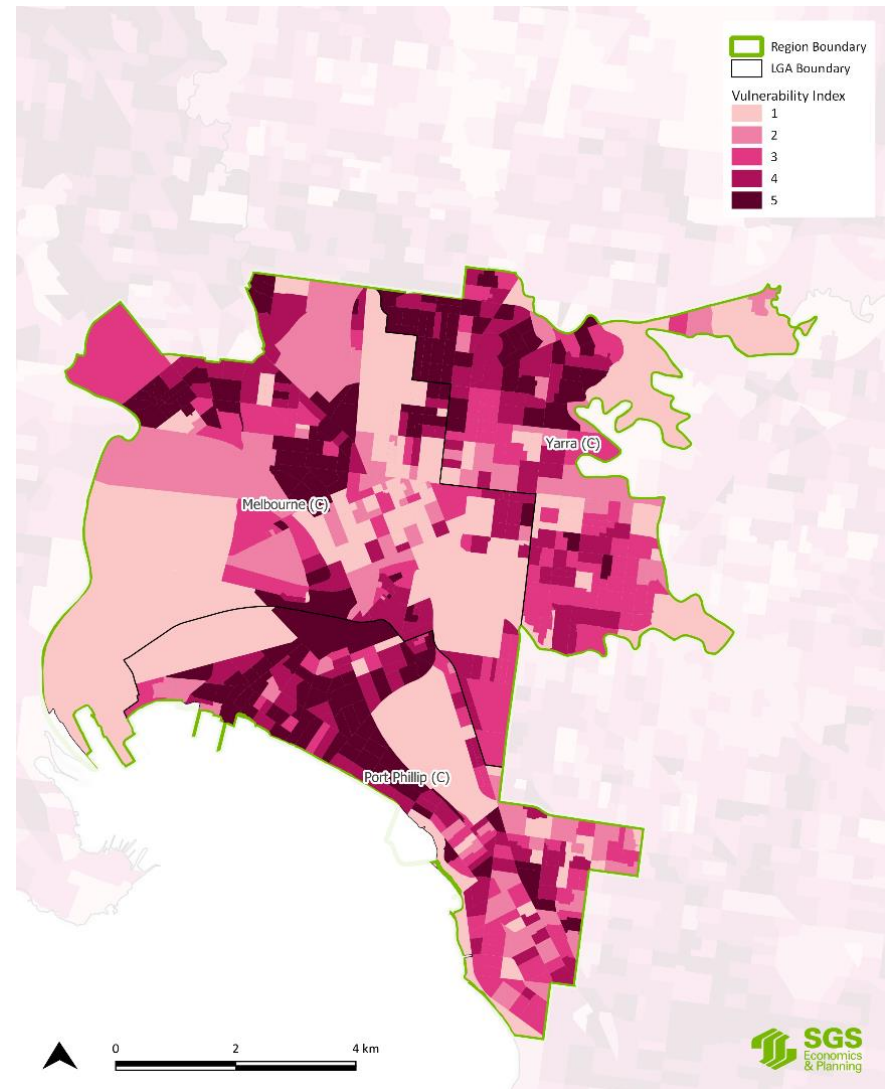
Analysis showed that heat vulnerability correlates with ambulance call outs on extreme heat days. It also shows that ambulance callouts are high in some coastal locations, which could be related to visitor numbers during hot periods.

FIGURE 122: URBAN HEAT ISLAND EFFECT (2014)



Source: (Sun et al., 2018) * Mean UHI in degrees Celsius shown in legend

FIGURE 123: HEAT VULNERABILITY INDEX (2014)



Source: (Sun et al., 2018)

Contaminated groundwater and other sites

The EPA monitors sites for contamination and other risks, particularly in light of the potential impacts on health. Currently, seven sites are listed on the EPA priority register in the region.¹⁷ Key reasons for being on the register include:

- former and current industrial sites that require management and or clean up
- former landfill sites that require clean up
- current service station that requires ongoing management
- illegal dumping that requires clean up.

The data shown in Figure 124 only provides a snapshot of contamination in the Inner Metro Region. The available data does not include all sites known or likely to be contaminated.

