Liveable cities

As we have learnt, there are a range of factors that make places more or less liveable. Liveability is generally measured by factors that provide quality of life, such as access to fresh water, food, housing, transport, health care, education and a safe and stable environment.

Each year, the results of a number of surveys are released rating cities all over the world in order of liveability.

In 2015, the capital city of Bangladesh, Dhaka, was rated as the world's second-least liveable city. It scored poorly in health care, public transport, crime and sanitation. Only the war-torn city of Damascus, Syria, scored lower then Dhaka in terms of liveability. Melbourne, Australia, was rated the world's most liveable city for the fifth year in a row.

chapter 5

Source 1 A young boy living in a slum in the Bangladeshi capital, Dhaka, uses a toilet built out over a river that is also used for drinking and bathing.

5A

What makes a city liveable?

1 What does this photograph tell you about the availability of services (such as water, housing and education) in Dhaka?

2 In Bangladesh there is widespread poverty and government corruption. How might this make it difficult to provide services such as water and public transport?

5B

Where are the world's most and least liveable cities?

1 What do you think is meant by the word 'liveability'?

2 Many European, North American and Australian cities tend to be rated highly in terms of liveability, whereas many Asian and African cities tend to be rated poorly. Why do you think this is the case?

5C

How can we make cities more liveable?

1 In the 2015 survey, Melbourne was rated the world's most liveable city, but some suburbs of Melbourne are rated much higher in terms of liveability than others. Why do you think this is the case?

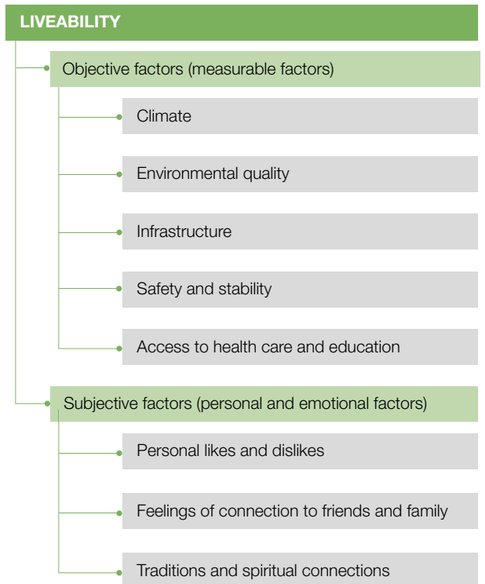
2 Think of a town or city you know well; what services and facilities could make this town or city more liveable?

5.1 Measuring liveability

The liveability of a place is generally measured by a number of different factors relating to quality of life. People's views about the liveability of a place can vary depending on their age, income, cultural background, lifestyle choices, values and beliefs.

The factors that influence people's ideas on liveability can be measured in two ways: by objective factors and subjective factors. Objective factors are things that can be measured and expressed as numbers, such as the cost of housing, the climate, the number of hospitals and schools, the availability of public transport, and the level of crime. Subjective factors are things that are personal, emotional and spiritual, and that cannot be easily measured or expressed as numbers. Examples of these factors are people's spiritual connections and sentimental attachments to a place (see Source 1).

Each year, a number of different companies review the liveability of cities around the world in terms of their objective factors, ranking them from the most to the least liveable. The most well-known of these surveys is conducted by an organisation called the Economist Intelligence Unit (EIU), which publishes an annual list of rankings. They rank cities based on a set of criteria using objective factors. Other organisations, such as Mercer and the Organisation for Economic Cooperation and Development (OECD), also produce regular reports. Unlike the EIU, the OECD incorporates more subjective factors into their surveys.



Source 1 Liveability can be measured by objective and subjective factors.

Objective factors

There are many different objective factors that affect liveability. The most important are introduced briefly below, then covered in more detail later in this section of the chapter.

Climate

Climate is one of the most important factors affecting the liveability of a place. Although different people like different types of weather, most people agree that a mild climate without extremes of heat or cold is ideal. Places with mild (temperate) climates often score highly in terms of liveability. The amount of rainfall is also key when it comes to climate. Too little or too much rain has a negative effect on the liveability of a place.

Environmental quality

The environment is another key factor that determines how liveable a place is. Environmental quality can refer to a number of characteristics relating to the natural or built environment, such as clean water and clean air. It can also be a measure of other things such as the level of pollution, rubbish or noise in an environment.

Infrastructure

The availability of services and facilities (such as roads, public transport, emergency services, post offices, water, sewerage-treatment plants, airports, housing, sporting and entertainment facilites, electricity and communications) helps make a place more or less liveable. Together these services and facilities are referred to as infrastructure.

Safety and stability

Safety and stability are two of the most important factors linked to the liveability of a place. More than most other things, people value feeling safe and stable in their homes. Australian cities are regarded as some of the most liveable places in the world for this reason. Safety and stability are measured by taking into account crime statistics and other information collected by the government. Many of the world's least liveable cities are found in war-torn countries such as Iraq and Afghanistan, where crime rates are very high and there are very few police to enforce the law. For this reason, many refugees flee to countries such as Australia in search of safety and stability.

Assess to health care and education

In general, people living in the world's most liveable cities have access to good health-care services, including doctors, public and private hospitals, specialist clinics and over-the-counter medication. They also have access to a range of schools and other education facilities, such as training centres and universities. In many of these cities, including those in Australia, a school education is not only compulsory but is also free. Cities in Canada, the USA, Australia and Western Europe generally rank highly in both health care and education. African cities are the lowest ranked in the world in terms of these services.

Subjective factors

Unlike objective factors, subjective factors cannot be easily measured and compared. They are linked to personal likes and dislikes, and feelings of connection to family, friends and cultural groups. They are also linked to beliefs, traditions and spiritual connections to places. Organisations such as the OECD are now conducting life-satisfaction surveys in order to take some of these subjective factors into account when rating the liveability of different places. These surveys try to take into account how happy or sad people feel, and look for the factors in their lives and environments that cause these feelings. This information is then taken into account alongside more objective measures in order to give a more complete picture of liveability.

Source 2 Safety and stability are two of the most important factors affecting the liveability of a place. This photograph shows two Syrian children running with balloons past heavily damaged buildings in a neighbourhood of the Syrian capital of Damascus. A civil war broke out in Syria in 2011. In 2015, Damascus was declared the world's least liveable city.

Check your learning 5.1

Remember and understand

1. How do companies measure the liveability of places around the world?
2. What are the objective measures of liveability for countries? Why are these important?
3. What are subjective measures of liveability and how are they measured?

Apply and analyse

4. Safety is a key liveability measure in all communities.
   a. What do you think are the most important safety issues for people living in large Australian cities?
   b. What do you think are the most important safety issues for people living in Damascus (see Source 2).
   c. Which safety issues are similar and which are different?

5.2 Climate

The **climate** of a place has a big effect on its liveability. Different climates suit different people, but it is generally agreed that mild temperatures (without extremes of heat or cold) help to make a place more liveable. Reliable rainfall, low humidity and low risks of weather-related disasters, such as cyclones and floods, increase the liveability of a place.

skill**drill:** Data and information

Comparing climate graphs

Climate graphs show the maximum and minimum temperatures as line graphs using the scale on the left-hand vertical axis, and rainfall as a column graph using the scale on the right-hand vertical axis. The months are shown on the horizontal axis. By comparing climate graphs, geographers can better understand climate differences and the reasons for them.

Step 1 Compare climate graphs for two locations.

Step 2 Describe the climate of one of these locations. Include the following elements of climate:

- The rainfall pattern: Mention whether rainfall is consistent throughout the year or whether there are clear wet and dry seasons. In particular, mention the highest rainfall month and any periods with little or no rainfall.
- The temperature pattern: Mention periods of warmer and colder temperatures, if these occur. State if there is a more, even temperature throughout the year. Use temperature figures in your description of the pattern.

Step 3 Describe the climate of the other location that you have chosen using the same method.

Step 4 Point out the obvious differences between the climates of the two locations.

Step 5 Try to explain these differences. Some of the most likely explanations are given below:

- Places nearer to the Equator are warmer than places closer to the poles. They also tend to be wetter with rainfall occurring throughout the year.
- Places near or beside oceans have milder climates with fewer extremes than places in the centre of large land masses.
- Places at high altitude are colder than places at sea level. They are often wetter as well.

Step 6 Point out any similarities between the two locations.

Apply the skill

1 Using the steps outlined above, compare the climate of two cities shown in Source 2.

Check your learning 5.2

Remember and understand

1 Name the city that is described as having acceptable temperature and humidity.

2 What is the connection between climate and liveability?

Apply and analyse

3 Why do you think Kathmandu's climate has been described as uncomfortable?

4 Which city has tolerable rather than acceptable weather?

5 Look carefully at Sources 1 and 2.

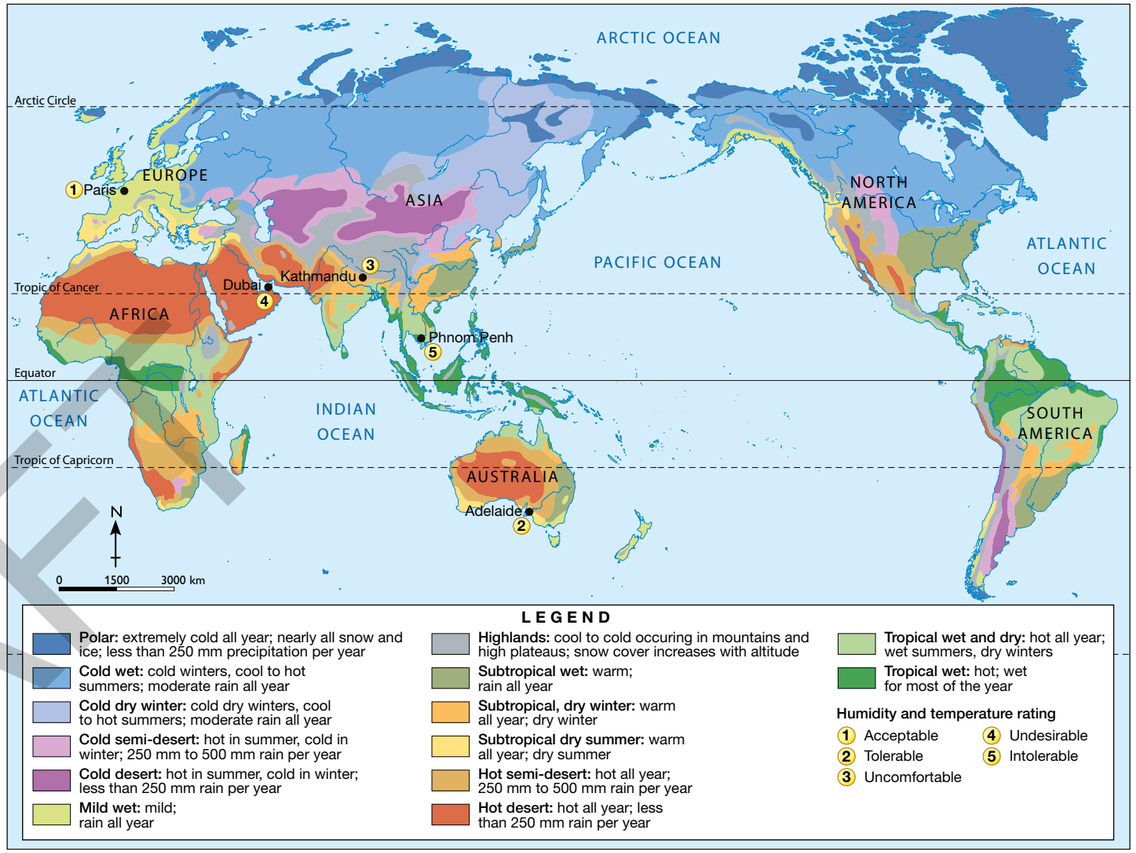
- **a** Which city has intolerable humidity and temperature?
- **b** What type of climate does this city experience?
- **c** What types of climate do cities with acceptable levels of humidity and temperature have?

Evaluate and create

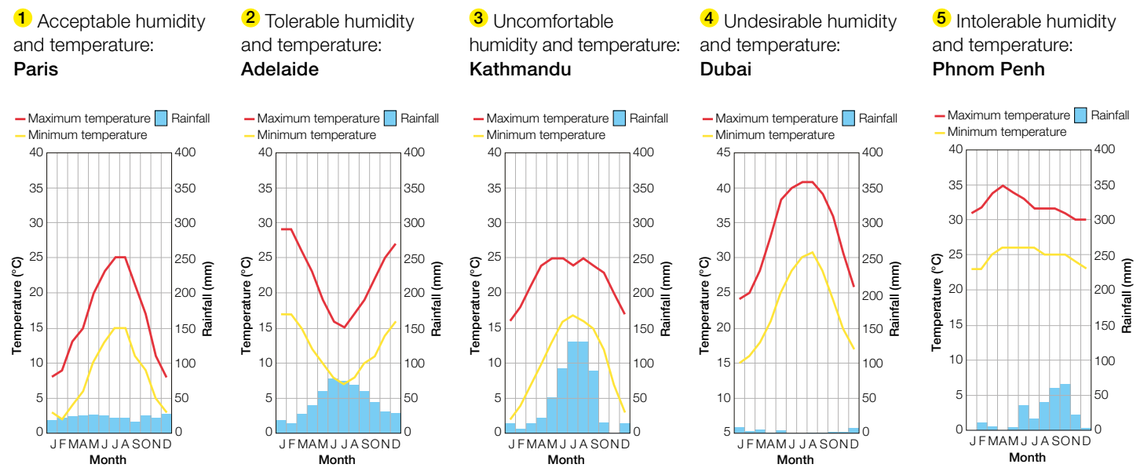
6 How do people adapt to living in places with undesirable climates?

