

Unit 2 Changing nations

Cities and urban life

On an ordinary day in 2007, something extraordinary happened. For the first time in human history, the number of people living in urban areas (cities) was greater than the number of people living in **rural** areas. Since that day, the world's cities have continued to grow at a faster rate than rural areas. **Urbanisation** – the increase in the percentage of people living in urban areas compared to rural areas – is one of the most significant changes in human population trends ever recorded.

Australia is one of the most urbanised countries in the world. In fact, around 90% of all Australians live in cities. In this chapter, we will look at some of the reasons why people in Australia and around the world choose to live in urban areas. We will also look at how we can better manage and plan our cities into the future.



chapter 5

5A

Why do people live in cities?

- 1 Some of the world's cities are growing rapidly. What types of things attract people to cities?
- 2 What are some of the disadvantages of living in cities?
- 3 Why do you think so many Australians live in cities?

5B

Where do people in different countries live?

- 1 In which areas of Australia do most people live today?
- 2 Why do you think Australians live in these areas and not in other parts of the continent?
- 3 Where do you think most people live in the United States of America?

5C

How can we manage and plan for Australia's urban future?

- 1 Look carefully at Source 1. How can you tell that Melbourne has grown into a large city over a long period of time?
- 2 What problems do you think city planners in Melbourne might have to deal with?

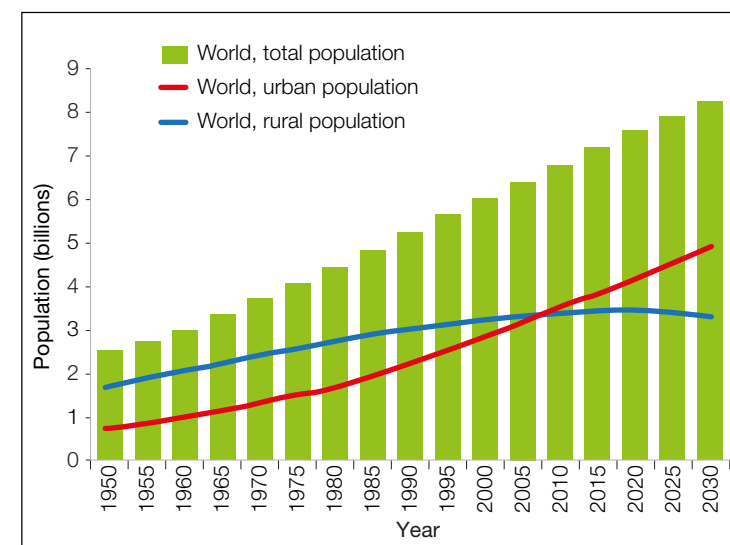
Source 1 Melbourne is Australia's second largest city. It has a population of just over 4 million people. In 2014–2015, Melbourne's population grew by 2.1 per cent making it Australia's fastest-growing capital city.

5.1 The urban explosion

It's almost impossible to imagine the world today without huge cities, but for thousands of years of human history that's exactly how it was. From ancient times right through until about 250 years ago, most people lived in small family groups or rural communities farming the land and raising animals to meet their own needs. In fact, since ancient human civilisations began, billions of people around the world lived and died without ever having seen or lived in a city. Of course, there were large cities in ancient times, such as Rome and Athens, but these cities were the exception rather than the rule.

This all changed about 250 years ago with the arrival of the industrial age. New, improved farming methods and farm machinery meant that fewer people were needed to grow and produce larger amounts of food. In the cities, new inventions, such as the steam engine and the knitting mill, created new jobs for many people. Less work in rural areas caused people to flood into cities looking for work and new opportunities. This trend quickly changed the economies of many countries, and cities became centres of industry and commerce.

Cities around the world have grown rapidly in the last 70 years. By around 1950, the world's population was 2.5 billion and there were seven cities with more than 5 million inhabitants. The largest of these cities was New York, with a population of around 12 million.



Source 1 The urban and rural population of the world, 1950–2030



Source 2 1950 – New York was the world's largest city, with a population of just over 12 million people.



Source 3 1990 – Tokyo's population reached 25 million, making it easily the world's largest city.



Source 4 2030 – Based on current trends, New Delhi is expected to be the world's largest city by 2030 with a population of over 40 million.

Today, there are more than 7 billion people on Earth and just over half of them live in cities. While many of these cities have populations under 1 million, there has been an explosion in the number and size of the world's very large cities. These cities, with a population greater than 10 million, have become

known as **megacities**. As of 2012, there are 27 megacities around the world. Eleven of these have populations greater than 20 million. Geographers refer to the rapid growth of the world's cities in the last 20 years as an urban explosion.

skilldrill: Place, space and interconnection

Generating questions for a geographical inquiry

Geographers look carefully at the world around them and ask questions about what they see. The questions they ask often come from natural curiosity and may start a major investigation. When developing questions of your own for a geographical inquiry, follow these steps:

Step 1 Think about a topic or problem you would like to investigate. Conduct some research online or in the field in order to identify an exciting area to explore.

Step 2 Think about the types of patterns or exceptions that are linked to the topic you are investigating. Write a series of open-ended questions that help you to explore them. Open-ended questions can have more than one correct answer and cannot simply be answered with 'yes' or 'no', such as 'Why are cities sometimes abandoned?'

For example, when investigating the image of the ancient ruins of the city of Uruk in Iraq (Source 5), a geographer would ask why this city was built in such a barren, dry place. This would then lead them onto other questions such as:

- Was this place wetter in the past?
- How did the people who lived here grow their food?
- Where did their water come from?

Apply the skill

- 1 Look carefully at Source 5 showing the ruins of part of one of the world's oldest cities.
 - a What looks out of place in this image?
 - b Generate an open-ended question that may help you investigate why this feature appears in this



Source 5 Excavations in Iraq have revealed the ruins of the ancient city of Uruk.

Check your learning 5.1

Remember and understand

- 1 Do most people in the world today live in cities or in the countryside?
- 2 What is a megacity? Name three megacities.
- 3 Why has most of the world's population growth occurred in cities rather than in rural areas?
- 4 Study Source 1. Describe the growth of the world's population since 1950. Give two reasons for the trends you have described.

Apply and analyse

- 5 Why do you think many people in poorer countries move from rural areas to urban areas?

Evaluate and create

- 6 Compare the photos of New York, Tokyo and New Delhi (Sources 2, 3 and 4). What are some features common to all three cities? In what ways have large cities changed between 1950 and today?

5.2 How cities are organised

For many people, cities can appear to be confusing and disorganised places – not for geographers, though. Geographers identify patterns in the way areas and features of cities are organised. These patterns bring a sense of order to these complex places. Like a jigsaw puzzle, cities are made up of individual pieces that, together, make up a distinctive landscape (see Source 1).



Central business district (CBD)
The central business district (CBD) is generally the oldest and most accessible part of any city. Because lots of people and businesses compete to have offices there, land prices are higher than other parts of cities. Developers build tall buildings to maximise the available land.



Residential areas
The largest area of any city is used for housing and to provide facilities, such as hospitals and schools, for the people who live there. Australian cities are renowned for their sprawling residential areas.



Source 1

Source: Oxford University Press



Commercial areas
Commercial areas are usually located on major roads. Large shopping centres are now a feature of many suburbs in Australian cities. With 530 shops, Chadstone Shopping Centre is the largest such centre in Australia.



Industrial areas
Factories, mills and warehouses are important parts of most cities. Industrial areas are often located near important transport links (such as ports, freeways and rail lines) but as far away as possible from residential areas.

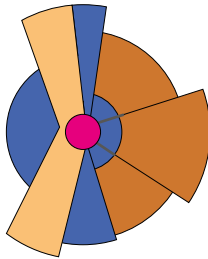


Parkland and nature areas
Parkland and nature areas are important as they offer people living in cities sporting and recreation opportunities. They are also essential for ensuring that native plant and animal populations remain healthy.

Models of city land use

Although every city is unique, they all share certain characteristics. For example, tall buildings tend to be located near the centre of every city, because land there is expensive. Land is usually cheaper near the edges of every city, so that is where people tend to live. By mapping the main land uses in a range of cities it is possible to identify similar patterns.

Some geographers have tried to explain these patterns by developing models that illustrate these patterns. One of these is the sector model. It shows how a city is divided into sectors (similar to slices of a cake) that are used for different purposes.



- LEGEND**
- Central business district
 - Residential area
 - Commercial area
 - Industrial area

Source 2 The sector model is one of many used to understand and explain land use in cities.

Check your learning 5.2

Remember and understand

- Why are there often tall buildings near the city centre?
- Look closely at the oblique aerial photograph of Chadstone Shopping Centre (this page). Which features suggest that most customers arrive by car?

Apply and analyse

- Look carefully at Sources 1 and 2.
 - In what ways does land use in Melbourne resemble the pattern of land use shown in the sector model?
 - In what ways is it different?
- Study Source 1. How has Port Phillip Bay influenced the way land is used in Melbourne?
- Why are industrial areas usually located near major transport links?

Evaluate and create

- Work in small groups to copy and complete the following table. In the left-hand column identify land use patterns in Source 1. In the right-hand column record possible reasons for this pattern. An example has been done for you. Try to identify two more.

Land use pattern in Melbourne	Possible reasons for this land use pattern
Tall buildings found in the CBD of the city	This is the most accessible part of the city; land is expensive there.

- Why are models used to describe and explain things such as land use?

5.3 The advantages of cities

Australia's high level of urbanisation can have advantages not only to the people who live in cities, but also to the nation as a whole. These advantages can roughly be divided into two categories – economic and social.

Economic advantages

Among the economic advantages offered by cities are access to work, industry, trade and, of course, income. Because cities are home to so many people, they are an obvious location for businesses and large companies to base their offices. Cities also provide companies with huge numbers of customers in a relatively small space, making it easier for them to sell their goods and services there. In addition, cities offer the best access to transport links, such as major highways, ports, railway lines and airports. These services (known as **infrastructure**) are vital for factories and businesses to manufacture and trade efficiently.

Probably the most obvious economic advantage offered by cities is the wide range of jobs available to those who live there. These range from jobs that involve little training and education through to highly skilled jobs requiring years of university study and training. Three-quarters of all jobs in Australia are based in our major cities and the income generated in those cities accounts for around 80 per cent of the total economy.



Source 1 Cities, such as Perth (shown here), provide a range of travel and transport options for the people who live there.



Source 2 Cities, such as Sydney (shown here), offer a wide range of world-class hospitals and health care options for the residents there.

Source 3 Cities, such as Brisbane (shown here), are good locations for companies to base their offices because they offer access to a large number of potential customers.



Throughout history, cities have been the birthplace of new ideas and inventions that have changed the world. Some of these (such as skyscrapers, subways, elevators and sewerage systems) were invented in response to the challenges of city living. Other great inventions (including telephones, computers, cameras, the iPod and the Internet) all began in cities. Many of history's greatest thinkers, including William Shakespeare and Albert Einstein, lived in cities. Cities continue to be places of innovation and change as they allow individuals and organisations to share ideas and resources effectively.

Social advantages

There are a range of social advantages of city life, including access to schools, hospitals and other services, and activities such as entertainment, sporting and cultural events.

Cities generally offer more social advantages than rural areas because there is a higher concentration of people in a smaller area. It is usually easier and cheaper to supply services to people who live closer together than to those who live far apart. As a result, city-dwellers have access to an enormous range of goods and services. Cities provide their residents with essential services, including water, electricity, supermarkets, public transport, health care, communication services (such as Internet access and Wi-Fi), schools and universities. In addition to these services, cities offer access to a range of non-essential products and services, including specialty boutiques, movie theatres, art galleries, casinos, aquariums, and major sporting and entertainment events.

One of the main ways in which the populations of Australian cities grow is through the arrival of people from overseas. For many newly arrived immigrants, the first experience of Australia will be a new home in a large city. Cities are obvious choices for new arrivals because they offer the best opportunities for employment, good access to government and support services (such as translators and community workers), and the best possibility of making links with people from their own cultural and language backgrounds. Immigration results in cultural diversity, which can often be seen in the range of shops, social and cultural organisations, restaurants and religious buildings (such as churches, mosques and temples). Over time, these new arrivals contribute to Australian cities and customs in many subtle ways (See Source 4). These changes help to make our cities dynamic and vibrant places.



Source 4 Constable Amitoj Singh, a member of the Sikh religion, is an example of how cultural and religious diversity can be seen across Australian cities. He is the first member of the Victoria Police to wear an official police-issue turban.

Check your learning 5.3

Remember and understand

- 1 Why do city-dwellers usually have access to a wide range of goods and services?
- 2 Why are cities often places of innovation and invention?

Apply and analyse

- 3 People in cities usually live longer than people in rural areas, particularly in poorer countries. Why do you think this is the case?
- 4 Examine Sources 1 to 3. What advantages of city living are shown in each of these images?
- 5 Why do you think young people in country towns often move to a city after they finish their high school education?

Evaluate and create

- 6 List a number of advantages of life in cities and then rank them from most to least important. How did you decide on your ranking? Did any of your classmates have a list similar to yours? Why/why not?
- 7 Australian inventions include the black box flight recorder, Google Maps, spray-on skin, the bionic ear, Wi-Fi and plastic bank notes. Select one of these (or another Australian invention) and research its inventor and the place where the invention was developed.