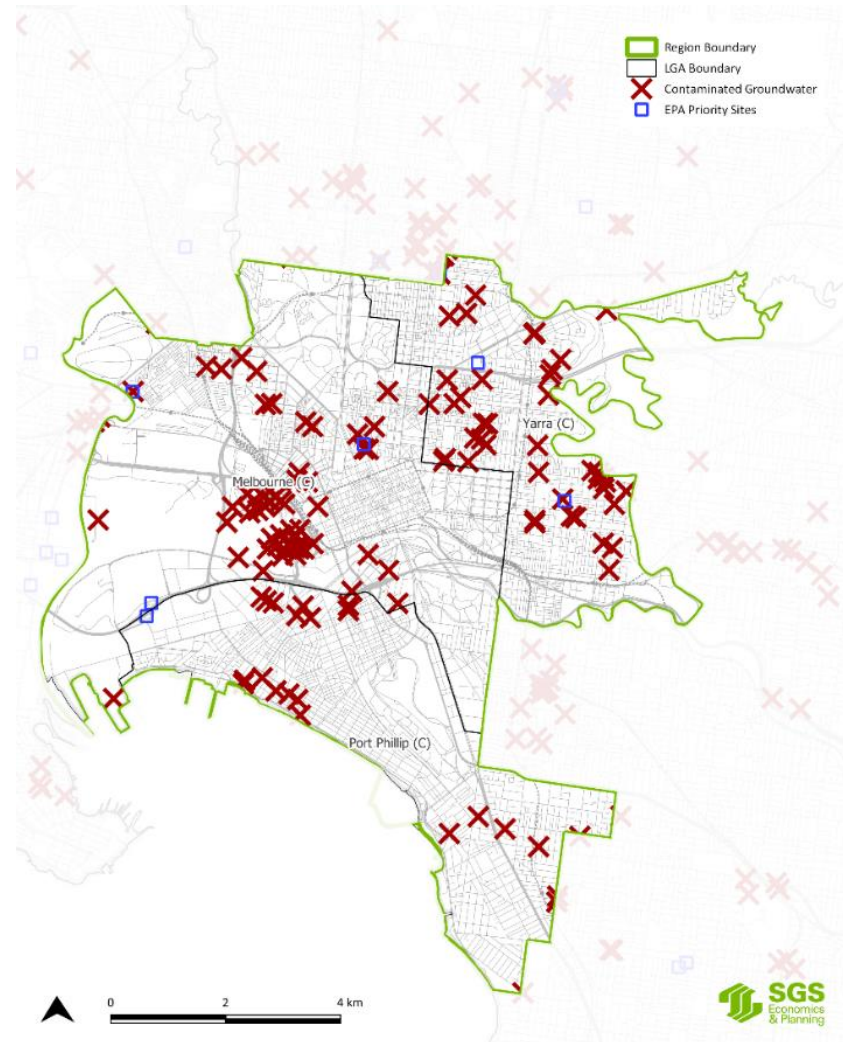
Collection of EPA priority site data over time may show areas more likely to be contaminated and the time taken to manage them to reasonable levels.

Concentration of contaminated groundwater sites (also shown in Figure 124) can build understanding of how economic activity is associated with the health of the environment.¹⁸ Together, the spatial data shows that contaminated sites:

- are concentrated in particular areas of the region
- are likely to be where industry has previously operated.

Soil and groundwater contamination must be addressed and remediated to acceptable levels before land can be changed to more sensitive uses such as residential.

FIGURE 124 EPA PRIORITY AND CONTAMINATED GROUNDWATER SITES



Source: (EPA Victoria, 2018a, 2018c)

¹⁷ <http://www.vvg.org.au/>

¹⁸ Groundwater quality restricted use zones data used

6.5 Environmental flows

Much economic activity relies on natural capital as well as human and physical capital to produce goods and services. For example, materials such as coal, timber and gas generate energy for almost any economic activity. Other basic needs, such as food, water and shelter, all rely on the environment.

Further, the environment provides a host of other services, not recognised as being a part of the economy, that affect human wellbeing. This includes:

- provisioning services – likely covered as an input into economic activity
- regulating services – including carbon sequestration and flood regulation
- recreational and cultural services – including spiritual experiences and a sense of belonging.

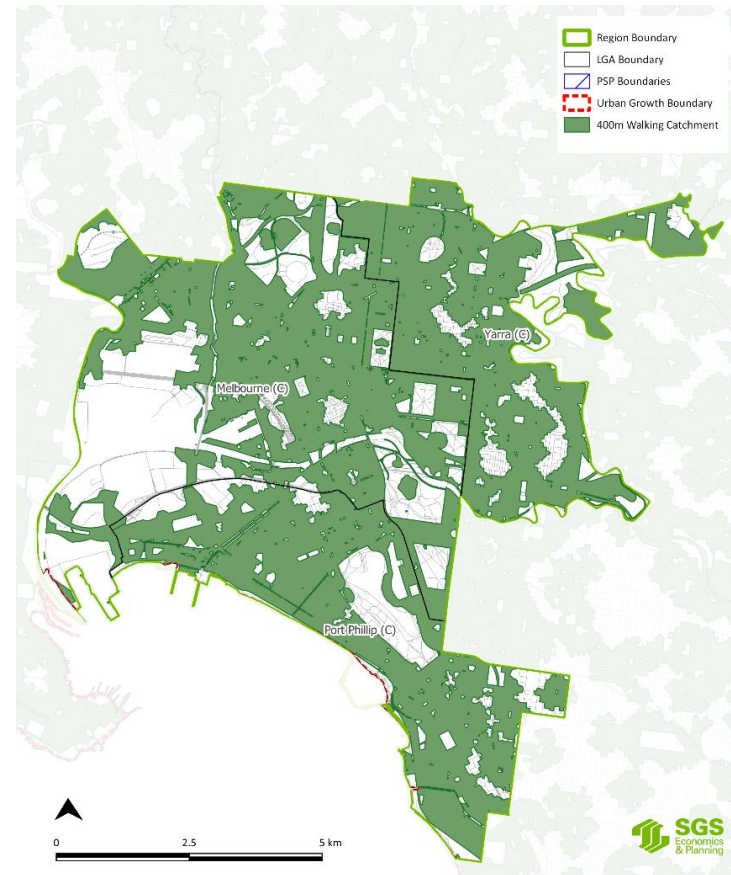
Such services are often difficult to measure. They are sometimes not incorporated into decision-making and when they are, they may not be represented accurately.

