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HUMANITIES & SOCIAL SCIENCES

8

WESTERN AUSTRALIA



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HUMANITIES & SOCIAL SCIENCES 8

WESTERN AUSTRALIA

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HUMANITIES & SOCIAL SCIENCES 8

WESTERN AUSTRALIA

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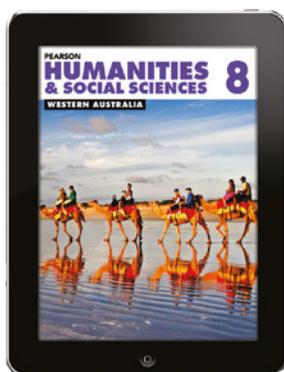
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How to use this book

The Student Book is divided into the four subject strands.

CIVICS AND CITIZENSHIP



CHAPTER 1

Democracy in action

The principles of freedom of opinion, religion, assembly, association and movement are all vital to a strong and vibrant democracy. Throughout history Australians have made effective use of the democratic tools available to them—such as staging peaceful protests and demonstrations to campaign for positive change.

Many of these intrinsic rights are currently under threat. It is the aim of civic education to protect and the introduction of new legislation that seeks to protect Australians from the threat of global terrorism. This has created a debate within Australian society about the need to introduce a bill of rights.

ECONOMICS AND BUSINESS



CHAPTER 4

Consumer rights in Australia

Rights are what a person is entitled to or observes. In Australia's mixed economy, governments try to protect the rights of both buyers and sellers using Australian Consumer Law (ACL). If we expect to have certain rights, then we also have a responsibility to make sure that we respect the rights of other people. ACL places responsibilities on both buyers and sellers to ensure that the rights of both groups are protected.

GEOGRAPHY



CHAPTER 6

Landscapes and landforms

Landscapes comprise the physical elements of the earth's surface and the cultural setting of human activity, some of which stretches back thousands of years.

Landscapes reflect the interactions of place and people over time and are important in shaping national identity. Landscapes contribute to our sense of place and form the dynamic (time-changing) landscape to our lives.

Landscapes are the natural features of the earth's surface.

In this chapter we are introduced to the concepts of landscapes and landforms, the processes responsible for their formation and the ways in which people value them.

HISTORY



CHAPTER 9

Overview: The ancient to the modern world

After the fall of Rome, societies across Europe, the Middle East and Asia changed significantly. Across medieval Europe, society was organised under feudalism. The Catholic Church became the most powerful force in Europe. During the fifteenth to eighteenth centuries, in European 'discovery' and elsewhere other parts of the world, this was to become known as the age of exploration.

In the Middle East, the Islamic empire formed and became the dominant power in the region. By Turkey, the Ottoman Empire emerged. Religious clashes between Christians and Muslims occurred in a series of wars known as the Crusades.



Each chapter is divided into unit spreads of between two and six pages. The features in each chapter are outlined below.

Chapter opener

Each chapter opens with an engaging image and an introduction related to the chapter content, providing a basis for inquiry into the topic. History chapter openers also feature a timeline showing the key dates of the period covered in the chapter.



CHAPTER 2

Law in action

Rules and laws exist wherever there are people. At school, at home and in society rules and laws tell us about what is acceptable behaviour and what is not. What do you know about the law? What exactly is the difference between a rule and a law? Why are laws needed and who makes them? What are the differences between civil and criminal law? What happens if laws are broken? As a member of Australian society, it is important for you to know how laws affect you and the rights and responsibilities you have.

Unit content

Content in each unit covers one or more 'Knowledge and understanding' content descriptions from the Humanities and Social Sciences syllabus. The core text is supported by primary and secondary written and visual sources. Engaging facts in 'Did you know?' feature will stimulate further interest and provide additional information.

UNIT 10.4

Medieval achievements

The Middle Ages left a rich legacy that can be seen in many aspects of modern Western culture, art, architecture, science, technology, literature and music. Many of these achievements were the result of a renaissance in learning, science and art that began in the late 12th century and continued into the 15th century.

Manuscripts
Medieval manuscripts were books made up of multiple sheets of vellum, made from calf or lamb skin, which were the best quality parchment available. These books, often written in illuminated (decorative) letters, were bound and had a spine. The parchment pages were held together by cords.

Did you know?
The oldest known manuscript is the Voynich Manuscript, which is a collection of handwritten text that has never been deciphered. It is named after the antique dealer who discovered it in 1912.

The printing press
The invention of the movable type by the early 15th century revolutionised the production of books. It allowed for the mass production of books, which was a major step towards the modern world.

Architecture
The soaring spires and grand domes of the great churches and cathedrals of the Middle Ages provide evidence of the architectural skills and determination of the medieval world.





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Spirit, Justice Earth Community

Pitt Street Uniting Church
Spirit, Justice Earth Community

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Spirit, Justice Earth Community

LET THEM STAY

I CAN'T BELIEVE WE EVEN NEED TO PROTEST THE TORTURE OF KIDS

AMNESIA CENTER

I SPEAK UP FOR THE VOICELESS

LET THESE BEAUTIFUL PEOPLE STAY IN THEIR HOMELANDS

WELCOME ASYLUM SEEKERS PEOPLE JUST LIKE US

SHAME

CLOSE MANUS AND...

WELCOME ASYLUM SEEKERS #LetThemStay

#LetThemStay

WELCOME ASYLUM SEEKERS #LetThemStay

MALCOLM TURNBULL #LetThemStay

WELCOME ASYLUM SEEKERS #LetThemStay

MALCOLM TURNBULL #LetThemStay

Democracy in action

The principles of freedom of opinion, religion, assembly, association and movement are all vital to a strong and robust democracy. Throughout history Australians have made effective use of the democratic tools available to them—such as staging peaceful protests and demonstrations to campaign for positive change.

Many of these intrinsic rights are currently under threat. This is due to weak constitutional protection and the introduction of new legislation that seeks to protect Australians from the threat of global terrorism. This has created a debate within Australian society about the need to introduce a bill of rights.

Source 1.0.1 4000 protesters at Sydney Town Hall gathered to demonstrate their opposition to the detention of asylum seeker children in the offshore processing centres of Manus Island and Nauru. The protesters also called for the abandonment of all offshore detention.

Australia: Freedoms

Since 1901 Australia has been a successful **representative liberal democracy**. Most people are able to live free from oppression, discrimination and government interference. They are protected by core principles of the rule of law and responsible government.

Democratic freedoms

The following values have been identified as some of the defining features of Australian democracy. Although there is no formal document guaranteeing the protection of these freedoms in law, they have been accepted and recognised as vital to the Australian democratic culture. They include:

- freedom of assembly and association
- freedom of religion and movement
- freedom of speech and expression
- freedom of information.

Magna Carta—the great charter

Australia’s democracy has been shaped by an important part of English law called the Magna Carta. This was a document written in 1215 by King John of England.

Source 1.1.1

The Magna Carta, written in 1215 by King John of England, on display at Old Parliament House, Canberra



The Magna Carta limited the king’s power and forced him to abide by the law. It established the foundation for the importance of the rule of law.

Source 1.1.2 An extract from the Magna Carta

No free man shall be seized or imprisoned, or stripped of his rights or possessions, or outlawed or exiled, or deprived of his standing in any other way, nor will we proceed with force against him, or send others to do so, except by the lawful judgment of his equals or by the law of the land.

Public interest versus democratic freedom

The world has changed immensely since our **Constitution** was written. There are now global fears of terrorism, increased refugee and humanitarian crises and security issues surrounding the use of the internet. Governments have a responsibility to deal with these issues but also to continue to protect and uphold democratic freedoms. This is a difficult task and there is much public debate about how best to do this.

Limits to democratic freedoms

There are currently 350 laws that have been identified in Australia that limit democratic freedoms. Of those, 209 have been legislated since the terrorist attacks in 2001. While attacks of terror must be dealt with forcefully, there is increased concern from some groups in Australia that politicians are using this excuse too much. This point of view argues that democratic freedoms are being eroded without enough thought to the consequences.

Some people within the community are now asking to what extent is it reasonable for a government to interfere with a citizen’s basic rights on the basis of protecting national security. Australians must continue to hold the government accountable for its actions if they are to preserve their democratic freedoms. It is difficult to regain such **liberties** once the law has taken them away.



Getting rid of civil liberties.



Bringing them back again.

Source 1.1.3 This cartoon shows a particular point of view about what the consequences of the new terror laws might be.

Source 1.1.4 Some of the arguments for and against a bill of rights

Arguments for a bill of rights	Arguments against a bill of rights
<ul style="list-style-type: none"> • Democratic freedoms would be guaranteed in law and not just implied by the Constitution. • Currently minority groups are at the mercy of the majority. A bill of rights would allow them to have equal protection before the law. This includes Indigenous Australians and refugees. • Judges are used to making decisions about difficult issues that parliament tends to avoid or defer. • State, federal and territory laws are inconsistent. • Currently judges must obey laws established by parliament, even if human rights are breached. A bill of rights would force judges to take human rights into greater consideration and bring Australia into line with international standards. 	<ul style="list-style-type: none"> • It is a challenge to parliamentary sovereignty, the basis of Australian democracy. It places limits on laws that are willed by the people. • Moral issues become political ones. • Major decisions are left with judges who are not elected by the people. • It enables judges to interpret and change the meaning of laws. • There is concern that participation in democracy would decrease. This is because judges would have more law-making capacity. • The judicial system will become biased as judges could be appointed based on their moral judgments. • There is potential for it to become outdated very quickly. It's better for parliament to deal with emerging issues as they arise. • It can entrench attitudes that are out of date. For example, when the American Bill of Rights was written, the concept of bearing arms was very different to what it means now.

ACTIVITIES

Remembering and understanding

- 1 List four democratic freedoms enjoyed in Australia.
- 2 State the main ideas contained within the Magna Carta.
- 3 Cite examples of issues that have emerged since the Australian Constitution took effect.

- 4 Demonstrate how democratic freedoms might be impacted by anti-terror laws.

Applying and analysing

- 5 Discover the rights given to citizens of the United States in the Bill of Rights.

Evaluating and creating

- 6 In groups of four, debate whether or not Australia should introduce a bill of rights.

A bill of rights

The new anti-terror laws are just one example of the changing nature of law-making in Australia. As a result of the new laws, the demand for a bill of rights has re-emerged as an issue. A bill of rights is a piece of law that guarantees basic individual rights and freedoms. It is used by judges to overturn laws that attempt to limit these rights. Perhaps the most famous example of a bill of rights is that of the United States.

Freedom of speech

Defining freedom of speech

Freedom of speech is the right of the individual or groups (such as the media or religious organisations) to express opinions publicly without government restraint or **censorship**. It is seen as essential to democracy as it allows for political debate and criticism of the government. Freedom of speech does not just refer to spoken communication but also includes written communication. Political cartoons, artworks and emails are all included when considering issues of **free speech**.

Exceptions to freedom of speech

There are some examples where it is right to limit freedom of speech. Laws have been enacted making vilification (hate speech) and defamation illegal. It is right to protect citizens from opinions that cause or incite violence and an intention to harm.

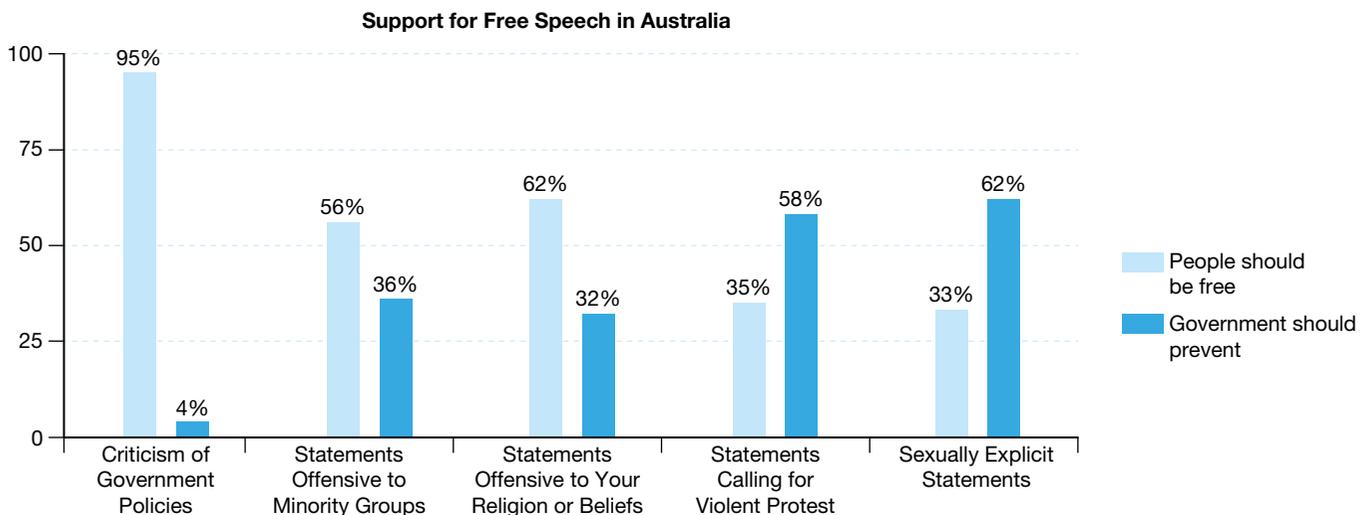
An example of this are the laws that make it illegal to publish child pornography. Although this is a limit to free speech, it aims to protect children from terrible harm and exploitation.

Source 1.2.1 indicates how important free speech is to Australians. It also shows issues where the public feels some limits to freedom of speech are needed.

The Constitution and free speech

Freedom of speech is not a guaranteed right in Australia, unlike in some other democracies around the world. The Australian Constitution does not explicitly protect freedom of speech and expression; it is merely implied.

Sections 7 and 24 of the Constitution state that both houses of parliament must be directly elected by the Australian public. If the parliament is to truly reflect the people's will, then the public needs to have access to information about the people they are voting for. They must be able to hear differing opinions before making a decision, so a provision of free speech is required. This is why the High Court (whose role is to interpret the Constitution) supports the idea that free speech is implied in the Constitution.



Source 1.2.1 A global survey published by the American Pew Research Center looked at whether people supported all types of free speech or whether they agreed that the government should prevent some types of speech.

Challenges to freedom of speech

Lange v Australian Broadcasting Corporation (1997)

The Lange case in 1997 was one of the first times that free speech was challenged in the High Court. In this case the former New Zealand Prime Minister David Lange accused the ABC of defamation. In its ruling, the High Court made two important decisions:

- freedom of speech is necessary only to promote representative and responsible government—it is not about individual rights
- the public needs access to a wide range of opinions to help in the voting process.

The judges ruled that the public uses the media to get information about political candidates, and therefore they supported the implied guarantee of free speech. The case was important because it helped to form other High Court rulings on matters of free speech.

The Street Church Case (2010)

The High Court ruling in *Lange v Australian Broadcasting Corporation* was applied to the Street Church case in Adelaide in 2010.

Samuel and Caleb Corneloup belonged to a street church in Adelaide. Using megaphones, signs and placards to express their particular religious views, they called out to passers-by that they would be going to hell for their activities. This included anything from holding hands to wearing Muslim dress.

In order to remove the street church, the Adelaide City Council used a by-law (a law made by a local council that only applies to that area) that restricted preaching, canvassing, haranguing and handing out printed matter in the Rundle Street Mall.

The Corneloup brothers challenged the by-law. Their case was heard in the High Court, which did not rule in their favour. The judges believed that it was a legitimate reason to limit free speech in order to ensure public order.



Source 1.2.2 The Corneloup brothers challenged a local council by-law that limited their freedom of speech.

The outcome highlighted some concerns for freedom of speech:

- freedom of political communication is limited
- protection of free expression needs to be strengthened through the law or the Constitution
- in this particular case, a by-law was able to prevent people from expressing their view in a public space.

ACTIVITIES

Remembering and understanding

- 1 Define the term 'freedom of speech'.
- 2 Show why freedom of speech is an essential part of democracy.
- 3 Give examples of the forms of communication to which freedom of speech applies.
- 4 Describe some of the limits to freedom of speech.

Applying and analysing

- 5 Examine why free speech is an implied right in the Australian Constitution.

Evaluating and creating

- 6 Compare and contrast the findings of the High Court in *Lange (1997)* and the *Street Church Case (2010)*. Do you agree with the decisions?

Freedom of association and assembly

Freedom of association

Freedom of association gives Australians the freedom to join any group or organisation (provided it is legal). This includes joining a political party, a church group, sports club or trade union.

Protecting freedom of association

Freedom of association in Australia is valued as a basic democratic right. Legally, however, this is not the case. The Australian Constitution only implies protection of freedom under sections 7 and 24 (in the same way that freedom of speech is implied).



Source 1.3.1 Freedom of association allows Australians to join any group and to meet together to express their views. This photograph shows Victorian nurses, supported by other trade unionists, rallying for better pay and conditions.

Laws that restrict freedom of association

The threat posed by terrorist organisations is one that the Australian government takes very seriously. Recently it has introduced legislation that seeks to prevent the operation of terrorist groups.

These changes make it illegal to associate with certain organisations. This is meant to prevent people assisting terrorist groups either financially or through distributing materials (leaflets or pamphlets) to help in their cause.

The government argues that the laws are necessary to protect the public from terrorism. However, civil liberties groups have concerns that this legislation extends too far for the following reasons.

- The definition of a 'terrorist organisation' is very vague.
- The government can brand an organisation as 'terrorist' without giving it the ability to defend itself. This shifts the burden of proof; people have to prove innocence rather than guilt.
- An individual may not know that they are associating with an illegal group.
- People can be punished because of whom they associate with, rather than because of their actual activities.
- It can prevent people visiting family members who live in areas associated with terrorism for fear of arrest.

Freedom of assembly

Freedom of assembly means that people are able to meet together in a public or a private place to exchange ideas and information and to express views. It also includes the right to peaceful protest.

Protests: An important part of the democratic process

Peaceful protests or **demonstrations** are an effective way for the public to show they are dissatisfied with the government. They allow people the chance to have a direct say in their community. Despite being a vital form of expression, they often create tension. This is because they can disrupt business and communities through the closing of streets or workers walking off the job.

Australians have protested over a wide range of issues including the war in Iraq, **federal budgets**,



Source 1.3.2 Indigenous Australians protesting in Halls Creek over the decision to close remote communities in Western Australia

bikie laws, environmental concerns over mining and logging, religious issues or those involving asylum seekers and refugees. One of the most famous and longstanding protests was the Aboriginal Tent Embassy at Old Parliament House.

Exercising the right to protest

In November 2014 the Western Australian government announced the closure of 100–150 remote Indigenous communities across the state. It included areas such as Broome, Halls Creek, Fitzroy Crossing and Dampier Peninsula.

In March 2015 street protests occurred across Western Australia with the decision being branded as a ‘**cultural genocide**’ by Aboriginal elders. The issue sparked national and worldwide attention, with protests occurring across international and state capitals in support of the first Australians.

The positive role of protests in a democracy

In this instance the holding of peaceful protests resulted in a positive outcome. It allowed a small number of people who were negatively impacted by a law to have their concerns acknowledged. They were able to exert pressure on the government by gaining the support of their community. It resulted in the state government of Western Australia seeking further consultation with the Indigenous community before taking further action. The

demonstrations served as an important example of how people can actively be involved in their community to bring about change. Participation in a democracy is not just about voting at an election.

It also shows that governments can be forced to amend or abandon laws in the wake of public outcry. If they proceed with unpopular or unfair laws they will be voted out at election time.

ACTIVITIES

Remembering and understanding

- 1 Identify three ways that Australians can exercise freedom of association.
- 2 Show one example of a limit to the freedom of association.
- 3 Compare and contrast freedom of association and freedom of assembly.
- 4 Explain the meaning of the term ‘peaceful protest’.

Applying and analysing

- 5 Choose one recent issue that has been the focus of peaceful protest in Australia and identify the point(s) of view being expressed by protesters.

Evaluating and creating

- 6 Appraise the importance of peaceful protest in Australia’s democracy.

Freedom of religion and movement

Freedom of religion

A definition

Freedom of religion ensures that people are able to follow a religion of their choice. This includes the right of an individual to make the choice to not follow a religion (examples of these include atheism and agnosticism). The government is not permitted to influence or interfere with an individual's decision in relation to their religious faith.

Freedom of religion and the Constitution

Provisions for protecting religious freedom in Australia are not guaranteed. Section 116 of the Australian Constitution is unique as it makes a point of preventing the government from making laws about religion. The states are not bound by this section. They are free to legislate on religion as they see fit.

There are limited opportunities for individuals to seek amends if it is felt that their religious rights have been violated. Often appeals have to be made through international bodies.

THE EXTERNAL AFFAIRS POWER

There is one way that the Commonwealth can get around section 116. This is through the External Affairs Power. The Commonwealth Government is the official government of Australia and therefore

it takes responsibility for all international matters. Signing an international treaty is an example of this. Once signed, there is an expectation that Australian domestic laws will change to reflect what has been agreed to in the treaty. The Commonwealth can use this power as a way of introducing legislation in regard to religious freedom.

Protecting religious freedom

A person's right to exercise freedom of religion is taken away when laws prevent them from participating in the religion of their choice. No court in Australia has ever found that religious freedom can never be limited or restricted.

Freedom of religion is complex to protect. This is because freedom of religion can come into conflict with another freedom (such as freedom of speech) or a law. It can also come into direct conflict with other religions. The Anti-Discrimination Act, while a positive law that prevents unequal treatment of individuals, directly impacts upon religious freedom.

The Anti-Discrimination Act and religious freedom

The Anti-Discrimination Act makes it illegal to discriminate against someone based on their personal attributes such as race, gender and ethnicity.



Source 1.4.1 A rally in support of religious freedom

In all Australian states, except for NSW and South Australia, this extends to religion.

Examples of religious discrimination claims:

- A Muslim prisoner claimed he was discriminated against because the prison did not offer halal meat; he was successful.
- A man who was employed by a petrol refinery was sacked after refusing to contribute to a union fund. His religious beliefs prevented it. He was successful.
- An employee was asked to remove a notice to hold a prayer service during work hours. It was a non-religious workplace (secular). The employee was unsuccessful.

Exclusions to the Act

Currently, religious organisations are exempt from parts of the Anti-Discrimination Act. For example, religious schools argue that to protect the spiritual values of the school they need to hire people who practise the faith. This means that people who do not share the religion do not have to be considered for jobs at that particular school. While religious schools are legally able to do this under current anti-discrimination laws, nonreligious schools cannot. On the one hand, this can be viewed as a violation of Australian anti-discrimination laws but, on the other, it can be seen as one that protects the ability of people to freely practise their religion. These exemptions do not apply to individuals, only to organisations.

Freedom of movement

Defining freedom of movement

Freedom of movement allows people who are lawfully within Australia the right to:

- enter and leave the country
- move freely within the states and territories
- choose where they live.

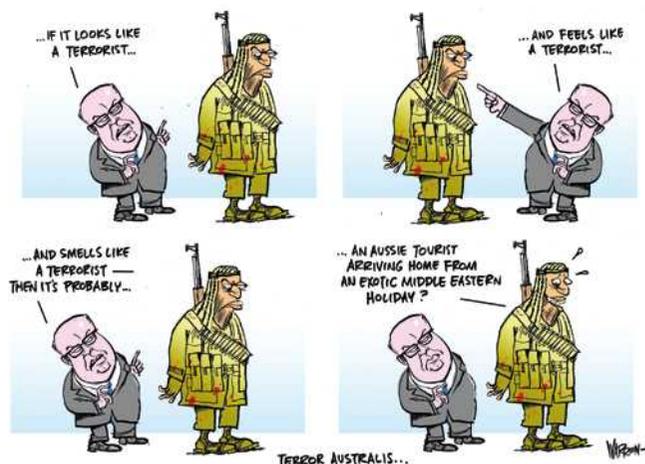
Limitations to freedom of movement

The Foreign Fighters Bill 2014 was introduced to deal with the security threat posed by people who leave Australia to fight in foreign conflicts. It is feared that foreign fighters who have fought alongside terrorist organisations may return to Australia to commit a terrorist act. Foreign fighters are targeted in two ways:

- trying to stop would-be terrorists from travelling to war zones

- when they return to Australia, foreign fighters can be restricted in their travel within Australia, unable to leave Australia or made to wear a tracking device.

Some people claim that the Bill is dangerous in a number of ways. It is not very specific, making it easier to accuse people of wrongdoing. A person may be imprisoned for up to 10 years if they've travelled to places where terrorists are operating. This includes people who have family living in these areas or journalists who are on assignment. The onus is on the traveller to prove that their visit was for legitimate reasons.



Source 1.4.2 This cartoon is a comment on what some groups fear will be a result of the Foreign Fighters Bill 2014.

ACTIVITIES

Remembering and understanding

- 1 Summarise what freedom of religion means for individuals and the government.
- 2 Name the section of the Australian Constitution that relates to freedom of religion.
- 3 Outline what this section of the constitution says about religious freedom in Australia.
- 4 Illustrate how freedom of religion can conflict with other democratic freedoms.