7 What features of the natural environment other than climate may affect a city's liveability?

WORLD: CLIMATE ZONES



Source 1 Source: Oxford University Press



Source 2 Climate graphs for five cities with different climates

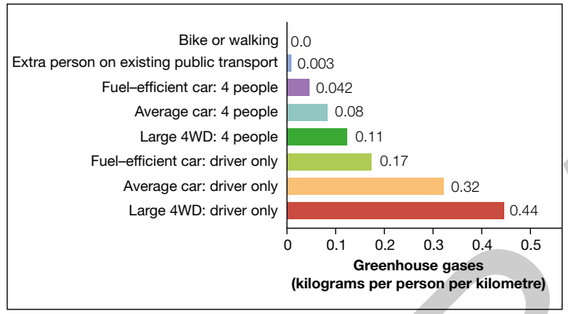
5.3 Environmental quality

The quality of air, water and parklands in cities are important parts of liveability for both health and aesthetic reasons. Air quality, in particular, can have a big impact on health.

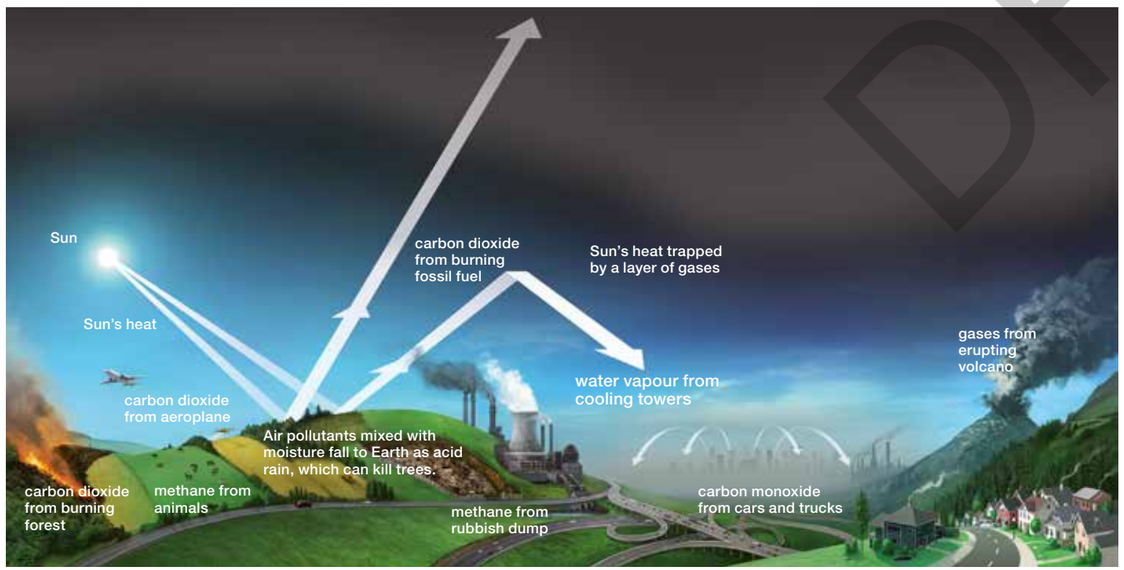
Air pollution tends to be worse in large cities where factories, power stations and motor vehicles spew harmful gases into the air. The polluted air can sometimes be trapped close to the Earth's surface as smog, or thrown high into the atmosphere where it may contribute to a layer of gases responsible for global warming.

Increasing numbers of people and cars on our roads mean we need to take action to improve the quality of the air we breathe. Air quality in Australian cities is good by world standards, but can vary. In Sydney, Melbourne and Brisbane, the number of days per year where pollution exceeds the National Environment Protection Measures standard is generally less than 10. Some years it can be much higher, however, particularly when air quality is negatively affected by other events such as bushfires.

Australian governments have now introduced laws to deal with air and noise pollution, however, urban air pollution still accounts for 2.3 per cent of all deaths in Australia. Motor vehicles are the main source of air pollution. Although unleaded petrol and hybrid cars that run partly on electricity are helping to reduce pollution from motor vehicles, these have been offset by the ever increasing numbers of cars on the road. Walking, riding a bike and using public transport remain the most environmentally friendly ways to get around.

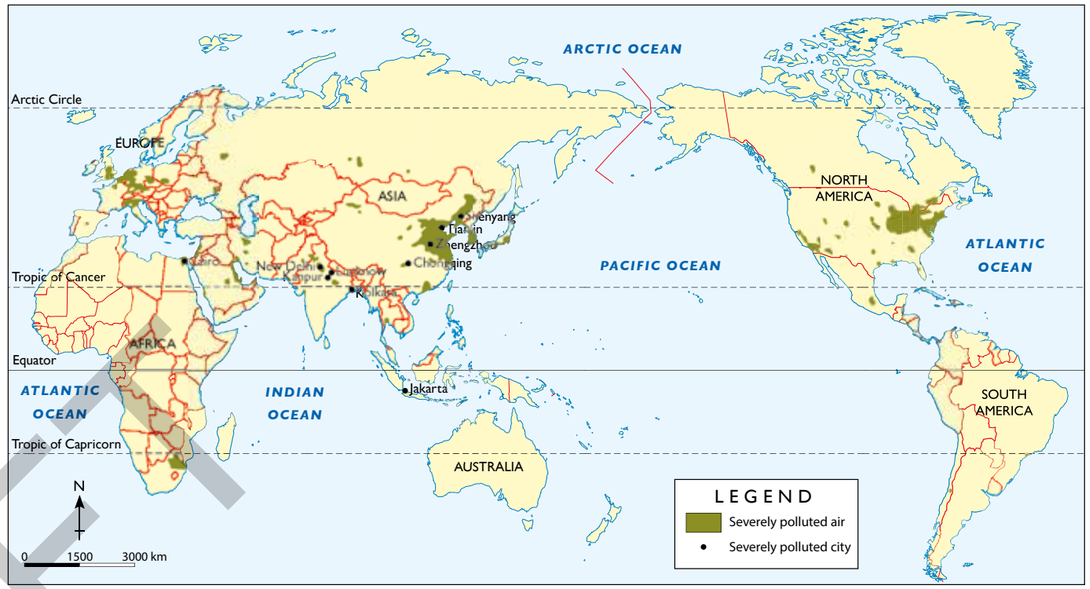


Source 2 Greenhouse gas emissions from different forms of transport



Source 1 Sources of air pollution

WORLD: MOST POLLUTED CITIES



Source 3

Source: Oxford University Press

Case study: Hong Kong

The city of Hong Kong in China is home to 7 million people. The liveability of Hong Kong is under threat from crippling pollution, three times the safe level set by the World Health Organization. Roadside pollution levels in Hong Kong are responsible for 90 000 hospital admissions and 2800 deaths each year.

In 2013, a strategy for decreasing pollution in Hong Kong was announced by electric vehicle–maker BYD. The plan involves replacing Hong Kong's fleet of diesel buses and LPG taxis with fully electric vehicles that produce no exhaust fumes. Experts suggest that this strategy will reduce pollution from Hong Kong's vehicles by around 56 per cent. Replacing the 18 000 LPG taxis and 12 000 diesel buses with electric taxis and buses would lead to a reduction in emissions equivalent to more than 800 000 private cars. The plan will reduce costs, lower vehicle emissions and improve air quality.

Check your learning 5.3

Remember and understand

1 Look carefully at Source 1.
   - a List the causes of pollution in cities.
   - b List the causes of pollution in rural areas.
   - c Why do cities such as Sydney, Los Angeles and Mexico City suffer from smog?

2 Look at Source 3.
   - a On which continent are most of the top 10 polluted cities located?
   - b Why do you think pollution is such an issue in these cities?

Apply and analyse

3 Study Source 2.
   - a What is the difference in the amount of greenhouse gases released per person between one person driving a 4WD and four people travelling together in a 4WD?
   - b What could governments do to encourage more people to share their cars as a way of reducing air pollution?
   - c List the ways in which car sharing could potentially improve the liveability of a city.

5.4 Infrastructure

Services and facilities (such as roads, public transport, emergency services, post offices, water, sewerage, airports, housing, electricity and communications) help make a place more or less liveable. Together these services and facilities are referred to as infrastructure.

The world's best infrastructure: Singapore

Singapore is considered to have some of the best infrastructure in the world. Singapore has been recognised for its excellent roads, and for producing one of the world's busiest and most efficient ports. A first-class airport acts as a central Asian hub for tens of millions of travellers every year. Most Singaporeans live in high-rise apartment blocks in a form of public housing available to the majority of the population. These buildings are clean, modern and well serviced.

With its reliable electricity supply, Singapore has developed as a centre for advancement in technology and now boasts one of the best communication networks, with fast mobile and wireless Internet and communication services available everywhere.

Singapore also has a ready supply of fresh drinking water, a good sewerage system and, thanks to the Restroom Association of Singapore, the cleanest public toilets. Singapore can be particularly proud of its public transport with buses, taxis and two train networks covering the whole country. The use of public transport is encouraged – over 50 per cent of workers in Singapore travel to work on public transport.

Source 1 Singapore's public transport system is considered one of the best in the world. It is clean, safe and efficient.

Source 2 The road network in Singapore allows commuters to move around the city easily.

The world's worst infrastructure: Dhaka

The capital of Bangladesh, Dhaka, is considered to have some of the worst infrastructure in the world. It rates poorly in the quality of its telecommunications, water and housing, but even worse in terms of transport. Both its road network and public transport are considered to be intolerable. This is due to a number of factors. Dhaka is a city of 16 million people and is growing at a rate of 4.2 per cent a year. This adds about 670000 people to the city a year. By world standards, this represents rapid growth. Unlike other cities in Asia, the reason for Dhaka's growth is increased poverty not increased prosperity. Poor rural migrants flood into the city, placing the existing infrastructure under great strain. For many of the rural poor who move to Dhaka, pulling a rickshaw is their first job (see Source 4).

Only about one-quarter of Dhaka's population is connected to the sewerage system. The rest use open toilets in the street or slums where they live. Only two-thirds are connected to a reliable water supply. Dhaka has the highest **population density** of any of the world's **megacities** with about 20000 people crammed into every square kilometre of land. This leaves little room for roads, rail lines, car parks, bus terminals and other elements of an effective transport system. There are very few forms of public transport and these are largely inefficient and poorly organised. People moving around Dhaka rely on a limited bus service and bicycle rickshaws. There is no train service within Dhaka, only trains betwen Dhaka and other centres in Bangladesh (see Source 3).

Source 3 Dhaka's public transport system is considered one of the worst in the world. It is old, overcrowded and dangerous.

Source 4 More than 80 per cent of households in Dhaka do not own a car or motorbike and instead rely on rickshaws for moving around the city.

Check your learning 5.4

Remember and understand

1. What is meant by the word 'infrastructure'?
2. How does an efficient and reliable 'infrastructure' add to a city's liveability?

Apply and analyse

3. Compare the photographs of the road systems in Singapore and Dhaka (Source 2 and 4). What are some of the differences and some of the similarities?
4. What are some of the factors that have resulted in such poor infrastructure in Dhaka?
5. Why do you think the infrastructure in Singapore is so reliable?
6. Make a list of all the forms of infrastructure mentioned in this spread. Rank these forms of infrastructure from the one you consider to be the most important to the one you consider to be the least important.
7. Compare the infrastructure of the city or town closest to you with the infrastructure in Singapore. What are the differences and similarities?
8. Is it possible to live in a city and not rely on or use any of its infrastructure?

5.5 Safety and stability

Like people all around the world, Australians want to feel safe. Even though it is tempting to believe everything that is presented in the media, if you did, you could think that Australian cities are in the grip of a crime wave and have become unsafe. While it is true that many crimes are committed in Australia, by world standards it is considered one of the safest places to live. Crime statistics even show that rates of some crimes, such as thefts, have actually declined in recent years.

Source 1 Tokyo – the capital of Japan, and the world's safest city in 2015

DRUGS SEIZED BY POLICE

A VARIETY of chemicals used in the production of the drug methamphetamine were seized from an Emerald residence early yesterday morning.

The search also located a rifle in the manhole of the Yamala St property.