5.4 The disadvantages of cities

Although there are many advantages to city life, there are also a number of disadvantages. Cities house a large number of people in a relatively small space, and this can create a number of unwanted problems and disadvantages. These disadvantages can roughly be divided into two categories – environmental and social.

Environmental disadvantages

Cities change the natural environment in many ways. The people, factories, cars and industries based in cities often pollute the air, water and soil. The goods and services needed by the residents of cities include food, water, electricity, petrol and gas, and these often have to be transported long distances, creating even more pollution. As Australian cities grow in size they place an enormous amount of stress on the natural environment around them.

The locations we have chosen for our cities are often home to native plants and animals. As our cities and suburbs grow, forests and grasslands are cleared, lakes and wetlands are drained, and rivers are diverted or dammed. Soft earth is replaced with hard surfaces, such as concrete and roads. This often has disastrous consequences for native animal and bird populations. A recent study found that more than half of Australia's rare or threatened plants, mammals, birds, reptiles and fish live in or near our cities.

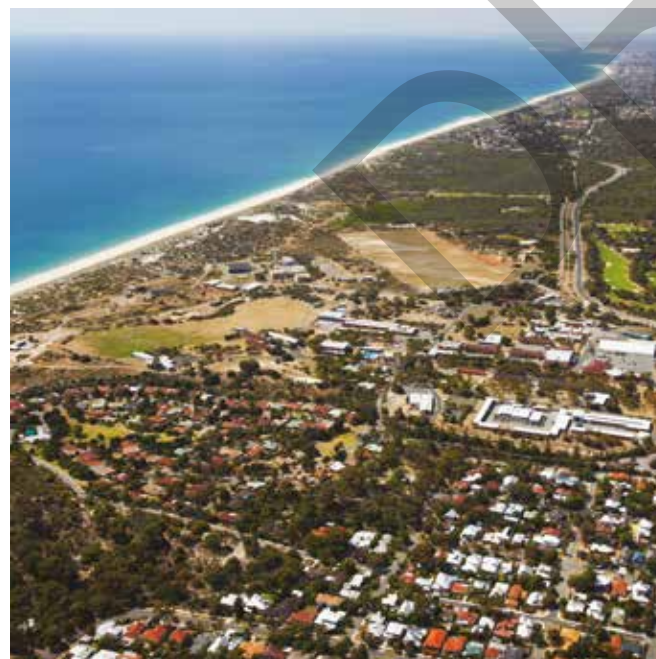
Social disadvantages

The social disadvantages faced by city-dwellers can vary widely from suburb to suburb, so one person's experience may be very different from another's. Overcrowding and rising house prices might be a disadvantage for those living in the inner city, while lack of schools and hospitals might be a disadvantage for those living in new housing estates on the edge of the city.

As the populations of Australian cities grow, land on the edges of cities is often converted from farmland and green spaces into residential areas. This urban sprawl comes at a cost to both the environment and to people.



Source 1 The squirrel glider, native to eastern Australia, is endangered by the loss of its habitat due to the sprawling city suburbs along the east coast.



Source 2 New suburbs on the city fringes of Perth expanding into areas of native bushland



Source 3 Traffic congestion is now a common problem in all major cities in Australia.

Regardless of where the residents of a city live, many will experience some form of disadvantage that impacts on their quality of life. Most of these disadvantages are linked to competition for services and resources. Because cities are home to large numbers of people concentrated in relatively small areas, these services and resources can be stretched beyond their limits. Some of the problems most commonly experienced by people living in cities include:

- traffic congestion – the result of too many people trying to use the roads at the same time
- rises in the cost of housing, food and utilities – the result of greater numbers of people competing for resources than can be supplied
- waiting times for schools, public transport and medical care – the result of more people trying to access these services than they were originally designed to accommodate
- rates of crime – the result of a complex combination of factors including unemployment, cultural and economic background, age and gender.

Check your learning 5.4

Remember and understand

- 1 Why is traffic congestion a common problem in many Australian cities?
- 2 How are squirrel gliders (Source 1) being impacted by urban sprawl in eastern Australia?

Apply and analyse

- 3 Describe the changes taking place in Source 2. How will these changes impact on the people who already live in this place? How will they impact on the natural environment?

Evaluate and create

- 4 With a partner, choose a large city in a developing country, such as Lagos (in Nigeria) or Mumbai (in India), and conduct a brief Internet search into the disadvantages of city life for people living there.
 - a How might the problems experienced by people living in your chosen city be different from those experienced by city-dwellers in developed countries such as Australia and the United States?
 - b Make a list of the disadvantages experienced by people living in your chosen city and another list of disadvantages experienced by people living in a large city close to you.
 - c Which problems are the same and which are different?
- 5 What strategies do you think could be put into place to protect endangered species whose natural habitat is near a city, such as the squirrel glider in Source 1?

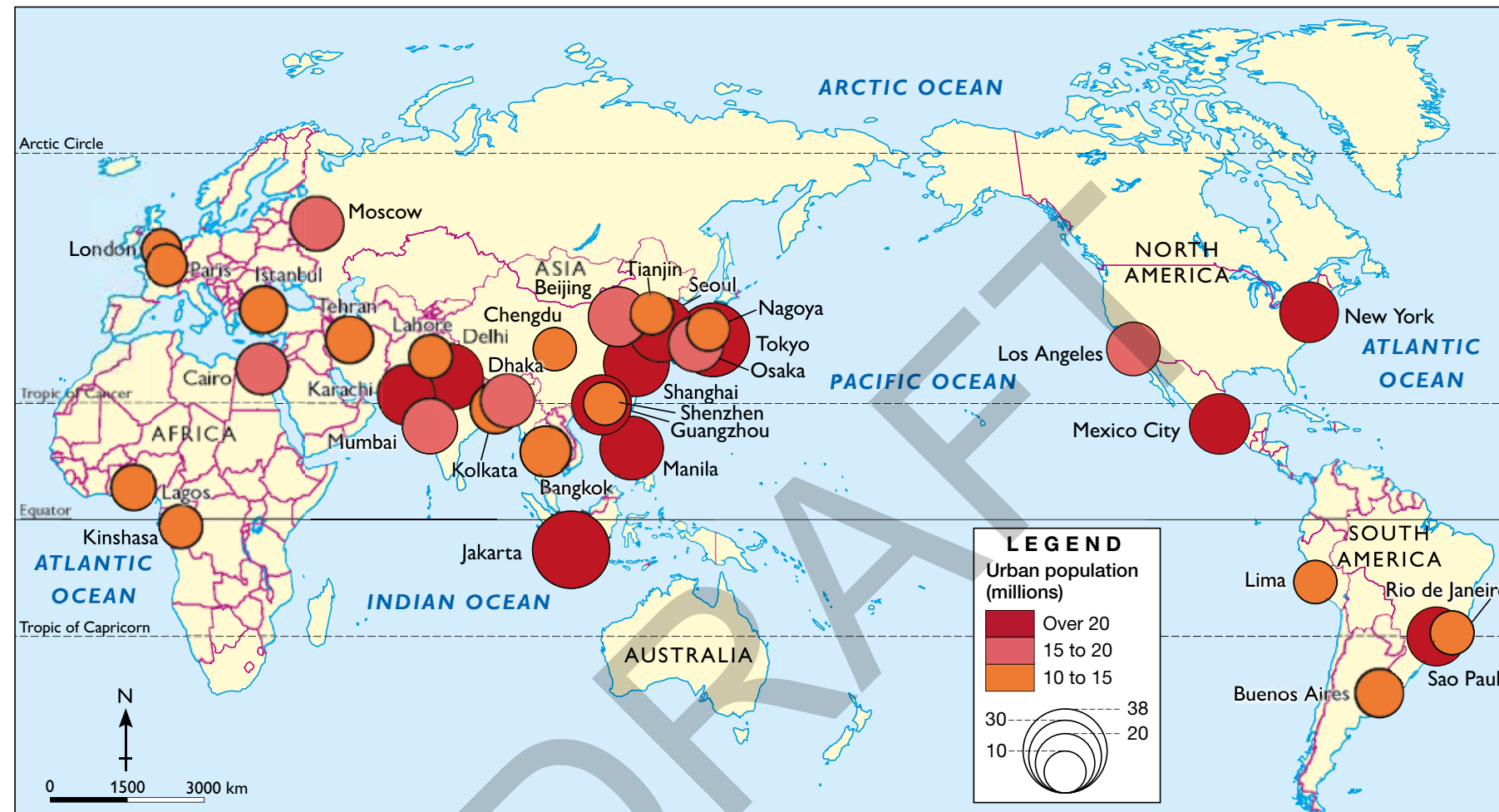
5.5 The rise of the megacity

Today, more people around the world are living in cities than ever before. A century ago, only about 15 in every 100 people lived in cities. Today, that number is more than 50 in every 100 people. This increase has resulted in the creation and growth of many cities worldwide, and an explosion in the number of very large cities, known as megacities. These are urban areas with populations of more than 10 million people.

In addition to the increase in the number of megacities over the last century, there has been a change in where these cities are found. No longer do the megacities of Europe and North America dominate – instead, the megacities of Asia, South America and Africa are becoming the world's largest.

Four of the world's megacities are explored briefly below. Although they are located in different parts of the world and have many unique characteristics, they also face many of the same challenges and have more in common than you might first think.

WORLD: MEGACITIES



Source 1

Source: Oxford University Press

Check your learning 5.5

Remember and understand

- 1 How many megacities are there in the world? How many of these megacities could you have named before reading the information given here?
- 2 Which continent is home to the most megacities?
- 3 Do you think the number of megacities will increase or decrease over the next 20 years? Give some possible reasons for your answer.
- 4 What are some of the problems faced by people living in megacities? Which of these problems will become worse as each of these cities grows?

Apply and analyse

- 5 Examine the location and distribution of the world's megacities. In what ways are many of their locations similar? What cities do not share all of these similar location features?
- 6 The images of these megacities show that tall buildings are common in many city centres. Why do you think this is the case? Why are there usually very few tall buildings on the edges of cities?

Evaluate and create

- 7 Select one of the megacities shown on the map (Source 1) that is not described in detail. Conduct some Internet research on this city. Find out about its location, history and any issues faced by the people who live there. Write a short paragraph about this city, similar to those shown here.

Cairo: Africa's first megacity

Cairo is the largest city in Africa and the Middle East. Its location on the Nile River has provided the city's residents with fresh water, fertile soil to grow food and a method of transportation for thousands of years. Modern Cairo is a bustling city of more than 15 million people. This rapid rate of expansion has led to a number of social and environmental challenges. For example, Cairo has some of the world's worst traffic congestion and air pollution.



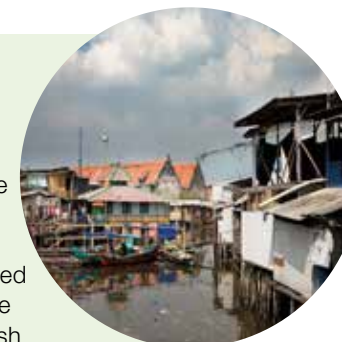
Moscow: the biggest city in the biggest country

Russia is the world's largest country and its capital, Moscow, one of the world's megacities. Moscow was established on the banks of the Moscow River almost 1000 years ago. Today, Moscow often tops the list of the world's most expensive cities because of the high cost of housing there. Traffic congestion and air pollution from cars are significant problems in Moscow, as they are in many large cities.



Jakarta: Australia's neighbour goes mega

Current estimates put the population of Jakarta at about 30.5 million people. Up to half the population lives in slums, called kampungs, where temporary homes are built on land considered unsuitable for housing. One of the city's biggest problems is the fresh water supply. Most residents use bores (deep wells) to obtain their fresh water. In North Jakarta so much water has been drawn from the ground that the land has begun to subside (sink) in places, leading to a greater risk of flooding.



Mexico City: the biggest megacity in the Americas

Mexico City's location is unusual when compared to most other megacities around the world. It is situated on a dry lake bed high in the mountains, rather than close to the coast and rivers. Like Cairo, Mexico City suffers from severe air pollution. This is made worse by the surrounding mountains, which help to trap polluted air. There is also great pressure on the groundwater resources in the region. In some cases, bores (deep wells) have caused land to collapse under buildings and roads.



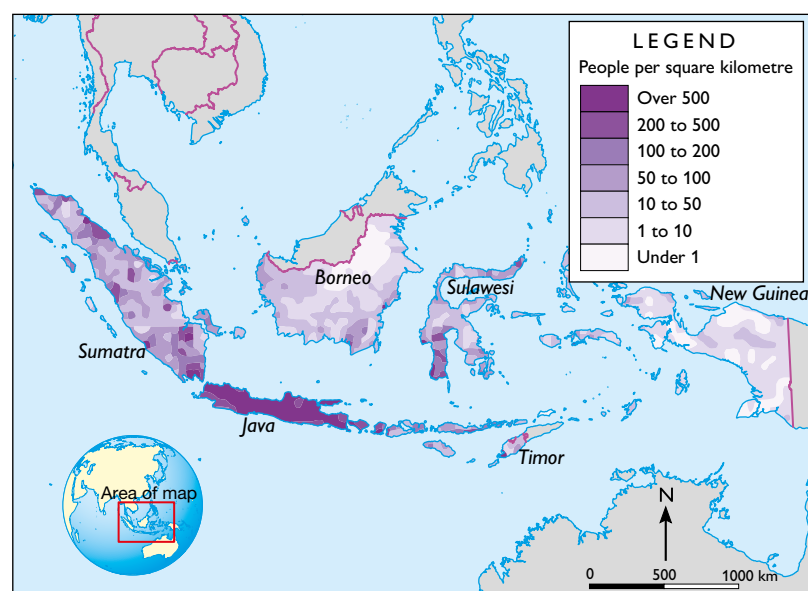
5.6 Urbanisation in Indonesia

Asia is home to some of the world's largest and fastest-growing cities. Of the 50 cities around the world with a population of over 5 million, half of them are located in Asia. Many of these cities are growing so quickly that they are unable to meet the demands of new residents, large numbers of whom are escaping rural poverty and looking for opportunities to improve their lives.