Applying and analysing

- 5 Question the role of the Anti-Discrimination Act in Australia with respect to freedom of religion. In your opinion, does the Act strengthen our democracy?

Evaluating and creating

- 6 Suggest two ways that the Foreign Fighters Bill (2014) could be improved.

Australians and democracy

In order for a democracy to thrive it must have active participation and involvement from its citizens. Australians can be involved in their community in many ways at a local, state and federal level. The most common way to participate is through the compulsory voting system that allows people to elect their representatives.

Participating in democracy is about more than just voting. The strength of Australian democracy relies on its citizens being informed about proposed laws, budgets, the impact of global issues such as war and attitudes towards refugees and migrants. If public interest in the community declines and people stop participating in public debate, it is difficult to keep politicians accountable for their actions.

Ways to be involved in the political process

Some of the most obvious ways to participate in democracy are to stand for office, fund a political party or join a party and attend its meetings. This requires a high level of commitment. Other ways to be involved include lobbying, direct action, signing petitions, boycotting goods and products, participating in marches and demonstrations and contacting local members of parliament.

Lobby groups

Lobby groups are formed to represent particular issues that they want the government to support. Their aim is to either:

- convince the government to pass laws that favour their cause **or**
- oppose laws that disadvantage them.

Lobbying is also used to obtain government funding for projects.

Lobby groups vary in size and the causes that they represent. Wealthy corporations are able to hire full-time lobbyists to protect their interests. They tend to seek out former political staff workers or retired politicians. This is so that they have up-to-date knowledge of government policies and access to political contacts. Lobbyists, however, are not

Political Action	% done in last 2-3 years (N)
Signed petition/e-petition	53 (727)
Boycotted products for political, ethical or environmental reasons	28 (387)
Urged someone else to get in touch with an elected representative	25 (341)
Presented views to local councillor	23 (317)
Presented views to member of a state legislature	11 (154)
Presented views to member of the House of Representatives	9 (121)
Been to a political meeting	7 (97)
Taken part in a demonstration, picket or march	6 (80)
Presented views to member of the Senate	6 (76)
Taken active part in a political campaign	4 (54)
Donated money or paid a fee to political party	3 (46)
Stood for public office	1 (13)
None of these activities	54.7 (752)

Source 1.5.1 Ways that Australians participate in democracy in between elections

just employed by big corporations. Individuals may form community groups or volunteer organisations.

METHODS USED BY LOBBYISTS

Lobbyists use many methods to achieve their goals. It could include appearing before legislative committees, writing letters, emails or making calls to officials, and running campaigns to generate public awareness. Wealthier lobbyists are able to buy advertising on commercial television or radio stations. The critical element to successful lobbying is managing to keep the public interested and never to let it forget the cause.

LOBBYING CODE OF CONDUCT

The Commonwealth has recently placed a lobbying code of conduct into effect. The purpose of the code is to monitor the activities of lobbyists. Big company

interests have been known to be met at the expense of the public interest. In a democratic country it is believed that the public should know which lobby groups are meeting with politicians and the issues that they represent. The public wants their governments to be transparent, ethical and free from political corruption.

The mining tax: a case study

In May 2010, former Prime Minister Kevin Rudd announced his intention to introduce a 40% tax on what was termed the ‘super profits’ of the mining industry. The financial strength of the mining companies allowed them to engage lobbyists to conduct a national campaign worth more than \$22 million aimed at preventing the tax. The campaign included advertisements on commercial television and radio stations and the lobbying of politicians. The key messages of the campaign were that the mining tax was above what they considered fair and would be the highest in the world, that the tax could threaten the industry as a whole and that greater consultation was required on the tax in general.

The Commonwealth Government and the unions also conducted their own advertising campaigns in support of the tax.

This context is seen as contributing to a drop in Prime Minister Kevin Rudd’s personal approval ratings. Following a challenge to his leadership, he was replaced as prime minister by Julia Gillard. In the end, a 30% tax was passed, limited to iron ore and coal. The event highlighted the effect a strong lobbying campaign can have on politics.

Direct action

Direct action uses activities such as strikes, protests and marches to achieve their means. As the name implies, direct action means that groups will take more aggressive measures to get their point across. They do not normally negotiate. Examples of organisations that use direct action tactics are Sea Shepherd, which aims to stop whaling in the Antarctic, and the Australian Conservation Foundation, which runs public awareness campaigns and lobbies governments.

Keep Mining Strong.
Who will be hurt by the new super tax on mining? Everyone.

1 Get the facts on the tax

- What is the tax?
- Why the miners oppose it.
- Principles of tax reform.
- Myths and facts.
- What the experts think.
- What the world says.

2 See how it affects you

- I'm an Australian
- I'm a shareholder
- I work in mining

What does it mean for your state?

3 Take Action

- Email your MP
- Write a letter to the editor
- Call talkback

Twitter feed

AFIC chairman: "I've been in the market for 50 years but I've never seen people turn off Australia so quickly" <https://mp4t8K0d> about 14 hours ago

From our blog

- It's vital to retain our investment reputation
- Housing Hit
- International projects will crowd out investment

Campaign spotlight

58%

Source 1.5.2 An example of a pamphlet used by lobbyists to build opposition for the mining tax



Source 1.5.3 The *Sea Shepherd* in conflict with Japanese whaling boats. Methods of direct action can result in confrontation, which can be dangerous.

Protests

Protests are an important aspect of democratic participation. Historically they have proven to be very successful in achieving political change. Examples of this include the Indigenous Freedom Rides, recognition of Indigenous citizenship and voting rights, the moratoriums on the Vietnam War and the Women's Liberation Movement.

In Western Australia issues such as logging and coal seam gas mining are a regular source of debate. Protest groups use methods of thumb locks and arm locks to strap themselves to equipment; some erect platforms in trees and stage a sit-in. In a bid to stop this type of protesting, the Western Australian Government has proposed new laws that make this type of activity illegal.

Prevention of Lawful Activity Bill 2015

In 2015 the Western Australian government introduced the Criminal Code Amendment (Prevention of Lawful Activity) Bill. It creates two new offences: physically preventing a lawful activity, and possessing a 'thing' with the intention of physically preventing a lawful activity. The law extends to both private and public property.

The aim of the law is to prevent environmental protesters from locking on to equipment, trees and mining sites. For example, if a farmer locks their gate to protect their land from fracking that is going ahead against their will, they could be jailed for two years and have to pay a \$24 000 fine and any other costs incurred.

RESPONSES TO THE CODE

The Bill was heavily criticised because of the wider implications that it holds for genuine protest. There are fears that the law undermines too many of Australia's democratic privileges. There were a number of arguments against the Bill:

- The Bill undermines people's right to freedom of assembly.
- People will be reluctant to protest.
- Individuals have to prove their innocence if arrested.
- Authorities are granted too much power at the expense of citizens.

The introduction of the Bill prompted the community to action with blogs, petitions, widespread media coverage, protests and letters to local members. The WA Farmers Federation and the Uniting Church WA were among more than 25 organisations that signed a petition calling on MPs to oppose the new laws.

Changing nature of Australian political participation

In recent years much research has been carried out in relation to Australian democracy. There are widespread concerns of disinterest, distrust and dissatisfaction with politicians. Younger voters (aged 18–24) have been identified as the biggest challenge to democratic engagement. It is believed that they have no interest in political matters. This, however, is untrue.

Different forms of political interaction

Younger voters are using technology as their form of political engagement. This has two implications:

- Technology allows for a wider variety of issues to be given a voice. Young adults are concerned about climate change and the growing refugee crisis. They are concerned about local issues. Instead of using traditional means such as a formal protest to express their views, they can express their ideas online in relation to a greater number of issues.
- Politicians need to learn how to engage with technology to better connect with their voters. They are participating in a world where information is now instant and people respond immediately to unfolding events. Polls are regularly conducted to measure and compare politicians' performance. With increased use of online blogging, forums, emails, tweets, captioned photographs and Facebook likes, public figures are held up for criticism or praise much more quickly. They need to learn how to cope with this change of pace and delivery.

Politicians face a challenge in that they need to engage with new forms of technology but also motivate younger voters to use the political structures that are already in place.

Ways of addressing change

The Australian Electoral Commission has started the process of trying to incorporate technology by allowing online enrolment. It received 830 000 online enrolment applications in the five weeks before the 2013 election.

Youth parliaments, including one for Indigenous Australians, have been set up by the YMCA. The Greens also suggested opening up federal parliament for a sitting day.

Key findings in a survey on political engagement

The Institute for Governance and Policy Analysis (IGPA) at the University of Canberra, conducted research into the current state of Australian participation in politics. Some of their key findings are listed in Source 1.5.4.

- Australian citizens are observers rather than participants in formal politics. Over half (54.7%) could not remember conducting any political activity in the last two or three years beyond the practice of voting.
- About 9 in 10 Australians think they have little or no influence at all over national decisions and just over 75% feel the same when it comes to local decision-making.
- Over 9 in 10 Australians think that politicians should stop talking and just take action on important problems.
- Some 32% of the 18–24 age group and 28% of the 24–34 age group use Facebook and Twitter and other social media to alert them to political news compared to only 4% of those over 65 years old.
- There is interest in a greater role for citizens in decision-making, with over 75% of Australians favouring greater use of referendums to decide matters.

Source 1.5.4 Findings from a survey conducted by the IGPA on political engagement in Australia

ACTIVITIES

Remembering and understanding

- 1 Identify the most common way that Australians participate in their democracy.
- 2 State the two aims of lobby groups.
- 3 List the various methods that are used by lobby groups.
- 4 Explain the meaning of the term 'direct action'.

Applying and analysing

- 5 Select one protest movement that is mentioned in this unit and identify its aims and its methods.
- 6 Analyse the Criminal Code Amendment Bill (2015). Develop a mind map which illustrates the offences it creates as well as its wider implications for democratic freedoms.

Evaluating and creating

- 7 Evaluate the way that technology is changing participation in the political process. Decide whether these changes are strengthening Australia's democracy.

Our elected representatives

Participating in democracy

At the heart of Australian democracy is a sovereign parliament that seeks to give all of its citizens a voice. Through democratic elections, Australians are given an opportunity to elect the person who they believe is the person to represent their interests best. Australians have three levels of government at which they are represented: local, state and federal.

The electoral system

Every state and territory within Australia is divided into electorates. Every electorate has a representative in parliament. The elected member has the responsibility to represent the interests of their electorate. If the members of the electorate feel they have not been well represented, they can choose another representative at the following election.

Members of government therefore have a level of accountability to their electorate.

For the House of Representatives, elections are held every three years. Senators are elected every six years.

Candidates have to be Australian citizens and eligible to vote. People who hold **allegiance** to or

are citizens of another country cannot stand. Nor can people who have been found guilty of certain crimes. A candidate needs to be nominated by a political party to stand for election.

People over the age of 18 are required to register to vote. Voting in Australia, unlike other democratic countries such as the United Kingdom and the United States, is compulsory.

People who are serving a prison sentence of three years or more are not allowed to vote, nor are people who are categorised as being of 'unsound mind'.

Elected representatives

ROLES AND RESPONSIBILITIES

Candidates who are elected to the House of Representatives become members of parliament. They serve as ministers or backbenchers and have varied jobs, including:

- remaining up to date with issues. This is not just for the local area that they represent, but also national and international issues
- knowing about all the key policy areas that are being debated and discussed



Source 1.6.1 People voting in the national election, September 2013

- speaking for or against the policy when bills are debated in parliament
- keeping their constituents up to date with current policies
- serving on committees
- bringing their key state issues to the party.

MPs AND THEIR ELECTORATES

Members of parliament (MPs) are the direct link between their electorate and the parliament. Every elected candidate represents an average of 98 085 voters. Although the number of people they represent is fairly even, the size of electorates can range between 30 square kilometres (Wentworth NSW) to over 1.5 million square kilometres in Durack Western Australia.

Most cases that members of parliament deal with are in relation to social welfare, immigration and tax. Other issues that arise include family law, health, education and employment.

There are times when parliament is debating a bill or proposing legislation that is of special interest to an electorate. These could include issues such as the proposed closure of an industry, the potential for major job losses or large-scale environmental impacts upon communities. It is the responsibility of the member of parliament to make a presentation to the parliament to ensure that their electorate is given a voice.

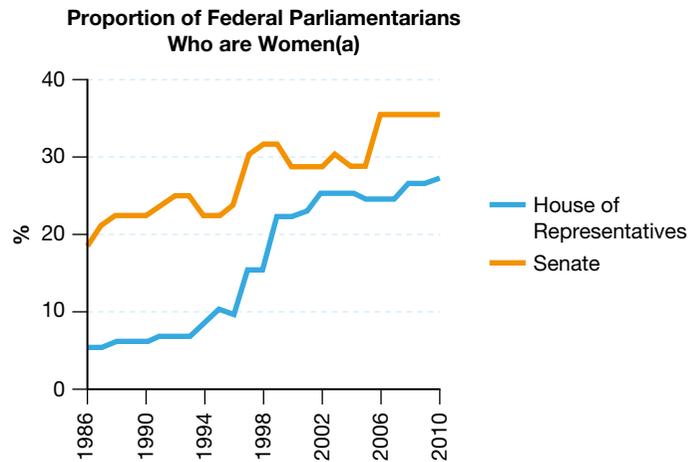
Representing all Australians

It can be argued that if the government is to represent Australian society, including its multicultural and Indigenous populations, the parliament needs to reflect that in the composition of its members.

Despite being a representative democracy, the Commonwealth is still dominated by men. Women make up half of the population, yet following the 2016 Federal election, women made up only 28.7% of MPs in the Lower House and 39.5% in the Senate.

There are some signs of this improving (Australia has had a female prime minister and governor general), but much work still needs to be done.

Aboriginal and Torres Strait Islanders have experienced immense injustice when it comes to political representation. Not only were they deprived of citizenship and voting rights for almost



Source 1.6.2 The proportion of women representing Australia in federal parliament

70 years, they have also struggled to be able to represent themselves at a state and federal level. Neville Bonner AO was elected to federal parliament in 1971, but since then achieving political representation has continued to be difficult.

Federal parliament does not reflect the multicultural composition of Australia. Around 25% of Australia's population was born overseas and yet only 12% of federal parliament representatives are overseas born.

ACTIVITIES

Remembering and understanding

- 1 Find out how often elections are held in Australia for the House of Representatives and the Senate.
- 2 What are the eligibility criteria for standing in a federal election?
- 3 Give three examples of the roles played by members of the House of Representatives.
- 4 Explain two differences between the electorates of Durack and Wentworth.

Applying and analysing

- 5 Inspect a list of current members of parliament and senators in Australia's federal parliament. Determine the percentage of women in the current federal parliament.

Evaluating and creating

- 6 Recommend some changes to the Australian political system which might increase the number of females that are elected to federal parliament.

Horseshoe Bridge and jarrah forests

Case study: The Horseshoe Bridge, Perth

A heritage bridge

Perth's Horseshoe Bridge was built in 1904 to solve congestion within the city. The bridge's innovative shape came about because existing arterial roads needed to be preserved. The shallow incline allowed horses and carts to use the bridge. It was also designed to prevent pedestrian access to ground level. Because of its historical importance, the bridge has a heritage listing.

As part of a major revamp to modernise Perth, it was planned to make the bridge open to two-way traffic and also to undergo some general repair work. The plan raised concerns that the heritage integrity of the bridge would be affected.

An example of community lobbying

Concerned citizen Andrew Nicholls wanted to raise awareness of the impact that the proposed changes could have on the bridge. He set up an online petition on Facebook outlining the history of the bridge, the proposed changes and works to the bridge and how they could potentially impact upon its unique architectural design.

He urged people to express their concerns by writing to the premier, the heritage minister and the

lord mayor, asking them to reconsider the proposed changes. His page attracted 423 likes.

The impact of lobbying

Lobbying is an effective way to make the community aware of an issue. The proposed changes went ahead with community feedback and the Horseshoe Bridge was reopened in July 2010.

Case study: Jarrah forests

Protecting Western Australian forests

The jarrah forests located in the south-west corner of Western Australia are millions of years old. They are biologically unique and had been under the management of Indigenous communities for thousands of years.

Since the 1890s the forests have been logged for railway construction, housing, furniture and more recently wood chips. The forests used to make up 2% of the land in Western Australia but significant logging has seen that decline to less than half of that.

Jarrah forests and direct action

Western Australia has a strong history of campaigning for better use of the forests. The 1990s saw a significant increase in the level of campaigning to protect what was left of the jarrah forests and other surrounding areas. The campaign lasted over a decade and had an impact on the 2001 state election.

WESTERN AUSTRALIAN FOREST ALLIANCE

The Western Australian Forest Alliance was formed in 1990. It served as a body for community organisations about forest conservation. In its vision it states that: 'The WA Forest Alliance works for the protection of WA's south-west forests and wildlife and an end to the logging, thinning and clearing of our public forests and woodlands.'

It also wanted the timber industry to complete its transformation into sustainably managed plantations and farm forestry. The Alliance used methods of direct action in order to achieve its goals, including:

- urging people to visit the forests to see the effect of logging



Source 1.7.1 Perth's iconic Horseshoe Bridge with its unique balustrades

- legal submissions
- rallies, lobbies, protests, public events, speeches
- banners erected on freeways
- hunger strikes
- tree-sitting on platforms high in the giant trees
- people padlocking themselves to heavy machinery
- people attaching themselves to road dragons (trains and old cars dug into the ground, placed into holes one metre deep and filled with concrete).

THE OUTCOME

The Forest Alliance was consistent and highly committed to preserve the jarrah forests. Its campaigns made a real difference—so much so that Western Australians made forest conservation an election issue in 2001. The Labor Party recognised this and declared an end to the logging of old-growth forests as part of their election campaign. It has been argued that this was a major factor in their election win.

Direct action as an effective voice in democracy

The consistent efforts of the Forest Alliance are an excellent example of how direct action can bring about change in democracy. There are a number of reasons that have been attributed to its success:

- strong leaders were passionate about their cause
- a united and inclusive approach was employed—everyone had the opportunity to be involved. Cities were targeted as much as the communities directly impacted upon
- the organisers ensured that public attention remained on the forestry issues
- continued pressure was on the government to change their policies
- people were convinced that the forests were worth saving
- a wide variety of society became involved—doctors for the preservation of old-growth forests, lawyers for forests, high-profile celebrities and sports personalities
- the campaign was relevant to everyone, rather than being fringe based
- there was effective use of media who sympathised with the cause
- technology was used well—for example, imagery from CSIRO was used to show the public the extent of forest destruction.



Source 1.7.2 A protester locked onto a road dragon in order to stop logging trucks

ACTIVITIES

Remembering and understanding

- 1 Identify the features that make the Horseshoe Bridge unique.
- 2 Outline the way the government proposed to change the Horseshoe Bridge.
- 3 Describe how social media was used to help protect the Horseshoe Bridge.
- 4 Illustrate the different ways that the jarrah forest has been used by humans over time.

Applying and analysing

- 5 Classify the various actions taken by the Western Australian Forest Alliance using a scale from 'Less direct' to 'More direct'.

Evaluating and creating

- 6 Design a campaign of action for an environmental issue that exists in Western Australia. Develop a range of actions and remember that all protests must be peaceful.

Inquiry tasks

Diversity

In pairs, devise a survey or questionnaire that aims to explore the different religions practised in Australia today, the ways that people participate and exercise their right to freedom of religion and whether they feel comfortable and safe exercising their freedom of religion.

Surveys could be given to family, friends, teachers and members of the local community.

Deliver this survey to at least five different people and once you have received them back, write a short summary of your findings.

Source 1.8.1 Members of the Australian Youth Climate Coalition (AYCC) ‘dump’ solar panels at Parliament House in Canberra to highlight their concerns about the government’s Renewable Energy Targets review in 2014. The AYCC consists of 25 other youth organisations whose aim is to solve the climate crisis.

Full freedom?

Prepare a speech to be presented at a school assembly that examines whether or not you believe that the government should be able to place restrictions on our democratic freedoms. When preparing your speech, you will need to consider why the government interferes with the exercising of our freedoms at times, and whether this benefits us or not. Your speech should use the following structure:

Introduction—Introduce yourself and provide a brief explanation of the democratic freedoms that exist in Australia today along with the government’s role in overseeing these freedoms.

Body—Provide 2–3 reasons why you believe the government should or should not place restrictions on our rights to exercise our democratic freedoms. Use examples to support your reasons.

Conclusion— Summarise your ideas and restate your opinion.



Young Australians and democracy

Create a visual presentation for your fellow Year 8 students that demonstrates and explains some of the ways that young people (under the age of 18) can actively participate in a democracy, and have their say in the political process and decisions made by our governments and councils.

Your presentation could take the form of a concept map, ICT presentation or poster.

The voice of the media

We get a lot of our day-to-day information from the media; however, many people believe there is censorship in the media, meaning the media can be restricted in what they are allowed to print or present. Imagine a world where the media was free to print and present whatever information they chose to. Prepare a PMI chart that explores the following areas:

P (Plus)—What would be the positives of the media having complete freedom of speech? How could the general public be advantaged by this situation? Who else could this affect in a positive manner?

M (Minus)—What would be the negatives of the media having complete freedom of speech? How could the general public be disadvantaged by this situation? Who else could this affect in a negative manner?

I (Interesting)—What could be some of the interesting/unusual/unexpected outcomes of the media having complete freedom of speech?

GLOSSARY

allegiance loyalty to someone or something

censorship the restriction of free speech

charter a written statement of rights granted by a government

constitution a set of rules or laws

cultural genocide the deliberate destruction of the cultural heritage of a people or nation

demonstrations gatherings organised by a group to express their ideas or opinions

federal budgets the budgets put in place by the Australian Government

freedom of assembly the right of an individual or group to come together to express their ideas

freedom of association the right to join groups or leave them, and the right of the group to take action

freedom of religion the right to practise any religion you choose

free speech the right to express any opinion without censorship

human rights basic rights and freedoms that all humans are entitled to, such as the right to life and liberty

judicial system the system of courts that interprets and applies the law

liberties freedoms

parliament a group of people elected to make laws for a country

parliamentary sovereignty a principle that states that parliament is the supreme law-making body in a nation

representative liberal democracy a form of government in which the people elect representatives in fair and free elections to represent them in a parliament and make laws on their behalf



Law in action

Rules and laws exist wherever there are people. At school, at home and in society rules and laws tell us about what is acceptable behaviour and what is not. What do you know about the law? What exactly is the difference between a rule and a law? Why are laws needed and who makes them? What are the differences between civil and criminal law? What happens if laws are broken? As a member of Australian society, it is important for you to know how laws affect you and the rights and responsibilities you have.

Source 2.0.1 Sports, from school to club to elite level, all need rules to operate a fair game.

The development of laws

Rules and laws

Rules and laws are important to the operation of society. For most of you, many different customs, rules and laws will have impacted your day already. Customs are the usual way of doing things. In Australia, for example, it might be customary in your house to eat dinner at a dining table with a knife and fork. In Japan, the custom may be to eat with chopsticks.

Rules

Rules are more formalised customs. They apply only to certain groups, rather than to all of society. Your school, classroom and any sporting clubs

you belong to all have rules to follow. People who belong to the group are required to follow the rules; however, they are not enforceable by law. Breaking a rule will usually have a minor consequence within that group. Some groups that may have rules are:

- sporting groups, for example, your local netball or football club may list the rules of fair play
- schools, for example, may have a rule about wearing a hat to play outside and the behaviour of students
- families, for example, may have a rule about no electronics until homework is complete.



Source 2.1.1 To ensure it is safe, there are many rules and some laws associated with the annual channel swim to Rottnest Island.

Laws

While rules apply to certain groups of people, laws apply to everyone. A law is a legal rule or regulation that is made and enforced by parliament and enforceable through the courts. Laws apply to everyone. Laws explain what our rights and responsibilities are and they exist to protect us and our property. Some laws apply to all of Australia and others are specific to individual states and territories.

Laws are important to help protect our society and to show people what is acceptable behaviour according to the values of that society. Australia's laws reflect our society's beliefs in areas such as moral, economic, social and political values. There are laws to protect property, people and their rights and freedoms.

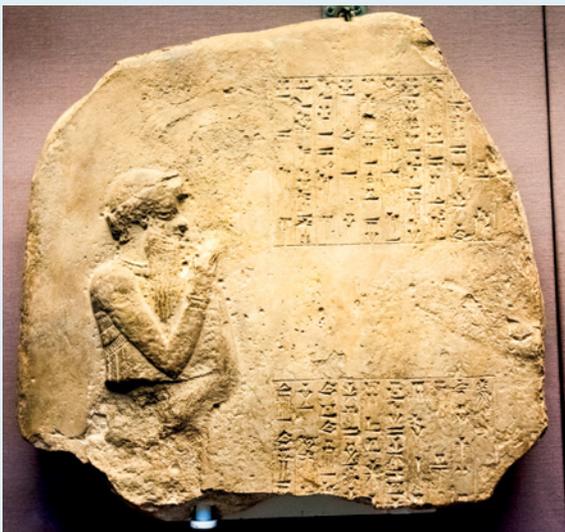
There are two ways in which laws can be made in Australia.