BOMB FEAR DRAMA IN SEBASTOPOL

THE Victoria Police bomb squad defused a suspected explosive device at a home in Sebastopol on Saturday night during an incident which lasted more than five hours.

GOONDIWINDI CRIME JUMPS 10 PER CENT

ASSAULTS in Goondiwindi have jumped more than 10 per cent in 12 months.

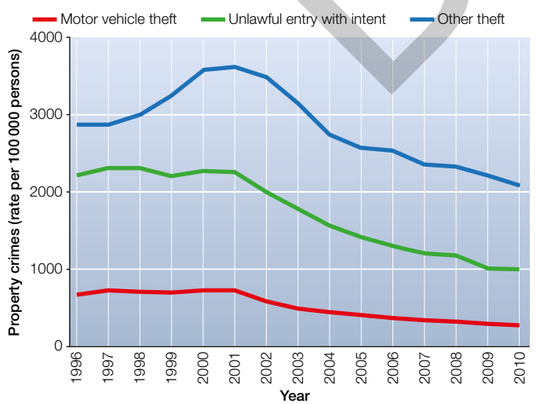
Source 2 Local news headlines in Australia can sometimes give the impression that Australia is a dangerous place.

The world's safest and most dangerous cities

In the 2015 liveability survey carried out by the Economist Intelligence Unit (EIU), 140 world cities were compared. Each city received a ranking for a range of different factors including infrastructure, health care, safety and stability. The world's safest and most stable city was found to be Tokyo in Japan. The world's most dangerous and unstable city was found to be Damascus in Syria.

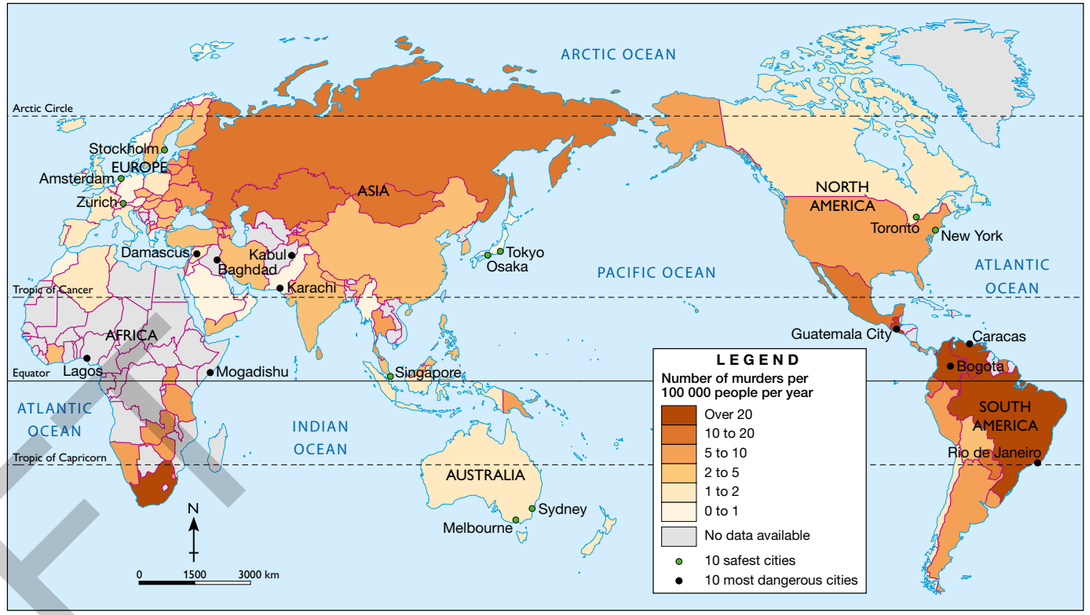
Unlike Tokyo – which has a low crime rate, high-quality health care and excellent infrastructure – Damascus has been at the centre of a violent civil war in Syria since 2011. As a result of the war, Damascus has very little infrastructure left. Many hospitals, schools and shops have been bombed and many innocent people have been killed in the fighting. It is estimated that 11 million people have been killed or forced to leave Syria as refugees to escape the fighting.

As shown in Source 4, many of the most dangerous cities are located in war-torn countries, such as Syria, Afghanistan and Somalia. In the capital cities of these countries – Damascus, Kabul and Mogadishu – the level of personal safety is classified as intolerable.



Source 3 Property crimes in Australia, 1996–2010

WORLD: SAFEST AND MOST DANGEROUS CITIES (INCLUDES MURDER RATES)



Source 4

Source: The Safe Cities Index; Economist Intelligence Unit, 2015

Source 5 Damascus – the capital of Syria and the world's least safe city

Check your learning 5.5

Remember and understand

1. Why are safety and stability important factors in determining a city's liveability?
2. Rank the following factors in order of what makes a place most liveable for you: safe, easy to get around, good health care, good work and education opportunities, affordable, diverse, sustainable, attractive.
3. In which regions are the world's least safe cities?
4. What makes some cities safer than others?

Apply and analyse

5. Collect reports of crime from your local newspaper. What impression do these reports give of safety in your community?
6. Visit the website of the Crime Statistics Agency (link available via your obook). Enter your postcode to learn more about the different crimes reported in your area.
   a. Are the rates of the following increasing or decreasing in your area?
      - robbery
      - property damage
      - assault
      - drug dealing and trafficking
   b. Do you think the media reports of crime rates you collected match the statistics? If not, why do you think they might differ?

5.6 Access to health care and education

People who live in the world's most liveable cities often have access to good health-care services, including doctors, public and private hospitals, specialist clinics and over-the-counter drugs. They also have access to a range of schools and other education facilities, such as training centres and universities. In many liveable cities, including those in Australia, education is not only compulsory; it is also free.

Often, cities in Canada, the USA, Australia and Western Europe rank highly for health care and education, while African cities are the lowest ranked in the world for these services.

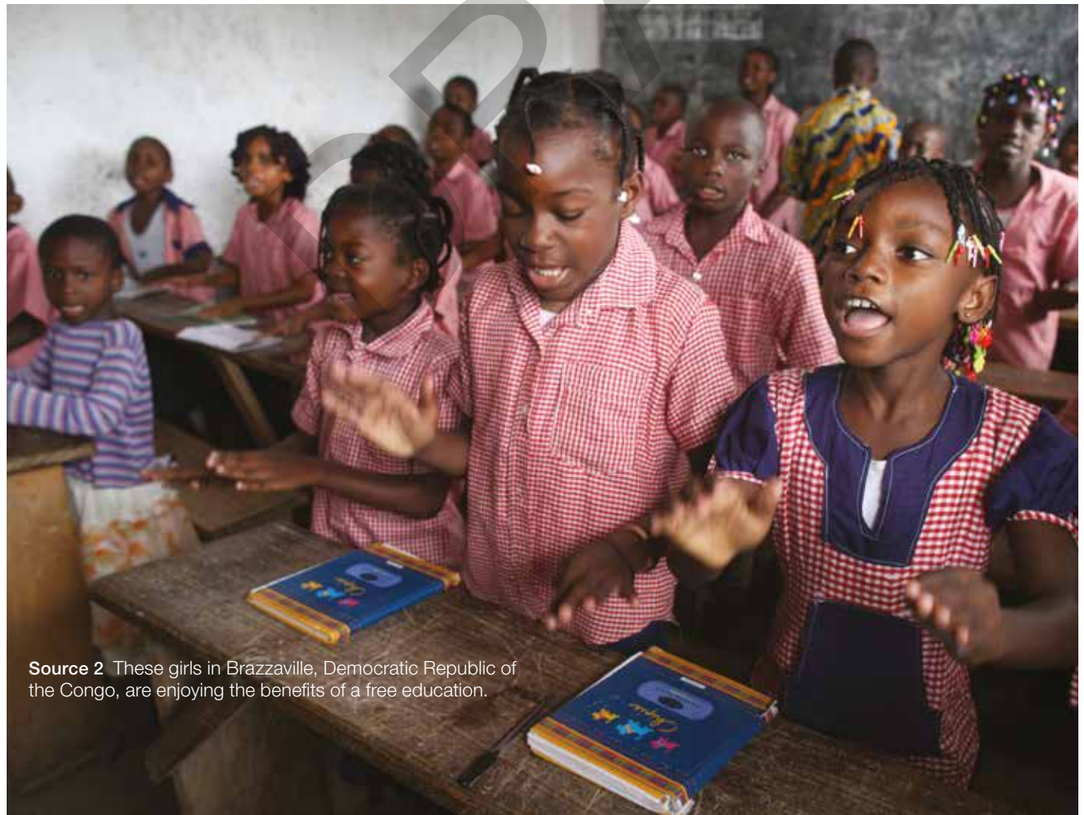
Source 1 A modern operating theatre at a hospital

The situation in the developing world

When examining access to health care and education in developing countries, it is easy to think that nothing can be done to improve the situation. Yet there have been some significant improvements in recent years.

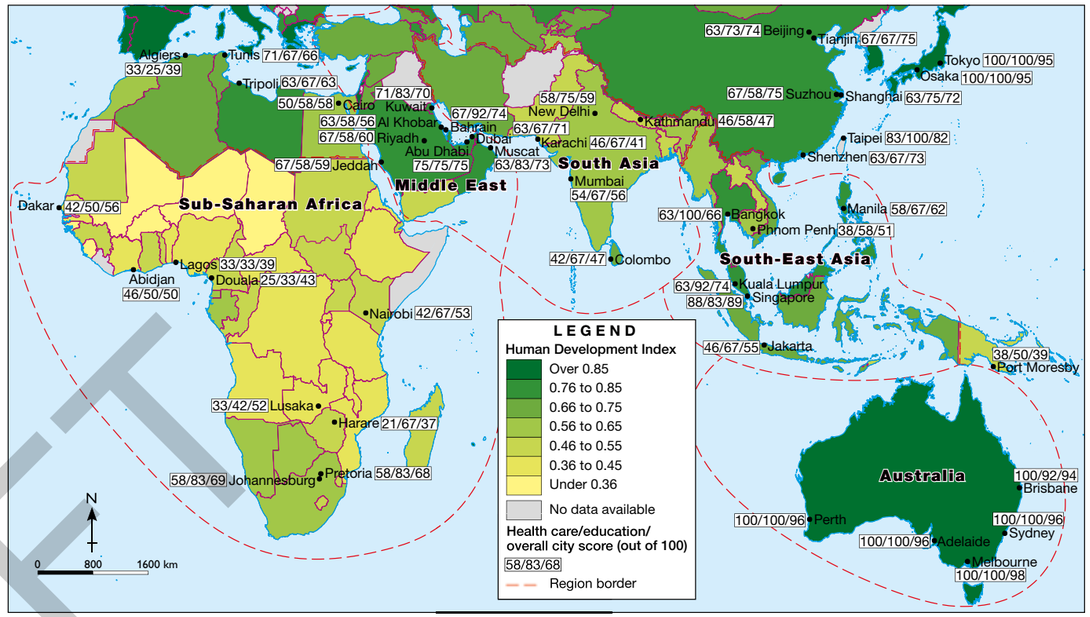
The number of mothers who die while giving birth each year, for example, has almost halved since 1990. The main reasons are thought to be improved care in hospitals and birth clinics; better education of girls and women; and better access to health-care professionals, such as maternal nurses and doctors. Though the current rate still means that 800 women a day die while giving birth, the improvements in the last two decades give hope that this rate will decline even further.

Worldwide, 89 per cent of all primary school aged children now attend school. Although 67 million children worldwide are not at school, this is a vast improvement on 1999 when the number of children not enrolled in primary school was 106 million. The countries that have made the greatest improvements in this area are the poorest countries of sub-Saharan Africa. In many of these countries, such as Rwanda and Mali, it is believed that abolishing school fees has been the main factor behind this improvement.



Source 2 These girls in Brazzaville, Democratic Republic of the Congo, are enjoying the benefits of a free education.

AFRICA, SOUTH AND SOUTH-EAST ASIA AND AUSTRALIA: HUMAN DEVELOPMENT INDEX



Source 3 Source: Oxford University Press

Check your learning 5.6

Remember and understand

1 What improvements have been made in health care and education in developing countries?
2 What changes have led to these improvements?

Apply and analyse

3 Why do you think educating girls is a key part of lowering the maternal death rate?
4 Examine Source 3. The map shows health-care and education scores in selected cities in Africa, Asia and Australia. The map also shows each country shaded according to the **Human Development Index (HDI)**. This uses measures of life expectancy, literacy and **gross domestic product (GDP)** to show the living standards in each country.
   a In which region is HDI the lowest?
   b How do cities in this region score for health care and education?
   c In which region is HDI the highest?
   d How do cities in this region score for health care and education?
   e Write a short paragraph describing the connection between living standards (as shown in the HDI), health care and education in the cities of the regions shown on the map.

5A rich task

The liveability of Mawson Station

Australia maintains three scientific research stations in Antarctica. The oldest of these stations is Mawson Station. It is located on Horseshoe Bay in one of the few places in Antarctica that stays relatively free from ice. The small community of scientists at Mawson Station face many challenges in one of the least liveable locations on Earth.