Economic activity generates residuals such as waste, wastewater, air pollution, greenhouse gas emissions, and the environment is typically a sink for these flows. For example, effluent/wastewater is typically discharged into other water bodies, and carbon flows to the atmosphere. The environment can actively or passively process these residuals. Water waste is processed by the next ecosystem to some extent, while solid waste can consume space. The management of residuals and areas tasked with dealing with them can affect the condition of environmental assets and their capacity to provide services that humans benefit from.

Access/use of green space

Green space and parks contribute to health, liveability and biodiversity outcomes. Figure 125 shows areas within the Inner Metro Region that are within 400 metres from the nearest public open space. This is a subset of the data presented in Figure 97.

FIGURE 125: 400 METRE WALKING CATCHMENTS



Source: (Victorian Planning Authority, 2017a)

The diversity of open space can provide the population with greater choice and benefits. Table 21 shows the percentage of households with access to each open space type. There are six different types of open space in the table, with private open space removed from the classes described earlier as it is inaccessible. Approximately 93 per cent of the region has access to at least one category of open space within 400 metres, making the region is one of the best in terms of accessibility to at least one type of open space.

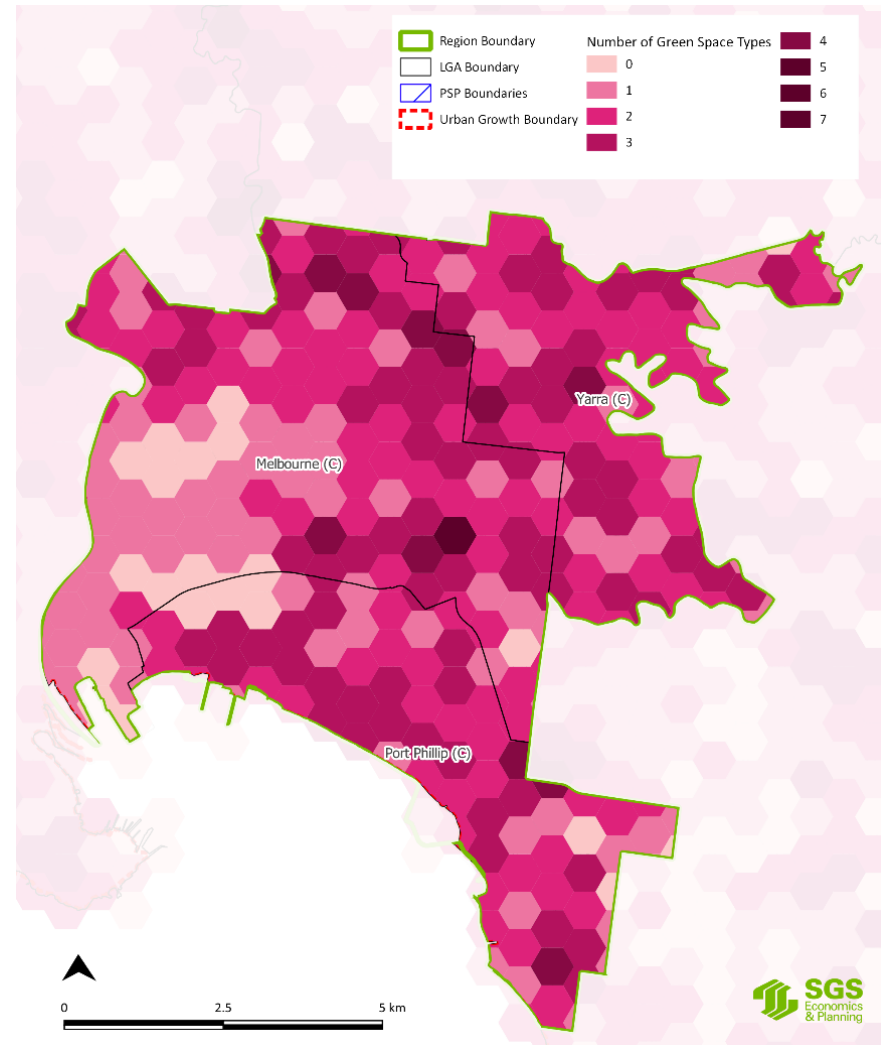
Figure 126 shows how the diversity of accessibility to the six types of open space varies across the Inner Metro Region.