- Laws can be made by parliament. This is known as statute law. Statute law is signed by the governor or governor-general and prevails over common law.
- Laws can be made in courts. This is known as common law.



Source 2.1.2 Laws can be made in parliament or through the court.

The two main types of laws are criminal law and civil law. These will be discussed in more detail in Unit 2.3.



Source 2.1.3 Hammurabi, the King of Babylon, created the oldest set of written laws.

If a noble destroys the eye of a member of the aristocracy, they shall destroy his eye.

If he has broken another noble's bone, they shall destroy his bone.

If he has destroyed the eye of a plebeian, or broken a bone of a plebeian, he shall pay one mina of silver.

If he has destroyed the eye of a man's slave, or broken a bone of a man's slave, he shall pay half his value.

If a man has knocked out the teeth of a man of the same rank, his own teeth shall be knocked out.

If he has knocked out the teeth of a plebeian, he shall pay one-third of a mina of silver.

If a man strikes the body of a man who is great above him, he shall publicly receive sixty lashes with a cowhide whip.

The development of the Australian legal system

As with our government system, Australia's laws have developed and evolved over time and have been shaped by legal systems from other societies.

The oldest written set of laws is known as the Code of Hammurabi. Hammurabi was the King of Babylon between BCE 1792–59. His laws were carved in stone and placed around the city so that people would know about them.

Other early laws are believed to have come from religion, such as the Ten Commandments. According to the Bible, the Ten Commandments were written on stone and handed to the Jewish holy man, Moses, as laws for the Jewish people to follow. Other early laws come from the ancient civilisations of Greece and Rome. In BCE 621, Draco drew up the earliest Greek legal code. The code was very harsh and the word 'draconian' is now used for any laws that are extremely severe.

The many Indigenous and Torres Strait Islander peoples who were in Australia had a well-established system of laws, well before the arrival of Europeans. Unit 2.4 examines these laws in

more detail. When Europeans began arriving in 1788, they brought many of their traditions from their home country. Much of Australia's legal and parliamentary system is similar to that of the United Kingdom. Originally, our laws were the same as Britain's, but as times have changed, so have many of the laws.

Making laws

Every person in Australia must obey laws by all three levels of government—local, state and federal. Today, most laws are made in parliaments by governments. This is known as statute law. Statute law:

- is made by parliament
- is bound by the Constitution
- applies to everyone
- covers broad areas.

A proposal for a new law, or change to an existing law, is known as a bill. To become a law, a bill must be passed with a majority vote in the House of Representatives and the Senate. Once it is agreed to in the same format by both houses it is signed by the governor-general and is then known as an Act of Parliament.

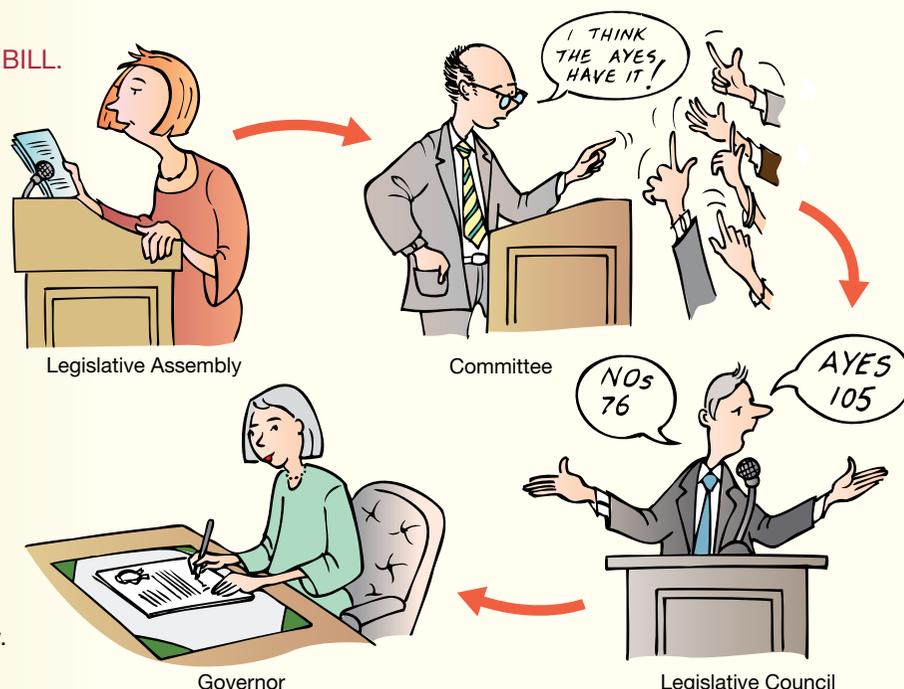
THE DRAFT OF A NEW LAW IS CALLED A BILL.

First reading: The title of the bill is read out in the Legislative Assembly without any discussion. Members of parliament (MPs) get copies.

Second reading: The bill is explained in more detail. MPs argue for or against the bill.

Committee stage: Parliament discusses and debates the bill in much more detail. Changes (amendments) may be suggested.

Third reading: The bill is read out again and any other changes are considered. MPs then vote for or against the bill. If the vote is in favour of the bill it is sent to the **Legislative Council** where it goes through the same process. Once the bill has passed successfully through both houses of parliament it is sent to the **Governor** for his/her approval. Once the Governor signs the bill it becomes law.



Source 2.1.4 To become a law, a bill must be passed with a majority vote in the House of Representatives and the Senate.

Parliament is the highest authority in regards to the law. Generally bills are introduced into the lower house or House of Representatives of parliament, and then sent to the Senate or upper house. Most bills are introduced by government ministers, although other members of parliament are able to introduce what is known as private members' bills.

It is possible for bills to start in the Senate, except for money and taxation bills. Of the 200 bills introduced into parliament each year, approximately 90 become law. Urgent bills are passed through parliament quickly, but it can take weeks or months for most bills to be passed.

Did you know?

The practice of reading a bill aloud three times dates back to early British Parliament, when many people could not read.

Common law

Not all laws are made by parliament and written down as statutes. Some laws are made by judges. This is known as common law. It is also known as case law or judge-made law.

Immediately after European settlement, laws in Australia were the same as British laws, but over the years many have changed. In England, law first began as tribal law or customs—an accepted way of doing things. These laws were not written but based on judgments made by visiting courts of the king.

Today, judges write down their decisions when judging a case. When a decision by a judge is the first of its kind, it is called a precedent. Later, when similar cases come before the courts, other judges can refer to these decisions for guidance.

Common law may eventually become statute law. Based on a common law verdict, a bill will be passed through parliament.

ACTIVITIES

Remembering and understanding

- 1 Rephrase the definition of the word 'custom'.
- 2 Distinguish between customs and rules.
- 3 Illustrate the consequences of breaking one of the rules mentioned in this unit.
- 4 Interpret the meaning of the term 'law'.
- 5 Identify two ways that laws can be made in Australia.

Applying and analysing

- 6 Examine the Code of Hammurabi. Manipulate the code into a set of laws that you think could apply in modern society.
- 7 Analyse the process that is used to make statute law. How does this help to give authority to the law?

Evaluating and creating

- 8 Prove the importance of the common law by finding some examples of how it protects democratic freedoms in Australia.

Young people and the law

Under the law, a 'young person' is anyone under 18 years of age. Once you reach the age of 18 you are considered an adult and the law will treat you differently. However, as a young person there are many legal restrictions on what you can and can't do.

Some areas of law that affect young people include buying and drinking alcohol, buying tobacco products, getting tattoos and graffiti. However, there is no one set legal age that covers all areas of the law for young people; each area has its own age restrictions that define when a young person can participate in each activity.

Alcohol

It is illegal for a person under the age of 18 to purchase, consume or possess alcohol except under two circumstances:

- they are in a private home, either their own or a friend's
- they are eating a meal at a licensed premises such as a pub or restaurant and are accompanied by an adult who is their parent, guardian or spouse.



Source 2.2.1 It is illegal to get a tattoo under the age of 18.

It is also illegal for adults to supply alcohol to minors at home unless they have gained permission from their parents or guardians. Under the new legislation, police can act on complaints by parents about their children drinking at another person's house. The police will be able to issue on-the-spot fines, for example, if they find under 18s drinking without parental or guardian consent at a private party.

Tobacco products

It is illegal for people under the age of 18 to buy cigarettes and other tobacco-related products. It is also illegal for young people to allow an adult to purchase cigarettes or tobacco for them.

Graffiti

It is illegal to mark graffiti without the property owner's permission. It is also illegal for anyone under the age of 18 to purchase spray-paint cans unless they can prove the paint is for use at work.



Source 2.2.2 It is illegal to mark graffiti without the property owner's permission.

It can also be an offence to carry spray-paint cans on or near public transport, or to carry something that can be used to graffiti (such as permanent markers or other forms of paint). If the police can prove that you have used them or were going to use them for graffiti you can be fined.

The consequences of sexting

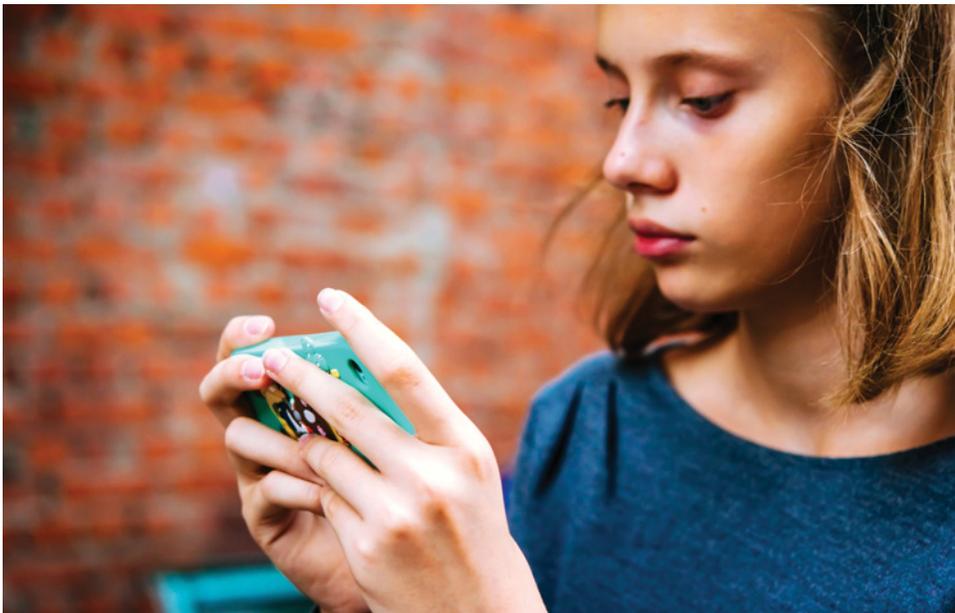
As technology has developed, new laws have been introduced to protect people from digital dangers. Sexting is defined as sharing through sending or receiving explicit images (for example, a nude photo), messages or videos through phones or computers. Although teenagers often see sexting as harmless fun, it can have serious social and legal consequences.

Some teens may take, send or receive a 'sexy' image because they are in a romantic relationship or because they are being pressured. Unfortunately, there is no way of knowing if that image will then be shared with other people and it is impossible to control who else views it.

Laws about sexting

Sexting may be considered a criminal offence, even if the person either taking the photos or in the photos agreed to be involved. Depending on the ages of the teenagers involved, the laws could be a federal or state offence.

Under the **Western Australian Criminal Code** it is an offence to take a sexually explicit photo of a person under the age of 16 years. It is also illegal to encourage others to take photos of themselves.



Source 2.2.3 Sexting can have serious social and legal consequences.

ACTIVITIES

Remembering and understanding

- 1 State the meaning of the term 'sexting'.
- 2 Show why it is important for teenagers to know about alcohol laws.
- 3 What conditions might make a police officer suspect a young person has produced graffiti or is about to?
- 4 Describe the difference between legal and social consequences.

Applying and analysing

- 5 Infer why sexting may be a criminal offence even if those concerned agreed to be involved.

Evaluating and creating

- 6 Compile a list of other laws that have recently emerged to help regulate the use of technology.

Criminal and civil law

Crimes such as murder, burglary and **assault** are all very serious crimes; however, they are not the only type of offences for which people can go to court.

Court cases can involve either criminal or civil law and different courts hear different types of cases. For example, the Children’s Court of Western Australia deals with offences committed by young people aged 10 to 17 years. Some Children’s Court cases are also heard in other courthouses throughout the state.

Western Australia	Australia
Supreme Court (the highest court in the state)	High Court of Australia
District Court	Federal Court of Australia
Magistrates Court	Federal Circuit Court of Australia
Family Court	Family Court of Australia
State Administrative Tribunal	Administrative Appeals Tribunal
Western Australian Industrial Relations Commission	Social Security Appeals Tribunal
Range of specialist courts such as the Children’s Court	

Source 2.3.1 There are many different courts in Western Australia and Australia. Each court hears different types of cases.

Criminal law

In Australia there is a large number of laws to protect people from hurting each other. These criminal laws range from assault to **manslaughter** and murder.

Criminal law involves an offence that is seen as a threat to the whole community. Murder, arson and assault are all examples of criminal acts. Criminal laws are a dispute between an accused person and the ‘state’ or government. This means that the government takes responsibility for taking people accused of these crimes to court and having them answer for what they have done. The government takes the person to court on behalf of all people in the community. The four main types of criminal law are:

- laws that protect property
- laws that protect people
- laws that protect society as a whole
- laws that protect the nation and the legal system.



Source 2.3.2 Western Australian Police Commissioner, Karl O’Callaghan. Criminal law offences usually involve the police.

Bail delay for boy on murder charge

Amanda Banks Legal Affairs Editor

February 17, 2016, 4:25 pm

An 11-year-old boy accused of murder had been charged with armed robbery and granted bail by police a week before he was allegedly involved in the fatal bashing, it was revealed in a Perth court today.

Emotional scenes erupted outside Perth Children's Court after a bail application for the boy was adjourned, with family members of the man who died voicing a mix of anger and grief.

...
'We believe that if this child should be found guilty, he should be convicted to the full extent of the law for his actions as an adult.

And that the responsibility for his actions should also fall back on to his legal guardians.'

...
Defence lawyer Helen Prince said the boy was charged with the most serious offence known in WA laws, but he was aged 11 and had no previous record. Ms Prince said the boy lived with his mother and had the support of both of his parents.

...
Adjourning the bail application until next month, Judge Reynolds said he wanted further information relating to the boy's accommodation, supervision and education.

Source 2.3.3 Murder is a serious offence that comes under criminal law.



Source 2.3.4 Criminal offences are heard in courtrooms.

Civil law

Civil law is sometimes referred to as private law because it doesn't affect everyone. Civil law involves disputes between individuals rather than the community as a whole. Examples of civil law are a dispute between neighbours about a barking dog or a loud party, or a dispute between an individual and a shop about a purchased product. If a case cannot be sorted out between the people involved, it may need to go to court.

Civil law is often not an area that individuals worry about until it directly affects them, but it is important to know that there are many laws in place to offer protection. There are three main types of civil law.

- Contract law—this law is concerned with agreements between people such as buying or selling a car or property.
- Family law—this law is concerned with matters such as births, marriages, divorces and the care of children. Working out which parent will have custody of children in the case of a divorce is one example of family law.
- Tort law—the word 'tort' comes from the French word for wrong and deals with people doing something wrong or not taking reasonable care. Trespass, **negligence**, nuisance and **defamation** are all types of issues covered under the law of tort.



Source 2.3.5 Disputes between neighbours over fences are an example of civil law.

Negligence laws

Negligence is an example of the law of tort, or wrongdoing. In early times manufacturers were not **held liable** for products that they sold. Gradually, however, the law of negligence developed and manufacturers were considered to have a duty of care to the consumer as well as the person who purchased the product.

Read Source 2.3.6 for an example of a case that was important in the development of negligence laws.

• • • • • • • • • •

Grant v The Australian Knitting Mills case

Year: 1936

What happened? Dr Grant, called the plaintiff, contracted a skin condition called dermatitis as a result of wearing woollen underpants. The pants were manufactured by Australian Knitting Mills Limited. Dr Grant wore the underpants for one week without washing them beforehand and the pants contained an excess of sulphite. Dr Grant then sued Australian Knitting Mills for damages.

The law: The court used a previous case and stated that for a case of negligence to be successful it must be shown that:

- *there was a duty of care owed by the defendant (in this case Australian Knitting Mills)*
- *there was a breach of the duty of care*
- *damage was suffered as a result.*

The result: The law of negligence was established and could be expanded to include many other situations.

• • • • • • • • • •

Source 2.3.6 The law of negligence

Did you know?

If you buy something online, you are usually covered by contract law if the product is not as described or if it is faulty.

Nuisance laws

A legal nuisance is any behavior or activity that interferes with you being able to enjoy your time at home. Courts usually take into account the following factors when considering complaints of nuisance:

- the activity causing the problem
- how long it has been going on
- when it is taking place
- whether a 'reasonable person' would consider it a nuisance.

Read Source 2.3.7 for an example of a case of private nuisance.

.....

GOLD Coast unit owner Neisha Cook was so disturbed by things that go 'plop' in the night that she took her upstairs neighbour to an adjudicator to flush out the problem.

Ms Cook, whose bedroom in the duplex is under the upstairs unit's toilet, can clearly hear 'trickles and drips, loud plopping and scrubbing with a toilet brush.'

The 'disgusting' noises often woke her up and she could hear them even if she had the television on in the lounge room, she told an adjudicator...

In late 2014 she paid more than \$1400 for an acoustical engineer's report, which recommended immediate work to improve the acoustics between the upstairs toilet floor and her bedroom...

After unsuccessfully trying to negotiate with her neighbour, she took an application to the Queensland Body Corporate and Community Management Commissioner.

An adjudicator found Ms Cook suffered 'unreasonable interference' caused by the sound transfer through a concrete slab with inadequate sound isolation and it was unreasonable for her to have to listen to toilet sounds every night or morning.

...[S]he ordered the two unit owners to share the costs of doing recommended work in both units.

.....

Source 2.3.7 The law of nuisance often relates to neighbours and may be heard in courts.

Did you know?

There are laws that govern how old you can be to watch certain movies, to buy certain publications and to play certain computer games. The Office of Film and Literature Classification classifies all films and computer games, and some publications. This includes **copyright** symbols for movies.



Source 2.3.8 Classifications of films are covered by law in Australia.

ACTIVITIES

Remembering and understanding

- 1 List the four main types of criminal law and the three main types of civil law.
- 2 Cite the meaning of the word 'tort'.
- 3 The nuisance caused by a neighbour's barking dog would be classified as which type of civil law?

Applying and analysing

- 4 Categorise the District, Magistrates and Supreme Courts of Western Australia into a hierarchy of importance from lowest to highest.
- 5 Source 2.3.3 refers to a bail application. Discover the exact meaning of this term.
- 6 Make use of the internet to find a civil case involving a dispute between neighbours. Briefly summarise the case and its outcomes.

Evaluating and creating

- 7 Debate whether or not an 11-year-old should be tried for murder.
- 8 Evaluate the role of precedent in civil cases. How important is it to 'stand upon what has been decided' in previous cases?

Aboriginal and Torres Strait Islander law

Originating in the Dreaming

Aboriginal and Torres Strait Islander people had a complex system of law and order in Australia. These rules and laws were not written down or developed as a code as in other countries. However, they were incorporated into traditions and ways of life. **Kinship**, religion and family structures formed the basis of how to live and guided how people should behave.

Through the traditions of storytelling and performance, Aboriginal law was passed on through generations. Like other aspects of traditional life, **customary law**—as it is also known—originated from the ancestral beings during the **Dreaming**. Dreaming stories contained clear messages about how people were to live and the consequences that could be expected for not following these expectations. Good or bad consequences, including death, would follow depending on how a person followed the examples in the Dreaming stories. The Dreaming stories were considered sacred so the messages of law, rules and behaviour had a much higher authority. Religious beliefs formed the basis of customary law in a similar way to the teachings of the Christian Bible. The ancestral beings decided the rights, responsibilities and behaviours of all. Laws covered aspects of life such as what foods could be eaten and how they should be shared, the rules for family, marriage and social organisation, the rules for looking after the land, the rules for ceremonies and the punishments if laws were broken.

Law in practice

Law in Aboriginal society operated through the kinship system. People who felt that they had been wronged first tried to settle the dispute through the network of **obligations** that existed under the kinship system. Obligations meant that people had a duty to perform a favour or service. Ideas of justice or fairness were seen in terms of kinship as there were no ‘chiefs’ or groups with authority over others.



Source 2.4.1 Dancers at the Laura Aboriginal Dance Festival. Traditionally, Aboriginal law was passed on through the traditions of storytelling and performance.

After a rule or law had been broken or a wrong had been seen to be done, questions were asked, such as: What were the circumstances of the wrongdoing? How or why was the affected person injured or killed? Who committed the crime or wrongdoing and who was their kin? Why did the alleged wrongdoer commit the crime and did their relatives take any action? Following this, a decision was made on how to settle the case.

Following customs

In a similar way to how societies today follow customs, traditional Aboriginal societies were bound by customs or accepted ways of behaving. Rather than a list of written rules and laws, people knew what was expected of them, how to treat their elders and the relationships that existed within the kinship system.

Following a young person's initiation, which took place around the time of puberty, children were expected to behave according to the teachings of the group. As well as the teachings of the Dreaming stories, people feared being ridiculed or punished by the group if they did not behave according to the accepted social norms.

..
The beginning of an initiation ceremony

Peter Stevens, a Kurrama man, remembers law meetings for initiation.

... Law meetings for initiation ... start from the centre of the law ground. Say you've got a son to start the meeting, you must stay within the law ground boundary and start the ceremony there. If you go to the ceremony, you can't leave that law ground until everything connected with the initiation process is finished. As a father you are not allowed to go anywhere. All the fathers must sit there throughout the ceremony.

The preparation for the ceremony starts with one boy going round to the communities bringing all of the mobs to the law ground for the opening. ...

The traditional method was that two boys at a time would go through the law together in accordance with their skin grouping, and in a relationship of skin, which cannot be mixed up. These boys are said to be yarlbū to each other.

These days, with the loss of traditional land and culture, there is a lot of mixing up of skin grouping at these ceremonies. Everybody is yarlbū now. Traditionally, boys who were yarlbū were said to be like brothers-in-law, gumbarli.

..
Source 2.4.2 Following their initiation into the law, young people were expected to know how to behave.

Punishments for breaking the law

Although conflict was generally reduced through the belief systems of the Dreaming, the kinship relationships and the threat of punishment, some people in traditional societies chose to go against established laws.

The main areas of law-breaking involved disputes over women, marriage rules, revenge for injury or death and breaching sacred laws. Groups of relatives may then have taken the matter into their own hands or the issues of law breaking may have been deferred to the council of elders.

Customary law in today's society

In Australian law today, customary Aboriginal laws may be recognised and considered in a range of ways. This is a relatively new idea, emerging in the late twentieth century. The state of Western Australia and the Northern Territory have argued strongly that customary law should be recognised in legal situations that involve Aboriginal Australians.

..
Customary law is what I am; the essence of an Aboriginal person is customary law. It controls you completely and wholly, not in an imprisoned way but in the way that it cares for you completely and that means holistically.

..
Source 2.4.3 Customary law is still very important in some areas of Australia.

ACTIVITIES

Remembering and understanding

- 1 Identify Australia's two groups of Indigenous peoples.
- 2 Describe how Indigenous law was passed from one generation to another.
- 3 Generalise how the messages of the Dreaming guided Aboriginal society.
- 4 Refer to the unit to find the origin of the Aboriginal Dreaming stories.

Applying and analysing

- 5 Construct a mind map that demonstrates the operation of law within Aboriginal society.
- 6 Select three statements from Source 2.4.2 that show the importance of initiation to people within Aboriginal society.

Evaluating and creating

- 7 Discuss how customary Indigenous laws have been or might be incorporated into the legal systems of Australia's states and/or territories.

National identity and being a citizen

Democracy and national identity

The laws and systems that run this country also make up part of our identity and are a key part of being a democracy. Our democratic values reflect a number of shared values of Australians, such as tolerance, acceptance of cultural diversity, respect for others, the rule of law, and freedom of speech, religion and association. These shared values are also a key part of our national identity and shape what it means to be an Australian.

What it means to be Australian

Who is an Australian? What does it mean to be an Australian and how is this determined? Australians come from all over the world and bring many different ideas, cultures and beliefs with them. Our nation is often regarded as a melting pot of culture. The bringing together of different cultures affects all aspects of our society. Having a culturally diverse society means that the government strives to promote and encourage the rights of all Australians.

The aim is for people to express and share their cultural heritage while also respecting the basic structures, such as law and government, and values of Australia.