Because of its isolation from other places, it can be challenging to create a liveable environment at Mawson Station. Electricity comes from a diesel generator and two wind turbines. Much of the electricity generated is used to provide heating, mainly to melt ice for water and to heat the water and buildings. Sewage is treated on site and scientists who are away from the station return to the station carrying all solid human waste with them where it is incinerated.

Vegetables are grown in a special heated **hydroponics** room in which they can grow without soil. The station has a small operating theatre and a dentist's suite to treat most medical conditions. There is a range of ways for people in the Mawson Station community to communicate with friends, family and colleagues in other places. Orbiting satellites provide a reliable Internet connection as well as radio and telephone connections to the ANARESAT dome.

The community lives in the Domestic Building (also known as the 'Red Shed'). When blizzard days stop fieldwork, the Red Shed provides many opportunities for expeditioners to pass the time. It has indoor climbing, a home theatre, a photographic dark room, a library and several communal sitting areas. There is a small gym, as well as sports equipment for volleyball and badminton and a range of cross-country ski equipment. A spa and sauna are also available.

Source 1 Oblique aerial view of Mawson Station, Antarctica

skill**drill:** Data and information

Analysing a map

Understanding the information provided by maps is a key skill for every geographer. Here are some basic steps to follow each time you begin to analyse a new map:

Step 1 Read the title carefully as this will tell you exactly what the map is showing.

Step 2 Look carefully at the legend and map labels to identify individual features on the map.

Step 3 Use the orientation arrow to work out in which direction the map is facing. Once you have established where north is, you will be able to work out the remaining cardinal points.

Step 4 Look carefully at the map scale. This will help you estimate how far distances shown on the map are on the ground. You can then use this scale to estimate distances between places on the map.

Step 5 If the map you are using shows a small area (i.e. a large-scale map), it may be helpful to look at another map showing a larger area (i.e. a small-scale map). This will help you locate the area shown. For more information about map scales, see page 23 of 'The geography toolkit'.

Apply the skill

1 Examine the map of Mawson Station in Source 2.
- **a** Which buildings are clustered together? Why do you think they are clustered in this way?
- **b** Two buildings are located away from other buildings. For each of these, estimate the distance to the nearest other building and explain why you think it is located where it is:
  - explosives hut
  - hangar (used to store aircraft)
- **c** What are the two main types of transport used to bring supplies to the station?

2 Examine the oblique aerial image of the station (Source 1). Do you think this photograph was taken in summer or winter?
Give two reasons for your answer.

3 Compare the map (Source 2) with the photograph (Source 1).
- **a** In which direction was the photographer facing when this image was taken?
- **b** What is the round building on the right of the photograph?
- **c** What colour is each of these buildings: domestic building, store and operations? Why do you think the buildings are different colours?
- **d** What do you think is stored in the tanks with the word 'Mawson' written on them? Why do you think they are located next to the wharf?

MAWSON STATION

Source 2 Source: Oxford University Press

Extend your understanding

1 Use the Internet to gather information about the climate at Mawson Station. Select the best description of the climate at Mawson Station when referring to its liveability: acceptable, tolerable, uncomfortable, undesirable, intolerable. Justify your response.

2 Mawson Station is essentially a scientific community. Why do you think plumbers, electricians, builders and diesel mechanics are also needed?

3 Rank the following factors in order of what makes Mawson Station most liveable: safety, easy to get around, good health care, good work and education opportunities, affordability, diversity, sustainability, attractiveness.

4 What are some challenges faced by people who live at Mawson Station? How do they overcome these challenges?

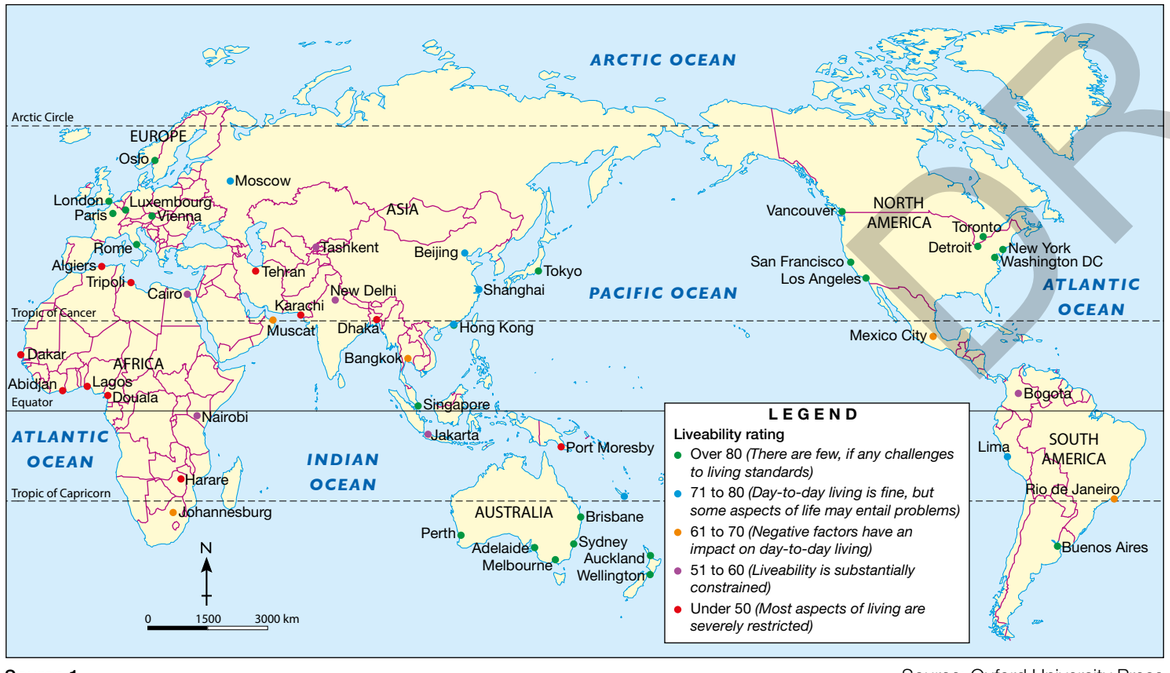
5 How liveable would Mawson Station be for you? What would be the advantages and disadvantages of living in this place? Discuss your answer with a classmate.

5.7 The world's most liveable cities

It is difficult to compare one city to another as people who live in one city tend to favour their own city. This can make it difficult for others who are considering moving to a new location to find out what it is really like to live there. In response to this problem, a number of companies research the world's biggest cities and rank them from the most liveable to the least liveable. These companies vary in what they study and measure. For example, one company may emphasise personal safety in their study, while another may put a greater emphasis on the climate of a place. This means their scores and rankings will differ.

These liveability rankings are useful for geographers as they give us the opportunity to compare places and to consider what makes one place more liveable than another. Importantly, it also allows us to make better decisions about improving the liveability of cities around the world. The following map uses the scores from the annual survey by the Economist Intelligence Unit (EIU) of 140 of the world's cities. In its survey the EIU gives each city a score based on its stability (such as crime and terrorism threats); health care; culture and environment (such as climate, shopping and religious freedom); education; and infrastructure (such as roads, public transport and water).

WORLD: LIVEABILITY RATING, 2015



Source 1

Source: Oxford University Press

Case study: Vancouver, Canada

The Canadian city of Vancouver is usually near the top of any list of the world's most liveable cities. In fact, in 2015 it was ranked third-most liveable city after Melbourne and Vienna. In the 2015 survey, it was the only city in the top 10 to receive a perfect score in the culture and environment category. The culture and environment category includes climate, levels of corruption and censorship, religious freedom, sporting and cultural facilities, and shopping. The city also received a perfect score for its health care and education.

Because cities are given new scores every year, their rankings in liveability surveys can often change without any perceivable change to living conditions in that city. Vancouver, for example, has slipped from the most liveable city to the third-most liveable. This is largely because its infrastructure score fell as a result of increased traffic congestion in the city.

Source 2 Residential housing and a marina in downtown Vancouver

Check your learning 5.7

Remember and understand

1 Why can it be difficult to compare the liveability in different cities?

2 Why is Vancouver considered to be less liveable in recent years?

Apply and analyse

3 Examine Source 1 carefully.
- **a** Compare the liveability of the cities shown in Africa with those shown in Western Europe.
- **b** Describe three patterns that you observe on this map.
- **c** Select one of these patterns and give an explanation for it.

4 Of the top 10 most liveable cities virtually all had perfect scores in education and health care but only one, Vancouver, had a perfect 'culture and environment' score. Why do you think so few cities would score perfectly for their culture and environment?

Evaluate and create

5 Some people are critical of comparing cities in this way and believe that it is unfair to the people who live there. Why do you think people would feel this way?

6 As well as companies looking to move employees to a new city and geographers, who else would find liveability rankings of the world's cities useful?

5.8 Vienna: a liveable city

Vienna, the capital of Austria, usually scores highly in any survey of the world's most liveable cities. In 2015, it was rated by the Economist Intelligence Unit as the second most liveable city (and by another organisation as the city with the highest quality of living in the world). It has topped this second list for three years in a row.

Infrastructure and safety

Vienna has excellent infrastructure, which has been designed to meet the changing needs of the city while ensuring sustainability. Vienna scores strongly in terms of its public transport and public housing. The city provides affordable public transport and has invested in an extensive bicycle network to keep traffic congestion in the streets low. Vienna has a large public housing system that provides high-quality housing for the majority of the Viennese population. This has kept housing affordable for everyone.

One of the features of Vienna that makes it liveable is the number of parks and other green spaces for people to enjoy. More than half the metropolitan area of Vienna is made up of these green spaces. This gives each resident of the city about 120 square metres of open space in which to socialise and exercise. (The World Health Organization suggests that at least 9 square metres of open space should be available to every city dweller.) Serious crime is rare and employment levels are high, creating a safe and stable environment for the city's residents.

Health care and education

Vienna has a wide range of hospitals offering different types of treatment and a high level of hospital care, and every worker in Vienna has health insurance. Education through the school system is provided to every child free of charge.

Source 1 Vienna is known for its shopping and safe public spaces.

key concept: Sustainability

Sustainability and liveability in Vienna

Vienna is leading the world in the reduction of the **greenhouse gases** that are changing the global climate. In 1999 they began a program that encouraged companies to change the way they used energy and water and also the ways in which they disposed of their waste. The aim was to reduce gases by 2.6 million tonnes a year by 2010. The program was so successful that the target was achieved four years early and new targets have been set for 2010–20. More than 9000 individual projects have been put into place to reduce greenhouse gases since 1999. These have resulted in some impressive reductions: more than 100 000 fewer tonnes of solid waste, 42 000 fewer tonnes of greenhouse gases and more than 1 million fewer cubic metres of drinking water used. This has resulted in less water and air pollution in Vienna, making it even more liveable than before.

For more information on the key concept of sustainability, refer to page 10 of 'The geography toolkit'.

Source 2 In this Viennese building, solid waste is incinerated to produce heat and electricity, which is used to power a nearby hospital.

Source 3 Vienna has a well-developed public transport network that includes buses, trains and trams.

Source 4 An amusement park in Prater Park near the centre of Vienna

Check your learning 5.8

Remember and understand

1 What are some of the features of Vienna that make it very liveable?
2 How is Vienna becoming more liveable?

Apply and analyse

3 The exterior of the waste incinerator in Source 2 was designed by an artist.
   a What does this tell you about the people of Vienna?
   b What do you think of the exterior of this building?
4 In what ways do open spaces make cities more liveable?
5 How is open space used in your community?

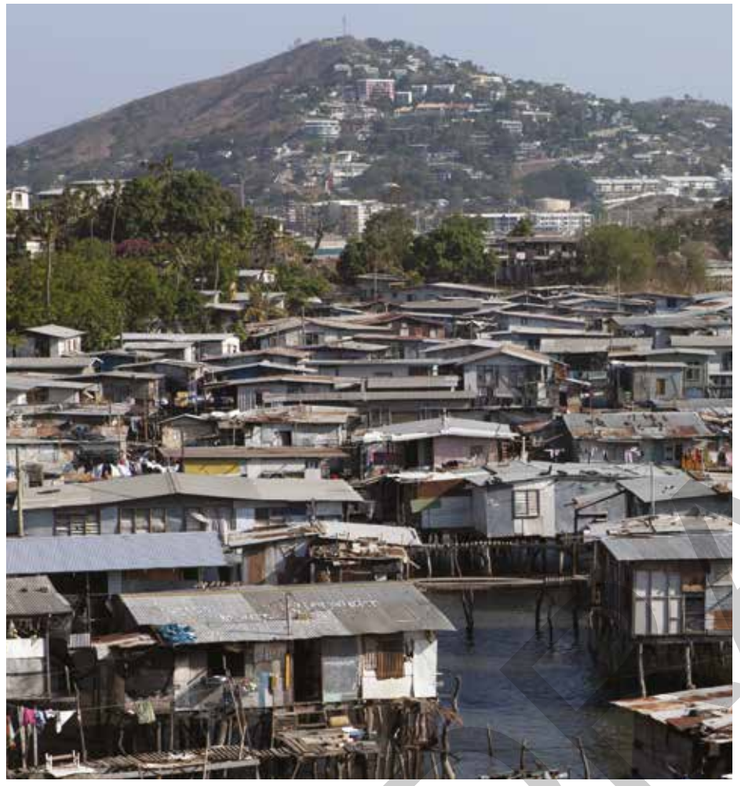
Evaluate and create

6 Imagine that you are designing a brochure advertising Vienna as the city with the world's best quality of life.
   a Which of the photographs of Vienna would you use in the brochure and why?
   b Which ones would you not use? Why not?