Urban growth in Indonesia

In 1950, Jakarta was the only Indonesian city with a population in excess of 1 million and only 15 per cent of Indonesia's population lived in urban areas. By 2010, a total of 10 cities had grown to have 1 million people.

INDONESIA: POPULATION DENSITY



Source 1

Source: Oxford University Press

Between 2000 and 2010 Indonesia's population increased from 204 to 238 million. The proportion of the population living in urban centres also increased significantly during this period, from 42 per cent to 50 per cent. About 68 per cent of Indonesia's urban population live in cities on the island of Java which has 20 cities with a population of 100 000 plus and seven cities with populations of over 1 million.

The migration of people from rural areas to large cities is a major factor in Indonesia's urban growth. Often, people living in rural areas lack employment and education opportunities

so the younger people move to cities for work, entertainment, education and health services. They leave behind an ageing rural workforce. Of the 140 million farmers in Indonesia, 80 per cent are aged 45 and above.

Jakarta: Indonesia's megacity

Jakarta, the capital city of Indonesia, is located on the island of Java. In late 2011, the population of the official metropolitan area of Jakarta was recorded at 10.1 million, qualifying it as a megacity. In reality, however, the population of greater Jakarta (that is, the suburbs surrounding the metropolitan area) brings the total population closer to 19 million. Jakarta is a very old city, having been settled as a trading settlement over 1500 years ago. Jakarta is located on the north-western coast of Java. A range of volcanoes and hilly slopes south of the city feed a series of rivers that have built up a fertile floodplain leading to the Java Sea. The combination of the flat, low-lying plain and the tropical climate means that flooding is a frequent problem for the residents of Jakarta.

Like many other cities across Asia, Jakarta is a place of contrasts. Slums sit alongside skyscrapers, modern homes and luxury hotels. Half of the population of Jakarta live in these slums. The homes there are often built from temporary materials on land considered unsuitable for regular housing. In the slums, running water, electricity and sanitation are difficult to obtain.



Source 2 Satellite images of Jakarta taken in 1976, 1989 and 2004. Urban areas appear as blue-green and vegetation appears as orange-red.

One of the biggest problems in Jakarta is the fresh water supply. The current piped system is largely ineffective, so most residents use **bores** to obtain their fresh water. In North Jakarta so much water has been drawn from the ground that the land has begun to sink in places, leading to a greater risk of flooding. A limited sewerage system due to the lack of running water makes the threat of disease a constant concern.



Source 3 A slum located in the metropolitan area of Jakarta, Indonesia

Check your learning 5.6

Remember and understand

- 1 What percentage of Indonesians live in urban areas? How did this change between 2000 and 2010?
- 2 In Indonesia, why are young people moving from rural areas to the cities?

Apply and analyse

- 3 How does Source 3 show the contrasting living conditions in Indonesia?
- 4 What health issues do you think the children in Source 3 might face?
- 5 How have residents in Java helped solve their fresh water problem? What additional problem has this caused?

Evaluate and create

- 6 Trace an outline of the city boundary of Jakarta in 1976 shown in Source 2. Mark the coastline and shade in areas of vegetation. Mark in any rivers or lakes that you can see. Now add an overlay sheet showing the city boundary in 2004. Describe the spatial change over time as shown on your overlay map.

5A rich task

Sydney – our biggest city

In 1901, both Sydney and Melbourne were home to about half a million people. Within a few years, though, Sydney had outgrown Melbourne, and by the year 2000 Sydney was the only Australian city with a population over 4 million people. One in five Australians now live in Sydney and it continues to grow by over 35 000 people a year.

By studying the rate at which Sydney grows and by analysing the ways in which the population there is changing, geographers can learn a lot about the causes and effects of urbanisation in Australia.

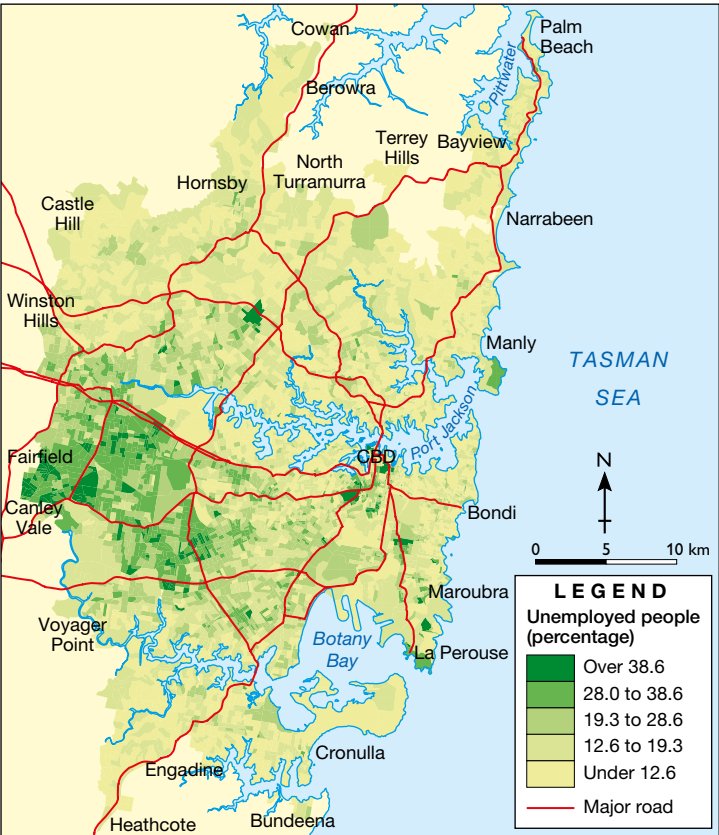
skilldrill: Place, space and interconnection

Interpreting choropleth maps

Sources 1, 3 and 4 are known as **choropleth maps**. These maps give a quick impression of spatial patterns by using dark and light shades of the same or similar colours. Darker shades usually show ‘the most’ and lighter shades show ‘the least’. To interpret a choropleth map, follow these steps:

- Step 1** Read the title carefully so you understand what is being shown on the map.
- Step 2** Look carefully at the legend so that you understand what the various shades and colours represent.
- Step 3** Look for large areas of similar shades and for other patterns (such as lighter colours near the edges of the city and darker colours near the centre of the city in Sources 1, 3 and 4).
- Step 4** Look for any exceptions to the general pattern.

SYDNEY: UNEMPLOYED PEOPLE, 2006



Source 1

Source: Oxford University Press

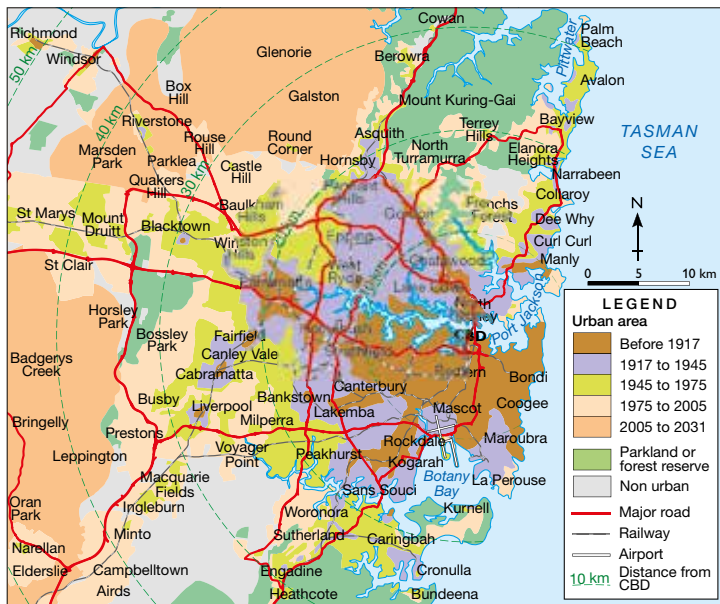
Apply the skill

- Study Source 4. Why do you think the areas with the highest percentage public transport users make linear patterns (i.e. form lines)?
- Study Source 1.
 - Use direction (north, south, east or west) to describe the area of Sydney where the highest percentage of unemployed people live.
 - What might be some of the advantages of living in this region for people who are unemployed?
 - What might be some of the disadvantages of living in this region for people who are unemployed?
- Study Source 3.
 - Which regions have the lowest percentage of people born overseas?
 - Which regions have the highest percentage of people born overseas?
 - What special services might the government offer in areas with larger numbers of immigrants?
 - In what ways can ethnicity change an area?

Extend your understanding

- What resources do you think early settlers looked for when selecting a place to live in Australia?
 - How do you think this compared to the resources required by Indigenous Australians?
- Study Source 2.
 - The city of Sydney was established on the southern shore of Port Jackson. How far south did Sydney grow by 1917?
 - In 1932 the Sydney Harbour Bridge was opened, linking the south to the north of Sydney over Port Jackson. How did this help the population to spread to Sydney’s north shore?
 - Use direction and distance to explain the most recent pattern of growth in Sydney.

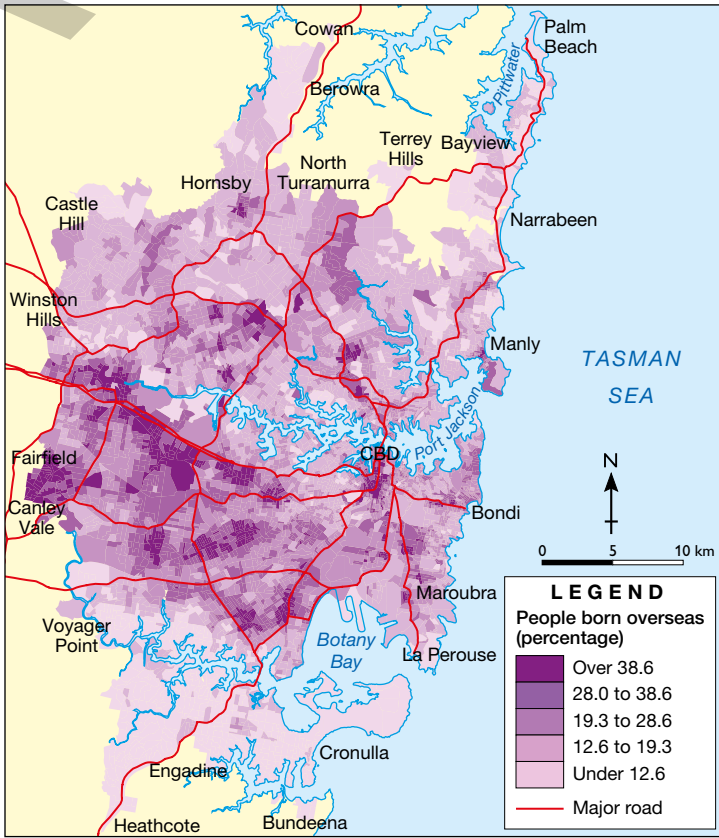
SYDNEY: URBAN GROWTH



Source 2

Source: Oxford University Press

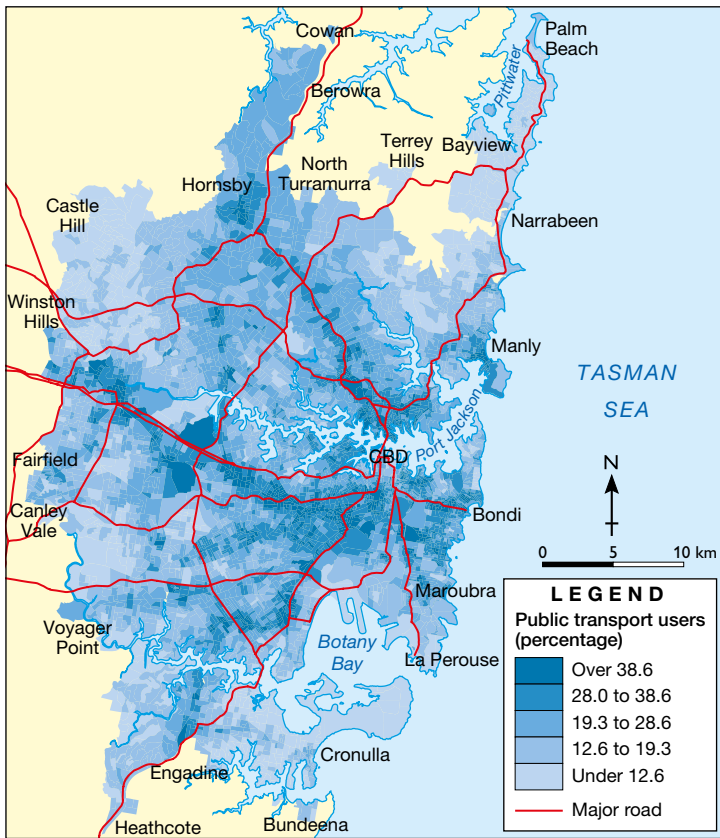
SYDNEY: PEOPLE BORN OVERSEAS, 2006



Source 3

Source: Oxford University Press

SYDNEY: PUBLIC TRANSPORT USERS, 2006



Source 4

Source: Oxford University Press

5.7 Where Australians live

Australia's population is more unevenly spread than virtually any other country on Earth. Of the 23 million people who live in Australia, more than 12 million live in just five cities. All these cities are state capitals and all are located on the coast. Nearly 90 per cent of all Australians live in a town or city, and 85 per cent of us live within 50 kilometres of the coast.