TABLE 21: PERCENTAGE OF REGION WITH GREEN SPACE WITHIN 400M BY GREEN SPACE TYPE (2017)

Open space Typology	UGB (excl. New Growth Areas)	All
Public and Built	7%	7%
Public and Green	86%	86%
Public and Mixed	41%	41%
Restricted and Built	5%	5%
Restricted and Green	7%	7%
Restricted and Mixed	53%	53%
Total with access to at least 1 category	93%	93%
No access to any category	7%	7%
Total	100%	100%

Source: (Victorian Planning Authority, 2017b) Note: open space definitions are the same as those used in figure 99. Note that sum of each open space typology does not equate to the row named total with access to at least 1 category field. This is because one hex could have access to two of the open space types. Therefore, it does not equal the sum of its parts.

FIGURE 126: NUMBER OF DIFFERENT GREEN SPACE TYPES ACCESSIBLE WITHIN 400M (2017)



Source: (Victorian Planning Authority, 2017b)

Visitation to parks

Accessibility can help to alleviate barriers associated with public health benefits. Accessibility does not, however, mean that public benefits will be realised. For instance, human behaviour and time are other barriers that can prevent the potential public health benefits.

Figure 127 shows the percentage of the population in each LGA that visits green space at least one time a week. There is a high percentage of residents visiting green space in all LGAs in the region, with the City of Port Phillip experiencing a very high percentage of residents visiting green space.

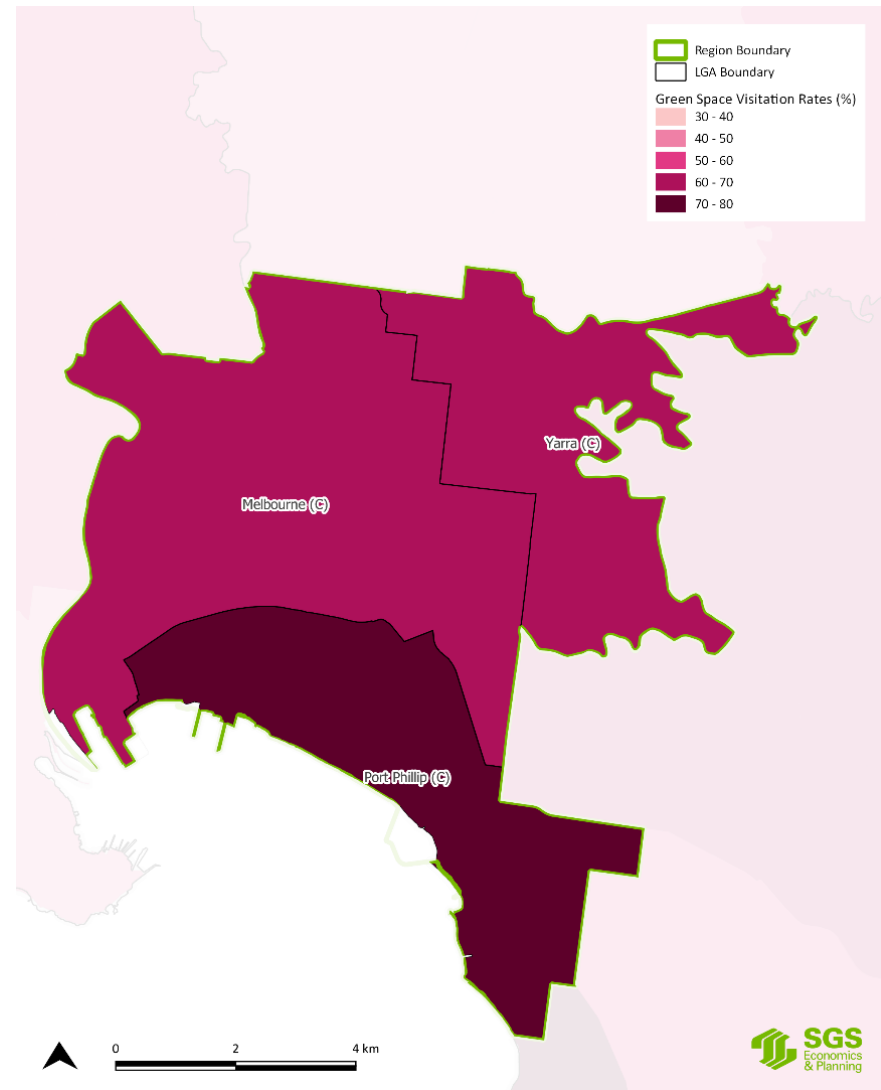
Concurrent analysis of the accessibility maps and visitation map shows that despite similar accessibility, a lower percentage of residents in the cities of Yarra and Melbourne appear to visit green space at least once a week when compared to the City of Port Phillip.