5.9 The world's least liveable cities

While cities in Europe, Canada and Australia dominate the top ranks of the world's most liveable cities, Asian and African cities tend to dominate the bottom ranks. It is important to remember, however, that most liveability surveys are paid for and conducted by companies in wealthy countries to provide their workers with a guide to lifestyles in cities around the world. The lists tend to measure aspects of each city that these companies think will be of most interest and relevance to their workers rather than the experiences of the people who live there all the time.

In 2015, the Economist Intelligence Unit published its annual list of 140 cities ranked from most liveable to least liveable. Source 1 shows the 10 least liveable cities. These cities rate poorly in terms of health care, infrastructure and access to education. They also rate poorly in terms of safety and stability, which is a measure of crime, terror and conflict. Although many of these cities have been ranked low for many years, there was a new entry in 2013: the Syrian capital city of Damascus, now ranked as the world's least liveable city due to a violent civil war in Syria.



Source 2 Housing area near the Port Moresby harbour

Rank	Country	City	Overall rating (100 = ideal; 0 = intolerable)	Stability	Health care	Culture and environment	Education	Infrastructure
130	Iran	Tehran	47.2	55.0	62.5	36.6	50.0	33.9
131	Cameroon	Douala	44.0	60.0	25.0	48.4	33.3	42.9
132	Ukraine	Kiev	43.4	20.0	54.2	45.8	75.0	42.9
133	Zimbabwe	Harare	42.6	40.0	20.8	58.6	66.7	35.7
134	Algeria	Algiers	40.9	40.0	45.8	42.6	50.0	30.4
135	Pakistan	Karachi	40.9	20.0	45.8	38.7	66.7	51.8
136	Libya	Tripoli	40.0	30.0	41.7	38.2	50.0	48.2
137	Nigeria	Lagos	39.7	25.0	37.5	53.5	33.3	46.4
138	Papua New Guinea	Port Moresby	38.9	30.0	37.5	44.2	50.0	39.3
139	Bangladesh	Dhaka	38.7	50.0	29.2	43.3	41.7	26.8
140	Syria	Damascus	29.3	10.0	29.2	44.7	33.3	32.1

Source 1 Liveability scores for the 10 least liveable cities in 2015 Source: The Economist Intelligence Unit

Case study: Port Moresby, Papua New Guinea

Port Moresby, the capital of Papua New Guinea, is often ranked as one of the world's least liveable cities. This is largely due to high crime rates and a lack of safety experienced by many residents and visitors.

In many developing countries, such as Papua New Guinea, large numbers of people move from rural areas to the cities hoping for a better life. They are attracted by the possibility of a steady job or the chance for their children to attend high school. This puts a strain on the city's infrastructure and services such as hospitals, schools and the police force.

In Port Moresby, many of the young men who have arrived in the city have not been able to find jobs. They join crime gangs to survive, to earn money to buy food and to gain a sense of belonging. The most notorious of these gangs is the Raskols (from the English word 'rascals'). Other gangs have names such as Mafia or Ook (Devils). These gangs are responsible for much of the violent crime in Port Moresby, such as robberies, car jackings, beatings, murders and rape.

Armed battles between the Raskols and the police are common, creating a dangerous environment. Many wealthier people in Port Moresby have responded to the dangers by building fences of razor wire and hiring armed security guards. The poorer people, having no access to these defences, have instead armed themselves with clubs and machetes.

Source 3 A Raskol gang member guards a stockpile of food and fuel.

Check your learning 5.9

Remember and understand

1 Why do people move to cities such as Port Moresby?
2 How can this movement affect a city's liveability?

Apply and analyse

3 Examine Source 1, showing the rankings and scores of the world's 10 least liveable cities.
   a Why do cities move up or down this list over time?
   b Which city is the least stable? Suggest a reason for this.
   c Of these cities, Tehran has by far the best health-care score. In what areas does it perform particularly poorly?
4 Refer back to Source 1 on page 160. Locate each of the 10 least liveable cities on this map. Investigate which of these 10 cities is not in Asia or Africa.

Evaluate and create

5 Draw a geographic sketch of Source 2. Add these labels to your sketch: central business district, poor housing standards, lack of sewerage, lack of electricity, houses built on stilts over the water, better quality housing.
6 What do Sources 2 and 3 tell you about inequalities in wealth in Port Moresby?

5.10 Harare: a least liveable city

Harare, the capital of Zimbabwe, was ranked at 133 out of 140 in terms of liveability in 2015. Harare is a city of great contrasts. Many people live prosperous, healthy lives there. They have good jobs, access to good health care and their children attend some of Africa's best schools. But this is not the reality for most Harare residents, many of whom live in extreme poverty.

Infrastructure and safety

Only 40 per cent of Harare residents have access to safe drinking water; most of the remaining 60 per cent collect their water from Lake Chivero, Harare's main water source. The lake is also the place where the city's untreated sewage is dumped as the treatment plant is unable to cope with the rapid expansion of the city's population.

Perhaps one of the greatest struggles facing many people in Harare is the struggle to find a secure home. In 2005, the country's president, Robert Mugabe, ordered the destruction of **slums** throughout the city. He claimed it was to restore order in the city but many others believe that it was done to intimidate his political opponents. It is estimated that about 700 000 people were made homeless or lost their jobs. As well as homes, the slum clearance program destroyed schools, shops, workplaces and pharmacies. Many people are reluctant to rebuild their homes in case this happens again.

A recent report that measured the liveability of 140 of the world's cities described Harare's level of petty crime, its threat of **civil unrest** or conflict, its public health care and its quality of public transport as intolerable. It also rated very poorly in other important areas, such as the amount of violent crime, the threat of military conflict and the provision of electricity and water.

For most of Harare's 3 million residents, daily life is a series of struggles. They struggle to find enough clean water to drink and with which to wash and they struggle to find enough food. They struggle to find work to earn money and they struggle to give their children a quality education.

Source 1 These boys are collecting water from a puddle in a Harare street.

Health care and education

Harare ranked the lowest for health care of all the cities surveyed. Many struggle with disease and illness. Fourteen in every 100 adult Zimbabweans have **HIV/AIDS**, the fifth-highest rate in the world. Poor **sanitation** and unsafe water supplies have led to outbreaks of cholera and typhoid in Harare, which have further strained the health services in the city and affected the ability of people to work.

A lack of government funding has made it difficult for hospitals and doctors to provide care for sick patients. The public health care system has collapsed and many common medical services are no longer available – patients cannot get prescriptions or drugs, hospitals have run out of medical supplies, and equipment has become unusable. The hospitals have had to stop performing operations and the wards are empty because the hospitals are unable to care for patients or even provide them with meals.

The only health care still available is in private clinics, which only the rich can afford. Poor patients are left without care and are dying as a result.

Source 2 Untreated sewage flows into a Harare street from an overflowing pipe.

Source 3 This cholera victim is being taken to a clinic in Harare.

Check your learning 5.10

Remember and understand

1 Why is Harare considered to be one of the least liveable cities?
2 Explain the connection between Source 2 and Source 3.

Apply and analyse

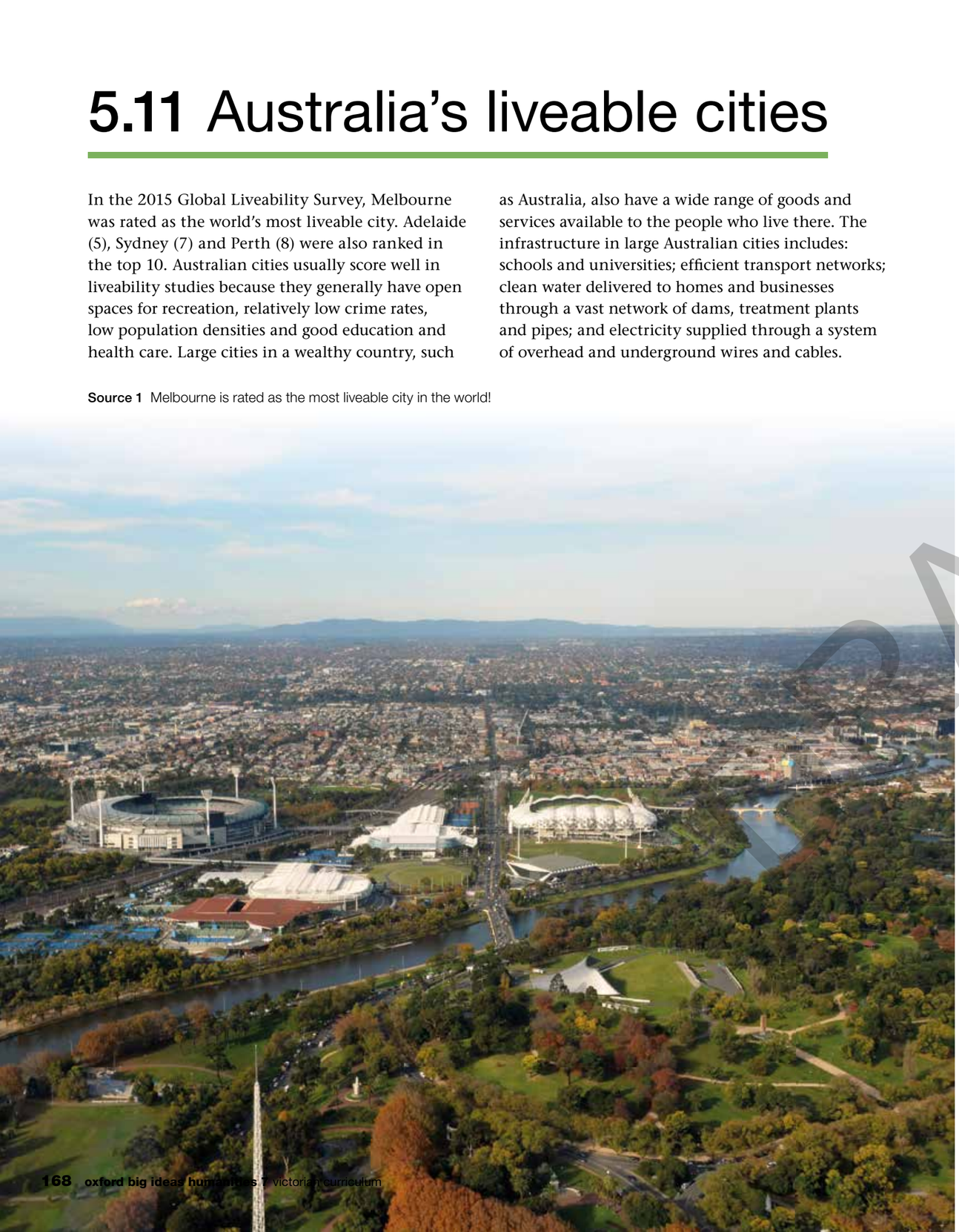
3 The boys in Source 1 are collecting water from the street. Discuss with a partner some problems that these boys may face every day and use your discussion to describe a day in their lives.

Evaluate and create

4 Make a list of the problems faced by many Harare residents. Rank them from the one that is the easiest to solve to the one that is hardest. Write a few sentences explaining why you have ranked them in this way.
5 For the problem you considered the easiest to solve, describe a possible solution. Why do you think this problem has not been solved in Harare?