Where do Australians live?

The best way to show the places where Australians live is to map the distribution of the population and study the population density. This not only shows the locations where people live but also the number of people who live in each square kilometre. Regions where there are lots of people per square kilometre are said to have a high population density. For example, Sydney's 10 most populated suburbs all have more than 10 000 people living in each square kilometre. Regions where there are very few people per square kilometre are said to have a low population density.

Australian cities

Cities in Australia are located close to the natural and/or built features that humans need most. These features include fresh water and fertile soil as well as transport links, such as harbours, railways and roads.

Most of Australia's earliest towns were settled on bays, harbours and at river mouths on the coast. These towns were able to trade and communicate with each other. Rivers not only provided clean drinking water but also water for growing food, cleaning, manufacturing and transport. Many of these early towns have grown into our largest cities – Sydney, Melbourne, Brisbane, Adelaide and Perth.

As farming spread and important minerals such as gold were discovered, inland cities such as Bendigo, Bathurst, Castlemaine, Ararat, Kalgoorlie and Rockhampton began to develop. Industrial towns such as Newcastle grew near transport hubs where goods could be sent to markets in Australia and overseas.



Source 1 Australia has one of the lowest population densities of any country on Earth. Ninety-seven per cent of Western Australia has a population density of less than 0.1 people per square kilometre.

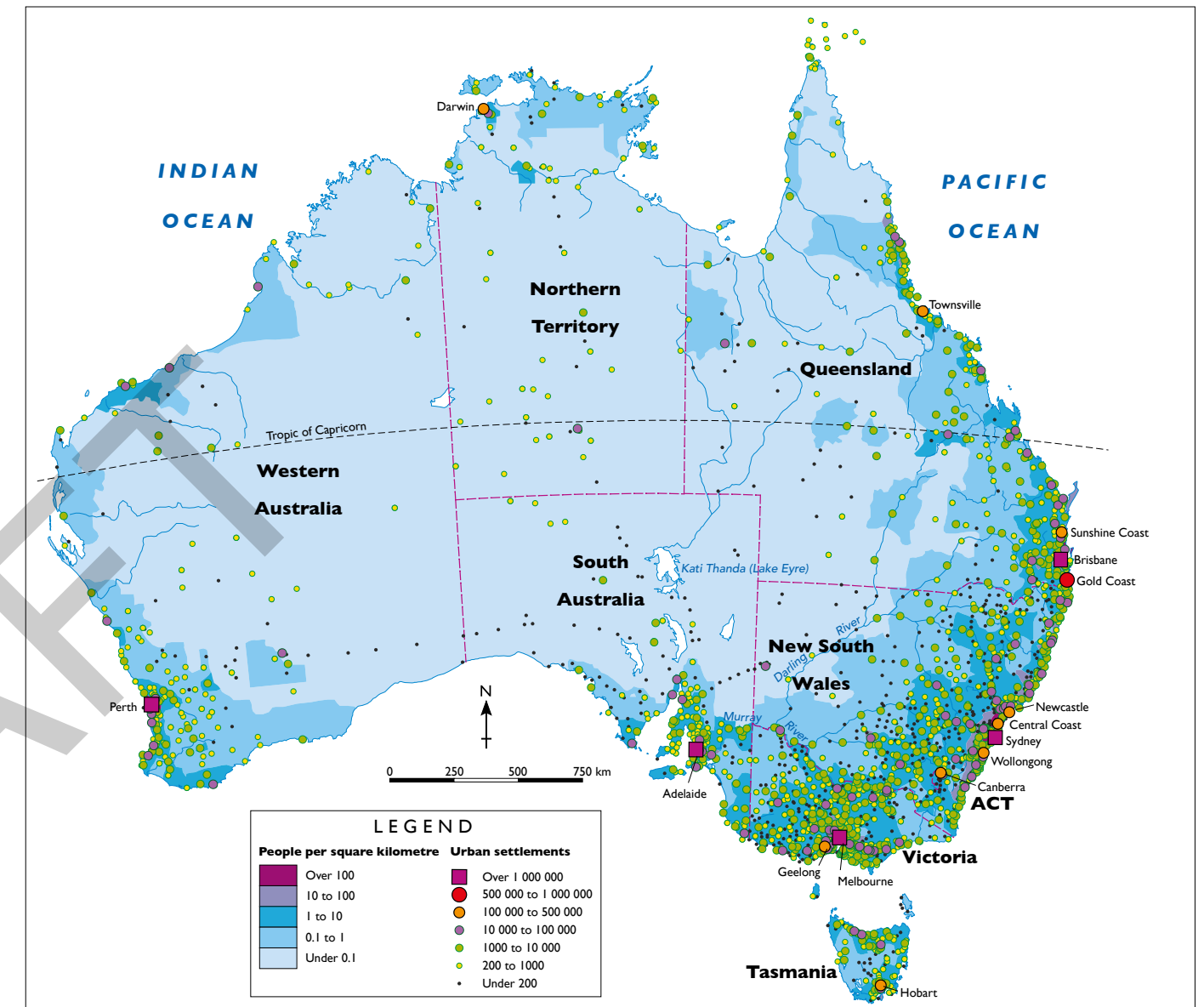


Source 2 South Australia's Barossa Valley has a medium population density as it includes a mix of towns and farming regions.



Source 3 The Sydney suburb of Elizabeth Bay is the most densely populated place in Australia with just over 20 000 people per square kilometre.

AUSTRALIA: POPULATION DENSITY AND DISTRIBUTION, 2016



Source 4

Source: Oxford University Press

Check your learning 5.7

Remember and understand

- 1 Why are most cities located near a source of fresh water?
- 2 Which parts of Australia are densely populated?
- 3 Which parts of Australia are sparsely populated?
- 4 How many Australian cities have more than 1 million people? In what ways are their locations all the same? Why do you think this is the case?

Apply and analyse

- 5 Study Source 1. Why do you think so few people live in parts of Western Australia?

- 6 Compare Elizabeth Bay (Source 3) with the Barossa Valley (Source 2).
 - a In what ways are they similar and in what ways are they different?
 - b In which of these two places would you prefer to live and why?
- 7 Study Source 4 and describe the distribution of Australia's population using the PQE method. (See page 30 of 'The geography toolkit'.)

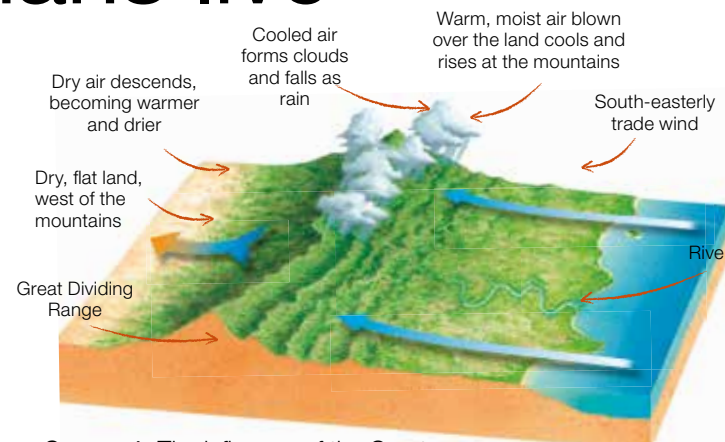
5.8 Why Australians live where they do

There are many reasons why people live where they do. In Australia, some of the most important factors relate to the natural environment. Much of the continent has low rainfall and poor soil fertility, making it very difficult for people to live and grow crops there. As a result, Australians tend to live in the parts of the country that receive the most rainfall.

The role of landscapes and climate

Australia's physical environments and different climate zones play a major role in where Australians choose to live. Places that receive the highest and most reliable rainfall are often the most populated. These regions are found in the south-east of the country, to the east of a mountain range known as the Great Dividing Range. This mountain range stretches from Cape York Peninsula in the north of Queensland to the Grampians in western Victoria. The Great Dividing Range has a great impact on the climate along the east coast of Australia, which in turn influences where people choose to settle (see Source 2). It also influences the kinds of vegetation that grows there and the kinds of animals that live there.

Winds from the south-east push warm, moist air over the land. This air is forced to rise over the Great Dividing Range. As the air rises, it cools. Cool air cannot hold as much moisture as warm air, so the moisture condenses into water droplets that fall as rain on the eastern side of the Great Dividing Range (see Source 1). The rain fills hundreds of rivers that run eastward to the coast. These rivers supply fresh water for drinking, food production, hydroelectricity, industry and transport. Most Australians live in coastal towns and cities near the mouths of these rivers. On the western side of the range, most of the land is dry and flat. The once moist air that passes over the range is now dry. As the air descends to the west of the Great Dividing Range it becomes warmer but remains dry, so little rain falls there. As a result, very few people live there.



Source 1 The influence of the Great Dividing Range on Australia's climate

The pull of the city

As in other countries around the world, in Australia the economic pull of the large cities is attracting more people to them. Between 2001 and 2011, the population of Australia increased by 2.9 million. The cities of Sydney and Melbourne became home to 40 per cent of these people (around 1.16 million).

The key attractions of living in a large Australian city are the opportunities for jobs and education. Australia's major cities generate 80 per cent of the country's wealth and employ 75 per cent of our workforce. By 2010, 75 per cent of all Australians lived in cities with populations greater than 100 000.

Check your learning 5.8

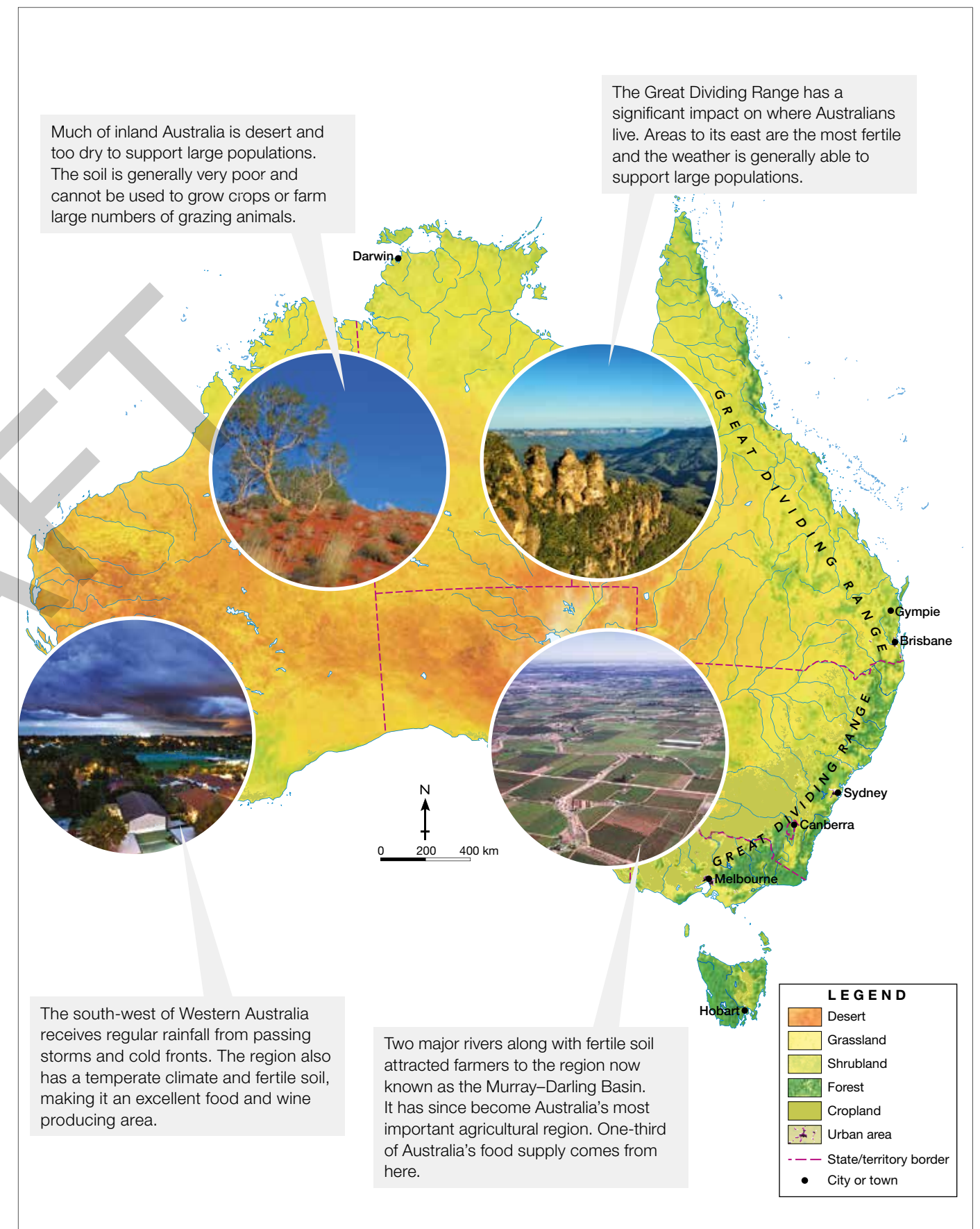
Remember and understand

- 1 Why do so few people live in inland Australia?
- 2 What is an important economic factor that helps to explain why people live where they do?
- 3 How does the Great Dividing Range influence where people in Australia live?
- 4 List three ways in which water has influenced where people in Australia live.