This may be due to the quality and attributes of parks and perceptions of safety. Further research is required to determine the factors that contribute to this difference.

According to Parks Victoria data, Albert Park (289,710 visitors annually) and Yarra Bend Park (1,493,520 visitors annually) are the two most popular Melbourne parks.

Further research is required to understand the users of these parks, where they originate from and future visitation patterns. This data does not give a full description of visitation of in the Inner Metro Region as it is only for Parks Victoria data.

FIGURE 127: % OF RESIDENTS VISITING GREEN SPACE (1+ TIMES A WEEK) (2011)

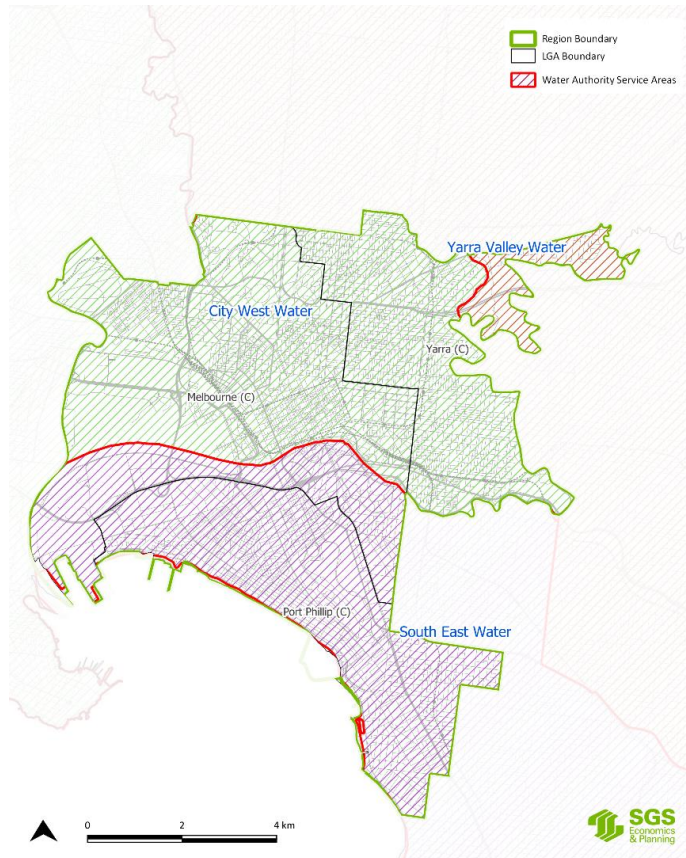


Source: (Victorian Health Promotion Foundation 2011 - 2014, n.d.)

Water security

Urban water supply across the Inner Metro Region is managed by City West Water, South East Water, Yarra Valley Water and Melbourne Water (see Figure 128). See the Northern or Eastern Metro Region report for information on Yarra Valley Water.

FIGURE 128: URBAN RETAIL AND REGIONAL WATER AUTHORITY SERVICE AREAS (2016)



Source: (Bureau of Meteorology, 2015)

Most City West Water customers receive water from secondary off-stream reservoirs in Melbourne's west and north, at Greenvale and Preston. The water supplied to City West Water customers from Greenvale Reservoir comes from the forested catchments of the Yarra and Thomson rivers via Silvan Reservoir. Preston Reservoir receives a mix of water from both forested catchments via Silvan Reservoir, and Sugarloaf Reservoir. In times of critical need, water owned by City West Water stored in northern Victoria may also be accessed via the North-South Pipeline.

Most of the drinking water supplied to South East Water customers comes from the forested catchments of the Yarra and Thomson rivers via Cardinia Reservoir. Other water will soon be supplied from the Victorian Desalination Project.

There are multiple scenarios that the water authorities consider when forecasting demand and supply of water. Under a high climate change and high demand scenario it is estimated that South East Water's water supplies will be secure for the next 10-15 years. Under a medium climate change and medium demand scenario water supplies will be secure until 2047. A low demand, low climate change scenario results in no shortfall until 2065. Factors affecting these scenarios include population growth, climate change and efficiency.

Future large-scale investments in water supply infrastructure are likely to occur in the South East Water catchment to sustainably and cost-effectively service growth in the area that it services.