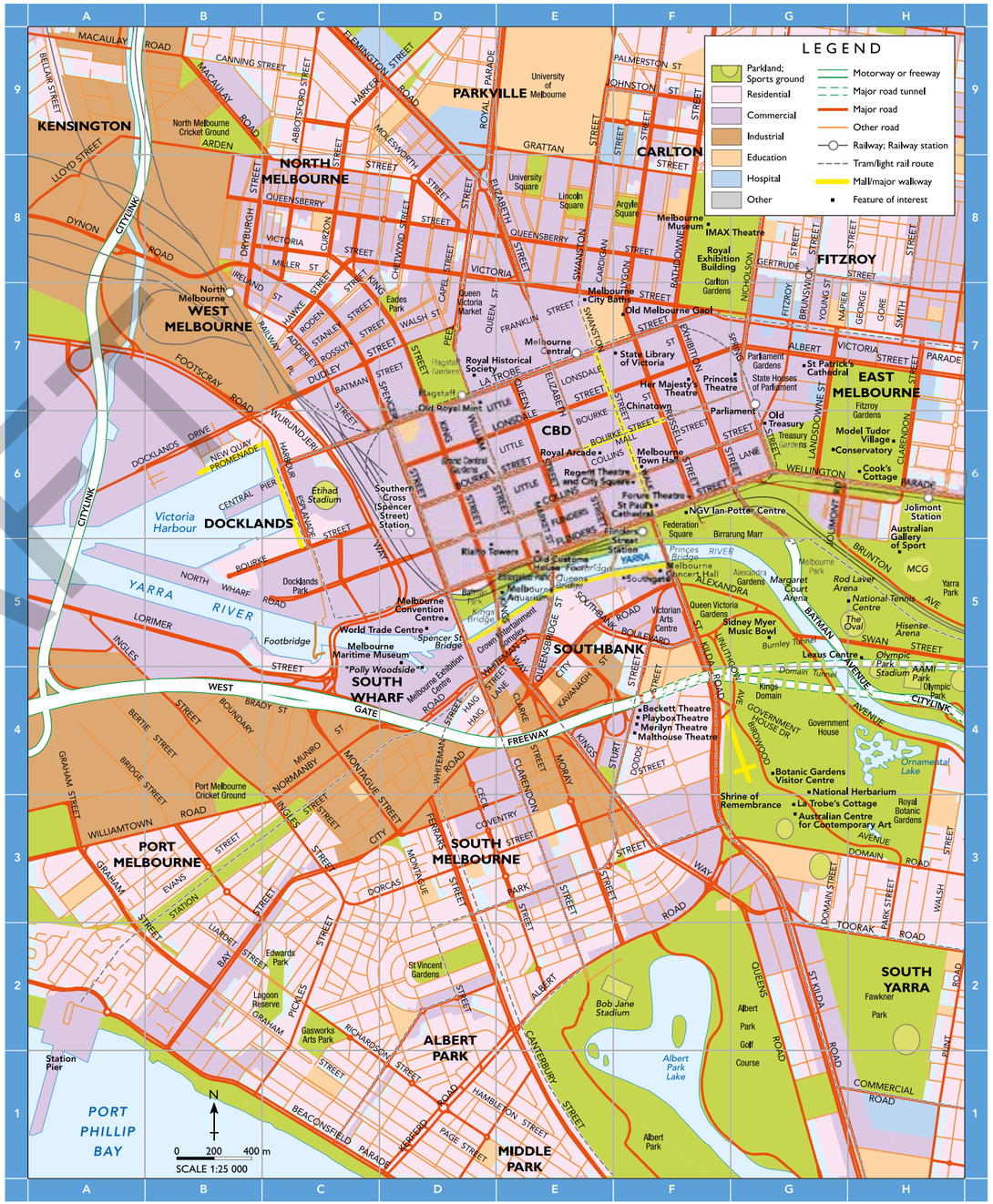
5.11 Australia's liveable cities

In the 2015 Global Liveability Survey, Melbourne was rated as the world's most liveable city. Adelaide (5), Sydney (7) and Perth (8) were also ranked in the top 10. Australian cities usually score well in liveability studies because they generally have open spaces for recreation, relatively low crime rates, low population densities and good education and health care. Large cities in a wealthy country, such as Australia, also have a wide range of goods and services available to the people who live there. The infrastructure in large Australian cities includes: schools and universities; efficient transport networks; clean water delivered to homes and businesses through a vast network of dams, treatment plants and pipes; and electricity supplied through a system of overhead and underground wires and cables.



Source 1 Melbourne is rated as the most liveable city in the world!

MELBOURNE: CBD AND INNER SUBURBS



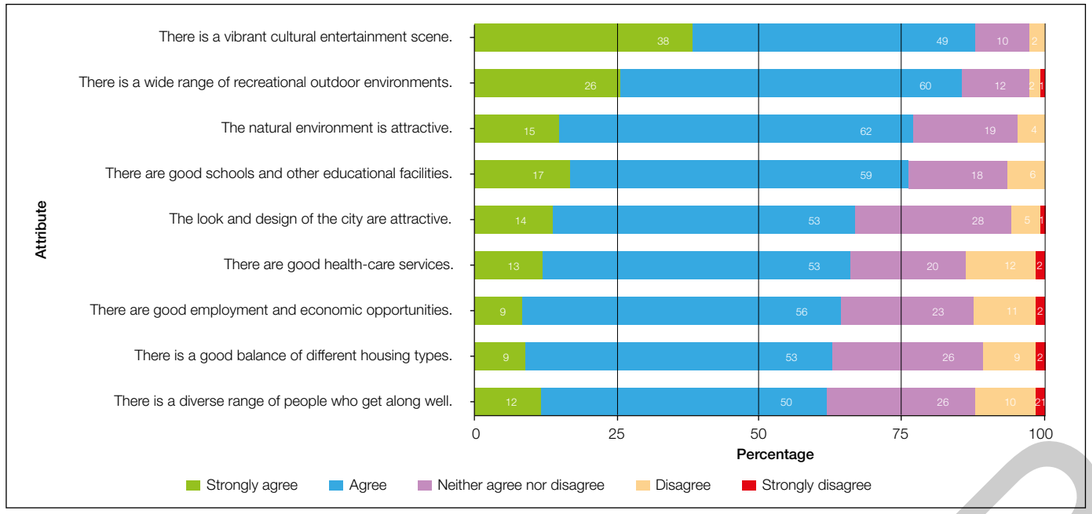
Source 2

Source: Oxford University Press

How do Melbourne's residents view their city?

In a different survey, Melbourne residents were asked about the liveability of their city. The results are shown in Source 2. While the city performed poorly in affordability, public transport and road network, it scored well among residents for culture, environment and education.

Source 3 Results of a survey of Melburnians of the liveability of Melbourne, 2015: best performing attributes



Check your learning 5.11

Remember and understand

1 What Australian cities featured in the top 10 most liveable cities in 2015?
2 Why do Australian cities feature highly in these surveys?
3 What features of their city do Melburnians like the best? How do these features help to make the city more liveable?
4 What features of their city do Melburnians not like?

Apply and analyse

5 Look at the oblique aerial view of Melbourne (Source 1). What features shown in this photograph might suggest that Melbourne is a liveable city?
6 Examine the map of central Melbourne on the previous page (Source 2). Then copy and complete the following table. Add at least two examples to each category. The first example has been done for you.

Liveability category	Examples from Melbourne	Grid reference
Availability of public health care	The Royal Melbourne Hospital	D9
Recreation: sports		
Recreation: culture		
Availability of consumer goods and services		
Religious freedom		
Availability of schools		
Availability of higher education		
Quality of road network		
Quality of public transport		

5.12 Melbourne's liveable suburbs

In a 2015 study conducted by *The Age* newspaper, each of Melbourne's 321 suburbs was rated in terms of its liveability. The study used available data, much of it from the census, to score each suburb on 14 key indicators. These included factors such as the access to shops, schools, restaurants and public transport as well as crime rates, open space and traffic congestion. The study found the inner-city suburb of East Melbourne to be the most liveable suburb in the most liveable city in the world.

East Melbourne scored highly because of its closeness to the city centre as well as its good public transport and shopping. Unlike many other suburbs close to city centres, it also has a large amount of open spaces. Living in East Melbourne, however, can have its drawbacks. The study found that residents of East Melbourne have to tolerate terrible traffic jams and poor telecommunications coverage.

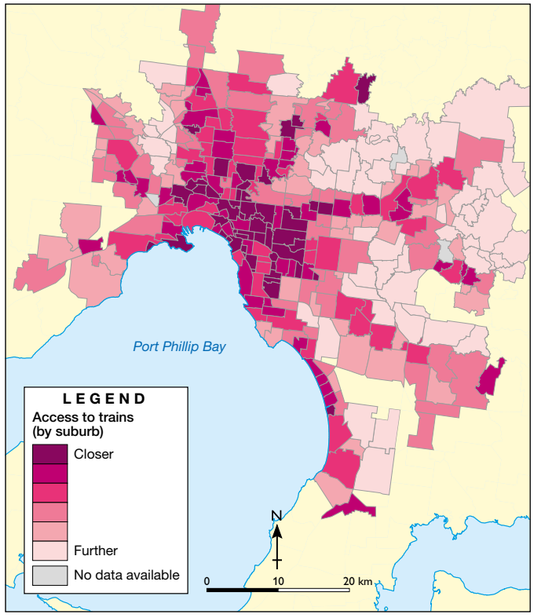
The suburb of Skye, in Melbourne's outskirts, was rated as the least liveable. A number of different factors contributed to this outcome. Skye rated poorly in terms of access to shops and open public spaces such as parks and playgrounds. Lack of good access to public transport and comparatively high crime rates were some of the other factors that resulted in a low rating. However, as Skye is a focus of state government funding to improve infrastructure (such as access to public transport), it may soon be moving up the ratings.

MELBOURNE: SUBURBS

Source 1 Source: Oxford University Press

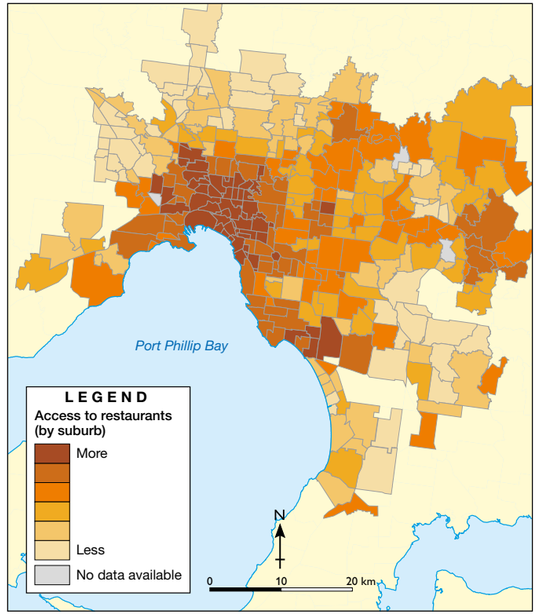
Source 2 Skye – Melbourne's least liveable suburb.

MELBOURNE: CHOROPLETH MAP SHOWING ACCESS TO TRAINS



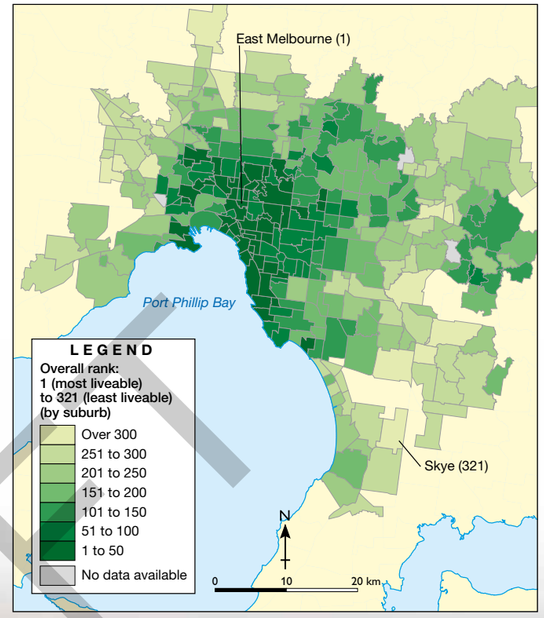
Source 3 Source: Oxford University Press

MELBOURNE: CHOROPLETH MAP SHOWING ACCESS TO RESTAURANTS



Source 4 Source: Oxford University Press

MELBOURNE: CHOROPLETH MAP SCORING EACH OF THE 314 SUBURBS ON ITS LIVEABILITY



Source 5 Source: Oxford University Press

Check your learning 5.12

Remember and understand

1 What pattern do you notice on the map showing access to trains (Source 3)? Describe this pattern using the names of specific places.
2 What feature on the key map (Source 1) helps to explain this pattern?

Apply and analyse

3 Examine Source 1.
  a How has Port Phillip Bay affected the shape of Melbourne?
  b What influence have major roads had on the shape of the outer suburbs?
4 These maps of Melbourne show that liveability is not the same for everyone in a city. Who would find these maps useful?

Source 6 East Melbourne – Melbournes most liveable suburb

skill**drill:** Data and information

Explaining patterns on maps

Geographers look for patterns on maps such as Sources 3–5 and then try to explain the patterns. By following these steps you will move from describing features of a map to explaining them.

Step 1 Look for an obvious pattern in the map you are exploring. This may be a cluster of similar features in a small region or a line of features. In the map showing the liveability of Melbourne's suburbs (Source 5, lighter colours (less liveable) tend to be near the fringes of the city whereas darker colours (more liveable) are nearer to the centre.

Step 2 Describe the pattern using names of specific places in your description.

Step 3 Look for clues that explain the pattern you have described. There may be clues in other maps or in the way the map has been drawn. In the case of the liveability map, the explanation for higher liveability in inner suburbs may be that there tends to be many restaurants, shops and train stations there. These factors were all taken into account in determining the liveability of each suburb.