Apply and analyse

- 5 Study Source 2. Which features of the natural environment do you think were important when deciding on the locations of Hobart, Gympie and Kalgoorlie?
- 6 Which factors discussed here apply to where you live?

AUSTRALIA: ENVIRONMENTS



Source: Oxford University Press

5.9 Where Americans live



Source 1 The area known as BosNYWash is often referred to as a megalopolis. It can be seen clearly on the north-east coast of the United States in this satellite image taken at night.



Source 2 This exurb being developed on the outskirts of Las Vegas is an example of urban sprawl.

America is similar to Australia in that the majority of people there live in urban areas. In fact, in the north-east of the United States a number of major cities (including New York, Washington and Boston), along with a number of smaller cities, have grown so large in recent years that they have begun to merge into one continuous urban area. The area is now often referred to by the name BosNYWash. Home to about 55 million people, it is classed as a **megalopolis**.

American cities

There are usually three distinct parts to every US city:

- the city centre (often referred to as ‘downtown’)
- the **suburbs**
- the **exurbs**.

At the centre of most cities in the United States is an area of tall skyscrapers and high-density residential apartment buildings. Downtown is often the place where the city was first settled and now contains the head offices of large companies and large residential apartment buildings. Land in the city centre is often very expensive, so buildings are tall rather than wide.

Beyond the city centre lies a large area of medium-density residential housing known as the suburbs. In many US cities, the suburbs grew rapidly from the 1950s onwards as people moved out of apartment buildings downtown and built free-standing houses on the city’s edges. The suburbs are home to well over half of those who live in US cities.

Separated from the suburbs, but connected to them by a network of roads and rail lines, lies an area known as the exurbs. They are separated from the city by farmland and open spaces, and the people who live there usually commute into the city for work. For this reason, the exurbs are sometimes also called ‘dormitory suburbs’. Over time, as the suburbs and exurbs grow in size they may join together, increasing the size of the city. Geographers refer to this expansion as **urban sprawl**. The United States is home to some of the world’s most sprawling cities. A key driver of urban sprawl is car ownership. Cars allow those people who live in the suburbs or

UNITED STATES: POPULATION DENSITY, 2010



Source 3

Source: Oxford University Press

Rank	City	Population
1	New York	19 015 900
2	Los Angeles	12 944 801
3	Chicago	9 504 753
4	Dallas	6 526 548
5	Houston	6 086 538
6	Philadelphia	5 992 414
7	Miami	5 670 125
8	Atlanta	5 359 205
9	Boston	4 591 112
10	San Francisco	4 391 037

Source 4 Ten largest US cities

exurbs to commute to work in the city centre much more safely and easily than they could in the past.

By Australian standards, the sheer number of people living in cities in the United States is staggering. In fact, the total number of residents living in only 10 of the largest US cities is around 75 million (see Source 4). This number is more than three times the total population of Australia.

Check your learning 5.9

Remember and understand

- 1 What is the difference between a suburb and an exurb?
- 2 Why do you think the continuous urban area in the north-east of the United States is sometimes referred to as BosNYWash?
- 3 What do geographers call areas such as BosNYWash?

Apply and analyse

- 4 Look closely at the map showing population density in the United States (Source 3). Make a list of three patterns that you notice on the map. Share your observations with a classmate and then with your class.

- 5 Compare Source 3 with a map showing population density in Australia (Source 4 on page 141). Make a list of the similarities and the differences between the population densities of these two countries.
- 6 US cities often have three main parts. What are these parts? Do large Australian cities also have these parts?

Evaluate and create

- 7 Do you think cities in the United States and Australia share similar characteristics? Provide reasons for your answer.
- 8 Which geographical key concepts would you use to help explain the development of the exurb in Source 2?

5.10 Why Americans live where they do

As you have learned, the American population of 314 million people is not distributed evenly. Some parts of the country are dominated by enormous, crowded cities and large towns that are home to tens of millions of people, while other parts of the country are vast areas of wilderness where virtually no-one lives. This is because people tend to live in places that supply their basic needs – food, water and shelter. In the United States, the most densely populated places tend to share the same features:

- a temperate climate (one that is not too cold or too hot)
- reliable rainfall and rivers to supply fresh water
- fertile soils for growing crops
- relatively flat, as opposed to mountainous, landscapes
- closeness to the coast.

The role of landscapes and climate

As Source 1 shows, much of the western United States is mountainous. A vast plain with a few low mountain ranges stretches from the foothills of the Rocky Mountains almost all the way to the east coast. For this reason the east of the country, especially the areas along the coast, is the most densely populated.

The United States is a vast country – the world’s fourth largest. It extends almost from the tropics in the south to the Arctic Circle in the north. This gives the United States a wide range of climates. The climate in the south of the country tends to be much warmer than in the north. In winter, snow can blanket northern cities such as New York and Chicago. In summer, it can be extremely hot and humid in southern cities such as Atlanta and Austin.

Much of the western half of North America is mountainous. Mountain ranges such as the Rocky Mountains were formed over millions of years by the collision of the Earth’s tectonic plates. Much of this mountain range is protected by public parks and forest lands, and it is a popular tourist destination.

The interior of the country is a huge, flat plain broken up by a few low mountain ranges and mighty rivers, such as the Mississippi River and the Missouri River. The central region of the US is subject to extremes in temperature with cold, snowy winters and hot summers.



Source 1 A satellite image of the US highlighting the key topographical features

The north-east region has fewer extremes in temperature and more rainfall than the central plains. This made the region suitable for farming and attractive to early settlers. Large urban centres were also established on this east coast, including New York, Washington and Boston.

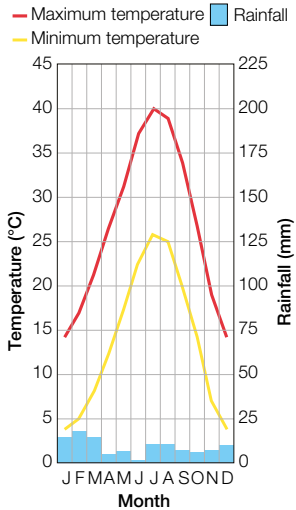
UNITED STATES: RAINFALL



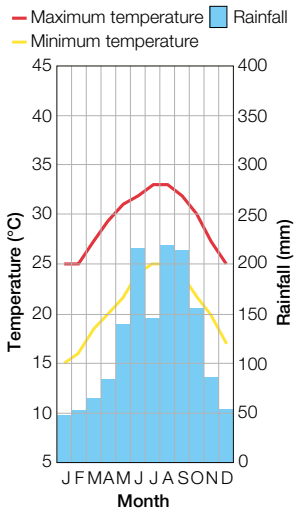
Source 2

Source: Oxford University Press

Temperatures tend to vary as you travel from the south up to the north, while the amounts of rainfall tend to vary from the east to the west. Mountainous areas, such as the Rocky Mountains in the west and the Appalachian Mountains in the east, have a big effect on rainfall across the country. They bring large amounts of rain to some places and create **rain shadows** (dry areas) in other places.



Source 3 A climate graph for Las Vegas in the state of Nevada, United States



Source 4 A climate graph for Miami in the state of Florida, United States

Check your learning 5.10

Remember and understand

- 1 Why are the populations of most countries clustered together rather than spread out evenly?
- 2 Why are most large cities located on or near rivers?

Apply and analyse

- 3 Compare the climate data for Las Vegas and Miami (Sources 3 and 4). Identify and describe the similarities and differences between them.
- 4 Why do you think the climates of Miami and Las Vegas are so different?

Evaluate and create

- 5 Imagine that you are travelling by road from New York on the east coast to San Francisco on the west coast.
 - a Use Source 1 to describe the landforms and landscapes that you might see on your journey.
 - b Use Source 2 to describe how the rainfall might vary as you travel west.

5.11 Life in New York – a US megacity

New York is the largest city in the United States and is also among the largest cities in the world. New York was the world’s first megacity (a city of more than 10 million people). For much of the 20th century it was also the largest city in the world.

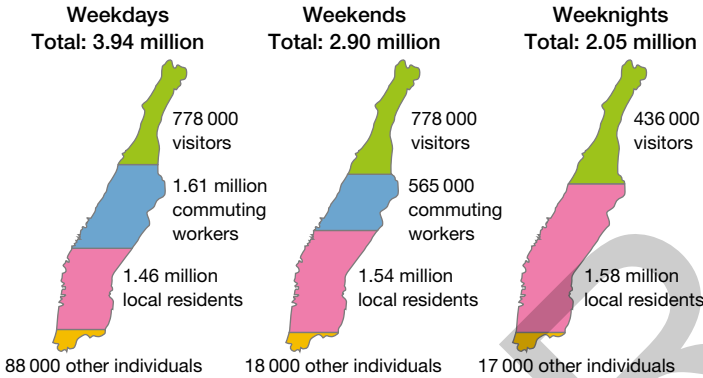
New York is made up of five areas known as boroughs. These boroughs are Manhattan, the Bronx, Queens, Brooklyn and Staten Island. In the outer neighbourhoods of Staten Island and Queens many people live in single-storey homes similar to those found in the suburbs of most Australian cities. In the inner neighbourhoods of the other three boroughs almost everyone lives in apartments. Manhattan, in particular, is one of the most densely populated places on Earth. It has a population of more than 1.5 million people in an area of less than 60 square kilometres. This is a population density of about 27 000 people per square kilometre. The overall population density of all five boroughs of New

Source 1 This oblique aerial photograph shows part of Manhattan Island in New York. In the foreground are apartment buildings in an area known as Central Park West, in the middle ground is Central Park and in the background is the Upper East Side.



York, however, is around 10 500 people per square kilometre. When you compare this with Sydney – which has a population density of 2000 people per square kilometre – you get an idea of just how many people there are in New York. They literally live on top of one another!

Apartment buildings dominate the skyline in New York. Each floor of an apartment building is commonly divided into four to six apartments. A typical New York apartment is about 21 square



Source 2 A comparison of the population density of the island of Manhattan in New York by day (left), by night (right), and weekends (centre)



Source 3 Is this the smallest apartment in New York? Felice Cohan pays US\$800 per month to live in this tiny 8 square metre apartment on the Upper West Side of Manhattan. The living space is so small that she can open the front door while sitting on the toilet!

metres in area, but this varies widely depending on the apartment blocks and location. About half of New Yorkers own their own apartment and the other half rent. There is often a convenience store at ground level in the building and a subway station nearby. For many New Yorkers, the corner coffee shop is an important meeting place because their apartments are too small for entertaining (see Source 3).

A huge number of people flood the island of Manhattan from the surrounding boroughs each day for work and then return home to the outer suburbs each evening. This more than doubles the population of Manhattan each day (see Source 2) and is only possible because of a complex and efficient system of tunnels, bridges, rail lines, ferries, bicycle lanes and pedestrian walkways that link the island to the surrounding boroughs and cities. Of the 1.6 million people who travel into Manhattan every day, about half arrive by train. This makes the New York subway the busiest underground train system in North America and the seventh busiest in the world.

Rank	City	Passenger rides per year
1	Tokyo, Japan	3.16 billion
2	Seoul, Korea	2.43 billion
3	Moscow, Russia	2.39 billion
4	Beijing, China	2.18 billion
5	Shanghai, China	2.01 billion
6	Guangzhou, China	1.65 billion
7	New York, US	1.64 billion
8	Paris, France	1.51 billion
9	Hong Kong, China	1.48 billion
10	Mexico City, Mexico	1.41 billion

Source 4 The top 10 busiest metropolitan train systems in the world measured by passenger rides per year. Australia’s busiest train system (in Melbourne) has a total of 200 million passenger rides per year (Note: 1 billion = 1000 million).

Check your learning 5.11

Remember and understand

- Describe a typical New York apartment building and apartment.
- Where are the world’s busiest train systems? Why are they in these places?

Apply and analyse

- Compare the population density of New York by day and night (Source 2). Why do these two figures vary?
- Compare the population density of New York with Australia’s largest city, Sydney. How different are these figures and what impact do you think this difference has on the lives of people living there?

Evaluate and create

- Use the information provided to describe a day in the life of a typical New York resident.
- Compare the way of life of a typical New Yorker with the life of a typical person where you live. Use a Venn diagram to show features that are unique to each community and features that are shared.