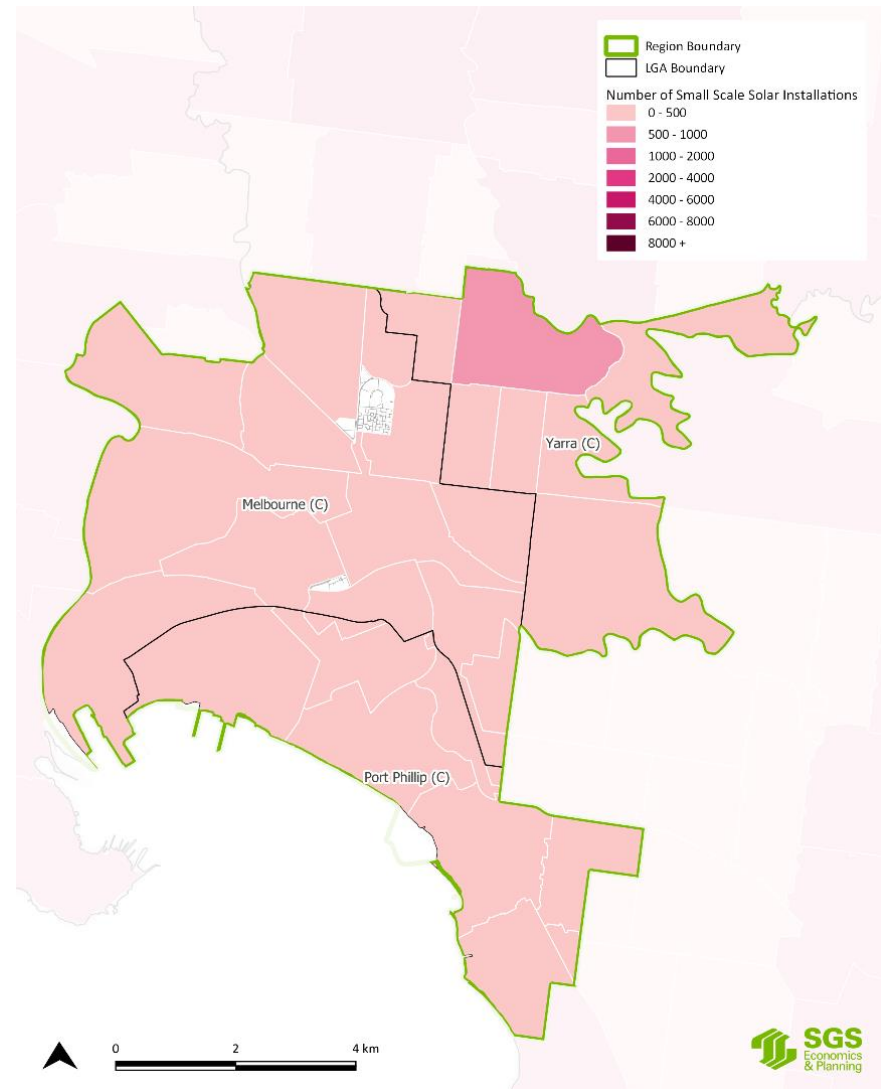
Under the high demand, low supply scenario City West Water results in a shortfall by 2027-28, the medium demand and medium supply results in a shortfall by 2044 and the low demand, high supply scenario results in no shortfall before 2065.

Among planned upgrades is the extension to the Greek Hill system that will incorporate a water supply tank, pump station and pipeworks. Another extension of the water supply system will be to the East Werribee and West Werribee region to service future growth.

Renewable energy

Renewable energy will emerge as traditional resources are depleted and the impacts of climate change increase. Figure 129 shows the number of small-scale solar installations from 2001 to 2016. This shows that small quantities of installations have occurred in the region. This may be due to the number of apartment buildings and high rises that do not have small scale solar installations.

FIGURE 129: SMALL SCALE SOLAR INSTALLATIONS (2001-2016)



Source: (Clean Energy Regulator, 2018)