Aboriginal and Torres Strait Islander people's perspectives of Australian identity

Indigenous Australian cultures are some of the oldest in the world. Aboriginal and Torres Strait Islander people have inhabited the land for more than 40 000 years. Today, many Indigenous Australians are still dealing with many cultural and personal issues because of European settlement. Assimilation (the process of absorbing one culture into another) is now regarded as having had a very negative impact on Indigenous culture in Australia. In today's society, preserving the rich Indigenous Australian culture is seen as a valuable and important part of Australia's wider national culture. Prominent people in Indigenous Australian communities have contributed towards challenging negative stereotypes of Indigenous Australians as well as promoting Aboriginal heritage as a valuable part of Australia's identity.

Source 2.5.1 Three Australian flags: the national flag, the Aboriginal flag and the Eureka flag. Each represents an aspect of Australian history and identity.



Days that shape Australian identity

Who we are and how Australians are represented are often shown through the significant days or celebrations we recognise. Anzac Day, Australia Day, the Melbourne Cup and the Australian Rules Grand Final all say something about who we are and what we value as Australians.

Anzac Day

Anzac Day, 25 April, is one of the most important national days in Australia. It marks the anniversary of the first major military action by Australian and New Zealand forces during World War I. ANZAC stands for Australian and New Zealand Army Corps. Despite the campaign at Gallipoli being regarded as a military failure, the Anzac legend was forged during this time. It became an important part of the identity of both Australia and New Zealand, and has shaped the way in which both nations see themselves.

The battle at Gallipoli in World War I is regarded as defining the spirit and identity of our nation. Gallipoli represents different things to different people, but the story of the Anzacs is one of courage and perseverance. After training in Egypt, the Anzac troops left for Gallipoli. At dawn on 25 April they landed on a beach now known as Anzac Cove. The landing was a disaster. The troops landed at the wrong place at the bottom of a very steep slope. The Turkish troops were able to fire on them from above. Casualties during the eight months were very high with more than 8700 deaths.

In the tragic loss of so many lives the Australian people sought to find a positive in the Gallipoli experience. The Anzac spirit of courage, bravery, endurance, mateship, determination and sacrifice was born.

Source 2.5.2 The commemoration of the events at Gallipoli during World War I often begins with a service at dawn at locations like Kings Park.



Australia Day

Australia Day is celebrated on 26 January each year and is a chance for many Australians to consider what it means to be Australian. Citizenship ceremonies are an important component of Australia Day celebrations. On this day the Prime Minister also announces the recipients of the Australian of the Year awards.

In recent years the celebration of Australia Day on 26 January (the day that Europeans first landed

on Australian soil) has been controversial. Many Aboriginal and Torres Strait Islander people regard the day as an invasion of their culture rather than a reason to celebrate.

In 2013, the Aboriginal flag was flown with the Australian flag on Sydney Harbour Bridge for the first time on Australia Day. This was important, as Aboriginal and Torres Strait Islander people have not always been acknowledged at Australia Day ceremonies.



.....

Best mates Nic Marchesi and Lucas Patchett built a free mobile laundry in their old van to help the homeless. Orange Sky Laundry began in September 2014 and since then, the world first idea has rapidly expanded to five vans, in Brisbane, Melbourne, South-East Victoria, Sydney and the Gold Coast. Run by over 270 volunteers, the custom-fitted vans with two commercial washing machines and two dryers, service over 36 locations and wash over 350 loads each week. A catalyst for bringing people of all walks of life together, Orange Sky

facilitates countless hours of conversations each week. In February 2015, they took their mobile laundry to North Queensland to wash clothes in cyclone-affected communities. Nic and Lucas have found a way to treat others the way they want to be treated by restoring respect, raising health standards and reducing the strain on resources. They now plan to expand services Australia-wide with the aim of positively connecting the community and improving the lives of others.

.....

Source 2.5.3 Young Australians of the Year 2016, Nic Marchesi and Lucas Patchett

National Reconciliation Week

National Reconciliation Week is held each year between 27 May and 3 June to celebrate Indigenous history and culture in Australia and promote reconciliation. The two dates at the start and end of the week commemorate two significant events. On 27 May 1967, more than 90% of Australians voted to give the government power to make laws for Aboriginal and Torres Strait Islander people and recognise them in the census. On 3 June 1992, known as Mabo Day, a legal decision was made to recognise the land rights of Aboriginal and Torres Strait Islander people and their special relationship with the land. This recognition paved the way for land rights or Native Title.

Did you know?

To become an Australian citizen, individuals must sit a citizenship test. The test categorises those aspects of Australian society that are considered culturally significant for citizens.



Source 2.5.4 Mabo Day is named for Eddie Mabo, born on Murray Island in the Torres Strait and an Indigenous community leader and human rights activist. His role in campaigning for indigenous land rights resulted in a landmark decision by the High Court of Australia to recognise native title and the unique ties some Indigenous groups have to land.

ACTIVITIES

Remembering and understanding

- 1 Rewrite what a culturally diverse society involves.
- 2 Give examples of some significant days that have helped shape Australian identity.
- 3 Spell out the word ANZAC and show what each letter stands for.
- 4 Identify some important ceremonies that take place on Australia Day.
- 5 Define the term 'assimilation'.

Applying and analysing

- 6 Dissect the story of ANZAC Day to show why it is important to Australian identity.
- 7 Simplify Source 2.5.4 in order to explain why Nic and Lucas were nominated for the Young Australian of the Year.

Evaluating and creating

- 8 Design an inclusive new tradition that could occur on one day of the year to recognise and celebrate Australia's cultural diversity. Explain the thinking behind your idea and predict the outcomes of its implementation.

Inquiry tasks

Being Australian

In groups, create a collage using a variety of images/ words/quotes/poetry that demonstrates what it means to your group to be an Australian citizen. Before you begin your collage, brainstorm different

aspects of life in Australia. Consider cultural aspects (such as food, sport, festivals, religions), natural and environmental aspects, historical aspects and political aspects. Upon completion, each group is to take a turn presenting their collage to the class.

Government of Western Australia
Department of Local Government and Communities
Office of Multicultural Interests

Harmony Week

15–21 March 2016



Celebrate WA's diversity

Western Australians share a diverse heritage that originates from every part of the world and builds upon our rich Indigenous culture.

Harmony Week is a time to celebrate our unique community and reflect on the many social, cultural and economic benefits that diversity brings to every Western Australian.

Take time out this Harmony Week to join in celebrations with your friends, your family, your workplace, and our remarkable multicultural community!



Visit www.omi.wa.gov.au to find out what's happening in your area.

#HarmonyWeek

Celebrate WA's diversity

Source 2.6.1 Harmony Day is celebrated throughout Australia on 21 March. It was first held in 1999 and has become a significant annual day for Australians to celebrate our nation's cultural diversity.

My rules, my law

Draw up a T-chart. In the left-hand column, compile a list of as many rules as you can think of that apply to your day-to-day life (consider home, school, after-school activities). In the right-hand column, compile a list of all the laws that apply to your day-to-day life. Once you have completed your T-chart, choose the five rules or laws that you feel are most important to you from your whole list and rank them from 1–5, with 1 being the most important and 5 being the least important. Provide an explanation of why you have chosen each of the five rules/laws.

Bill into law

The process of a bill becoming a law can be long and complex in Parliament. Spend some time conducting research into the path of how a bill can become a law. Using your researched information, create an 8–10 panel cartoon strip that demonstrates the process to a primary school-aged audience. You can create your own characters to help explain the process, and your comic strip should include a combination of images and words/text. Make sure that you also include all of the necessary steps in the correct order.

Comparing laws

Use a Venn diagram to compare the similarities and differences between Aboriginal and Torres Strait Islander law and Australia's current model of a court system. Conduct some research to help you complete your diagram. Consider the following when working on your diagram:

- where/how each type of law originated
- how we learn/understand about the law and how the laws are documented or recorded
- the processes of how the laws are applied
- what happens when a law is broken.

GLOSSARY

assault a physical attack

ensorship the suppression of free speech; in Australia censorship is called classification and is managed by the Classification Board

customary law (in terms of Aboriginal and Torres Strait Islander law) among Aboriginal people, systems and practices governing behaviour that have developed over time

defamation the act of damaging someone's good reputation

Dreaming for Aboriginal people, understanding and knowledge of the time when the earth was created along with the people, animals and plants

held liable being legally responsible for your actions

kinship relationship by family ties or common interests; in Aboriginal culture, kinship is a system of laws governing social interactions and family relationships

manslaughter the crime of killing someone without meaning to

negligence (in terms of law) failure to take reasonable care to avoid causing injury or loss to another person

obligations duties

sexting sending someone sexually explicit photographs or messages by mobile phone

Western Australian Criminal Code the law in Western Australia that governs criminal offences



VINEGAR
OILS

Sweet plums
\$5.99

Sweet plum
\$5.99

Sweet
Mandarin
\$3.49

WESTERN AUSTRALIA

Markets in Australia

Markets are where buying and selling takes place. There are many different markets in Australia that contribute to our being among the richest countries in the world (based on average wealth per person). In this chapter we learn how buyers and sellers meet to agree on prices of things for sale and how markets help in making decisions about how we use resources. We also learn how the decisions made by governments in Australia influence how markets work.

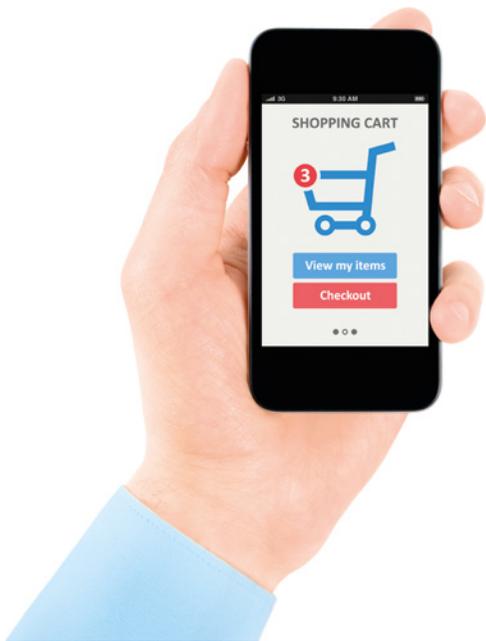
Source 3.0.1 We buy and sell things on a daily basis as part of our way of life.

Types of markets

Markets

In economics, a **market** refers to any situation where people exchange **goods** and **services**. Goods are physical things that you can see and feel. They are items like bread, soft drinks, shoes, pens, skateboards, magazines, television sets, computer games and radios. Services are actions that other people might perform for us and are not physical items. When you visit the hairdresser, ride on a bus, go to the doctor, log on to the internet or learn from a teacher you are receiving a service.

We take part in markets when we buy or use goods and services in our daily lives. This makes us buyers or **consumers** in markets. People who provide goods and services are sellers or **producers**. A market may be in an actual place such as a shop or a street market where buyers and sellers meet. In modern times we have **virtual markets** where buying and selling is done online through the internet, without face-to-face meetings. Buyers and sellers interact with each other in many different kinds of markets and in many different ways.

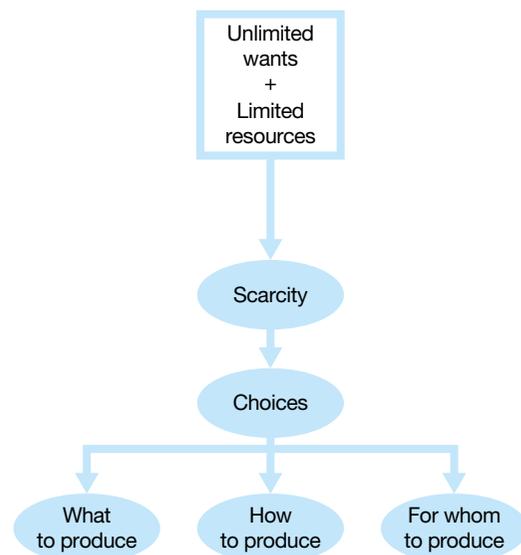


Source 3.1.1 Shopping online has become very common. In 2012–13 Australian Bureau of Statistics figures showed that 76% of Australia's 15.4 million internet users aged over 15 years bought something online.

Markets and the economic problem

We all have many needs and wants for goods and services, but we have a limited amount of resources—including money—to obtain them. This is known as the **economic problem of scarcity**: when resources are relatively hard to come by compared to needs and wants. A simple example is how the money available to you is very likely less than the cost of all the things that you want to buy, so money is a scarce resource. The same situation faces your family, your school, a local shop, a large business or a government.

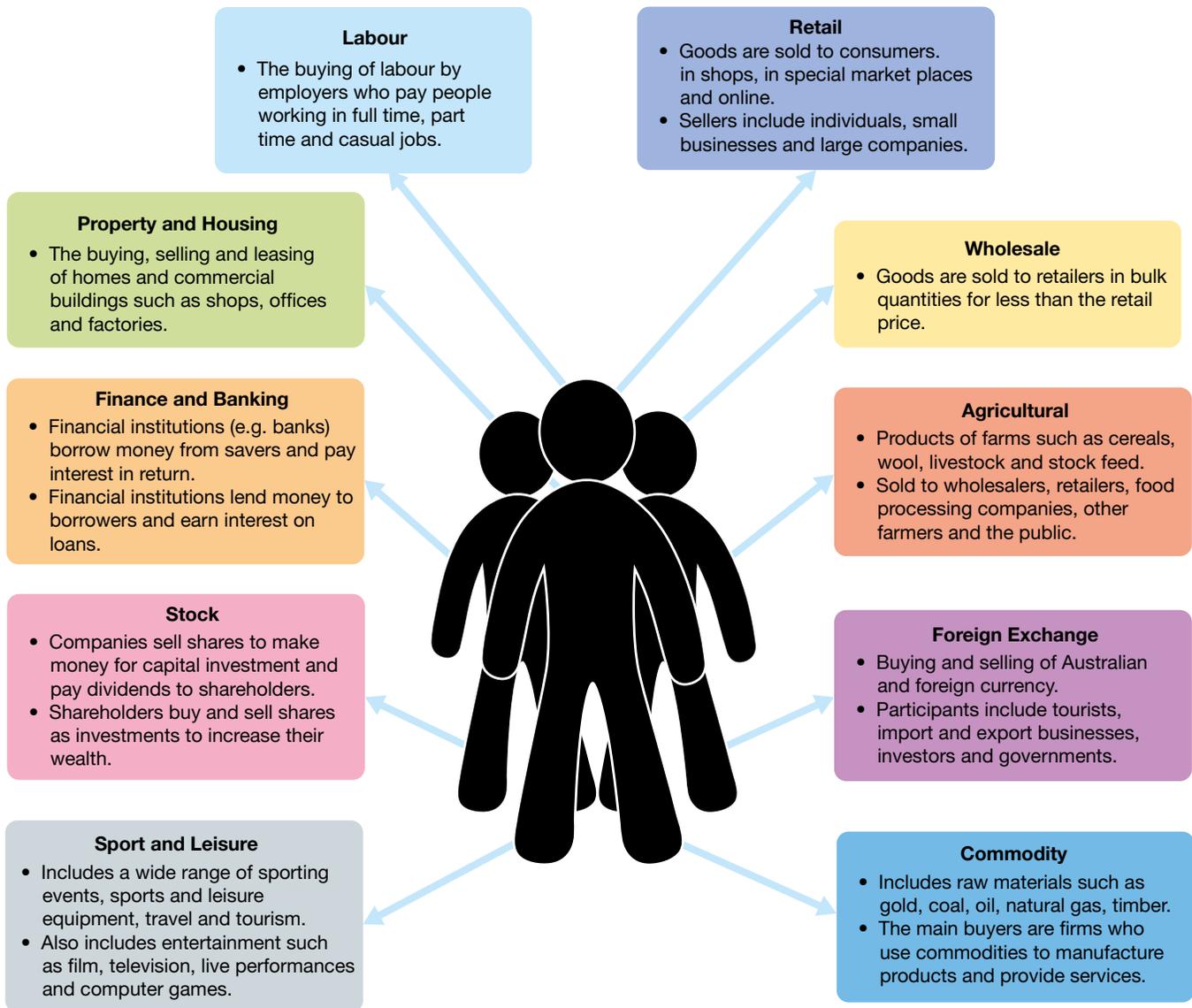
The economic problem forces both consumers and producers to make choices about how they will use their scarce resources. Markets have developed as a way for buyers and sellers to make their choices and to satisfy as many needs and wants as possible with their scarce resources. In the modern world we depend greatly on markets to provide the things we need to support our lifestyle.



Source 3.1.2 Scarcity occurs when there are not enough resources to satisfy all of our wants and/or needs.

Types of markets

Australians all take part in the market for consumer goods and services, known as the **retail market**. There are many other markets, and they vary in a range of ways, including the products traded, the types of buyers and sellers, the geographical area over which they operate and the quantity of goods and services exchanged.



Source 3.1.3 Markets cover many different areas of life.

ACTIVITIES

Remembering and understanding

- 1 Define the term 'market'.
- 2 Classify the following purchases as either goods or services: can of tuna, movie ticket, lounge chair, school fees.
- 3 Distinguish between producers and consumers.

Applying and analysing

- 4 Draw a diagram or cartoon to explain what you think is meant by the term "economic problem".

Evaluating and creating

- 5 Construct a mind map showing the different types of markets. Include information about the products traded and the types of buyers and sellers involved. Decide which of these markets is of greatest importance to the Australian economy.

Buyers and sellers

Australia's mixed market economy

Australia has a **market economy** where buyers and sellers are allowed to trade quite freely. However, federal, state and local governments have some control over the economy through spending, **taxation**, laws and regulations. These governments also take part in economic activity by producing and consuming goods and services. Combining free markets and government involvement creates a mixed economy. Most world economies are mixed economies. They have elements of both a perfectly free market economy and a completely government-dominated (or command) economy.

Source 3.2.1 A model of our economic system

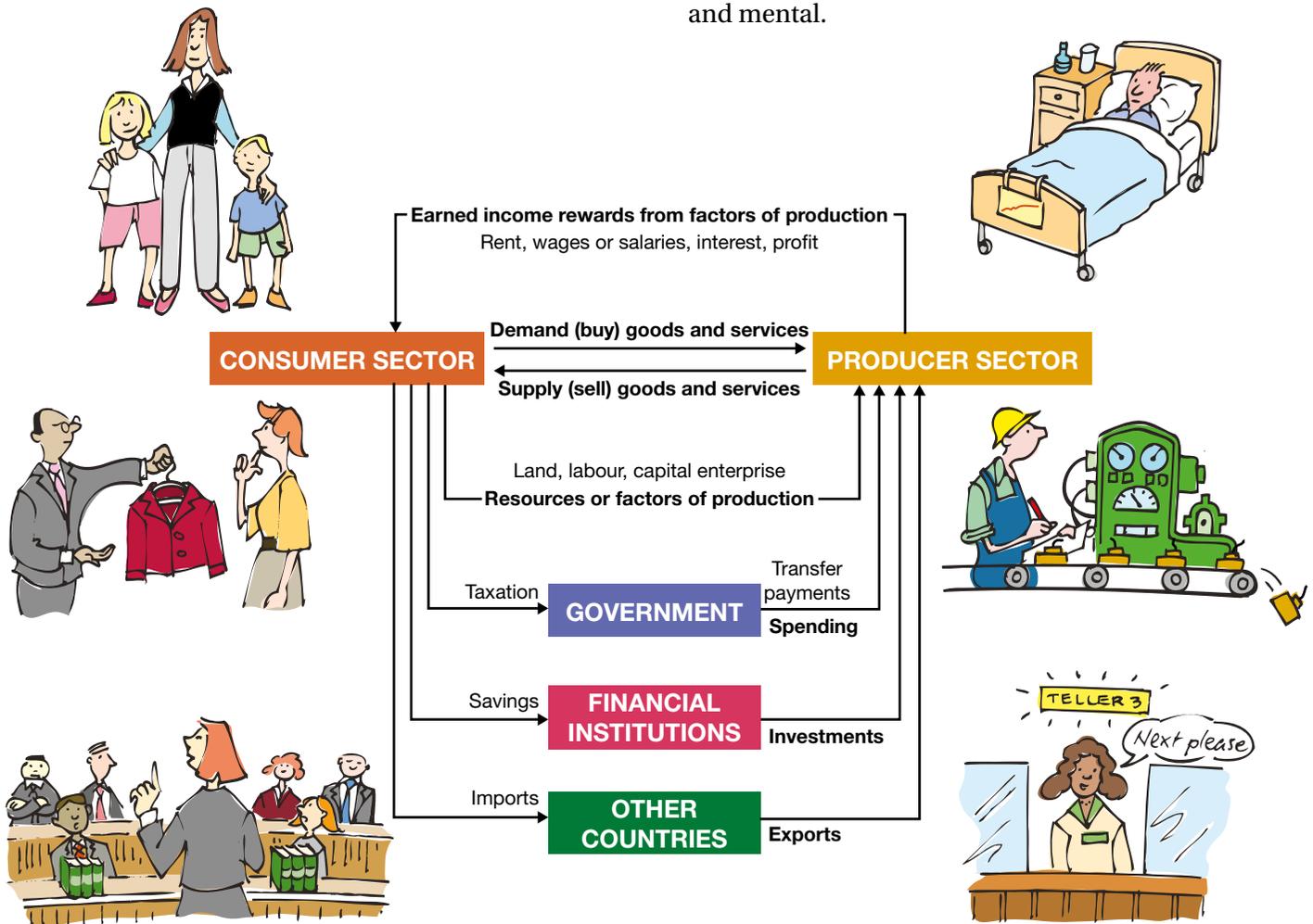
Consumers and producers

In a market economy, there is a system of exchange between the producers (sellers) and consumers (buyers) that forms a circular flow. Producers provide goods and services to consumers in return for payment. Consumers provide the resources, called factors of production, that the producers need to provide the goods and services.

Factors of production

The factors of production are land, labour, capital and enterprise.

- Land resources are raw materials that come from nature. This includes natural resources such as land, water, iron ore, coal, natural gas, forests, the atmosphere and animals.
- Labour includes all human work, both physical and mental.



- Capital refers to things that people have made that are used in the production process. This includes machinery, tools and buildings. Money is not a capital resource because by itself it doesn't produce anything. When money is lent to businesses it is considered a capital resource because it is contributing to economic activity.
- Enterprise refers to the ability of people called entrepreneurs to organise the combination of land, labour and capital resources to produce goods and services.

Allocation of resources

Every society must decide how to allocate (distribute) an economy's scarce resources and goods and services. Buyers must decide what to buy, how much to buy and who to buy it from. They create demand for goods and services. Sellers must decide what to produce, how to produce it, how much to produce and for whom to produce it. They supply goods and services.

One important factor that guides both buyers and sellers in making their choices is the **market price**. It is the key piece of information in the operation of markets because it influences both demand and supply.

The influence of price

Buyers often look for the cheapest products when shopping for goods and services. It is in their interest to do this so they will have more money left over to spend on other products or to save for the future.

However, price isn't the only thing shoppers have in their minds. They also think of the quality of the products in the market and how much they need these products in their lives.

Market prices also affect the decision making of sellers. If they can't cover the costs of producing goods and services, they operate at a loss.

Sellers aim to make a profit from their business by selling their products for more than they cost to produce. If the market price is high enough to make a good profit, then sellers will continue or even increase production. When the price is too low to make a good profit, sellers seek ways to lower costs or cut back on their production. They may even stop producing those products.



Source 3.2.2 Buyers and sellers influence and respond to each other.

Influences other than price

The market price isn't the only factor that sellers must keep in mind. They compete with other producers of the same or similar products. **Competition** does involve price, but sellers must also consider their product's quality and features. As well, they compete through promoting their products. This is done through different ways of packaging, presenting and advertising products. Competition means that sellers must be efficient in their production processes to keep the costs of production as low as possible compared to the market price.

ACTIVITIES

Remembering and understanding

- 1 Show how a mixed economy is created.
- 2 Describe the four factors of production and give an example of each.
- 3 Compare and contrast the way that price changes affect buyers and sellers.

Applying and analysing

- 4 What are some examples of the different factors of production used at your school?

Evaluating and creating

- 5 Select a product that you would like to buy and research the purchasing options available. Choose the best option for you and justify your decision in a short report.

Setting market prices

Demand and supply

In Australia's market economy, sellers don't simply choose a price for their products. Prices are mainly affected by the combination of the demand from buyers and the supply from sellers. Economists call the changes in demand and supply **market forces**.

Demand forces

Buyers' demand for goods and services is constantly changing. Some reasons for changes in demand from buyers include the following.

- Prices move up or down. When prices rise, consumers buy less of a product. A fall in price encourages people to buy more of it.
- Tastes, fads and fashions come and go. Popular things are in high demand; less popular things are demanded less.
- Technology develops, providing new and better products. An example is the high demand for smartphones as telecommunication networks keep getting faster.
- Changing seasons create seasonal demand because they affect people's choice of food, clothing, leisure activities and modes of transport.

- Public holidays, school holidays, major sporting events and special times of the year such as Christmas, Easter, Ramadan and Chinese New Year create demand for particular goods and services.
- The level of activity in the economy affects people's jobs and incomes, causing them to alter their spending, depending on how much money they have. Our economy relies on trading with other countries, so the level of global economic activity affects the income of Australians greatly.

Changes in prices cause changes in demand.

Economists have developed the **law of demand**, which says that if everything else stays the same, when the price of a product rises then the quantity demanded will fall. Likewise, when the price of a product falls, the quantity demanded will rise.