5B rich task

The growth of Las Vegas

Cities grow for many different reasons. Some cities grow because they are located on major roads, railway lines or coastal ports. Some cities grow because large numbers of people come in search of work and new opportunities. Other cities grow because they are near reserves of important minerals, metals and natural resources.

Las Vegas in the US state of Nevada is an unusual city for a number of reasons. It is located in a desert region with little rainfall, yet despite this it is one of the fastest-growing cities in the United States. This is due almost entirely to its role as a centre for gambling and entertainment. The state of Nevada has more casinos than any other state in the US; around 361 in total. The city of Las Vegas alone is currently home to more than 120 casinos and about 200 000 slot machines.

Las Vegas attracts millions of visitors a year. This tourism creates jobs for skilled and unskilled workers who flood into the city. This, in turn, creates jobs for builders, road engineers and many other residents.

Source 1 Population of Las Vegas, 1910–2010

Year	Population
1910	3 321
1920	4 859
1930	8 532
1940	16 414
1950	48 289
1960	127 016
1970	273 288
1980	463 087
1990	741 459
2000	1 375 765
2010	1 951 269

Source 2 The US states with the most casinos and the number of casinos in each of these states

State	Number of casinos
Nevada	361
California	184
Florida	150
Montana	146
Washington	125
Oklahoma	115

skilldrill: Data and information

Creating column and line graphs

Graphs are used in geography to display data and make it easier to understand. Raw data often appears as a confusing table of numbers, so turning data into graphs makes it easier to recognise and analyse trends and patterns. Some commonly used graphs in geography are:

- column graphs – used to compare data (for example, to compare the sizes of several cities)
- line graphs – used to show trends over time (for example, the growth of a city’s population).

To draw a graph you should follow these steps:

- Step 1** Decide whether a column graph or line graph will best suit your purpose.
- Step 2** Examine the data carefully to decide on the axes and the scale you should use so that all the data fits. It is important that the scale on each axis is an even scale; for example, 1 centimetre equals 1 million people.
- Step 3** Construct your axes and your scale using a ruler.
- Step 4** Plot the data carefully. Use a straight, horizontal line for a column graph. Use a small, neat dot for a line graph.
- Step 5** On a column graph, draw a series of columns that extend to the horizontal axis. Lightly shade each column with a coloured pencil. On a line graph join the dots with a smooth, freehand line.
- Step 6** Label each axis with a description of the data and give your completed graph a title.

Apply the skill

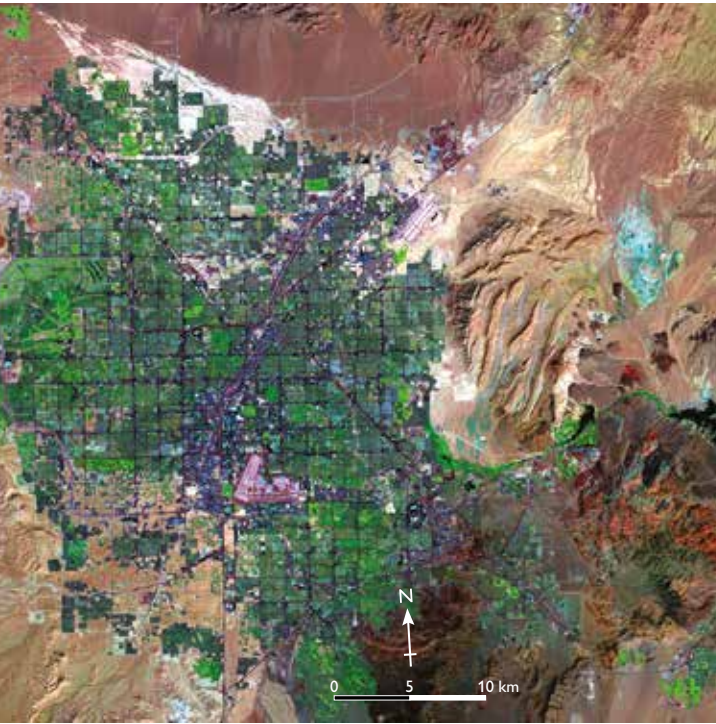
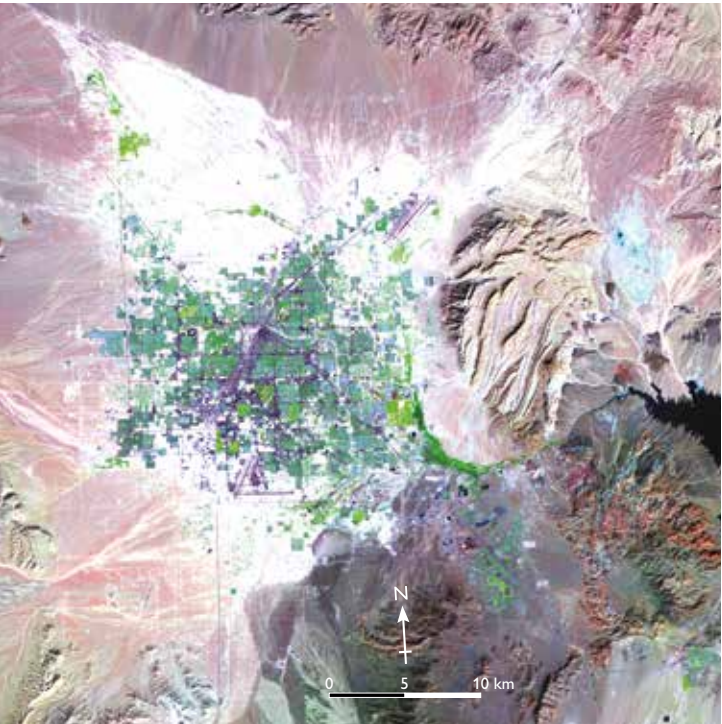
- 1** Using the data provided in Sources 1 and 2, create two different types of graphs:
- a** a line graph showing the growth of the population of Las Vegas from 1910 to 2010 (see Source 1)
 - b** a column graph showing the numbers of casinos in selected states (see Source 2).

Extend your understanding

- 1** Study Source 1.
- a** Describe the changes in the population of Las Vegas between 1910 and 2010.
 - b** Why did the population change over this time?
- 2** Examine the satellite images of Las Vegas taken in 1984 and 2011 (Source 4). In these images, urban areas appear green and the surrounding desert is brown. How has the centre of the city changed over time? How have the edges of the city changed?
- 3** Examine Source 3. Use the steps described in Rich task 4C to construct a field sketch of this scene. On your sketch label five ways in which this suburb has changed the natural environment.



Source 3 A new suburb pushes out into the desert on the edge of Las Vegas



Source 4 Satellite images of Las Vegas, 1984 (left) and 2011 (right)

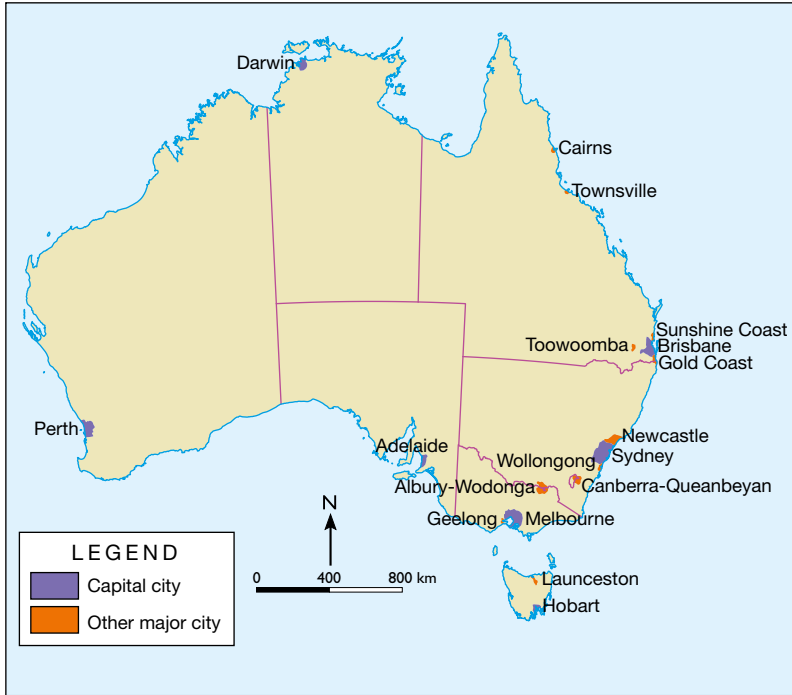
5.12 Managing the growth of our cities

Around Australia today, about 75 per cent of the total population live in just 18 cities (see Source 2). Because this number is so large, it is vital that the growth of these cities be carefully planned and managed – both now and into the future. In 2013, the population of Australia reached 23 million, but by 2056 it is estimated that the population will reach 36 million. It is also estimated that around 72 per cent of this growth will take place in our major cities (see Source 1).

Planning for future cities

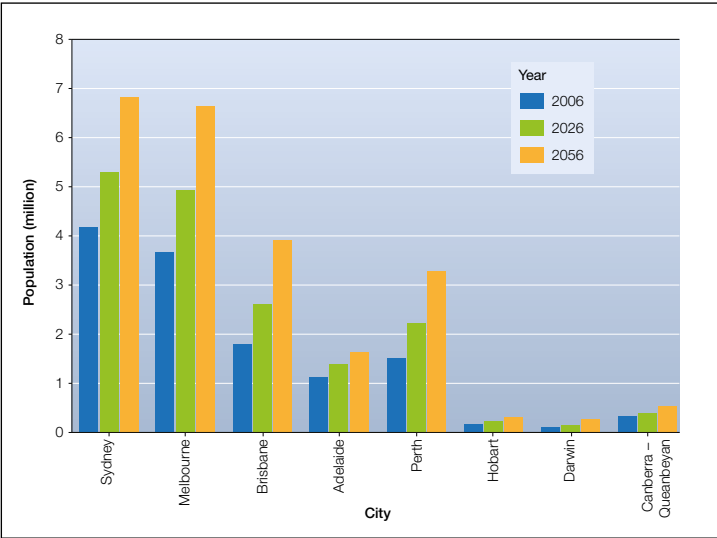
Growing urban populations place many pressures on governments and councils who need to plan and build new houses and infrastructure, such as schools, hospitals, roads, sewerage systems, power and gas lines, phone and Internet cables, public transport

AUSTRALIA: MAJOR CITIES WITH POPULATIONS OVER 100 000



Source 2

Source: Oxford University Press



Source 1 Population projections for Australia's capital cities to the year 2056

links and shopping centres. By 2050, it has been estimated that Australia will need a further:

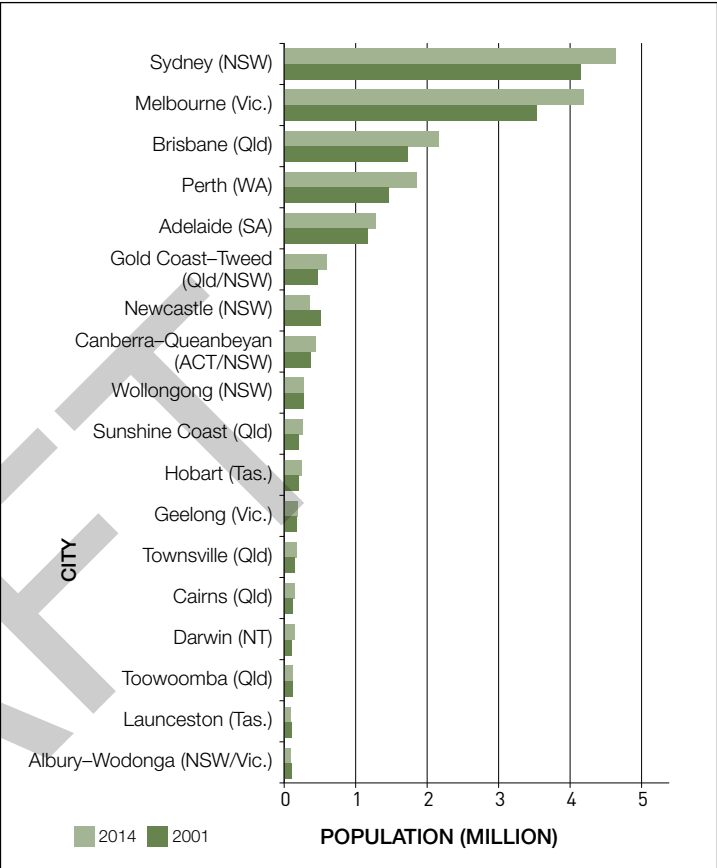
- 6.9 million homes (an 82 per cent increase)
- 173 348 kilometres of new roads (a 51 per cent increase)
- 3254 new schools, 1370 new supermarkets and 1370 new cinema screens.

These services take time to build and are extremely expensive, so they need to be budgeted for in advance. There are also serious environmental issues to consider. The construction of new homes and suburbs can damage or pollute the natural environment and have a negative effect on plant and animal populations.