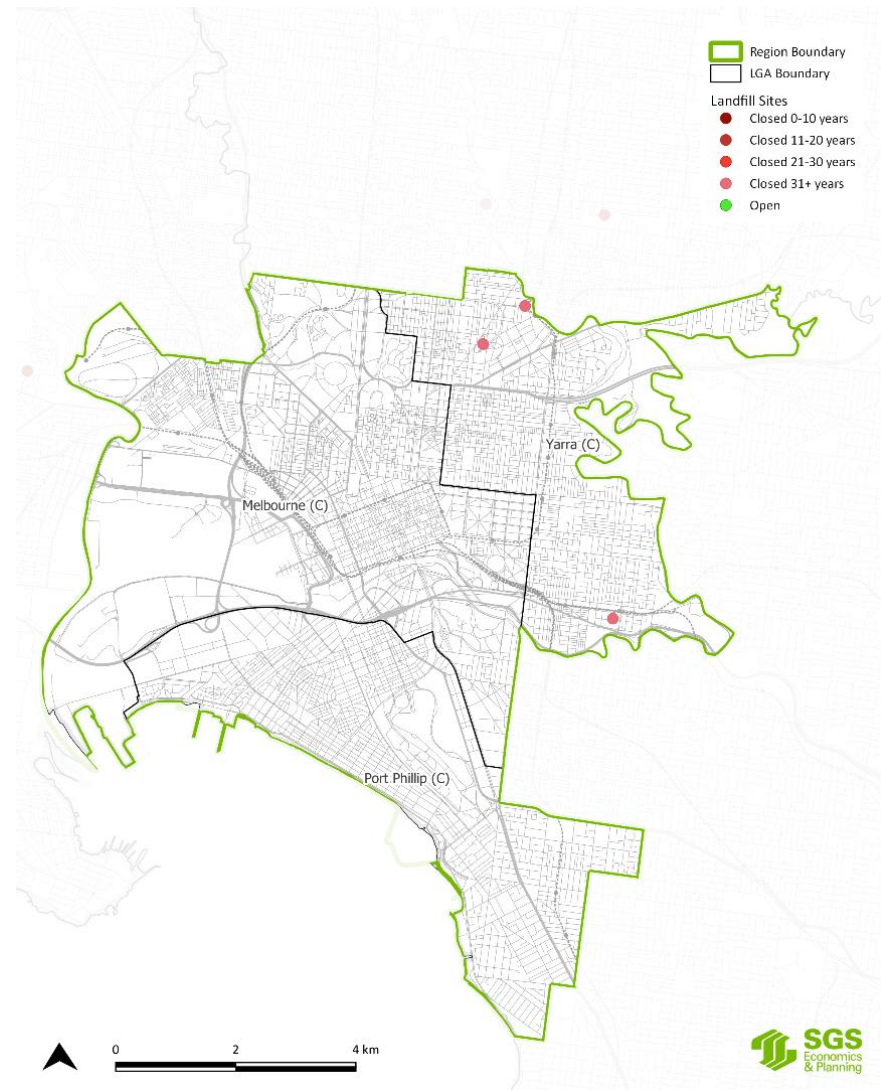
Waste

Many waste management locations in the Inner Metro Region require continued management. Waste sites can cause odours and contaminate water supplies if not managed properly. Figure 130 indicates that no landfill sites are open, and the remaining sites are relatively old. There is a recycling facility on Dynon Road in West Melbourne.

Kerbside garbage is one indication of the quantity of flows from the economy to the environment and the requirement on the environment to process the waste. Figure 131 and Figure 132 shows that:

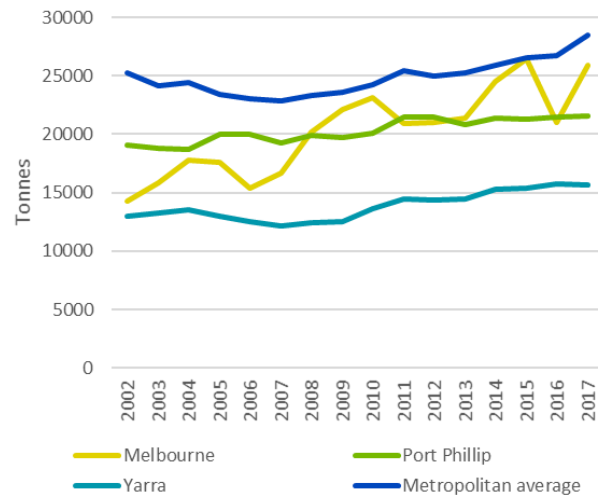
- Aggregate waste in the region is increasing.
- The cities of Melbourne and Port Phillip are larger contributors than the City of Yarra.
- All LGAs contribute a similar amount of kerbside garbage per capita, with the City of Port Phillip the largest contributor and the City of Melbourne the lowest contributor in 2017.

FIGURE 130: LANDFILL SITES (2018)



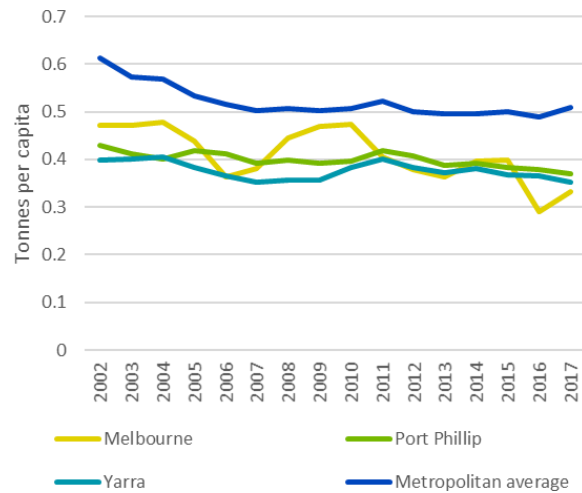
Source: (EPA Victoria, 2018b)

FIGURE 131: KERBSIDE GARBAGE (2002-2017)



Source: Sustainability Victoria

FIGURE 132: KERBSIDE GARBAGE PER CAPITA (2002-2017)



Source: Sustainability Victoria

Wastewater

Discharge of wastewater from treatment plants contributes to the environmental footprint of the Inner Metro Region. The condition of assets such as the Port Phillip Bay are affected by the flow of wastewater.

City West Water’s catchment generated 94,000 ML of wastewater in 2015-2016. Ninety-four per cent is transferred to Melbourne Water for treatment at its Western Treatment Plant. The remaining six per cent is received and treated at the Altona Treatment Plant which is owned and operated by City West Water.