Supply forces

Changes in the supply of products are also connected to changes in price. The law of supply says that, if everything else stays the same, when the price of a product rises then the quantity supplied will also rise. In the same way, if the price of a product falls then the quantity supplied will fall.



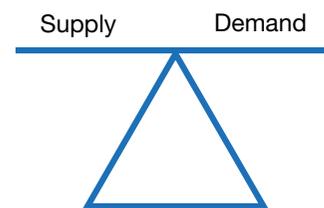
Source 3.3.1 Advances in technology have driven demand for new and better ways to listen to music.

A shift in supply can be caused by a number of factors including:

- new technologies and methods of production, making production more efficient and less expensive
- a change in the cost of one or more of the factors of production. This changes the cost of providing goods and services
- a change in the number of suppliers competing in the market. More suppliers in the market means total supply increases; fewer suppliers means supply decreases
- natural disasters such as cyclones, bushfires, floods and droughts may affect the supply of farming, mining and fishing products, as well as essential services such as power and transport.

Market equilibrium

Sometimes, the price is at a level where the amount that buyers are willing to demand is the same amount as that which sellers are willing to supply. This price is the market equilibrium price. There is no pressure for the price to move up or down unless changing market conditions lead to changes in demand or supply, which is when a new equilibrium price will be found. Buyers are happy because they can obtain all they are prepared to pay for at the market price. Sellers are happy because they are able to sell as much as they can produce at that price.



Source 3.3.3 When supply and demand are in balance there is market equilibrium.



Source 3.3.2 New technologies can make producing cars more efficient and less expensive.

Market structures

Many different markets exist in Australia and they all arrive at prices for goods and services. The way in which prices are set in markets always involves agreement between buyers and sellers. However, buyers and sellers aren't always in an equal bargaining position and this influences prices. Markets are structured in several ways, depending on the numbers of buyers and sellers.

Prices in perfectly competitive markets

In markets where there is perfect competition, there are many buyers and many sellers. The sellers are often small businesses that sell very similar, inexpensive products. An example is the market for fruit and vegetables. These are common foods that people consume and buy regularly in small quantities so no single consumer can have any impact on market demand. The sellers are farmers who each contribute a small amount of total supply of products that aren't much different to those of any other farmer.

Prices in a perfectly competitive market are set by the forces of demand and supply and they settle at or near the equilibrium price. In actual fact, perfect competition is just an idea that doesn't exist in real life for various reasons. In particular, not all buyers and sellers have good knowledge of the best price in the market at any time. Also, it is rare to find a

market where there aren't buyers or sellers who can influence the market by their activities. Despite these difficulties, strong competition is seen as good in markets because competitive markets provide the most efficient way for both buyers and sellers to decide how they will allocate their scarce resources.

Prices in imperfectly competitive markets

In perfectly competitive markets both buyers and sellers are price takers. This means that they have to accept the market price because their individual buying or selling isn't great enough to influence demand and supply. In reality, no markets are perfectly competitive and this allows sellers to be price makers. This means that they can influence the price of their products. There are different types of imperfectly competitive markets.

Monopolistic competition

In monopolistic competition, large numbers of sellers have products that are in some way different from those of other sellers. An example is the clothing market where businesses have different brand names and styles. Each firm tries to get the greatest share of the market as possible, mostly through advertising. These sellers set the price of their products and will increase production if they are making a profit.



Source 3.3.4 There are many buyers and sellers in the market for fruit and vegetables, making it a competitive market.

Monopoly

In a monopoly market there is only one seller of products for which there are no close substitutes. They control the prices because there are no competing sellers. An example of a **monopoly** is Perth's water supply provided by the Water Corporation.

Duopoly

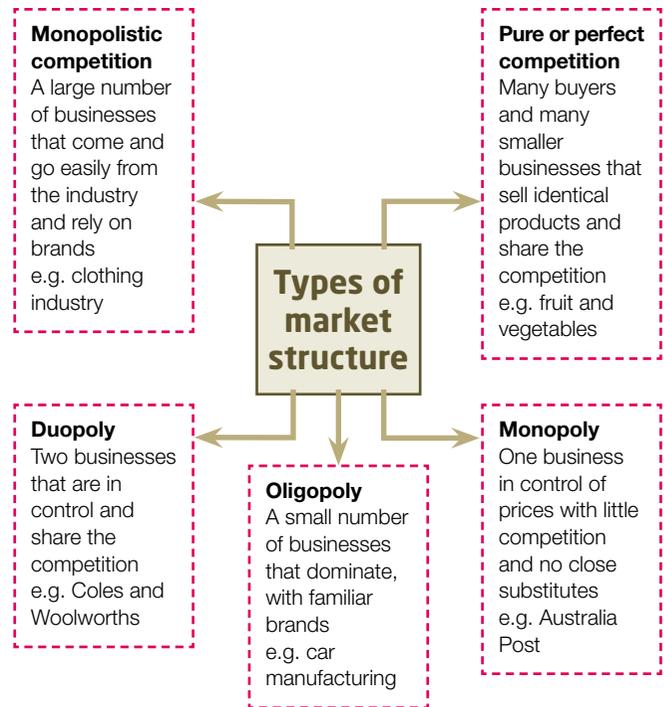
A duopoly is where there are two businesses that control most of the market. The grocery market in Australia is an example because of the dominance of Coles and Woolworths. Between them, these two companies controlled over 70% of the \$82 billion grocery market in 2014. Because each company is larger than all of the other companies in the market, they are price makers who mainly compete with each other for customers.

Oligopoly

An oligopoly is where a small number of businesses dominate the market. They are price makers and sell well-known brands. An example is car making.



Source 3.3.5 Australia Post is an example of a monopoly in Australia.



Source 3.3.6 Types of markets

ACTIVITIES

Remembering and understanding

- 1 Identify two market forces.
- 2 Give three examples of factors that influence demand.
- 3 State the law of demand.
- 4 Find the difference between the law of supply and the law of demand.
- 5 Name the factors that can cause a shift in supply. Which of these can suppliers influence the most?

Applying and analysing

- 6 Apply your knowledge of supply and demand to explain the concept of market equilibrium.
- 7 Differentiate between perfectly competitive markets and imperfectly competitive markets.

Evaluating and creating

- 8 Discuss one type of imperfectly competitive market that exists in Australia.

Allocation of resources

In a market economy, prices are critical in determining who gets what products and services. This is called allocation of resources.

Prices and the allocation of resources

In Unit 3.3 we saw that there is a connection between market prices and the demand and supply of goods and services to markets. This is called the **price mechanism**: because it affects both demand and supply as buyers and sellers use prices to decide how to allocate their scarce resources. The resources are the factors of production: land, labour, capital and enterprise. **Resource allocation** is dividing up these limited resources between various uses to satisfy unlimited and competing needs and wants.

Through the operation of the price mechanism, prices are important in markets in three main ways:

- they provide a signal to buyers and sellers about the state of the market
- they help consumers to ration their spending and buy more or less
- they provide an incentive to producers to produce more or less.

Prices as a signal

Prices adjust according to changes in supply and demand. This sends a message about where resources are needed and where they are not. When demand is greater than supply, there are shortages in the market and some buyers will pay higher prices just to obtain the goods or services. Sellers take this as a message that they should provide more to the market because they can make greater profits. If supply is greater than demand, then sellers can't sell all of their products and are left with a surplus. This is a sign to them that they will have to lower their prices, and prices fall as a result.

Prices ration demand

Prices send messages to buyers about whether they can afford a product and how much of that product they can buy with their income. When prices rise, some consumers will be rationed out of the market because they cannot afford to buy as much. Their spending power has decreased. Falling prices will ration some consumers back into the market because their spending power has increased and they can afford to buy more.

Prices provide incentives to producers

Changes in prices provide information to producers about demand and supply in the market. If prices rise, the message to producers is to produce more. The incentive for them is that they can make larger profits. When prices fall, producers' profits are less. They have an incentive to reduce their production or use resources more efficiently because both will help them to cut costs and keep their profits up. They will reduce their costs and avoid being left with a surplus of unsold products. Surplus products often have to be sold at a reduced price, which reduces the producer's profits or can cause them to make a loss.



Source 3.4.1 At the beginning of the tulip season, fewer tulips are available for sale, so they are more expensive. When there are a lot of tulips in flower, their price decreases.

Decisions for producers

Producers make decisions about how they will allocate their resources based on market prices and levels of demand and supply. They ask themselves three key questions.

What to produce?

Producers seek to maximise their profits by producing goods and services for which there is strong demand and no oversupply from sellers. They plan to produce the maximum amount that they can sell for a profit. They choose ways of keeping the cost of producing their products as low as possible.

How to produce?

Producers look for 'least cost' ways of producing goods and services to minimise costs and maximise profits. They can look for cheaper supplies of raw materials and capital goods or cheaper substitutes for these items. For example, a builder might use steel for the framework of a house because it is cheaper and longer lasting than timber. Producers can use new technologies, such as a farmer using chemical sprays to control weeds rather than cultivating the soil a number of times.

Another way to reduce costs is to change the amounts of labour and capital used. For example, producers might buy machines that carry out tasks automatically, such as robots. This might be cheaper than employing people to do these jobs. Many companies increase their production so that they can spread their costs over a large quantity of products and make them as cheaply as possible. This is called mass production.

For whom to produce?

Goods and services are made for any buyers who can pay the price that sellers are prepared to accept. This leads to a great variety of products in different markets depending on the number of buyers, who the buyers are, and how much they are prepared to spend. Some products are produced for people on low to middle incomes, while others are aimed at high-income earners.

Taking food products as an example, a basic food item such as bread is priced so that most people can afford to buy it at just a few dollars per loaf. Luxury food items such as truffles are very expensive and only wealthier people would buy them at around \$2000 per kilogram. Per kilogram, truffles cost about 400 times as much as bread!



Source 3.4.2 Haigh's in Adelaide is famous for its chocolates, some of which are handmade. This, along with their use of expensive ingredients, makes them a luxury food compared to cheaper products in the market.

ACTIVITIES

Remembering and understanding

- 1 Demonstrate three ways that prices are important within markets.
- 2 Explain what happens in a market when demand is greater than supply.
- 3 Illustrate, with an example, what happens if supply is greater than demand.
- 4 Relate a situation that you have experienced where price rationed your demand for a product.

Applying and analysing

- 5 Develop a flow chart to model how price can provide either an incentive or disincentive to producers.

Evaluating and creating

- 6 What to produce, how and for whom are important questions for producers. Imagine you are a producer. What other questions might be on your mind?

Case study: The banana market in Australia

The Australian banana market

Bananas are a popular, fresh-food item, and Australia's banana market is competitive, with many buyers and sellers. Consumers buy large quantities of bananas throughout the year, although they will buy other fruits if the price of bananas becomes too high. Sellers usually supply bananas to the market all year round, but bad weather can cause shortages, which are followed by surpluses as production returns to higher levels. The price of bananas is fairly steady but shifts in supply can cause it to rise or fall dramatically.

Growing bananas

Bananas are a tropical fruit growing in bunches on a tall, broad-leafed plant. Banana growing in Australia was introduced by Chinese immigrants in the mid-nineteenth century. Today there are many plantations in tropical and sub-tropical areas of the country. About 90% of bananas are grown in North Queensland.

All of the fresh bananas sold in Australia are grown here because overseas bananas could introduce plant diseases that would threaten our banana production. Most growers produce the Cavendish variety because that is a favourite with buyers and is

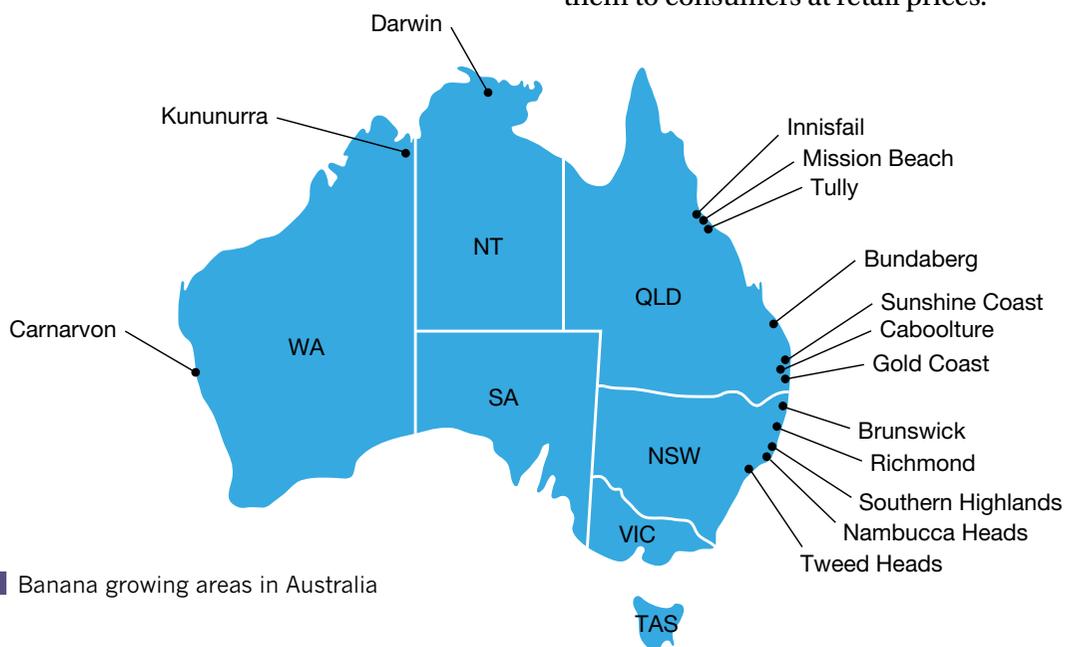
one of the easiest varieties to grow and to transport. This means that there isn't much competition between growers of bananas, other than to supply the best quality Cavendish fruit. Other varieties, with a much smaller share of sales, are Lady Finger, Ducasse, sugar bananas, Goldfinger, Red Dakkas (really, red bananas!) and cooking bananas, called plantains.

Did you know?

Bananas are the top selling product in supermarkets. The main banana grower organisation estimates that Australians eat over 5 million bananas every day, which is 310 000 tonnes each year.

Buying and selling bananas

Banana production in 2013–14 was 372 000 tonnes, or 28.6 million 13-kilogram cartons, with a value to farmers of about \$600 million. About 14 000 hectares of land is used for banana plantations and banana growing is Australia's single biggest horticultural industry. Most bananas are first sold to wholesalers at auctions in fruit and vegetable markets in the capital cities. Wholesalers then sell the bananas to supermarket chains and greengrocers, which sell them to consumers at retail prices.



Source 3.5.1 Banana growing areas in Australia

In such a large market for a product that is essentially the same, there is little that individual sellers or buyers can do to influence the market price. However, supply conditions and prices can change very quickly due to extreme weather in growing areas, such as tropical cyclones.

Changing market prices for bananas

Bananas are grown near the coast in tropical and sub-tropical areas of Australia. During the summer and early autumn, tropical cyclones (severe storms) often bring devastating winds and flooding rains. These cyclones badly damage the banana plants and it takes at least nine months for the plants to recover or to be replaced. In recent years several major cyclones have caused major destruction of banana crops, causing severe shortages of supply and resulting in extremely high prices.



Source 3.5.2 Cyclone damage to a banana plantation

Cyclone Larry

In March 2006, Cyclone Larry crossed the Queensland coast near Innisfail, wiping out 80% of Australia's banana crop. More than 200 000 tonnes of fruit worth \$300 million was destroyed. The price of bananas went from \$2–\$3 per kilogram before Larry, to \$15 per kilogram in June 2006. Production recovered eventually, but then too many bananas came onto the market and at the height of the glut in 2010 prices were down to \$1.50–\$3 per kilogram.

Cyclone Yasi

Cyclone Yasi was one of the most powerful cyclones to hit Australia and was particularly damaging for banana growers. It crossed the Queensland coast near Mission Beach in early February 2011, destroying 85% of Australia's banana crop. Before Yasi struck, bananas were selling in shops for around \$1.90 to \$4.60 per kilogram. By April, prices were between \$10–17 per kilogram and most consumers stopped buying bananas. This fall in demand caused the industry to begin a marketing campaign to attract shoppers back to bananas.

Cyclone Olwyn

Cyclone Olwyn destroyed 100% of the banana crop in Carnarvon in March 2015. Carnarvon bananas make up about 25% of the Perth market but prices weren't affected as Queensland growers were able to make up for the short supply.

Market impacts of cyclones

Severe cyclone damage impacts on the market. When consumers decide that the price of bananas is too high, they stop buying as many bananas. When supply gets back to normal and people are prepared to buy bananas again, then a new market equilibrium price is reached. This process may take a few years.

ACTIVITIES

Remembering and understanding

- 1 Cite two indicators of the popularity of bananas in Australia.
- 2 Describe one factor that can lower the demand for bananas.
- 3 Record the different varieties of bananas that are available in the Australian market.
- 4 Estimate the strength of the market for bananas with reference to figures available in this unit.

Applying and analysing

- 5 Analyse the nature of the threat that cyclones pose to Australian banana producers. When are producers most at risk and what do they stand to lose?

Evaluating and creating

- 6 Determine one way that banana producers could minimise the risk posed to their crops by cyclones. Present your idea to the class.

The government and the market

The need for government in a market economy

We have seen that in a perfectly competitive market the price mechanism, through the forces of supply and demand, ensures the efficient allocation of resources to provide the goods and services that people need. We have also seen that all markets have some level of imperfect competition. Markets don't always provide all types of goods and services in the quantity needed or to all of the people who need them. This is because sellers produce goods that bring them the level of profit they want and sell them to the people who can afford to pay for them.

In a mixed economy such as Australia's, governments take steps to ensure that markets operate as competitively and fairly as possible. This is done in three main ways: by having regulations that control the behaviour of buyers and sellers; by providing

goods and services that aren't adequately provided by sellers; and by operating their own businesses, known as government business enterprises.

Government regulation of markets

There are three levels of government in Australia. The federal or Commonwealth government is responsible for the whole nation and is based in the Canberra, the national capital. At the next level are the governments of the six states and two territories, each based in their state or territory capital city. The lowest level of government is local government, based in city, town and shire areas within the states and territories. Each government makes decisions about matters affecting people within their area. These governments make laws and regulations to make sure that these decisions are carried out. For a number of reasons, governments try to affect the operation of markets.



Source 3.6.1 Government restrictions on importing food and other products aim to prevent the spread of diseases, pests and weeds.

Some regulations are aimed at getting a market result that otherwise might not occur. At the federal level, for example, there are controls on importing some agricultural products, such as bananas and livestock, in order to prevent the introduction of diseases. If these controls weren't in place, then sellers would import bananas and livestock from overseas when the Australian products were in short supply and at a high price. This would carry the risk of importing plant and animal diseases that could badly affect Australian producers. Another example is the restriction on importing and selling some types of firearms. If there were no restrictions on importing high-powered automatic weapons, the likelihood of violent crimes resulting in multiple deaths would increase.

Sometimes governments regulate markets by providing financial incentives for sellers or buyers to operate in a particular way. For example, the First Home Owner Grant scheme gives money towards the cost of buying a first home. This is designed to encourage people to buy their own home, boosting the market for new and established homes. Another example is the Commonwealth carbon-pricing scheme that operated from 2012–14. Businesses that put a lot of carbon dioxide into the atmosphere had to pay a levy to the government. This was an incentive for them to cut down their carbon emissions, which contribute to climate change. The levy was to fund research into low-carbon, renewable energy sources.

Regulations can also be used to produce or prevent outcomes in different places than otherwise might occur. For example, the Western Australian government does not allow some fruit to be brought into the state from other parts of Australia. This is to prevent the spread of pests and diseases that would affect the local fruit industry. Another example is the extra pay and allowances that governments of all levels offer to people who are prepared to work in regional areas outside the major cities. These policies help the economies of country areas by encouraging people to live and work away from the capital cities.

Another way in which regulations are used is to produce or prevent outcomes in different time

scales than otherwise might occur. An example of this is the federal government regulations that enforce the plain packaging of tobacco products, together with other regulations such as banning the advertising of these products, their sale to people under 18 years, and smoking in certain areas.

These regulations all help to produce the outcome of reducing tobacco smoking in the community and reducing the level of tobacco-related illnesses more quickly than would happen if there were no restrictions. Tobacco products are considered to be demerit goods because they harm the consumer and can have negative effects on other people who are affected by the tobacco smoke. Governments try to regulate the market for such goods to reduce their use.

Governments provide public goods and services

The markets do not provide some things because it is difficult to make a profit from them. In economics, these are called **public goods**, and they have two features. Firstly, it is not practical to stop a person from using the goods. Secondly, one person's use of the goods doesn't reduce the ability of other people to use them. An example of a public good is a footpath that is open for anybody to walk along. It is not practical to make everybody who uses a footpath pay for walking on it. One person's temporary use of the path doesn't stop other people from using it, so footpaths don't get 'used up'. The worst that can happen is that a lot of people might want to use the footpath at the same time, making it very crowded and reducing its usefulness to individuals. These public goods are not exactly 'free' since they are paid for with government taxes.

There are many other examples of public goods, including the protection provided by defence and police forces whose job is to keep everyone safe, (not just people who can pay to be kept safe); street lighting that helps everyone to see where they are going; fire and emergency services that help everybody in times of accidents and disasters; and lighthouses and navigation aids that assist all ships and boats to travel safely.



Source 3.6.2 Public goods and services are all around us.

As well as public goods, governments also provide some goods that could be provided by markets, but not at a price that some people can afford. For example, federal and state governments fund public schools to provide a low-cost option for parents. Private schools also receive government assistance to help them lower the cost of providing education, giving more parents the option of choosing to send their children to these schools. Health care is another service that can be provided privately but that governments also pay for, such as public hospitals and various health services. Education and healthcare are **merit goods** because they benefit society, not just the individuals who consume them. Governments try to increase the use of merit goods.

Government business enterprises

Sometimes governments set up their own business enterprises in markets to sell goods and services. This is most common where there is a natural monopoly and it makes sense to have just one seller in the market. An example of this is the Western Australian government-owned Water Corporation, which supplies water to over a million properties, collects and treats waste water through the sewerage system, provides irrigation water to farmers, and manages drainage systems in Perth and regional areas to prevent flooding.

It is very expensive to provide these services. A large and expensive network of dams, bores,

desalination plants, water and sewerage pipes, drains, tanks and pumping stations is required. Building, operating and maintaining the system needs a lot of people, so it isn't economical or practical for other businesses to set up other networks in competition with the Water Corporation. It's difficult to make money selling these services because water supply and the other services are so essential that prices have to be kept as low as possible. Because the government of Western Australia owns the Water Corporation, it controls the prices that the Water Corporation charges its customers. While the Water Corporation is run like a business, its aim is not to make a large profit but to deliver its services as efficiently as possible. The government may use any profits for other public spending and it has to cover any losses.

The many federal and state government business enterprises in Australia cover a wide range of activities. Commonwealth business enterprises include:

- Air Services Australia (services to the aviation industry)
- Australian Broadcasting Corporation (The ABC, public radio and television broadcasting)
- Australia Post (postal services)
- NBN Co (building the National Broadband Network)
- Reserve Bank of Australia (The RBA, Australia's central bank)
- Special Broadcasting Service (SBS, television broadcasting, partly funded by advertising)



Source 3.6.3 Government business enterprises

Some Western Australian government business enterprises, along with the Water Corporation, are:

- Horizon Power (provides electricity to areas outside the south-west of the state)
- Transwa (rail and bus public transport services to regional areas)
- Transperth (rail, bus and ferry public transport in the Perth area)
- Western Power (runs the electricity network in the south-west of the state)
- Synergy (generates and sells electricity in the south-west of the state).

ACTIVITIES

Remembering and understanding

- 1 Outline what is meant when perfectly competitive markets are described as an ideal situation.
- 2 Explain why markets may not always provide all types of goods and services.
- 3 Identify three ways that Australia's governments ensure that markets operate competitively and fairly.
- 4 Select one example of how the government regulates the market and explain its importance.

Applying and analysing

- 5 Find out more about the carbon-pricing scheme that was applied between 2012 and 2014. Discover whether the scheme was effective or not.

Evaluating and creating

- 6 Experiment with the idea that the government is no longer providing any public goods and services. Write a paragraph describing what your day would have been like so far.

Inquiry tasks

Different markets

Use a compare and contrast chart to explore some of the similarities and differences in the goods and services available to teenagers who live in a big city like Perth, and the goods and services available to teenagers who live in a small country town like Dimboola. When completing your chart, consider aspects of life such as food, education, transport, healthcare and recreation/entertainment. When you have completed your chart, write a paragraph explaining which location you would prefer to live in and why.

Source 3.7.1 Perth's train system experienced delays during a summer heatwave in February 2016. In extreme temperatures, many services to the public can be affected.

Market forces

Draw up a three-column table with the following headings: Goods and/or Services, How Supply and Demand Are Affected, Explanation of Why Supply and Demand Are Affected. Then choose one of the following scenarios and complete your table in as much detail as possible, thinking of a minimum of five goods or services that are impacted by the particular scenario you have chosen.