When planning and managing the future growth of Australia's cities, governments and local councils often rely on the following three strategies:

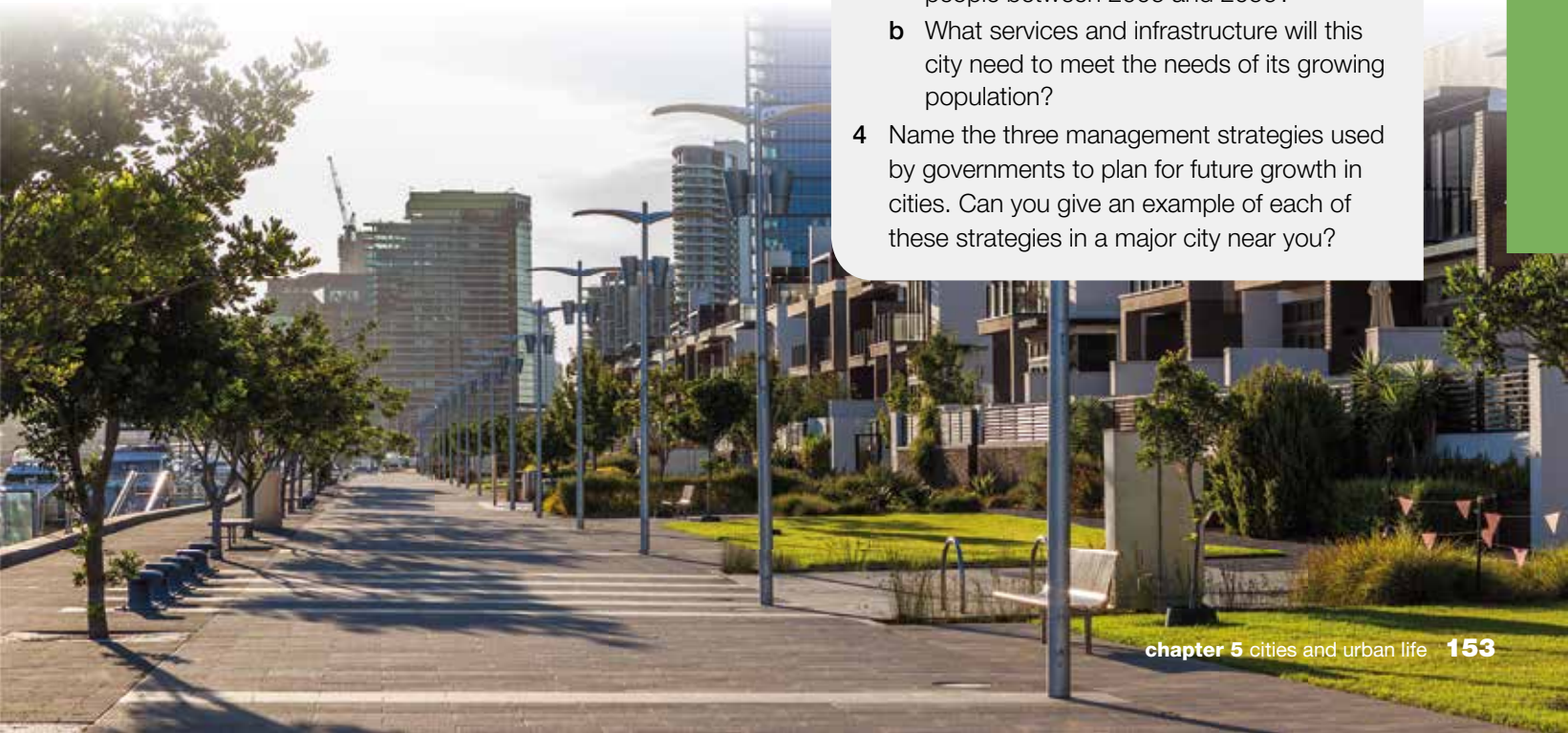
1 Suburbanisation

Making more land on the outskirts (fringes) of cities available for new suburbs to be built.



Source 3 Population growth in Australia's largest cities 2001–2014

Source 4 One of Melbourne's newest suburbs, Docklands is an example of urban renewal. The old docks have been redeveloped with apartments, business and restaurants.



2 Urban renewal

Redeveloping existing areas of unused land or buildings within cities to provide housing for new communities.

3 Decentralisation

Encouraging the growth of regional and suburban areas by moving jobs and businesses there, rather than keeping these things concentrated in the central business districts of major cities. These strategies will be explored in more detail in the remainder of this section.

Check your learning 5.12

- Remember and understand
- 1 How many more people are estimated to be living in Australia by 2050?
- Apply and analyse
- 2 Look carefully at Source 3.
 - a Which city added the most people between 2001 and 2014?
 - b As a percentage, Perth had the greatest population growth between 2001 and 2014. Approximately how many new residents were added to Perth's population?
 - 3 Look carefully at Source 1.
 - a Which city is estimated to add the most people between 2006 and 2056?
 - b What services and infrastructure will this city need to meet the needs of its growing population?
 - 4 Name the three management strategies used by governments to plan for future growth in cities. Can you give an example of each of these strategies in a major city near you?

5.13 Suburbanisation

Suburbanisation is the process of growing cities outwards by building new housing estates away from the central business district. New suburbs are often built on what was once farmland or bushland on the rural–urban fringe. Services are then attracted to these new suburbs to meet the needs of the growing population. Schools, shopping centres, medical centres and sporting facilities are built and the area becomes urbanised. Industries can also be attracted by the cheaper land and rents of the outer suburbs.

Case study: Suburbanisation in Melbourne

Melbourne added more new residents than any other Australian city in the decade between 2001 and 2011. Many of the 650 000 new residents moved to new housing estates on the fringes, contributing to the expansion of Melbourne's urban boundaries. Melbourne is one of the world's largest cities by area – stretching 100 kilometres from east to west – and it is still getting larger.

More land on the city's western, northern and south-eastern fringes is now set to undergo suburbanisation. These growth corridors will provide homes for up to 100 000 new residents. The largest development of 10 500 new homes for 29 500 new residents is in Lockerbie which is part of the north growth corridor (see Source 2). This area will include a train station, a main road, three primary schools, a secondary school, four new sports reserves and a town centre.

Advantages

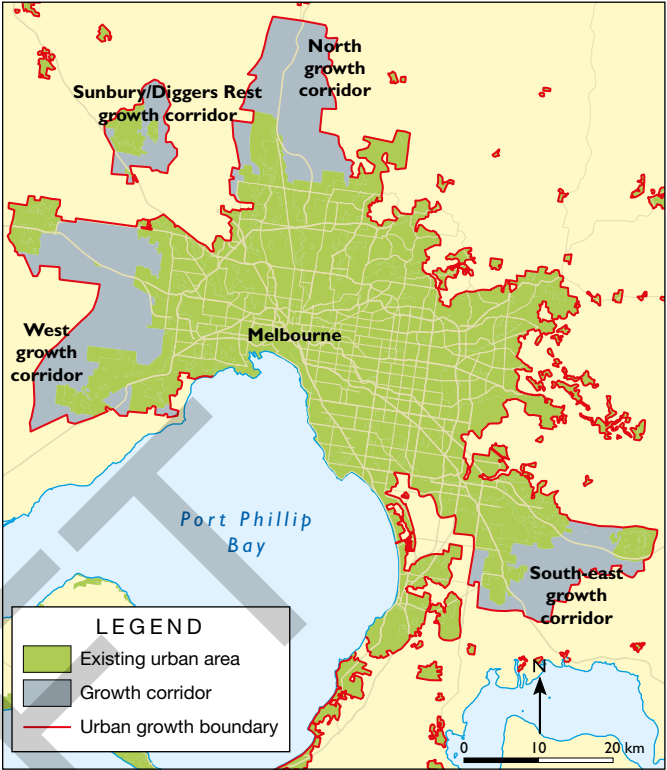
A major advantage of suburbanisation is that housing estates are relatively quick and inexpensive to establish on already cleared farmland on the fringes of many Australian cities. The housing estates built there also provide an affordable option for new residents and can be designed to meet the needs of modern populations. New housing can also be built to be more energy efficient and sustainable than older housing in established suburbs.

Disadvantages

Disadvantages of suburbanisation are that new infrastructure to service housing developments can be very expensive to supply and local services can be slow to arrive, leaving new residents isolated. Residents in new outer suburbs end up relying on the use of motor vehicles because of infrequent or unreliable public transport. This leads to further congestion of major roads to the CBD. For example, by 2031 it is expected that Melbourne roads will have to cope with an additional 3 million car trips every day.

Source 1 Melbourne added 650 000 new residents between 2001 and 2011, many choosing to settle in new suburbs on the city's fringes.

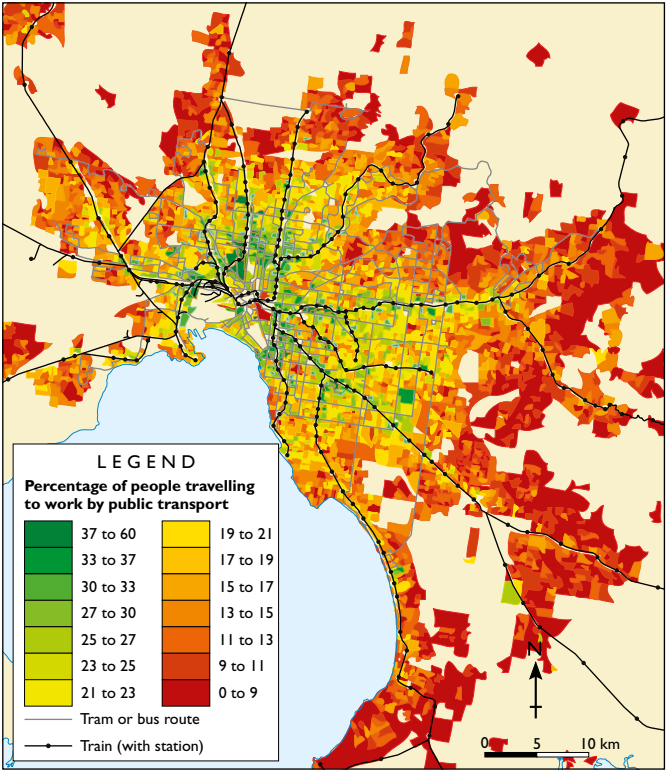
MELBOURNE: GROWTH CORRIDORS 2013



Source 2

Source: Growth Areas Authority

MELBOURNE: PUBLIC TRANSPORT USE, 2006



Source 3

Source: Australian Bureau of Statistics

Case study: The Southern Brown Bandicoot

Urban sprawl also eats into productive farmland and nature areas on the edges of cities, impacting on native wildlife. The Southern Brown Bandicoot is an endangered native animal which lives in the area of Melbourne's south-east growth



Source 4 The Southern Brown Bandicoot is under threat from Melbourne's suburbanisation.

corridor. They are under increasing pressure from the clearance of their native habitat and attacks by foxes, dogs and cats. To help the Southern Brown Bandicoot survive, habitat corridors linking their fragmented habitats together are a feature of the new development plans in the region. These open spaces will also provide recreation spaces for the new residents.

Check your learning 5.13

Remember and understand

- 1 What is suburbanisation?
- 2 What infrastructure and services are being built in the new suburb of Lockerbie, north of Melbourne?
- 3 What problems has Melbourne's suburbanisation caused for the Southern Brown Bandicoot?
- 4 What plans are in place to help protect this endangered species?

Apply and analyse

- 5 Look carefully at Source 2.
 - a Which two growth corridors link existing urban areas with Melbourne's metropolitan area?
 - b What disadvantages of suburbanisation does Source 1 clearly illustrate? Name two examples.
- 6 Examine Source 3.
 - a What pattern of public transport use in outer suburbs is created?
 - b What problems might this cause for people in Melbourne?

5.14 Urban renewal

Urban renewal is the process of taking existing areas no longer in use within a city's boundaries and redeveloping them. Often the areas selected are places that have become run-down or disused over time (referred to as urban decay). For example, old warehouses and docks that are no longer used because the city's port has closed down or been moved are often redeveloped to provide new houses for residents and offices for businesses. Green spaces can also be created for entertainment and leisure.

Urban renewal allows townhouses and apartment blocks to be built in existing urban areas so that more people can be housed within established suburbs rather than needing to build new ones.

Advantages

Urban renewal can help a city cope with population growth without the need for urban sprawl. By building in established suburbs, developers can make use of the existing infrastructure such as transport routes, energy supply and telecommunications. New residents are able to share in the advantages of inner-city living.

Disadvantages

Historic areas can have special significance for a city but the preservation and refurbishment of old buildings can be expensive. Developers also need to ensure that any new building blends in with existing buildings which can also put limits on the use of the site. A sharp increase in population numbers in a small area can put pressure on established services, and even decrease the liveability of the area for existing residents.



Source 1 Pyrmont-Ultimo in 1980



Source 2 Pyrmont-Ultimo in 2012

Case study: Pyrmont-Ultimo, Sydney

Since 1992, the peninsula of Pyrmont in Sydney has been part of a large urban renewal project that is expected to see the residential population grow to 20 000 and the number of jobs in the area grow to 26 000 by 2021 (see Source 2).

Pyrmont was once the location of shipyards, wool stores, mills, iron foundries and a coal power station. By the 1950s, the heavy industries had shut down and moved away from the area. In the 1970s, shipyards moved to Port Botany and the facilities at Pyrmont became obsolete. The area fell into a state of urban decay. Warehouses were empty, wharves were demolished and the train service ceased. By 1981, the local population had fallen to just 1590 people.