Apply the skill

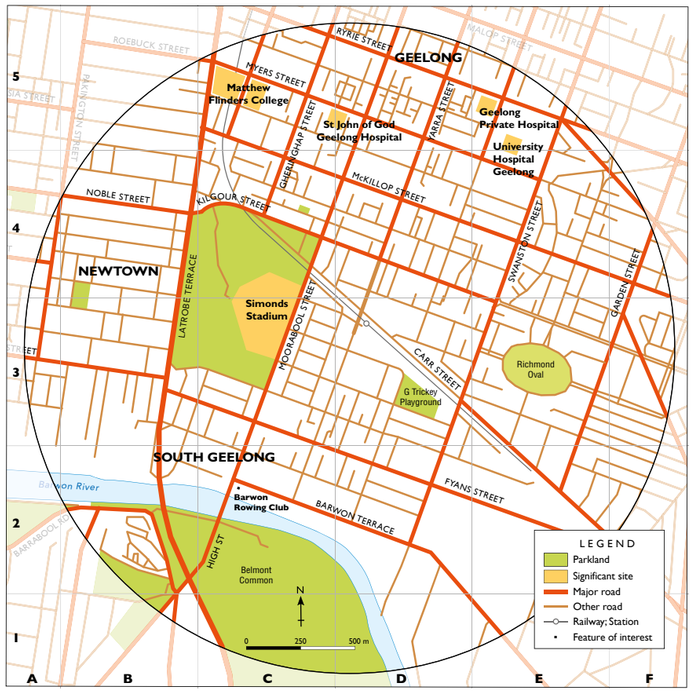
1 Explain the pattern in Source 4 showing access to restaurants in Melbourne's suburbs.

5B rich task

The liveability of your local area

Liveability applies not only to countries and cities but also to smaller local areas. Some areas are more liveable than others because of the infrastructure that is available or because of their culture and environment.

GEELONG: INNER SUBURBS



Source 1 Source: Oxford University Press

skill**drill:** Data and information

Completing a map survey

There are several pieces of information that you can collect to assess the liveability of your local area. The first of these is a map survey.

To complete a map survey of your local area, follow these steps:

Step 1 Locate a map of your local area. This could be from a street directory or from a website, such as Google Maps. Decide on the limits of your local area. This could be a suburb if you live in a large city or the whole town if you live in a smaller rural town. In this example, the student lives in South Geelong in inner Geelong and has chosen an area 1.5 kilometres from where she lives.

Step 2 Mark the limit of your local area on your map.

Step 3 Examine this area closely and count each of the following pieces of infrastructure within it:

- police stations
- hospitals
- chemists
- doctors
- churches
- sporting grounds
- parks
- post offices
- schools.

Apply the skill

1 Using the steps outlined above, complete a map survey of your local area.

2 Describe the infrastructure of this area in a carefully worded paragraph.

skill**drill:** Data and information

Completing a street survey

Another useful way to collect information about the liveability of your local area is to undertake a street survey as part of some fieldwork. In a street survey you are assessing the quality of the housing and other features of a street or several streets.

To complete a street survey in your local area, follow these steps:

Step 1 Choose a street with at least 30 properties and a length of at least 100 metres.

Step 2 Use a street survey form like the one shown in Source 2 to score your chosen street on a scale of 0 to 3 in a range of categories.

Apply the skill

1 Using the steps outlined above, complete a street survey in your local area.

2 In what parts of the survey did the street score well? In what areas did it score poorly?

3 What could be done to improve this street?

Street name: _____ **Suburb:** _____

		SCALE				
Traffic	Free of parked vehicles Low volume of traffic Safe for children	3	2	1	0	Cluttered with parked vehicles High volume of traffic Dangerous for children
Gardens	Variety of plants Neatly maintained					No plants Overgrown
Houses	Well maintained Variety of housing styles Variety of building styles					Run down All houses the same style All houses built from the same material
Vegetation	Trees shade half of road					No trees
Street furniture (signs, electricity poles, seats etc.)	Inconspicuous Improve the area					Conspicuous Detract from the area
Street lighting	Well lit					Poorly lit
Litter, vandalism and graffiti	No litter, vandalism or graffiti					Much litter, vandalism and graffiti
Access to facilities	Shops within walking distance Parks within walking distance Primary school within walking distance					Shops not within walking distance Parks not within walking distance Primary school not within walking distance
Footpaths, roads and kerbing	Clearly defined Good condition Maintained nature strips					Undefined Poor condition No nature strips
Other land uses	No offensive land uses					Offensive land uses
Column score						
Total score						

Source 2 Street survey

Source 3 South Geelong is an inner-city suburb of Geelong. It contains a mix of residential and commercial land uses.

Extend your understanding

1 What health-care facilities are available to residents of South Geelong?

2 What education facilities are available to residents of South Geelong?

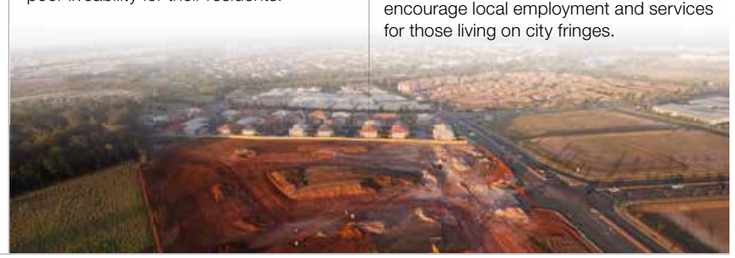
3 As an inner-city area, South Geelong is well served with public transport. What evidence can you find for this?

4 Comment on the availability of roads in this area.

5.13 Strategies for improving liveability

Over time, cities change and grow and the needs of people living in cities also change. To maintain and improve the liveability of a city, the services and facilities provided by governments and councils need to be regularly reviewed. Experts within government, universities, private business and community organisations, including geographers, are needed to identify problems in our cities and offer solutions.

In developing strategies to improve the liveability of our cities, planners must first identify the problems and their underlying causes, identify the impact on liveability, and then come up with strategies to try to overcome the problems. Source 1 shows some of the liveability issues currently facing people in Australian cities along with some of the strategies that have been suggested to cope with them.

The problem and underlying cause	The impacts on liveability	Some strategies for solving the problem
Traffic congestion As cities grow, people need to travel further to work and school. Higher rates of car ownership see more cars on the road, leaving the road network struggling to cope.	Traffic congestion results in people spending less time at home and more time in their cars; increases levels of air and noise pollution; increases levels of stress and frustration for drivers leading to increased incidents of road rage.	Strategies include building new roads that take road-users around rather than through the city; increasing public transport options to encourage people to leave their cars at home; encouraging alternative modes of transport, for example, building bike paths for cyclists.
		
Social inequalities As cities grow, some people within the community are left without work and are unable to access services such as schools, health care and housing.	Social inequalities can result in homelessness, unemployment and poverty; leaves some people with a sense of alienation from the community; can have a particularly negative impact on young people.	Strategies include ensuring access to opportunities through good education facilities and public transport; assessing needs and providing support through community services; providing facilities for young people where they can get together and receive the help they need.
		
Environmental issues As cities grow, they have a greater impact on the environment. Water resources are used up, pollution increases and more and more energy is required to service the greater population.	Environmental issues include air pollution from increased energy usage, land contamination from landfill, water shortages and damaged waterways.	Strategies for sustainable use of the environment include recycling rubbish materials; restricting water use; developing buildings and cars to be more energy efficient; and using renewable energy sources.
		
Urban sprawl As cities grow, more and more housing is required at an affordable price. Housing estates on the outskirts of cities offer cheaper housing options, but they also push further and further outwards.	Urban sprawl reduces the amounts of productive farmland near cities; threatens the habitats of native plant and animal species; creates greater dependency on cars, which in turn increases levels of air pollution and traffic congestion. New housing developments can suffer from a lack of community services, providing poor liveability for their residents.	Strategies include increasing the density of housing in established suburbs closer to the CBD with more multi-storey dwellings; protecting native habitats with bushland corridors and by planting more native trees in urban areas; ensuring public transport services are provided to all new developments and establishing satellite business centres outside the CBD to encourage local employment and services for those living on city fringes.
		

Source 1 Some issues faced by modern city dwellers and some strategies for improving liveability

Check your learning 5.13

Remember and understand

1. How does traffic congestion reduce the liveability of a city?
2. What is urban sprawl and what causes it?
3. What is an alternative to urban sprawl when a city needs to increase its housing supply?
4. Name three environmental issues that have a negative impact on liveability.

Apply and analyse

5. Which urban issues described here affect people in the city in which you live (or in a city you know well)?
6. What would you describe as the biggest issue faced by people in that city?
7. Select one of the problems described in Source 1 and come up with a list of strategies of your own that you think could be used to reduce the problem and improve liveability.

5.14 Improving transportation

Australians are among the most car-addicted people in the world. About 90 per cent of all journeys made in Australia are made by car, with trains, trams, buses and bicycles accounting for the remaining 10 per cent. As the number of people in cities grows, so too does the number of cars. Many urban roads are struggling to cope. Road congestion, particularly during morning and evening peak times, is threatening the liveability of many of our large cities.

In 2010, federal Minister for Infrastructure Anthony Albanese described the problem like this: 'Urban congestion contributes to traffic delays, increased greenhouse gas emissions, higher vehicle running costs and more accidents. It is a tragedy that many parents spend more time travelling to and from work, than at home with their kids. Relieve urban congestion and we improve our quality of life.' He estimated that traffic congestion will cost Australian cities $20 billion a year by 2020 unless the problem is addressed.

Strategies for improving transportation

Here are some solutions that planners around the world are experimenting with to improve traffic flows:

- Change the roads
  - Build more ring roads and bypasses that take traffic around the city centre and other busy places.
  - Change the traffic flow in the inner city by introducing a one-way system for most of the roads.
  - Make the main roads smarter by installing overhead signs advising of variable speed limits; signs that use GPS satellites to provide drivers with traffic information; traffic lights on entry ramps; monitoring systems in the road surface to detect traffic incidents and congestion; overhead closed circuit television monitors; and traffic signals that give priority to public transport.
- Get people off the roads
  - Introduce a 'park and ride' system where drivers park their cars on the edge of the central business district (CBD) and then travel to the CBD by bus or train.
  - Ban cars from the CBD.
  - Charge car drivers a toll when they enter the city centre.
  - Develop a better public transport system that encourages people to get out of their cars into trams, trains, buses and ferries. The world's best public transport systems involve all these modes working together on a single ticket and with an integrated timetable rather than as individual pieces of different puzzles.
  - Encourage people to walk or cycle by building more footpaths and bike lanes and promoting the health benefits of walking and cycling.
- Keep doing what we're doing
  - Build more multi-storey car parks in the city centre.
  - Build more roads to carry the increased traffic.
  - Increase motoring taxes to pay for new roads through increases in petrol prices.
  - Encourage private companies to build toll roads.

Source 1 Traffic on the Westgate Bridge leading to the Princes Freeway in Melbourne

Source 2 Graphic representation of the paths taken by 380 taxis in a single day in London. Bright splashes of light show paths taken by many taxis while darker areas have seen few, if any, taxis.

Check your learning 5.14

Remember and understand

1 What does the graphic representation of London taxis (Source 2) reveal about transport flows in large cities?
2 What are the causes of traffic congestion?
3 What problems does traffic congestion cause for people and cities?

Apply and analyse

4 Here we have described many possible solutions to traffic congestion.
  a Which do you believe are the three solutions most likely to relieve congestion? Explain your response.
  b Which solutions do you think are most likely to make congestion worse rather than better? Explain your response.

Evaluate and create

5 As the planner responsible for traffic congestion in your city, you have chosen one of these solutions to put into place. Design an advertising campaign that explains this solution to drivers and the general public. Remember to explain it clearly and simply and to point out the benefits of this solution for drivers and for all the residents in the city. You may choose to create a poster, brochure, bumper sticker or short TV or radio ad explaining your campaign.

5.15 Improving liveability for young people

When trying to improve the liveability of a town or city, planners need to take into account the varying needs of people of different ages. The needs of children and young people are obviously very different from the needs of older retired people. Each of these groups, however, benefits from having special attention paid to their particular needs. Here we will look specifically at strategies for improving the liveability of places for children and young people.

Source 1 Venues designed for young people can increase youth participation in the community.