- 1 Perth has experienced a particularly long and unexpected cold snap with temperatures not getting above 10 degrees for the last 10 days.
- 2 Ten cases of food poisoning have been linked to jars of peanut butter made by an Australian company.
- 3 A popular female celebrity has cut her hair short, got some tattoos and signed a contract to only wear a particular brand of designer clothing.



To market, to market

You and your fellow students are going to enter the marketplace. Your school is running a fete and students will be participating in a cake stall to try and raise money for the school. In groups, come up with a market action plan to help you get organised for the day. Include the following in your action plan:

- 1 What to produce**—determine (perhaps through a survey) the kinds of baked goods people enjoy the most and the prices they are willing to pay for these baked goods. Find out what other stalls will be making and decide if you want something original or popular.
- 2 How to produce**—decide the most cost efficient and effective place to purchase your supplies, and determine where you will produce your baked goods.
- 3 For whom to produce**—decide who your target audience will be (in order to maximise profits). Consider fellow students, parents, teachers, members of the general public, younger children, etc.

Going bananas

In groups, use the case study on bananas in Unit 3.5 to create a role-play that demonstrates and explains the effects on both consumers and producers, and supply and demand, of the cyclones that destroyed the banana crops. Your role-play needs to be appropriate for an upper primary audience.

GLOSSARY

competition rivalry among sellers to sell their goods and services to increase their profits and share of the market

consumers people or groups that are the final users of goods or services

economic problem of scarcity the fundamental economic problem of having unlimited human wants in a world that has limited resources

goods things that are bought and sold

law of demand an economic law that states that as the price of a good or service increases, the demand by consumers for it will decrease and vice versa

market the organised exchange of goods and services by buyers and sellers

market economy an economic system that coordinates the production and distribution of goods and services using markets

market forces the economic factors that affect the price of and demand for a good or service

market price the current price that goods or services can be bought or sold for

merit goods goods or services that are provided free to all members of society by the government

monopoly the exclusive control by one group or company of the market for a good or service

price mechanism an economic term referring to the system whereby the price of a good or service is determined by supply and demand for it

producers people and businesses who make or produce goods and services

public goods goods and services provided to all members of society either by a government or by an organisation

resource allocation the process of planning how to use available resources to achieve a goal

retail market places where goods and services are sold directly to consumers

services systems supplying a public need, such as transport

taxation the act of levying taxes, which is the means by which governments pay for their spending

virtual markets online places where people come together over the internet to buy and sell goods and services

information
gift vouchers

ask us

s & returns



HOMEBASE

Paint us a picture

Let us know how we did today.

Paint us a picture of our service by completing our short survey and you receive £5 off next purchase £50 or more at Homebase.



Consumer rights in Australia

Rights are what a person is entitled to or deserves. In Australia's mixed economy, governments try to protect the rights of both buyers and sellers using Australian Consumer Law (ACL). If we expect to have certain rights, then we also have a responsibility to make sure that we respect the rights of other people. ACL places responsibilities on both buyers and sellers to ensure that the rights of both groups are protected.

Source 4.0.1 Australian consumers spend more than \$30 000 per household every year on goods and services. Companies offer customer support to help buyers of their goods and services, but sometimes sellers and consumers need the backing of the law to resolve their issues.

The rights and responsibilities of consumers and businesses

Consumer rights

When consumers buy products from an Australian seller, they are protected by a consumer guarantee under the Australian Consumer Law. A consumer guarantee means that the seller must meet certain standards of product, marketing and after sales service.

The standards apply to both new and second-hand products, to items that are on sale or at special prices, and to products bought online from Australian sellers. Items bought from a private seller (not a business) don't have all of the **consumer guarantees**, and it isn't always possible to take action against overseas suppliers.

Consumer guarantees protect buyers' rights in a number of ways and, if these rights aren't met, then the buyer has the right to seek help from government authorities. In Western Australia this is the Consumer Protection division of the Department of Commerce.

Acceptable quality

Products for sale must be of acceptable quality. This means they must be:

- suitable for the supplied purpose, for example, a hair dryer should dry hair
- safe to use, able to last a reasonable time under normal use and not have any defects, for example, a hair dryer should not emit sparks or stop working after a few weeks
- acceptable to the buyer in appearance, for example, a new hair dryer should not have scratches on it when first unpacked.

If a product doesn't meet these **standards**, the buyer has the right to ask the seller to fix the problem.

Cause damage to other property

Buyers can seek **compensation** from the seller or maker of a product when a faulty product causes loss or damage to other property, but only if the loss or damage was reasonably predictable. For example, if a new television had a fault that caused an electrical short circuit and started a fire in your lounge room, you could claim damages from the manufacturer.



Source 4.1.1

With the rise in internet shopping, consumers are more exposed to buying products that do not do what they have been advertised to do.

Match the description

A product must match the description under which it was sold. The description might be on the label, the packaging, in an advertisement or on a website. If a product *does* have any faults, it must be indicated, such as if a new refrigerator was slightly scratched while being transported to the store and is being sold for a lower price as damaged goods. Even if the buyer has inspected the goods and could have noticed they weren't as described, the seller must make sure that they match the description. If you buy a shirt that was described as cotton in the store's advertising, only to find when you get home that it is made of **synthetic** material, then you are entitled to return it to the store for a full **refund**.

The same as a sample or demonstration model

If you buy a product after looking at a sample or a **demonstration model**, the product must match what you have been shown. If your parents order a new lounge chair based on one they have been shown in the furniture store and the one that is delivered was made using a lower-quality fabric covering, they are entitled to ask the store to remedy the situation.

Suitable for the purpose specified

Products must be reasonably fit for the purpose specified by the buyer and agreed by the seller at the time of sale. For example, you buy a BMX bike and you tell the salesperson it will be used for serious competition riding. The salesperson says it is strong enough for that purpose. However, the frame breaks during your first competition, even though you haven't done anything out of the ordinary for a competition rider. You are entitled to ask for a refund because you wouldn't have bought the bike if you thought it wasn't built to competition standard.

The right to sell the product and pass on ownership

If a seller does not already own the item that is being sold, they must first gain the owner's consent. Otherwise the owner is entitled to claim the item back. Similarly, a seller must ensure that the product they are selling has not been stolen. They must also make sure that there is no money owing on the item, such as selling a car on which they still owe money to a **hire-purchase** company.



Source 4.1.2 Certain products sold in Australia, such as movable soccer goals, are subject to **mandatory standards**. This means they must meet particular safety criteria before they can be sold in Australia.

In such cases the person isn't allowed to sell the car until they have paid what's owed, because they don't actually own it. In these situations, buyers are entitled to seek some remedy.

Repairs and spare parts

The seller must make sure that repairs and spare parts will be available for purchased goods for a reasonable amount of time. If the waiting time for repair is unacceptably long or the supplier can't repair the item, then the buyer is entitled to seek remedy for the situation. If repairs are being done, the buyer of the goods is entitled to know if new or second-hand parts are being used. If a device for storing data, such as a computer, is being repaired, then the buyer must be told that the repairs may result in loss of data.

Cooling-off period

A cooling-off period gives consumers the chance to change their minds about a product or service they have agreed to buy if the sale was made through a telemarketer or door-to-door salesperson. The consumer has the right to cancel the agreement within 10 days without penalty. It protects consumers from being forced into quick decisions when they have not had time to assess an offer properly.

Refunds, repairs and replacements

If a buyer has a problem with a product the seller may have to provide a remedy. This could be a

refund, repairs, replacement or compensation. The type of remedy depends on whether the problem is major or minor. Minor problems can be sorted out in a reasonable time by the seller, who chooses whether to refund the price paid, repair the goods or replace the goods. Major problems are where you wouldn't have bought the product if you had known about the problem, where the product is significantly different to what you expected, where the product doesn't do what it's supposed to do or the product isn't safe. When there is a major problem with a product, the consumer is entitled to return it and seek a remedy. The buyer can ask for a refund or a replacement, or keep the goods and accept compensation from the seller for any drop in value.

Consumer responsibilities

Responsibilities come with these various consumer rights. Above all, the consumer must be honest about their claims of problems with products. They need to provide proof—such as receipts or credit card records—that they purchased the goods, along with the date of purchase. They also need to be honest in claiming that the product was being used according to the manufacturer's instructions and that the problem arose from a fault with the product, not from an accident or deliberate damage. They should be able to provide proof of the fault in the product or of damage resulting from using the product, such as showing the faulty product itself or photographs of any damage.

The screenshot shows the Australian Competition & Consumer Commission website. The header includes the logo and a search bar. The navigation menu has options like 'Consumers', 'Business', 'Regulated Infrastructure', 'About us', 'Public registers', 'Media', 'Publications', and 'Contact us'. The breadcrumb trail reads: Home > Consumers > Complaints & problems > Resolve a problem.

The main content area is titled 'Resolve a problem' and includes a 'Listen' button. Below the title, it states: 'The repair, replace, refund problem solver helps you understand your consumer rights and the steps you can take to resolve a problem.'

The 'Repair Replace Refund' section features a banner with the text 'IF IT'S NOT RIGHT, USE YOUR RIGHTS' and an illustration of a bicycle and a chair. Below the banner, it explains: 'You have the right to a repair, replacement or refund if your goods are faulty, unsafe, do not work or appear as they should. You have the right to a repair, compensation or refund, if the services you received are not right. Which remedy, and who gets to pick, depends on the problem.'

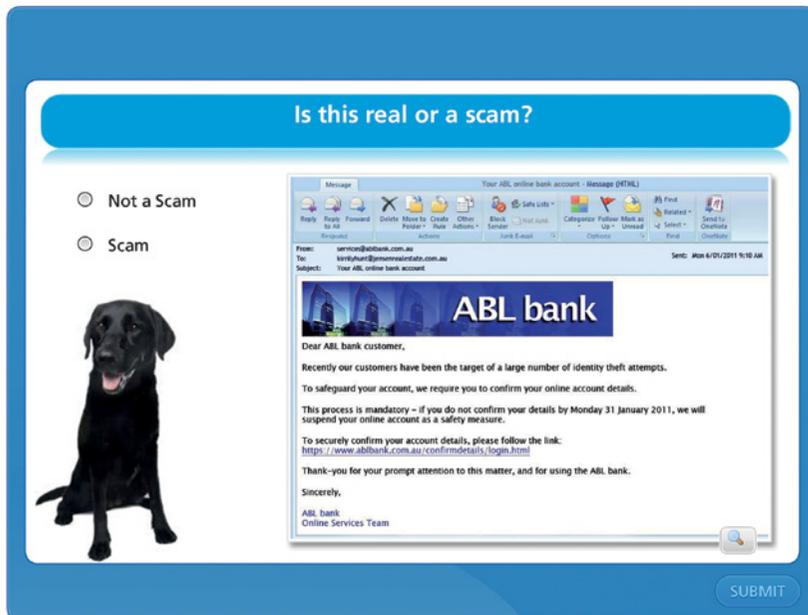
It further states: 'You still have these rights, even if the goods or services come with a warranty against defects, often called a voluntary, manufacturers or extended warranty. This guide provides key information about when you can use your rights.'

A note at the bottom of the section reads: 'Note: This information is for general guidance only and should not be relied on'. A 'NEXT' button is located at the bottom right of the main content area.

The sidebar on the left lists various categories under 'Consumers', including 'Consumer rights & guarantees', 'Complaints & problems', 'Consumer protection', 'Misleading claims & advertising', 'Prices, surcharges & receipts', 'Sales & delivery', 'Contracts & agreements', 'Debt & debt collection', 'Groceries', 'Health, home & car', 'Online shopping', 'Internet & phone', 'National Broadband Network', and 'Petrol, diesel & LPG'.

At the bottom of the page, there are tags for 'AUDIENCE' (Consumers) and 'TOPICS' (Complaints, Consumer advice, Consumer rights).

Source 4.1.3 The Australian Competition and Consumer Commission has a 'repair, replace, refund' problem solver to help you understand your rights.



Source 4.1.4 You can learn how to ‘sniff out a scam’ by completing a quiz at the WA ScamNet website.

Business obligations

Under Australian Consumer Law, sellers have a responsibility to respect the rights of buyers according to the consumer guarantee. If they fail to do so, consumers can seek the various remedies available to them, such as refund, repair or replacement. Other options involve consumer protection agencies or taking legal action through the court system. This ensures that products are safe, do what they are supposed to do, meet Australian standards of quality and are sold in a fair way.

Businesses cannot engage in misleading or deceptive conduct under Australian Consumer Law. This applies to advertising, promotions, quotes to supply goods or services, statements about products and any claims made by the company about their product. A business breaks the law if it creates a misleading impression about the price, value or quality of consumer goods and services. Even if a business did not intend to mislead the consumer,

Did you know?

A scam is a dishonest scheme or a **fraud**. To scam someone is to swindle or trick them to pay some money. There are many scams and the Western Australian Government’s Department of Commerce has set up www.scamnet.wa.gov.au to help people detect and report scams.

it is the actions and statements of the business that matter. Penalties for misleading conduct include having to **pay damages** and having bad publicity about their business.

ACTIVITIES

Remembering and understanding

- 1 State how Australian consumer law protects consumers.
- 2 Name the agency in Western Australia that helps to protect consumer rights.
- 3 Rephrase the meaning of ‘acceptable quality’ with respect to consumer purchases.
- 4 What options do consumers have when they believe a product is below the standard of acceptable quality?

Applying and analysing

- 5 Use the internet to find an example of a situation where a product, being used in the correct manner, has caused damage to other property.
- 6 Build a structured overview of some of the common problems that consumers experience with purchased products.

Evaluating and creating

- 7 Differentiate between the terms ‘refund’, ‘repair’ and ‘replacement’. Decide which of these is the fairest remedy when a product doesn’t meet expected standards.

Laws protecting consumer rights

Guarantees and warranties

Under Australian Consumer Law consumers automatically receive consumer guarantees when they buy, lease or hire goods or buy services. A **warranty** is a written guarantee to repair or replace faulty goods within a given time period, usually one year.

Manufacturer's warranty

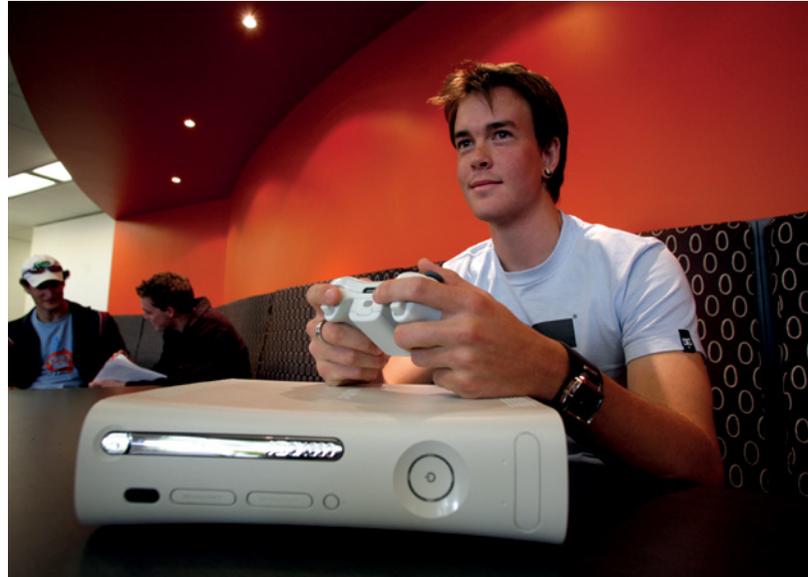
The supplier offers a manufacturer's warranty against any defects in a product. It entitles the consumer to repairs, replacement, refund or something else if the good or service is faulty in some way. This is in addition to the consumer's legal rights under Australian Consumer Law.

Express warranties

Express warranties are any extra verbal or written promises made by a manufacturer or a store about the product, such as its quality, performance or features of the product. An example is if the seller of a bookshelf states that it can hold up to 100 kilograms of books. If the bookshelf breaks with less than that weight of books, then the buyer could make a claim under the warranty for repairs, replacement or refund.

Extended warranties

In some cases, consumers are offered an optional extended warranty for longer periods, for which they pay extra. This warranty is in addition to the automatic consumer guarantee. A smart consumer will ask the store offering the extended warranty what benefits it provides over the legal rights already available to them. Extended warranties are often offered by a third company, not the manufacturer or the store, and these companies often set very complicated conditions for honouring the warranty when a claim is made.



Source 4.2.1 Perth, WA. Student Michael de Brouwer at Murdoch University in Perth, had his Xbox 360 replaced after writing a letter of demand using ACCC guidelines to the retailer. Microsoft had refused to replace the old one, which had broken down only weeks after the warranty expired.

Cooling-off periods

When a salesperson has contacted a consumer—for example, over the telephone, door-to-door selling or any place other than the supplier's premises—and the person has agreed to purchase a product worth over \$100, this is called an **unsolicited consumer agreement**. If salespeople are approaching customers in a shopping centre, even if they are operating from a kiosk or stall, then any agreement to buy something is an unsolicited agreement because the approach was uninvited. The consumer has the right to cancel such an agreement without any penalty within 10 business days. This is called the cooling-off period. It protects consumers from being pressured into buying something that they don't really want. It gives consumers extra time to think about things like whether they can afford the product, if it's a good deal compared to other products, and if they really need it.

During the cooling-off period the supplier is not allowed to accept any payment or to supply any services. They may supply goods worth over \$500, but these are known as **unsolicited goods**,

which means they have been supplied to a person who hasn't agreed to purchase or receive them. The consumer isn't obliged to pay for them but the supplier has the right to take the goods back within a three-month recovery period. This is shortened to one month if the receiver lets the supplier know in writing that they no longer want the goods. The receiver is responsible for any deliberate damage to the goods during the recovery period. If the unsolicited goods haven't been collected during the recovery period, then the receiver can keep them and doesn't have to pay for them.

Did you know?

- Signs such as 'No refunds', 'No refunds on sale items' or 'Exchange or credit note only for return of sale items' are illegal.
- If you've lost a receipt, there are other ways you can provide proof of purchase. These include a credit card statement listing the goods, a confirmation or receipt number from a telephone or internet purchase, and a warranty card showing the details of the date, price and place of purchase.



Source 4.2.2 It is against the law for businesses to say that they do not give refunds under any circumstances, including for gifts and during sales.

ACTIVITIES

Remembering and understanding

- 1 Define the term 'warranty'.
- 2 Identify the areas covered by a manufacturer's warranty.
- 3 Extend the given example of an express warranty. To what other purchases might this type of warranty apply?
- 4 Outline the type of questions that a consumer should ask before purchasing an extended warranty.

Applying and analysing

- 5 Compile a list of the typical goods and services that are commonly sold through the use of an unsolicited approach.

Evaluating and creating

- 6 Construct a list of things to think about for consumers during the cooling-off period after an unsolicited approach results in a purchase.

Laws regulating businesses

Businesses in Australia have to obey various Commonwealth and state government laws in their dealings with consumers. These laws may ban products from being sold, set minimum standards or criteria for products, or provide for the recall of unsafe or faulty products. If businesses do not follow these laws when they provide goods and services, they face penalties.

Bans

Some consumer products and services related to products are banned from sale in Australia. A **temporary ban** lasts for 60 days and may be extended for another 60 days. A **permanent ban** expires after 10 years and needs to be renewed if the product is still considered to be dangerous. Australian Consumer Law has a single, national approach so that any Commonwealth product bans apply in all states and territories. State and territory governments may only impose temporary bans.

A banned consumer good makes it illegal for anyone to supply, offer to supply, make, possess or have control of that good. If a product-related service is banned, it is unlawful to supply or offer to supply that service. A good or a product-related service may be banned if a government believes that:

- it will or may injure someone
- using or misusing the goods—in ways that could reasonably be foreseen—will or may injure someone
- another government has put a temporary ban on the good that is still in place.

Did you know?

A list of banned products is provided on the Product Safety website at www.productsafety.gov.au. It includes a variety of products such as unsafe baby dummies, children's plastic items containing a dangerous chemical, hoverboards, novelty cigarettes, and pools and spas with unsafe design features.



Source 4.3.1 Dummies with unsafe decoration, hoverboards and candles with lead wicks are all examples of banned products.

Standards

Standards are published for products. They set out specifications and procedures aimed at making sure that goods and services are safe and reliable and that they consistently perform as they were intended to. Most standards are mandatory, and must be followed for products provided in Australia. They are mandated, which means they are compulsory and enforced by laws. There are also many **voluntary standards** that businesses may choose to follow but which are not enforced by laws. Voluntary standards may focus on a range of issues that aren't connected with safety while mandatory safety standards deal only with essential safety features.

Mandatory safety standards

Mandatory safety standards apply to products that could be particularly hazardous, such as electrical appliances. These standards protect consumers by specifying minimum safety requirements that products must meet before they can be sold in Australia. There are rules about:

- performance (what the product can be expected to do)
- composition (what the product is made of)

- contents (what is inside the product)
- methods of manufacture or processing (how the product is made)
- design (the shape of the product)
- construction (how the product is built or held together)
- finish (the outer coating or surface of the product)
- packaging (how the product is wrapped, bagged or boxed).

Mandatory information standards

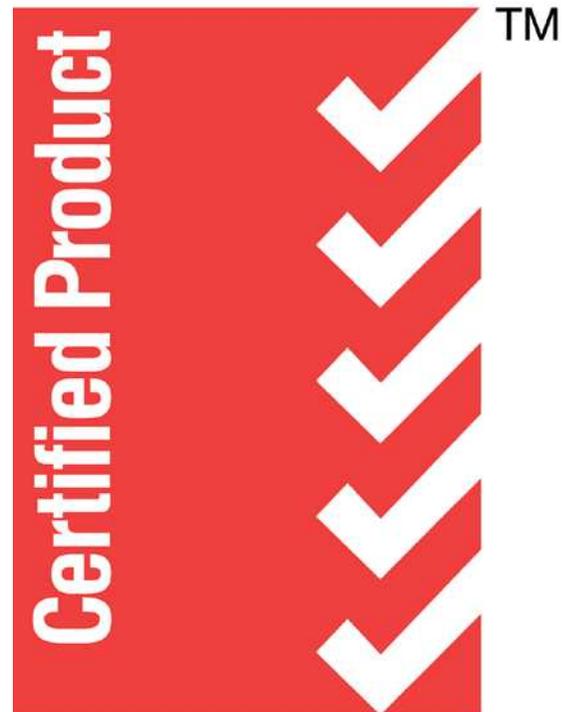
Mandatory information standards are put in place to make sure that consumers are provided with important details of products so that they can make the best personal choices about using them. Examples of goods where information standards are mandatory are ingredient labelling for cosmetics, health warnings for tobacco products and care labels for clothing and textiles. Information standards relate to both safety and more general issues. Children’s nightwear, for example, has labelling warning about its level of risk of catching fire as well as labelling suggesting the best washing methods.

Product safety recalls

Products may be recalled if they are found to be unsafe after they have gone on sale. This may be a voluntary recall set in place by the supplier. It may be a mandatory recall if the federal government believes the product may or is likely to cause injury, or that the supplier hasn’t acted properly to prevent products causing harm.

Recalls are very common. The Australian Competition and Consumer Commission product

safety recalls website listed 54 recalled products for 30 days in February and March 2016. When a recall takes place, sellers return unsold products to the supplier or maker. Consumers may return products they have purchased. Both sellers and consumers will be supplied with improved or repaired goods, or they will have the cost refunded.



Australian Standard

Source 4.3.2 The Australian Standard emblem shows that a product meets Australian standards.

ACTIVITIES

Remembering and understanding

- 1 Identify three ways that laws can regulate the products that businesses offer.
- 2 Show the difference between a permanent and a temporary ban.
- 3 Give examples of the reasons why a product may be banned by the government.
- 4 Describe the role of product standards.

Applying and analysing

- 5 Visit the website of Product Safety Australia. Categorise 10 recently banned products based on the reason for their ban.

Evaluating and creating

- 6 Prove that product safety standards are working to protect consumers by evaluating the nature of the products that have been recently recalled in Western Australia.

Case study: Product recall in action

The story of a product recall

In 2015 an Australian company, Patties Foods, announced a voluntary recall of some of its frozen fruit products. From this case, we can learn about what is involved in recalling products in Australia.

The reason for the recall

In January 2015 a case of the liver disease hepatitis A was diagnosed in Victoria. It is an acute disease, which means it is short-term but quite severe. It is spread by a virus and can cause symptoms such as fever, weakness, fatigue, nausea and vomiting. In early February, two more cases were reported to Victorian health authorities, which warned of a possible association with frozen berries after it was found that all three patients had consumed the same products.

The products were Nanna's Mixed Berries and Nanna's Raspberries. The fruit was grown in China and Chile before being packed in China and then shipped for sale in Australian supermarkets. The virus was found in some samples taken from the homes of the patients and in additional packets of the frozen fruit from shops.