Today, the Pyrmont-Ultimo area has undergone a process of urban renewal. It is now home to a young, wealthy, professional community. More than 13 000 residents now live in medium-density housing there. Train services have restarted and over 30 per cent of households do not own cars. Retail shops, cafés and restaurants have opened and the peninsula now has more than eight hectares of new parks.

Source 3 Pyrmont wharf area with its medium-density housing

Once known for its old industrial buildings and smokestacks, the peninsula is now home to e-commerce and electronic media companies such as Network 10, ABC and Foxtel, and radio stations Nova and 2SM.

Check your learning 5.14

Remember and understand

- 1 Give an example of urban decay from your own local area or somewhere you know.
- 2 What is urban renewal?

Apply and analyse

- 3 Look carefully at the oblique aerial views of Pyrmont-Ultimo in Sources 1 and 2.
 - a Which parts of the area have remained the same?
 - b List three changes that have taken place from 1992 to 2012.
- 4 What do you think are the advantages and disadvantages of the medium-density housing shown in Source 3?
- 5 People aged 20–29 make up 55 per cent of the population in Pyrmont-Ultimo. Why do you think people in this age group are attracted to the area?
- 6 What percentage of residents in Pyrmont-Ultimo don't own cars? Why do you think this is the case? How does this help urban planners in inner Sydney?

5.15 Decentralisation

Decentralisation is the process of encouraging population growth and job creation in areas outside the central business districts of major cities. Decentralisation is a strategy that governments use to take the pressure off larger capital cities by providing job opportunities in other areas such as:

- smaller towns and cities in regional areas
- newer suburbs on the outskirts of cities.

Decentralisation to regional cities

One way to decentralise growing capital cities is to encourage people to move to smaller regional cities and towns nearby. Industries and companies are given financial benefits to encourage them to move their operations from capital cities to regional centres. Government departments are also established in regional centres. For example, in 2013, the regional city of Geelong in Victoria was chosen as the headquarters for DisabilityCare Australia – the organisation that will administer the disability insurance scheme. Geelong was chosen over larger cities such as Sydney or Melbourne to encourage the creation of jobs and other opportunities there.



Decentralisation to suburbs

Another way to decentralise capital cities is to spread the location of multiple business activity centres across the city so that business is not all centralised in the CBD. These smaller business activity centres become hubs for employment and are established in a range of suburbs with good public transport. This form of decentralisation is designed to spread the load so that all workers do not have to travel to the CBD every day but instead can find employment in more accessible locations in the suburbs. In Melbourne, the centres of Box Hill, Dandenong, Footscray, Frankston, Werribee and Ringwood have all been identified as suitable to become major business centres in addition to the CBD.

MELBOURNE: POTENTIAL BUSINESS ACTIVITY CENTRES



Source 2

Source: Oxford University Press

Source 1 Geelong has benefited from regional decentralisation plans.

Natural decentralisation

Sometimes population movement trends can operate as a form of decentralisation naturally, without government involvement. From 1970 to 2000, for example, many older people moved from Sydney and Melbourne to coastal areas on Queensland's Gold and Sunshine coasts. This was a form of decentralisation driven by retirees attracted by a warm climate and cheaper housing. As housing prices in these regions have increased, however, the numbers of people migrating north has declined.

Advantages

Decentralisation of the population can help relieve some of the problems of large cities such as the cost of housing, traffic congestion and damage to the natural environment.

Disadvantages

It can often be difficult and expensive to get companies and workers to move to regional centres in the numbers necessary to make incentive and development programs a success.

Case study: Canberra, a decentralised city

Canberra is Australia's largest decentralised city and today has a population of 367 000 people. The inner-city area was originally designed by the American architect Walter Burley Griffin. Within the central area of the city near Lake Burley Griffin, major roads follow a geometric hub-and-spoke pattern rather than a grid. The outer areas of the city, built later, are laid out in a Y shape.

Source 3 The district of Canberra Central is one of the oldest parts of the city and is divided into divisions (suburbs) such as Barton, City and Dickson.



Canberra is organised into a series of seven residential districts:

- Canberra Central – settled from the 1920s onwards has 25 suburbs
- Woden Valley – first settled in 1964 has 12 suburbs
- Belconnen – first settled in 1966 has 25 suburbs (and one not yet developed)
- Weston Creek – settled in 1969 has eight suburbs
- Tuggeranong – settled in 1974 has 18 suburbs
- Gungahlin – settled in the early 1990s has 18 suburbs (and six not yet developed)
- Molonglo Valley – developed in 2010 has 13 suburbs planned.

Each district contains a mixture of a town centre, group centres, local suburbs and industrial areas. The town centre is the focus for business and social activities. The layout of these districts around a series of central shopping and town centres linked by freeways is designed to make them self-sufficient and prevent the mass-commuting of workers into the CBD every day, as is the case in all of Australia's other major cities.

Check your learning 5.15

Remember and understand

- 1 What is decentralisation?
- 2 How do governments try to encourage people to move to regional towns?
- 3 What were the reasons for retirees moving to the Gold and Sunshine coasts between 1970 and 2000?

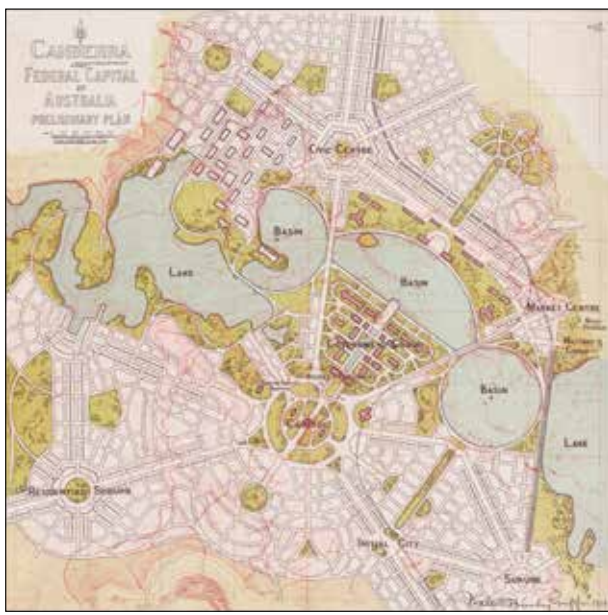
Apply and analyse

- 4 Look at Source 2.
 - a What are the advantages of having several business activity centres rather than just one CBD?
 - b Do you think a vibrant and bustling CBD is important for a city to have? Why/why not?

5C rich task

Canberra – a planned city

Urban planning happens on many different scales. An example of urban planning on a massive scale is Australia's capital, Canberra. In 1911, the Australian Government announced a competition to design the city. Entries were submitted by architects from around the world. The winning design came from a Chicago architect, Walter Burley Griffin. His design involved a series of shapes that would line up with important features of the natural environment, such as the surrounding hilltops. Griffin's plan also included a central lake. This lake now bears his name – Lake Burley Griffin.



Source 1 Walter Burley Griffin's original plan for Canberra, drawn in 1911

skilldrill: Place, space and interconnection

Comparing vertical aerial images

A range of sources used by geographers – such as maps, plans and photographs – are drawn or captured from directly above. In a vertical aerial photograph, the camera is positioned directly above the landscape (often from a satellite or aeroplane). Vertical aerial images can be a useful tool for examining a small area of the Earth's surface in detail. This vertical view (often called plan view) allows geographers to see the extent of any features and patterns they make on the Earth's surface. Most importantly, comparing these sources helps geographers identify any changes that have taken place over time. This type of analysis allows us to compare the original plans for cities and suburbs against photographs taken after they have been established. These types of comparisons are useful for geographers in a number of ways. When comparing vertical aerial images, follow these steps:

- Step 1** Examine the scale and the legend of both sources. Ideally, these will be the same. If they are not, you will need to be careful when making comparisons that the area on one image corresponds exactly to the same area on the other image.
- Step 2** Look for geographical features such as the outline of lakes, the location of streets and landmarks such as railway stations. This allows you to compare other features in this landscape.
- Step 3** Locate features that appear on both images that are similar. Take note of these.
- Step 4** Locate features that appear on both images that are different. Take note of these.
- Step 5** Prepare a list or table of these similarities and differences and try to explain the different reasons for them. You may need to conduct more research at this point in order to do this.

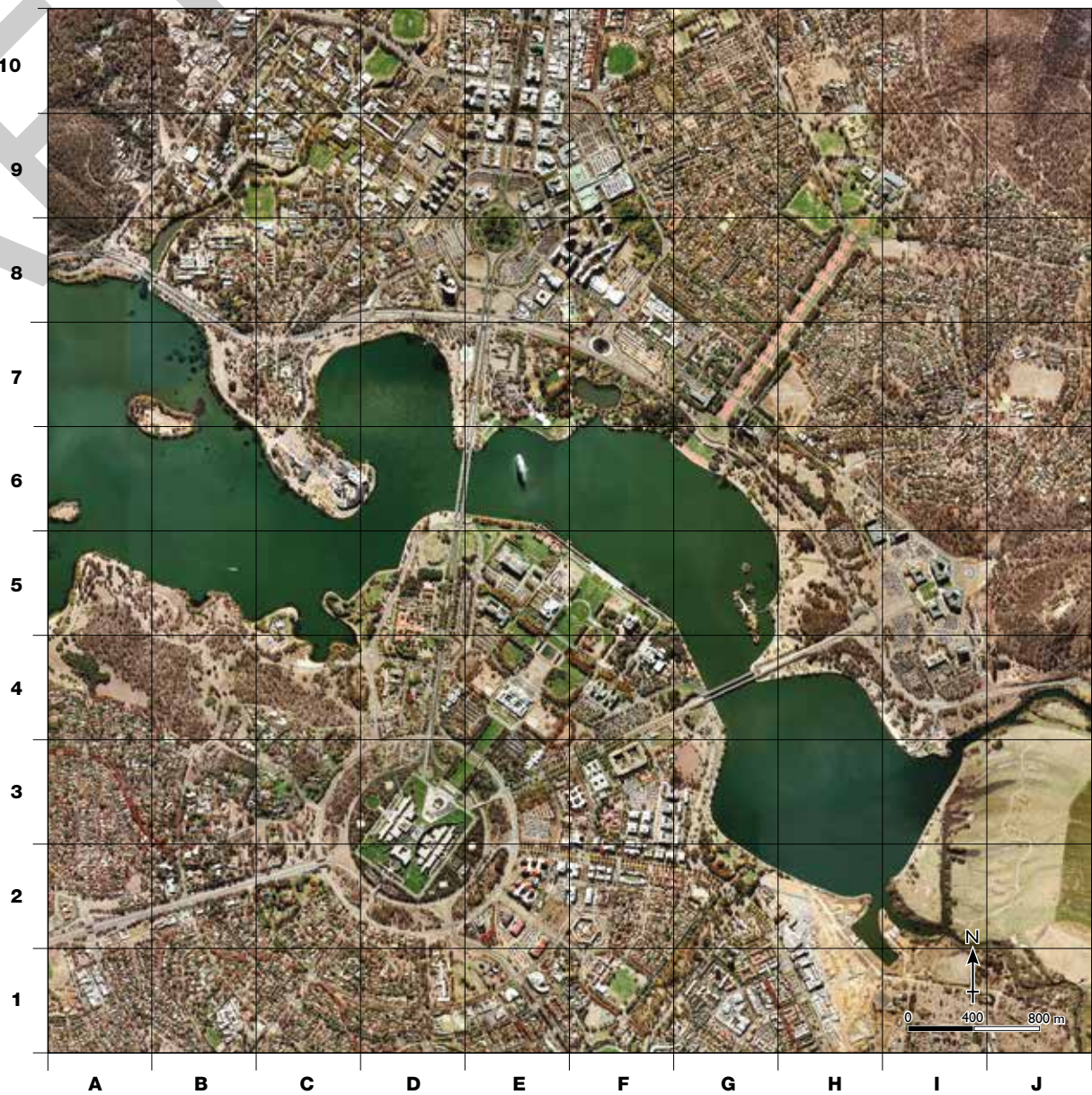
Apply the skill

- Look closely at Griffin's plan for Canberra (Source 1).
 - What are some of the distinctive features of his plan?
 - The judges particularly liked the way in which this plan took into account natural features, such as the surrounding hills and the native bush. What evidence can you find of this on the original plan?

- Look closely at the vertical aerial photograph of modern Canberra (Source 2).
 - What features indicate that this is a planned city?
 - What is located at I5? Is this the land use that Griffin called for at this place?
 - Can you find three examples of where Griffin's plan has not been followed? For example, there is a missing bridge north-west of Capital Hill.
- How well have modern-day town planners in Canberra followed Griffin's original town plan? Give some evidence from the plan and photograph in your response.
- What evidence is there in the aerial photograph that Canberra's population is increasing?

Extend your understanding

- What types of issues can changing land use and development create for people living in cities?
- What evidence of changing land use can you identify in H1 and H2?
- Use an atlas or Google Maps to locate the following features shown in Source 1:
 - National Gallery of Australia
 - Captain Cook Memorial Jet
 - Parliament House.Provide a grid reference for each of these features.



Source 2 Vertical aerial photograph of modern-day Canberra