South East Water currently removes around 121 GL of wastewater per year. Eighty-eight per cent of this is treated at the Eastern Treatment Plant and Western Treatment Plant operated by Melbourne Water with 12 per cent treated at South East Water’s eight water recycling plants.

Respectively, the Western Metro Region report and the Southern Metro Region report describe the role of the Western and Eastern Treatment Plants in treating the wastewater.

7. REFERENCES

- Agriculture Victoria. (2018). Victorian Land Use Information System (VLUIS). Retrieved August 15, 2018, from <http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/vluis>
- Australian Institute of Health and Welfare (AIHW) 2002. Diabetes: Australian facts 2002. AIHW Cat. No. CVD 20 (Diabetes Series No.3). Canberra: AIHW
- Bureau of Meteorology. (2015). Physical information. Retrieved from <http://www.bom.gov.au/water/nwa/2015/melbourne/contextual/physicalinformation.shtml>
- Clean Air and Urban Landscapes Hub. (2018). Urban Vegetation Cover Analysis, Melbourne western Region, (Unpublished Interim Report). Melbourne.
- Clean Energy Regulator. (2018). Postcode data for small scale installations (SGU-Solar). Retrieved from <http://www.cleanenergyregulator.gov.au/RET/Forms-and-resources/Postcode-data-for-small-scale-installations#Postcode-data-files>
- Commonwealth of Australia. (2018). Australian Disasters. Retrieved from <https://www.disasterassist.gov.au/Pages/australian-disasters.aspx>
- Department of Economic Development, Jobs, Transport and Resources. (2015). Earth Resources - Geovic. Retrieved from http://er-info.dpi.vic.gov.au/sd_weave/anonymous.html
- Department of Environment, Land, Water and Planning. (2014). Index of Stream Condition. Retrieved from <http://ics.water.vic.gov.au/ics/>
- Department of Environment, Land, Water and Planning. (2018a). Public Land Management Generalised. Retrieved from <https://www.data.vic.gov.au/data/dataset/public-land-management-plm25-generalised>
- Department of Environment, Land, Water and Planning. (2018b). Vicmap-planning. Retrieved from <https://www.data.vic.gov.au/data/dataset/vicmap-planning>
- Department of Environment, Land, Water and Planning. (2018c). Vicmap Hydro. Retrieved from <https://www.data.vic.gov.au/data/dataset/vicmap-hydro-1-25-000>
- Department of Environment, Land, Water and Planning. (2018d). Victoria Flood Database. Retrieved from <https://www.data.vic.gov.au/data/dataset/victoria-flood-database>
- Department of Environment, Land, Water and Planning. (2018e). Victorian Coastal Inundation. Retrieved from <https://www.data.vic.gov.au/data/dataset/victorian-coastal-inundation>
- Department of the Environment. (2015). Ramsar Wetlands of Australia.
- EPA Victoria. (2014). Air Watch. Retrieved from <https://www.data.vic.gov.au/data/dataset/epa-air-watch-all-sites-air-quality-hourly-averages-yearly>
- EPA Victoria. (2018a). Groundwater quality (restricted use zones). Retrieved from <https://www.data.vic.gov.au/data/dataset/epa-victoria-groundwater-quality-restricted-use-zones-gqruz>
- EPA Victoria. (2018b). Landfill register. Retrieved from <https://www.epa.vic.gov.au/your-environment/waste/landfills/victorian-landfill-register>
- EPA Victoria. (2018c). Priority sites register. Retrieved from <https://www.epa.vic.gov.au/your-environment/land-and-groundwater/priority-sites-register>
- Sun, C., Hurley, J., Amati, M., Arundel, J., Saunders, A., Boruff, B., & Caccetta, P. (2018). *Interim report: Urban Vegetation Cover Analysis, Melbourne eastern Region, Version 2*. Melbourne, Australia.
- Victorian Health Promotion Foundation 2011 - 2014. (n.d.). LGA visit to green space (once per week). Retrieved from <https://data.aurin.org.au/dataset/vic-govt->

vicehealth-vicehealth-green-space-safety-visit-to-green-space-more-than-once-perwk-lga

Victorian Planning Authority. (2017a). Public Open Space - 400m Walkable Catchments.

Victorian Planning Authority. (2017b). VPA Open Space. Retrieved from https://data-planvic.opendata.arcgis.com/datasets/da1c06e3ab6948fcb56de4bb3c722449_0



Contact us

CANBERRA

Level 2, 28-36 Ainslie Avenue
Canberra ACT 2601
+61 2 6257 4525
sgsact@sgsep.com.au

HOBART

PO Box 123
Franklin TAS 7113
+61 421 372 940
sgstas@sgsep.com.au

MELBOURNE

Level 14, 222 Exhibition Street
Melbourne VIC 3000
+61 3 8616 0331
sgsvic@sgsep.com.au

SYDNEY

209/50 Holt Street
Surry Hills NSW 2010
+61 2 8307 0121
sgsnsw@sgsep.com.au