The decision to recall the product

The Victorian health authorities notified OzFoodNet, the national food-borne diseases surveillance network established by the Commonwealth government to investigate the spread of diseases through food. OzFoodNet contacted Patties Foods, who distribute Nanna's products, and informed them of the possible link to hepatitis A. Patties announced a voluntary recall of Nanna's mixed berry and raspberry products. The next day they announced the recall of another of their frozen fruit products, Creative Gourmet Mixed Berries. This was just a precaution because that brand had not been linked to the outbreak of hepatitis.

Carrying out the recall

The recall applied across Australia as these products were sold nationally by Coles, Woolworths, IGA and some independent supermarkets. Consumers were advised through advertisements and information

released to the media of the specific products that were withdrawn from sale. Patties advised people not to eat these products and that they could return the packs to the place they were purchased to obtain a full refund. Supermarket owners took the products off their shelves and returned them to Patties, together with products returned to them by consumers.

The aftermath of the recall

There was widespread reporting of the recall in Australia's media. By early March, 26 people from around the country were believed to have contracted hepatitis from eating the berries. Many other people who had eaten the Nanna's and Creative Gourmet products waited anxiously to find out whether they had contracted hepatitis A.



FOOD RECALL

Creative Gourmet Mixed Berries
(500g, all batches up to and including BBD 22/11/16)



The recalled product has been available for sale in Coles, Woolworths, IGA stores and other independent supermarkets nationally.

Problem: The recall is due to potential Hepatitis A contamination.

Food Safety Hazard: Food products contaminated with Hepatitis A may cause illness if consumed.

What to do: Consumers should not eat this product and should return it to the place of purchase for a full cash refund. Any consumers concerned about their health should seek medical advice. We apologise for any inconvenience.

Contact details: For further information contact

Patties Foods Customer Service
03 5150 1829

See www.foodstandards.gov.au/recalls
for Australian food recall information

Source 4.4.1 Product recall notice for Creative Gourmet Mixed Berries

People began asking how contaminated food of this kind could be sold in Australia. Some pointed the finger at lower health standards in other countries as the main cause. They began calling for the Australian Government to improve the labelling of food products to clearly show the country of origin. The consumer organisation Choice, for example, pointed out that one of the products in the recall was described on the Coles website as being 'Packed in Australia using imported fruit.' Choice claimed this was quite meaningless unless the country of origin was named and that consumers should be able to buy food in supermarkets knowing it's safe to eat, no matter where it comes from.

Members of parliament called for closer screening of imported food for signs of disease and other chemical contamination to ensure that imported foods met the same health standards as Australian produce. Government health authorities issued warnings about the danger of hepatitis A and gave advice about what people should do if they suspected they might have the disease. There was particular concern about the health of children and elderly people.

Patties Foods paid a heavy price for the recall, reporting that it had cost the company nearly \$15 million in lost profits for the year. By the end of 2015 they announced they would be getting out of the frozen fruit market the following year. This was despite the fact that further testing of samples of the recalled products did not detect any traces of contamination. The financial cost of the recall and the bad publicity for the company influenced their decision to leave the frozen fruit market in which they were once the leading supplier.

The system of **product recalls** in this case was effective in protecting Australian consumers and drawing attention to the need to have strong regulations to control the safety of products sold in this country.

Did you know?

The Australian Government Product Safety Recalls website is at www.recalls.gov.au. Consumers can check the details of any product recalls.

FOOD RECALLS

WHO DOES WHAT?

Industry and government work together to ensure food that may pose a risk to public health and safety is recalled quickly. Below is a summary of who does what:

THE FOOD BUSINESS

- Notifies government that a recall is needed.
- Notifies its business customers that the food needs to be recalled.
- Communicates the recall to the public.
- Provides Information to Food Standards Australia New Zealand about the food being recalled.

↓

STATE & TERRITORY GOVERNMENT

- Confirms that a recall is needed.
- Provides assistance to businesses recalling food.
- Checks that the food business is effectively recalling the food.

↓

FOOD STANDARDS AUSTRALIA NEW ZEALAND

- Coordinates recalls in consultation with the business & state/territory government.
- Obtains information about the recall from business.
- Communicates the recall to government, industry and international government contacts.
- Publishes the recall on the FSANZ website and social media.



Source 4.4.2 How the food industry and government work together during a food recall

ACTIVITIES

Remembering and understanding

- 1 Record the symptoms of hepatitis A.
- 2 Sequence the events that occurred in the recall of Patties Foods frozen fruit products.
- 3 Explain how the link between the cases of hepatitis and the frozen fruit products was established.
- 4 Infer why health authorities tested products in consumers' homes as well as from the shops.

Applying and analysing

- 5 Analyse why Patties Foods made the decision to issue a voluntary recall for their mixed berry and raspberry products.

Evaluating and creating

- 6 In the aftermath of the hepatitis cases, recommend some changes that could be made to better protect Australian consumers.

Inquiry tasks

Request for a refund

Imagine that you have bought an item that you are unhappy with (for several reasons) and you would now like a refund from the company you purchased the item from. Write a letter or an email to the company requesting a refund, based on the item not meeting two of the standards of product, marketing and after sales service as outlined by Australian Consumer Law (and found in this chapter, Unit 4.1). You know you are within your rights to request a full refund but you need to convince the company of this. In your letter make sure you cover the following:

- **why** you are writing the letter
- **what** the problem is with the item and an explanation of how the product fails to meet two of the standards
- **what** you know about your consumer rights and responsibilities
- **what** you would like the final outcome to be.

Source 4.5.1 Online shopping has both advantages and disadvantages for consumers.



Online vs in-store shopping

In groups, complete two different PMI (Plus, Minus, Interesting) charts on consumers using the internet for purchases versus consumers making their purchases in store. Have a discussion with your group on the topic before completing the charts. Once you have finished, individually write a short paragraph making a recommendation for which method you think is better for consumers and provide two reasons to support your opinion.

Consumer rights

You have been asked by the management of a big shopping centre to create a poster or pamphlet that outlines the rights and responsibilities of consumers when purchasing goods in Australia. In order to complete this task, you will have to read back over the chapter and highlight key words and terms in order to summarise the information. Use clear headings and images in your poster/pamphlet so that your information is clearly organised and presented.

Avoiding scams

Create an instructional piece of writing that outlines how consumers can protect themselves against scams. Your piece should include:

- the main different types of scams that exist in Australia
- how consumers can be aware of potential scams—things to look out for, particular words or terms used or promises made, how the approach is made (for example, phone calls, letters in the mail, etc.)
- how consumers can actively stop themselves and their families becoming victims of scams
- what a consumer can do if they fall victim to a scam.

Scamwatch and the Australian Competition and Consumer Commission are good places to start when researching your piece.

GLOSSARY

compensation something awarded to make up for loss or injury

consumer guarantees formal assurances that certain conditions will be fulfilled relating to a good or service

cooling-off period a period of time after a contract of sale is signed when the purchaser can cancel the contract without having to pay a penalty

demonstration model an example of a product made and used to show people how it works

fraud wrongful deception intended to result in a financial or personal gain

hire-purchase a system where an individual pays for something in instalments and can use it at the same time

mandatory standards standards relating to safety that suppliers are legally bound to comply with

(pay) damages an award usually of money paid to an individual as compensation for loss or injury

permanent ban a ban on a good or product-related service intended to last indefinitely

product recalls requests usually based on safety concerns to return defective goods from consumers

refund a repayment of money

standards principles relating to the design and manufacture of goods designed to ensure their safety

synthetic artificially made

temporary ban a ban on a good or product-related service intended to last for a short time only

unsolicited consumer agreement an agreement that occurs when a supplier sells goods or services to individuals without the individuals having invited the contact and the total value of the goods or service is more than \$100 or not established at the time the agreement was made

unsolicited goods goods supplied to an individual who has not asked for them

voluntary standards standards usually representing industry best practice that suppliers may choose to meet but are not legally bound to comply with

warranty guarantee



Business in Australia

Having a good idea for a product or service is an essential part of starting a business, but this definitely doesn't guarantee success. Having had that good idea, the entrepreneur needs to decide how to structure the business, how to respond to changing circumstances and how to manage employees. To make things more difficult, decisions that are appropriate for today's circumstances may be completely wrong in a couple of years' time. To be successful, a business needs that good idea, but also a considerable amount of creativity and flexibility to cope with the twists and turns ahead.

Source 5.0.1 Adventure World's Abyss rollercoaster cost \$12 million to build. The loops, climbs and drops are a good model for the uncertainty that all businesses must face.

Types of businesses

Business structures

A **business** is any organisation that is involved in buying or selling goods and services. This includes very small businesses run by just one person, such as a local shoe repair kiosk, all the way up to large corporations with thousands of owners, such as Woolworths. There are a number of common business structures in Australia. These include:

- sole trader
- partnership
- corporation
- cooperative
- franchise.

Sole trader

Being a **sole trader** is the simplest way to structure a business: one person owns the business and makes all the decisions about how it is run. Sole traders can employ others to work in the business, but the owner makes the strategic decisions. If there are fewer than 15 employees, the sole trader is also considered to be a small business. The owner is responsible for any business **debts**. This means that if the business fails, the owner may need to sell some of their personal **assets** such as a car or house to pay off the business's debts.

Partnership

In a **partnership**, the business is owned by two to twenty people, who all share in the decision-making process. Like a sole trader, the partners in the business are personally responsible for any business debts and share in any profits that are earned. Advantages of partnerships include being able to spread the workload in accordance with each partner's experience and expertise. The Lenton Brae winery in Margaret River is an example of a partnership.

Corporation

A **corporation** is a much more complex business structure than a sole trader or partnership and is generally a large business with many employees. There are many owners, known as **shareholders**,



Source 5.1.1 All the shareholders of a corporation are invited to an annual general meeting, where the directors report on the company's progress through the year and shareholders vote on key measures.

who own shares in the company. Their influence depends on the number of shares they own. Rather than having day-to-day input, shareholders elect directors to oversee the operation of the business and appoint senior managers.

A corporation (or company) has the same legal rights as a person: it can sue others, or be sued, and can incur debt in its own name. This means that the shareholders are not personally responsible for the business's debts; even if the company fails, shareholders cannot be required to sell their personal assets.

Cooperative

A **cooperative** is a business that is owned, controlled and operated by a small group of five or more owners to benefit themselves. It is usually a small business. The members all have an equal say in the running of the business, regardless of the amount of money they have contributed. Like a corporation, it is a separate legal entity and so the members aren't responsible for any debts of the business.

Most cooperatives limit the amount of profit that can be paid out to members (some don't allow any to be paid out). In several regions of WA, farmers have formed local cooperatives to make it easier to obtain necessary supplies. The Kellerberrin Farmers Cooperative and the Ord River District Cooperative are examples of this.

Franchise

A **franchise** is a special type of business relationship in which a parent business gives permission to independent people to promote and sell the parent business's products and to use the parent name for a certain period of time. This is based on a formal legal document called the franchise agreement.

The parent can set a maximum price that the products can be sold for, but the operator of the

franchise is free to charge less if they choose. The franchisee gets the advantage of access to the parent's knowledge of how the business is run and their overall marketing. However, it can be very expensive to purchase a franchise and some agreements can set very close controls on the operation of the business. McDonald's and Boost Juice are examples of franchises.



Source 5.1.2 Boost Juice is an Australian franchise chain that now operates in seventeen countries.

ACTIVITIES

Remembering and understanding

- 1 List the different types of business structures.
- 2 Briefly outline what is meant by the term 'sole trader'.
- 3 Give an example of a sole trader that became a corporation.
- 4 Summarise the important features of a business partnership.

Applying and analysing

- 5 Test the idea that the biggest businesses in Australia are all corporations. Conduct research to either prove or disprove this idea.

Evaluating and creating

- 6 Compare and contrast a cooperative and a franchise. Evaluate which is the most effective way to structure a business.

Business opportunities

Long-term business success

In order to remain successful for many years, businesses need to be able to identify and respond to changes in their market. To do this, managers often need to think creatively about potentially difficult situations in order to turn them into opportunities for business growth. Businesses that don't respond successfully to changes in the market may soon find themselves at risk of becoming an outdated, irrelevant presence in an industry with many more dynamic and appealing competitors.

Changes in demand

A fundamental requirement for business success is to have a reasonable level of **demand** for the business's product. Patterns of demand can easily change for many reasons, including:

- population changes; for example, a baby boom will greatly increase demand for prams, while an ageing population will increase demand for home support services



Source 5.2.1 'Acid washed' jeans were the height of fashion in the late 1980s. When they re-emerged in the early 2000s, firms needed to quickly alter their production methods to meet the new demand.

- changing fashions; a product may be wildly popular for a short period of time then have a total market collapse
- competing items; if other firms are producing a cheaper, higher-quality or otherwise more desirable substitute, the business may find that demand for their product decreases rapidly.

To manage the risk of shifting demand, businesses need to ensure they stay up-to-date on the interests, **aspirations** and concerns of their target market. By maintaining a deep understanding of the market, managers may be able to identify, or even predict, shifts in demand at a very early stage, giving them time to determine their response.

Other changes

Changes in **government policy** can often affect the way firms operate. This might include changes to safety regulations which require firms to change the way a product works or is produced, or tax changes which affect how much it costs to make the item or how much it is sold for. These sorts of changes are usually announced several weeks or months before they are implemented, meaning that business managers need to ensure they stay up-to-date on the news relating to their industry.

Changes in the operations of suppliers or rival firms can also create significant opportunities. If another firm changes its product in some way or if key resources are more difficult than usual to obtain, the business may need to quickly change its own operations.

Businesses may also be affected by internal changes. When an employee leaves, this creates a risk that essential skills or information might be lost; alternatively, when a new employee arrives they may bring new ideas and methods that can affect the way the firm operates. This could involve any aspect of the firm's operations, from how the product is made to its overall management style.

Responding to market opportunities

In many cases, businesses need to be able to respond to changes very quickly, before their product loses momentum in the market. This might involve changing the product itself in some way, developing an entirely new line, revising the price of the product or engaging in a new advertising campaign.

If a business finds that it is slower to respond to changing market conditions than their competitors, it may be appropriate to consider changing the way the business operates. Shifting management style to encourage greater input from employees, altering pay structures to allow for bonuses or employing people with key skills that are currently under-represented in the business may all be useful strategies.



Source 5.2.2 Some businesses find the SWOT framework useful when deciding how to respond to changes in the market.

With the substantial technological progress of recent years, many businesses have needed to alter the way they sell their product in order to maintain their market share or to access new markets. Making it safe and easy for potential customers to make bookings or purchases online allows firms to reach far more potential customers, but it also makes it easier than ever before for those customers to obtain competitors' prices. As a result, the level of competition and the pace of change in many industries are now faster than ever before.

To cope with continually changing market conditions, many businesses focus on understanding their strengths, weaknesses, opportunities and threats (SWOT). By identifying its current strengths and weaknesses, the business may develop several different perspectives on how to respond to opportunities and threats.

ACTIVITIES

Remembering and understanding

- 1 Show how population can influence demand.
- 2 Give examples of how changing fashions can influence demand.
- 3 Illustrate, by listing, products or firms that directly compete with one another.
- 4 Interpret what a deep understanding of the market might involve.

Applying and analysing

- 5 Question which has the greatest impact on the operation of firms—changes in government policy, rival firms or internal business changes.

Evaluating and creating

- 6 Choose one business and formulate a SWOT analysis of how it will be affected by changing market conditions in Australia.

Case studies: Western Australian businesses

Diversity of business in WA

Over two million businesses are actively trading in Australia. Around 10 per cent of these are based in Western Australia. The four Western Australian businesses highlighted here demonstrate that flexibility and openness to change are key elements of ongoing business success. Each started with a different business structure and purpose, although some have changed their operations significantly as part of the ongoing process of predicting and responding to changes in the market. They also reflect the considerable diversity of the business community in WA, drawing on industries from farming to hospitality.

D'Orsogna

D'Orsogna is a Western Australian producer of smallgoods including ham and salami. Tommaso D'Orsogna, who emigrated from Italy to Australia in 1933 at the age of 14, gained experience at a number of smallgoods producers in Perth and Melbourne before opening his own butcher shop. When brother Giovanni entered into partnership with him they created the D'Orsogna Brothers smallgoods company. A third brother, Cesare, joined them in 1951.



Source 5.3.1 Tommaso (left) and Giovanni D'Orsogna

Today, while D'Orsogna's headquarters remain in the Perth suburb of Palmyra, their products are now sold Australia-wide. They employ over 550 people and have major **processing facilities** in both WA and Victoria, and hope to expand into the **export market**. D'Orsogna has been a shareholder in Westpork since the 1980s, a link that helps D'Orsogna assure its supply of high-quality, locally-produced pork.

D'Orsogna remains entirely family-owned, but the business's ownership structure has shifted from the original partnership. As the potential for business growth became apparent, it was decided that the unlimited liability of a partnership was no longer an appropriate arrangement. D'Orsogna is now a **private company**, meaning that they have all the legal advantages of a corporation without having their shares listed for public purchase on the **Australian Stock Exchange**.

As consumers have become more aware of health and nutrition, D'Orsogna has incorporated this into its range and marketing strategy. It is now producing items that are lower in fat and salt than more traditional recipes, offering smaller packages and working with nutritionists and chefs to educate consumers. D'Orsogna has changed its operations to ensure they remain relevant. The business also markets itself as a WA family-owned enterprise and maintains strong links with the local community. This helps build awareness of and loyalty to the brand.

Cooperative Bulk Handling (CBH)

Cooperative Bulk Handling (CBH) is Australia's largest cooperative, owned and controlled by over 2400 Western Australian grain farmers. CBH receives about 90 per cent of the WA grain harvest and exports to customers in over 20 countries.

CBH was founded during the **Great Depression**. In 1933 WA wheat growers were struggling with high costs, so the initial goal of this cooperative was to provide a cheap and efficient system for



Source 5.3.2 CBH owns the Kwinana grain terminal, where ships are loaded with WA wheat for export to many different countries.

transporting grain. They took over the management of all systems for receiving and transporting grain, including **silos** and ports. By the 1960s CBH was operating over 300 points for receiving the harvest.

Until 1989, CBH was the sole receiver of the grain harvest. In that year, the Western Australian Government allowed other firms to enter the market, providing potential competition for CBH. This led to a period of significant change for the business, including a merger in 2002 with another grower-controlled cooperative, the Grain Pool of Western Australia. This allowed CBH to expand into grain marketing, which was seen as a logical fit with CBH's existing operations and a powerful way to provide better service for the members of the cooperative.

In total, CBH's assets are worth more than \$2 billion, including silos throughout the state, trains and port facilities. It is a very large business, employing over 1000 workers on a permanent basis and also creating more than 1500 casual positions during the wheat harvest period from October to January.

CBH maintains an active presence in the WA community through measures including sponsorship of the arts and scholarships for students studying relevant aspects of agriculture.

Wesfarmers

Wesfarmers was established in 1914 as a farmers' cooperative, providing goods and services to rural communities in Western Australia. It has grown to become one of the largest companies in Australia, with over 500 000 shareholders and total assets of over \$40 billion. The company maintains its corporate headquarters in Perth's Wesfarmers House.

Wesfarmers is described as a 'diversified' company, meaning that it has operations in a wide range of industries. For example, in 1989 Wesfarmers entered the coal market, in 1994 it took over Bunnings, and in 2007 it acquired the Coles group (including Coles supermarkets, Target, Kmart and Officeworks). It is heavily involved in sponsorship of the arts and other community initiatives.



Source 5.3.3 In 1979, Wesfarmers acquired CSBP Fertilisers, a leading manufacturer of locally-developed fertiliser products. CSBP provides ongoing support to Western Australian farmers through research, advice and innovative products.

In June 1984, Wesfarmers listed on the Australian Stock Exchange. This was the final stage in the transition from its cooperative origins to becoming a major company, as it allowed any member of the public to purchase shares. As a result of adopting a corporate structure, the number of votes each shareholder controls is based on the number of shares they own. This allows major shareholders to have significant input into the direction of the company.

From the 1940s, Wesfarmers was involved in the insurance industry. After receiving offers on its insurance division, Wesfarmers sold this part of the business in 2014 for more than \$2.8 billion. Selling the insurance businesses not only benefited shareholders but also gave Wesfarmers a significant injection of cash. This may be used to finance the company's growth in directions that are more closely aligned with its other businesses.

Dôme cafés

The first Dôme shop was established in Cottesloe in 1991 as a specialty coffee roaster. It has expanded through the creation of café franchises, and now has over 100 outlets in seven countries. They have focused on developing 'European' style outlets that will attract a broad variety of customers throughout the day. The Dôme headquarters remains in Western Australia, in Maylands, where new franchisees attend management training and have access to ongoing support. All Dôme outlets must follow strict design and operational guidelines to preserve the group's signature style.

As with most franchises, there are significant costs associated with establishing a new Dôme outlet. Before the new café opens for business, the franchisee needs to enter into a franchise



Source 5.3.4 While each Dôme café may appear different on the outside, such as this Maylands outlet based in an historic building, the interior is carefully controlled by the parent company to maintain the brand's consistency.

agreement and pay the associated fee. They are then responsible for paying for the fit-out of the café, including the chain's signature wood panelling, all the food service and kitchen equipment, and wages for employees during training. According

to Australian law, the parent company is not allowed to make promises about the level of profit the franchisee is likely to make; while the parent company gives considerable support, there are risks associated with this kind of business.

ACTIVITIES

Remembering and understanding

- 1 Identify the percentage of Australian businesses that are based in Western Australia.
- 2 Record the year of establishment for the four Western Australian businesses mentioned as case studies in this unit.
- 3 Classify each of the business case studies by their business structure.
- 4 Describe the goods/services offered by one of the businesses.

Applying and analysing

- 5 Discover the marketing strategies used by one of the business case studies and comment on their effectiveness.

Evaluating and creating

- 6 If you could invest money in one of these businesses, which one would you choose and why?

Factors affecting the way people work

Factors currently influencing work

According to the Australian Bureau of Statistics, there were 2 100 162 active businesses in Australia in June 2014. While the businesses operating in any particular industry may have significant similarities, the sheer number of firms operating in Australia, let alone the world, means that there is great diversity in the way people work. For many firms, work practices can change significantly over time as the firm responds to changes in the business and social environment. Some of the most important influences at the moment include:

- technological changes
- communication changes
- outsourcing
- casualisation.

Technological change

Rio Tinto is the largest owner and operator of autonomous trucks in the world. Since the first deployment in 2012, the company now has three iron ore operations which use fully remote-controlled trucks to move the ore around. The trucks are controlled from their Operations Centre in Perth, 1500 kilometres away from the mine sites. This is an example of how technological change is affecting many workers. Moving to driverless technology has had substantial benefits for the company. Productivity has risen as the trucks can be run all day, every day because there is no driver who needs a break. In addition, many of the health and safety risks associated with driving mining trucks have been greatly reduced.

For example, the possibility that tired drivers may make costly mistakes is now lower, and more



Source 5.4.1 A driverless truck at Rio Tinto's Yandicoogina mine in the Pilbara, Western Australia

workers can be based in urban areas with their families rather than working on a fly-in, fly-out basis.

Projects of this nature lead to substantial changes in the workforce. While there is now less demand for truck drivers at these mines, a number of new jobs have been created, including highly skilled technicians and programmers who run and maintain the system. This is part of a broad trend across the economy as many traditional manual jobs are being automated, creating a need for people with very different skill sets.

Even within industries such as health and education, technological change is continually affecting work. As new hardware and software are introduced, employees need to participate in ongoing training to ensure they are able to use this technology. For some employees, this continuous change can be a source of significant stress, particularly if there is a perception that new systems are being implemented without adequate preparation.

Communication changes

Changes in the ways we communicate are affecting almost every aspect of business operations and work life. Wireless technology and cloud computing allow employees to be in contact with their workplace all day, every day; it is not uncommon to receive work-related email or text messages even very late at night. This has significant benefits, largely arising from the fact that employees no longer need to gather at a central office each day. It is now easier than ever before to work from home, or for employees to stay in contact while they are travelling. The personal impact of these changes needs to be carefully managed by businesses. This may involve establishing clear expectations about work hours and emphasising the importance of maintaining an appropriate work/life balance.

For many tradespeople and contractors, a very important element of these communications changes has been the introduction of new payment systems. Rather than having to wait for a cheque to be cleared, for example, a plumber can now be



Source 5.4.2 Mobile payment systems using a tablet or smartphone allow increasing numbers of tradespeople to receive payment as soon as a job is complete.

paid instantly using a mobile payment app. This greatly simplifies the finances of those who are self-employed, making it more attractive and easier for people to establish themselves as contractors.

Outsourced labour

Outsourcing is the process of contracting part of a business's operations out to another business. For example, many companies outsource their IT purchases, management and support. Recruitment agencies allow firms to outsource the process of finding prospective employees by managing the advertisements, collecting applications and assisting in the interview stage.

The great advantage of outsourcing is that it allows the business to focus on its core operation without needing to hire experts in areas such as IT, legal support and even caring for office plants. By hiring other firms that are experts in these areas, the business may be able to obtain these services for significantly lower cost as they gain advantages from the specialist firm's expertise and size.