Strategies for young people

The views of young people need to be taken into account when planning for more liveable cities. Some of the key liveability factors relevant to a younger population are discussed here:

- **Public transport**
  Young people are the community group most likely to be dependent on public transport services. Public transport needs to be safe and reliable to encourage young people to use it. Public transport routes also need to be designed to meet the needs of young people with services regularly going past local schools, shops, and entertainment and sports facilities.
- **An attractive and healthy natural environment**
  When cities experience environmental issues such as air pollution, children are often the worst affected, and negative impacts to their health can last a lifetime. With housing density increasing, the need for green spaces is increasing. Access to public parks and playgrounds provides healthy natural environments for children who are living in housing without gardens. These playgrounds also provide opportunities for children to develop their coordination and physical strength while enabling them to make friends and socialise.
- **Good schools and other educational facilities**
  Schools need to have teaching spaces that offer the flexibility for group work and individual work and also provide good outdoor spaces. As students use more technology in the classroom, schools need to adapt to meet the needs of this new technology by providing fast Internet and Wi-Fi.
- **A wide range of recreational environments for young people**
  One of the keys to improving liveability for young people is providing good public spaces. Public spaces should be designed to cater for their specific needs and interests. These include sportsgrounds and facilities such as skate parks and skating rinks, and entertainment facilities including cafes, cinemas and music venues. Community festivals and events can also be organised to include activities specifically designed to interest young people.
- **Services for young people at risk**
  Vulnerable young people who are at risk from abusive family members, homelessness or substance abuse need special attention to ensure that they are not disadvantaged by their circumstances and can reach their potential. Community services can provide support through counselling and mentoring, or by helping to arrange alternative accommodation.

Case study: 'Happy, Healthy and Heard' – City of Port Phillip, Victoria

In Victoria, local councils are responsible for helping young people to connect with their local community. The City of Port Phillip in Melbourne is an example of a local council that has a well-developed youth strategy. The City of Port Phillip stretches from the suburb of Elwood (in the south) up to Port Melbourne (in the north) and includes the well-known suburbs of St Kilda and Albert Park.

The youth strategy for the City of Port Phillip is known as 'Happy, Healthy and Heard'. It includes a number of important goals designed to:

- strengthen the links for young people to their friendship networks and build stronger connections to family, school and community
- create safe programs and spaces that allow young people to explore, be supported and be themselves – and celebrate them!

City of Port Phillip Marina Reserve

One example of a community space that has been created specifically to appeal to young people and improve liveability in the City of Port Phillip is the Marina Reserve on the St Kilda foreshore. Opened in 2013, it includes a large skate park, toilets, barbeques and picnic tables, as well as being a space for people to exercise their dogs in an off-leash area.

Source 2 Skate parks – like this one at the Marina Reserve in St Kilda – are a great way to make open spaces more appealing to young people.

An interesting feature of the park is the 24-hour streaming webcam that allows skaters and their parents to monitor the skate park. Not everyone in the local community supports the use of this webcam. Some people argue that it intrudes on people's privacy. Others feel that it helps to make the area safer and more liveable.

Check your learning 5.15

Remember and understand

1. What are three liveability issues that affect young people?
2. How does a skate park provide a more liveable community for some young people?
3. What facility or service would you like to see in your local community to make it more liveable for you?

Apply and analyse

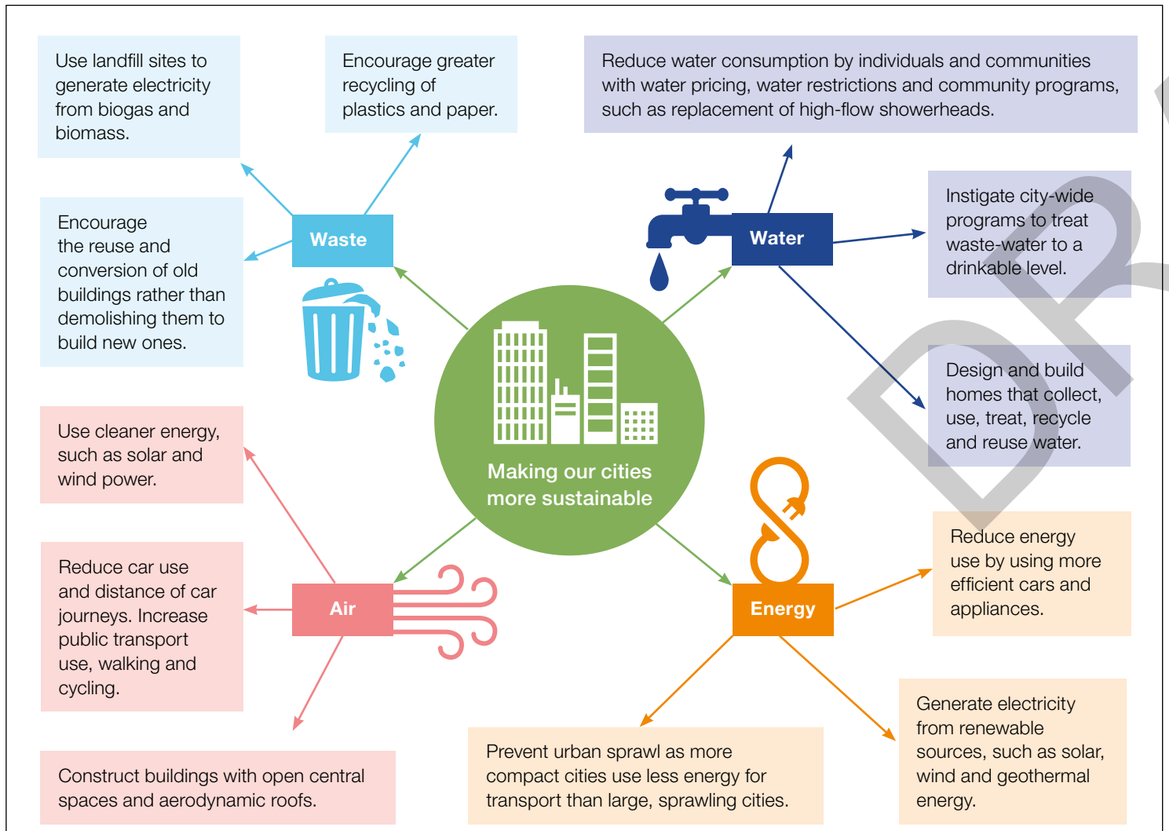
4. Consider the 'Happy, Healthy and Heard' case study from the City of Port Phillip which of the council's goals have been addressed by the facilities at Marina Reserve?
5. Access the Marina Reserve webcam and have a look at what's currently happening at the skate space. Do you think the addition of a streaming webcam makes the park more liveable or less liveable? Explain your point of view.

5.16 Improving sustainability

The quality of the environment has a big effect on the liveability of a place. Cities consume large amounts of **natural resources**, such as water and energy. They also produce substances that are harmful to the environment, such as greenhouse gases, as well as solid waste, such as sewage and rubbish. Rapidly growing cities in developing countries are struggling to deal with these and other environmental issues.

In the last decade, Australian cities have become more sustainable by reducing their impact on the environment in many significant ways. We now use less energy, produce less rubbish, consume less water and have cleaner air than was the case at the beginning of this century. This is largely due to new technologies in such things as power stations and the phasing out of old technologies such as less efficient cars that pollute more.

There have also been changes in behaviour that have been encouraged by governments. City dwellers, for example, now take for granted that recyclable material is not waste and should be separated out in the weekly rubbish collection. Local restrictions on the use of water in households have also helped to make our cities more sustainable. But there is still much more that can be done.



Source 1 Concept map showing strategies for a more sustainable city

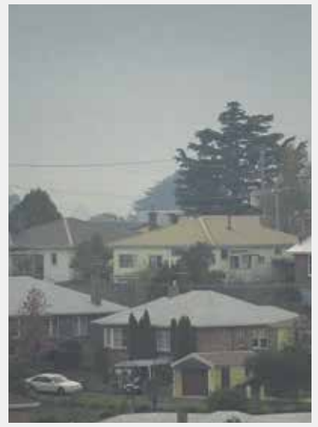
key concept: Sustainability

Clearing the air in Launceston

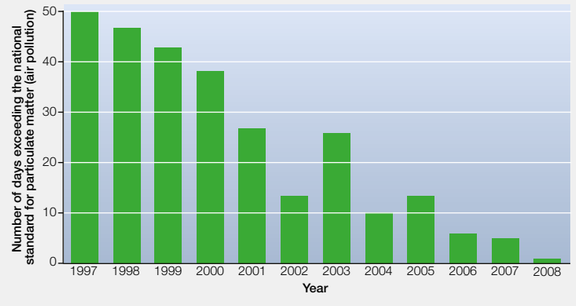
The city of Launceston in northern Tasmania was once one of Australia's most polluted cities. This was due to a combination of natural processes and human activities. About two-thirds of households in the early 1990s used wood fires to heat their homes and this produced large quantities of smoke, particularly during winter. Launceston's location in a valley meant that the smoke was trapped and people's health began to suffer. Researchers linked Launceston's smoke to high rates of asthma and lung disease and likened it to the effects of tobacco smoking.

In 1997 there were 50 days in which Launceston's air exceeded the national standard for the amount of pollution. By 2008, this had fallen to only one day a year. This was due not to wood heaters but to a nearby bushfire. This dramatic change is largely because of a government scheme where Launceston residents were given $500 to change their home heating from wood fires to other methods, such as a gas fire or electric heater. More than 2000 residents have so far taken advantage of the scheme and thousands of others have changed their heating methods because of the publicity generated.

For more information on the key concept of sustainability, refer to page 10 in 'The geography toolkit'.



Source 2 The hills that surround Launceston trapped wood smoke, making it one of the world's most polluted cities.



Source 3 Air pollution in Launceston, 1997–2008

Check your learning 5.16

Remember and understand

1 Why did Launceston have such poor air quality?
2 How did the people of Launceston improve their air quality?

Apply and analyse

3 Solutions to some of the environmental problems faced by city dwellers can be easy to find but hard to put into place. Give some examples of solutions that have been difficult to put into place.
4 Select one of the four environmental issues shown in Source 1.
   a Explain why this is an issue in cities.
   b Which of the three solutions given do you think has the best chance of helping to address the issue?
   c Can you think of two more solutions? Share these with your classmates and use the discussion to describe how cities can be made more sustainable.
5 Examine Source 3.
   a Describe the change in air pollution in Launceston from 1997 to 2008.
   b Give a possible reason for the sudden increase in pollution in 2003.

Evaluate and create

6 Cities are one of the main causes of global climate change, as much of the gas that traps heat comes from burning **fossil fuels** in cities. In a small group discuss how cities can lead the way in reducing the emission of these gases.

5C rich task

Hamburg – a green city

The city of Hamburg in Germany is one of the most environmentally friendly cities in the world. Green spaces, parks, woodlands and nature reserves make up 16.7 per cent of the urban area, and 17 per cent of the city's total power usage comes from renewable sources like wind and solar. Hamburg is one of the 20 most liveable cities in the world and, in 2011, was named the European Green Capital.

Hamburg is currently building an inner-city development called HafenCity in the location of the old port warehouses. HafenCity will provide housing for 12 000 residents and jobs for around 45 000 people. It will create 10.5 kilometres of new waterfront and 26 hectares of public parks, squares and promenades.

The HafenCity community will use 30 per cent less power thanks to environmentally friendly design and materials, and wind- and solar-power technologies. Many rooftops will be covered in greenery to slow stormwater run-off and reduce heat from the development.

skill**drill:** Data and information

Interpreting oblique aerial images

The photograph and illustrated plan provided are both what geographers call oblique aerial images. Oblique aerial images are taken on an angle from a high point. They can be taken looking down from a hill or mountain, or from an aircraft or hot-air balloon. Oblique aerial images are useful for geographers because they can show a much larger area than photographs taken from ground level (known as ground-level images) because the view is not interrupted by trees, houses or mountains. They are also useful because all of the features shown in them are easily recognisable. This is not always the case with images taken from directly above (known as vertical images or 'plan view' images).

When interpreting oblique aerial images, it is important to be aware of the following points:

- Oblique aerial images allow you to see the height and width of features on the ground. As a result it is possible to get an idea of the steepness of the ground or the height of a building.
- A major disadvantage of an oblique aerial image is that scale is inconsistent. This means that distances in the foreground and distances in the background cannot be calculated using the same scale. If you want to make a map or take accurate measurements of distance, you should not use oblique aerial images. Use vertical images instead that show the area in plan view.

Source 1 An oblique aerial photograph of the HafenCity development in Hamburg, Germany. It will be Europe's largest inner-city development project.

Apply the skill

1 Examine the photograph of HafenCity shown in Source 1.
   - **a** Are the buildings in HafenCity (in the foreground) generally lower or higher than those in the background? How can you tell?
   - **b** Would the width of the channel behind HafenCity be easier to measure on a plan or oblique view?

Extend your understanding

Conduct some research on the Internet to find out more about the HafenCity development in Hamburg.

1 In what year was the project first announced?
2 When do the developers estimate the project will be completed?
3 How many homes will HafenCity contain once the project is complete?
4 Find some images of the HafenCity site before it was developed and compare them with Source 2.
   - **a** In what ways has the HafenCity site changed since development began?
   - **b** How has the HafenCity development improved the liveability of the city of Hamburg?
   - **c** HafenCity has been designed to be highly sustainable – using environmentally friendly building materials and wind and solar power. Using Source 1 on page 182, suggest three more ideas that could be introduced to improve the sustainability of HafenCity.

Source 2 A compuer-generated plan of HafenCity from an oblique aerial view