Outsourcing is, however, a very controversial issue. Establishing a new outsourcing arrangement often involves existing employees losing their jobs. While in some cases these employees may be hired by the specialist firm, this certainly isn't always the case. Outsourcing customer support can lead to complaints that the firm 'doesn't care' about its customers and therefore needs to be managed carefully. Finally, outsourcing can mean that external firms have access to confidential information, which also requires careful management.

A prominent example of outsourcing by an Australian firm is Telstra's outsourcing of some of their call centre and finance roles to India and the Philippines. This has led to significant cost reductions for the company, but has been highly controversial as jobs have been lost in Australia and there have been concerns about whether the standard of service given to customers has fallen.



**“The hospital computer system has a virus.
Ironic, isn't it?”**

Source 5.4.3 Outsourcing of business support services such as IT can lead to cost reductions, but may not always produce positive outcomes for the business.

Casualisation

Casualisation refers to the current tendency for a greater proportion of workers to be employed on short-term contracts or a casual basis rather than permanently. This leads to greater uncertainty for employees as there is no guarantee that a short-term contract will be renewed, or that a casual worker will be rostered on. This lack of income security can make it more difficult to plan for the future, and in particular, can make banks very reluctant to lend money to those on short-term contracts. In addition, casual workers don't receive sick leave or annual leave.

Month	Proportion of employed people working full-time
December 1985	81.9%
December 1995	75.6%
December 2005	71.4%
December 2015	69.0%

Source 5.4.4 The proportion of employed people in Australia who are working full-time has declined significantly in recent years.

However, the casualisation of the workforce can also lead to considerable benefits. It can provide the worker with a much greater degree of flexibility to choose their own working hours, to work for more than one firm at a time, or to change jobs frequently. In some cases, even employees with full-time, permanent jobs may occasionally take on additional work on a contract basis.

Balancing the positive and negative aspects of casual work can be difficult. The major challenge is for casual workers to be proactive in ensuring that they set aside a proportion of their income so they have savings to draw upon if they are unable to work for a time due to illness or other factors. With careful management, casual or short-term contract work can allow the worker to gain experience in a range of different environments, which may increase their chances of obtaining a permanent position in the future.

ACTIVITIES

Remembering and understanding

- 1 Find four important influences on work practices.
- 2 Infer two benefits of Rio Tinto's use of remote-controlled trucks.
- 3 Relate how technological change can affect the workforce.
- 4 State three advantages of changes in workplace communication.

Applying and analysing

- 5 Explain why outsourcing can be regarded as a controversial business practice.
- 6 Experiment with the concept of outsourcing. Suggest ways that this idea could be applied to schools to make them more effective places of learning.

Evaluating and creating

- 7 Conclude whether casualisation is an advantage or disadvantage for workers, businesses and the economy as a whole.

Work in the future

Factors affecting future work

As society continues to change in the future, so will the nature of work. While we cannot be certain about the exact nature of these changes, some broad predictions seem reasonably likely.

Automation

Automation refers to the process of using machines to replace human effort. In 2015, a study by researchers at Oxford University and Deloitte concluded that about 35 per cent of current jobs are at high risk of being automated within the next twenty years. Highly repetitive jobs such as telemarketing are most at risk, while careers based on creativity and a high degree of emotional intelligence, such as doctors, are least at risk. While this means that some jobs and even industries may vanish, others will emerge to support the new technology.

Driverless cars

The development of driverless cars has the potential to revolutionise many industries. While the demand for drivers of all types may fall significantly, some employees may find they can spend less time in a central office as their travel time becomes an extension of office time. Widespread adoption of this technology will bring about changes in the ways mechanics, petrol station attendants and even road construction workers operate. As with any change, those who are proactive and flexible in responding to change may find exciting new opportunities, while others may suffer greatly as previously secure jobs become threatened.

Changes to work environments

One recent development that has been facilitated by technological change is the growth of business incubators. These are physical spaces that provide



Source 5.5.1 One of Spacecubed's shared office spaces, which uses modern collaborative technology to support new businesses

office facilities for a number of new businesses, sometimes as many as fifty. These businesses have access to a range of shared services and business advice, all with the aim of helping the businesses grow and develop. Spacecubed is an example of this: with spaces in central Perth and Leederville, Spacecubed offers facilities from simple desk space to meeting rooms, mentoring and opportunities for entrepreneurs to collaborate.

Collaborative spaces

It seems highly likely that future work environments will make increasing use of collaborative spaces, with even well-established firms perhaps sharing office space and services to reduce costs and encourage employees to share ideas. As is already occurring in some businesses, such as PricewaterhouseCoopers, fewer employees will have a set desk of their own, with employees perhaps each having a secure storage locker for their personal items but moving to different work spaces, depending on the task at hand.

Did you know?

Not all future work spaces will feature the ultra-ergonomic, sleek furniture often seen in science-fiction movies. Many offices are starting to turn rooftops and other currently 'wasted' spaces into gardens where employees can relax. In the future, more offices are likely to embrace colour, natural light and shared spaces to create a stronger sense of community among employees and to foster creativity.



Source 5.5.2 Office buildings may incorporate rooftop gardens to help employees de-stress and boost creativity.

Changing attitudes to work

The relationship between 'work' and 'life' may shift as increasing numbers of employers put strategies in place to promote the wellbeing of their employees. This may include a greater number of firms providing onsite childcare facilities, and the implementation of policies to actively encourage workers to take their annual leave. The boundary between education and work is also likely to blur in the future, as continuous learning becomes a central element of many careers. While wages and salaries will continue to be important, workers may move from one job or career to another more frequently as they seek a broader sense of job satisfaction.

ACTIVITIES

Remembering and understanding

- 1 Define the term 'automation'.
- 2 Cite the percentage of jobs at high risk of automation in the next twenty years.
- 3 Sequence these jobs from low to high in terms of their risk of automation: doctor, telemarketer, teacher, checkout operator.
- 4 Make use of the technology behind driverless cars to show how jobs in related industries might be at risk of change due to automation.

Applying and analysing

- 5 Conduct some research into the new types of work environments that have emerged in the last 10 years. Describe how physical spaces are being redesigned to make businesses more efficient and productive.

Evaluating and creating

- 6 Write an email designed to persuade an employer or an employee of the benefits that can be achieved by obtaining a better work-life balance.

Inquiry tasks

Busy businesses

Provide your own example of each of the five different business structures discussed (sole trader, partnership, corporation, cooperative and franchise). Set up a graffiti wall around the classroom with a different poster-sized sheet for each type of business structure. Each sheet should have a T-chart drawn up with the left-hand column labelled 'Advantages' and the right-hand column labelled 'Disadvantages.' Think of as many advantages and disadvantages as you can for each type of business structure and then walk around the room, adding your ideas to the various sheets. For example, an advantage of being a sole trader is that you are your own boss and not answerable to anyone above you. A disadvantage of having a franchise is if something goes wrong in one of the other franchises (for example, food poisoning in a restaurant), it can affect the reputation of your franchise.

Business analyst

You and your team of three other students have been asked to undertake a SWOT analysis (strengths, weaknesses, opportunities, threats) for a large company of your choosing (for example, Nike, Cadbury, Apple, etc.). The company wants to make sure they are heading in the right direction and continuing to maintain a successful business so they require a thorough examination by your team. They want you to look at:

- **strengths**—what they are doing right, what they excel at, how they are ahead of their competitors
- **weaknesses**—what they are doing wrong, areas they can improve on
- **opportunities**—areas they can move into, ideas they haven't thought of, new uses for technology in their business
- **threats**—potential problems they may face in the future, what competition they have in the marketplace.

You will be required to present your findings in an ICT presentation.

Business and the community

Complete an extended response explaining why it is important for businesses to be involved in their local communities. Structure your response in the following manner:

- **Introduction**—Explain what a business is and introduce the ways that businesses may be involved in their local communities.
- **Body**—This should be made up of 2–3 paragraphs. Each paragraph should provide a different reason that explains how being involved in local communities helps businesses in many different ways. Your paragraphs could also include specific examples and explanations of businesses that are involved in their local communities.
- **Conclusion**—This should summarise the main points that you have made in your discussion and should restate why it is so important for businesses to be involved in their local communities.

Business and technology

Conduct a fishbowl debate on the following topic: *'Is technology a help or a hindrance to businesses?'* In a fishbowl debate, divide the class in half. One half forms an inner circle and sits on chairs. They then discuss, question and comment on the topic from an affirmative position—*'Technology is a help to businesses'*. Everyone in the inner circle must contribute to this discussion in some way. The rest of the students form an outer circle standing around the inner circle and their job is to listen to the inner circle's discussion. Once the inner circle has finished, students swap positions (the inner circle stands up and the outer circle sits down) and the new inner circle now discusses the topic from a negative position—*'Technology is a hindrance to businesses'*, while the outer circle listens.



Source 5.6.1 Chief Executive Officer of the Commonwealth Bank, Ian Narev, participating in Vinnies CEO Sleepout in Sydney in 2012

GLOSSARY

aspirations hopes or ambitions

assets property owned by a person or organisation that has value and is available to be used to pay debts

Australian Stock Exchange the largest market on which securities are bought and sold in Australia, which has its headquarters in Sydney

business an organisation or enterprise engaged in the production and trade of goods or services, usually for profit

cooperative (business) a business or organisation that is owned and operated by people for their own benefit

corporation a large company or group of companies

debts money owed or due to be paid

demand the amount of a good or service that consumers are willing and able to buy at a particular time

export market a foreign country to which goods or services are sold

franchise authorisation given by the government or a business to an individual or group to carry out specific business activities

government policy plans or principles that guide how a government acts and manages the day-to-day running of government

Great Depression an economic recession that began on 29 October 1929 with the crash of the US stock market and led to worldwide unemployment, hardship and reduction in industrial production

partnership an arrangement where two or more individuals share the running of a business and its profits and losses

private company a company whose shares may not be offered for sale to the public

processing facilities industrial sites where materials are transformed into goods to be distributed or sold

shareholders individuals or groups who own shares in a company

silos tall towers on a farm where grain is stored

sole trader an individual who is the exclusive owner of a business



Landscapes and landforms

Landscapes comprise the physical elements of the earth's surface and the cultural overlay of human activity, some of which stretches back thousands of years.

Landscapes reflect the interactions of place and people over time and are important in shaping national identity. Landscapes contribute to our 'sense of place' and form the dynamic (ever-changing) backdrop to our lives.

Landforms are the natural features of the earth's surface.

In this chapter we are introduced to the concepts of landscapes and landforms, the processes responsible for their formation and the ways in which people value them.

Source 6.0.1 The Austrian village of Hallstatt is a spectacular alpine landscape that combines elements of both the biophysical and the constructed environments in a unique way.

Landscapes and landforms in Australia

Landscapes

Many types of landscapes are found in Australia, from vast deserts in the central and north-western part of the country to rainforests in wet coastal areas of tropical Queensland, to high mountain areas of southern New South Wales and north-eastern Victoria.

Landscape is the term used to describe the visible features of an area, both natural and human-made. It includes:

- the natural elements of landforms, such as coastlines, rivers, mountains, deserts and caves
- the living elements of land cover, such as plants and animals
- the human elements, such as cities, buildings, roads, farms and dams
- changeable elements, such as weather conditions.

Culture and landscapes

Landscapes combine physical features with an ‘overlay’ of human activity. This overlay may have accumulated over thousands of years and can often easily be identified as elements of managed and constructed environments. Sometimes, however, evidence of human activity is harder to see. Geographers seek to explain how and why places have changed over time.

Landscapes are the product of the interaction of people and place, and play an important role in creating a ‘sense of place’—the qualities that distinguish one place from another. Landscapes also play a role in shaping people’s personal, local and national identities. These national identities can even last long after they are truly representative of the nation. For example, Egypt’s pharaohs are long dead but the pyramids at Giza are still an important aspect of Egyptian national identity.



Natural elements



Human elements



Living elements



Changeable elements

Landscape

Source 6.1.1 Elements of landscape

Landforms

Landforms are the natural features of the landscape that form part of the overall shape of the earth's surface. They are the result of physical process, such as **weathering** or the movement of tectonic plates. Examples of landforms are mountains, rivers, valleys, cliffs, dunes and glaciers.

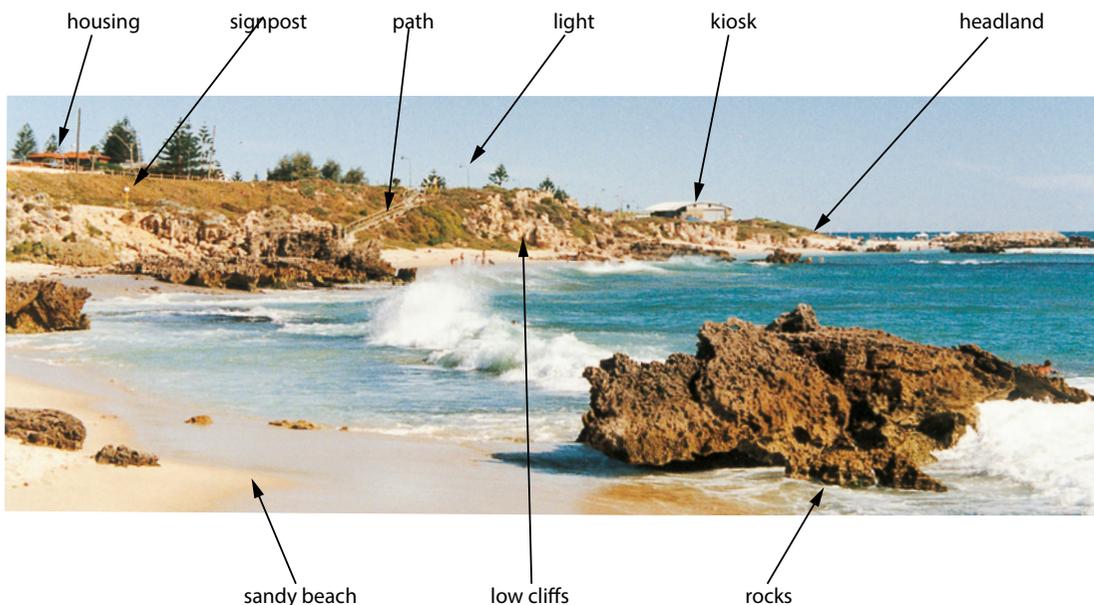
Types of landscapes

The earth has a vast range of landscapes, including natural, managed and built landscapes. In Australia, common natural landscapes include:

- coastal landscapes
- riverine landscapes
- arid landscapes
- karst landscapes
- mountain landscapes.

Coastal landscapes

Australia's mainland has over 35 000 kilometres of coast. A coast is the area or boundary where the ocean and landmass meet. Coastal landscapes are formed by the forces of wind and water, through the actions of waves, tides and currents. Waves erode the land when they crash on shore, but also deposit sediment such as sand and gravel on the beach. As the wave recedes, it carries away material from the beach. The larger the wave, the more sediment it will move.



Source 6.1.3 The natural landscape at Perth's Trigg Beach consists of a series of sandy beaches, rocks, low cliffs and a headland.

Common coastal landforms include cliffs, caves, beaches, dunes, reefs and islands.

Source 6.1.2 Length of Australia's coastlines

State or Territory	Length of mainland coastline (km)
Victoria	1868
New South Wales	2007
Tasmania	2833
South Australia	3816
Northern Territory	5437
Queensland	6973
Western Australia	12 889
Total	35 823

Source: Geoscience Australia

Riverine landscapes

Many riverine landscapes occur in Australia. Riverine landscapes are the network of rivers and their surrounding land that are created by the movement of water around hills and mountains. Rivers are responsible for shaping most of the landforms covering the earth's surface. They erode the land as they flow from their source to the sea or lake into which they empty. They also transport huge amounts of sediment that is eventually deposited to form a range of landform features and the rich alluvial plains that support our most productive agricultural systems.



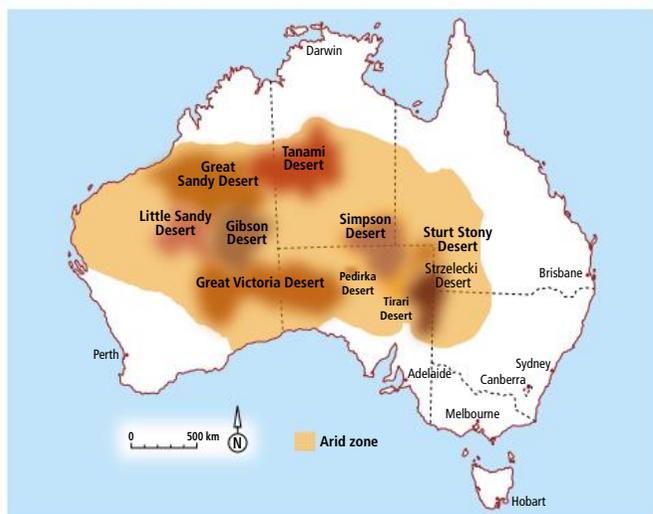
Source 6.1.4 The Finke River in central Australia is one of the oldest rivers in the world.

Riverine landscapes can contain the following landforms:

- flood plain—a low-lying area regularly flooded by a river
- riverbed—the channel in which the river flows
- billabong—a branch of the river which flows away from the main stream to form an isolated pond.

Arid landscapes

Arid landscapes are characterised by very low rainfall, with an annual average rainfall of 250 millimetres or less. This lack of rain means the landscape cannot support many types of vegetation, though some arid landscapes do have hardy plants growing. Their landforms are characterised by sand dunes and oases.



Source 6.1.5 Australia's deserts

Desert	Area (square kilometres)	State or Territory
Great Victoria	348 750	Western Australia, South Australia
Great Sandy	267 250	Western Australia
Tanami	184 500	Western Australia, Northern Territory
Simpson	176 500	Northern Territory, Queensland, South Australia
Gibson	156 000	Western Australia
Little Sandy	111 500	Western Australia
Nullarbor Plain	105 750	Western Australia, South Australia
Strzelecki	80 250	South Australia, Queensland, New South Wales
Sturt Stony	29 750	South Australia, Queensland, New South Wales
Tirari	15 250	South Australia
Pedirka	1 250	South Australia
Total area	1 476 750	

Source 6.1.6 Australia's largest deserts. Geoscience Australia

With the exception of Antarctica, Australia is the driest continent in the world, with 70 per cent of the mainland receiving less than 500 millimetres of rain annually. About 35 per cent (more than 1 400 000 square kilometres) of the continent is classed as desert.

Karst landscapes

Karst landscapes are made when rock such as limestone is eroded by water seeping into it and dissolving it. The landforms that are typical of karst landscapes include caves and rivers below the surface and sinkholes on the surface.

Approximately 15% of Australia is made up of karst landscapes but over 10% of this is underground. The Nullarbor Plain, which straddles the border of Western Australia and South Australia, is the world's largest limestone karst landscape. Other karst areas include:

- Margaret River, Yancheep and Shark Bay (Western Australia)



Source 6.1.7 A sinkhole on the Nullarbor Plain, which is the world's largest limestone karst landscape

- Eyre Peninsula, Glenelg River (South Australia)
- Buchan (Victoria)
- Mole Creek (Tasmania)
- Jenolan (New South Wales).

Mountain landscapes

Mountain landscapes are created by volcanic activity, **erosion** and the movement of the earth's crust (tectonic plates pushing against each other). Mountain landforms include mountains, hills, plains and plateaus.

Australia is the lowest and flattest of the world's continents, averaging 300 metres above sea level. Our highest mountain, Mt Kosciuszko, is

Source 6.1.8 The Blue Mountains in New South Wales are part of the Great Dividing Range.



2228 metres high, whereas Mt Everest (in the Himalayas in Asia) is 8848 metres high.

Australia's highest mountains are in the Snowy Mountains region in New South Wales and the Victorian Alps. These are part of the mountain chain called the Great Dividing Range.

ACTIVITIES

Remembering and understanding

- 1 What is meant by the following terms: landscape, overlay, landform?
- 2 Identify the elements of landscapes and give examples of each.
- 3 List the main characteristics of the following landscapes: coastal, riverine, karst, mountain.
- 4 Explain why geographers study landscapes.

Applying and analysing

- 5 Create a table with three examples of each of the landscapes discussed in this unit and the state or territory in which they occur. Download an outline map of Australia and mark in the places you chose.

Evaluating and creating

- 6 Rank the landscapes from the one you find most appealing to the one you find least appealing. Write down the criteria you used when determining your ranking.
- 7 Identify a typical Australian landscape. What are the elements of the landscape that make it uniquely Australian?

Valuing landscapes

The different values

Landscapes are important to us for many reasons. They are a shared resource—they belong to everyone. They are a living record of our past, and an inspiration for our culture. They provide a wide range of social and health benefits. The value placed on landscapes changes over time.

Landscapes are said to have aesthetic, emotional, spiritual and economic value.

Aesthetic value

The term ‘aesthetic value’ refers to the idea of attractiveness or beauty. The aesthetic value of all landscapes is not the same, as not all landscapes are equally appealing. People can, for example, appreciate and interpret the same landscape quite differently. What may appeal to one person may not appeal to another. For US retirees seeking a warm, sunny climate, California’s Palm Springs is an attractive desert landscape. Others view desert landscapes as hostile places. International tourists travel thousands of kilometres to see the landscapes of Australia’s Red Centre, while many Australians head overseas to see the managed and constructed landscapes of South-East Asia (see Source 6.2.1), Western Europe and North America.

Source 6.2.1 Marina Bay area, Singapore



Whether we find a landscape personally appealing depends on a range of factors. These include our emotions, our attitudes and personal values, and our preferences, experiences and memories.

Emotional value

People often develop an emotional attachment to a place or landscape. This attachment usually results from a long-term connection with that place or landscape. While this is especially strong for indigenous peoples, it also applies to people more generally. We all remember, often with fondness, places we went for holidays, and we often develop an emotional attachment to the places in which we live or have lived.

This attachment is different from a simple aesthetic response, such as recognising that a certain landscape or place is special because it is beautiful. For a deeper and lasting emotional attachment to develop, a long-term relationship with a place is normally required. This relationship may be physical or emotional. It might be the place in which we live or a place our mind wanders to from time to time. A snowboarder might, for example, find their thoughts drifting to the mountains on which they snowboard. A bushwalker often develops an emotional attachment to their favourite national park, such as Karijini National Park, shown in Source 6.2.2.

Many people find landscapes inspiring. Landscape artists and photographers, for example, seek to capture or portray the beauty of landscapes in their paintings and photographs. These provide an opportunity for people who can’t observe the landscapes directly to share the experience.

Did you know?

In 2015, over 1.1 billion people travelled internationally, generating more than US\$7.2 trillion in economic activity. This represents almost 10 per cent of the world’s total gross domestic product and one in 11 jobs.



Source 6.2.2 Karijini National Park, Western Australia

Spiritual value

Landscapes hold special spiritual significance for some people. Many Aboriginal and Torres Strait Islander people, for example, recognise that features of the landscape such as rivers, mountains and even individual trees have a spiritual value. Through these features, they connect by means of song and ritual to the Dreaming and ancestral creator beings. Sacred sites are places of special spiritual importance to Indigenous Australians.

Economic value

Landscapes also have an economic value. Some, such as agricultural, industrial and urban landscapes, are in fact the product of economic activity. Others generate economic activity even though they remain in a near-natural state.

Landscapes that are spectacular and/or unique are important tourist destinations. Historic Venice in Italy, for example, attracts nearly 22 million tourists a year; California's Yosemite National Park more than 4 million; Machu Picchu in Peru, more than 700 000; and Australia's Great Barrier Reef, more than 1.6 million people. Catering for the needs of these visitors creates economic activity and employment. The economic wellbeing of many communities depends on tourism.

Landscapes offer many opportunities for people to enjoy the outdoors, from the local park through to coastal national parks and remote mountain wilderness areas. All offer relaxation, challenges, inspiration and an opportunity to experience first-hand our natural and cultural heritage.

ACTIVITIES

Remembering and understanding

- 1 Explain what we mean when we talk about a landscape's 'aesthetic value'.
- 2 Name a place or places that have aesthetic value for you.
- 3 Explain the economic value of landscapes.

Applying and analysing

- 4 Construct a photo sketch of Source 6.2.1 or 6.2.2. Annotate the sketch, naming as many

natural elements of the landscape as you can. Also label any human elements that are evident.

Evaluating and creating

- 5 Choose a landscape that you are familiar with. Create a concept map to help evaluate the importance of that landscape. Remember to consider the possible aesthetic, emotional, spiritual and/or economic value of such a landscape.

Case study: Aboriginal and Torres Strait Islander people

The origins of landscapes and landforms

Australia's Aboriginal and Torres Strait Islander people have their own explanations of how the world and its landscapes and landforms were created. Aboriginal people believe that everything around them exists because of the Dreaming, the creation era that extends from the past into the future.

At the beginning of time, spirit ancestors wandered the earth in the form of animals. While some of these ancestors went into the sky to create the sun, moon and stars, others stayed and created the natural world. They shaped the land, provided its resources and created the spirits that made plants, animals and human life. All living things, including Aboriginal people themselves, are descendants of all these original spirit beings, who did not die but live on in the different features of the landscape, flora and fauna.

The land and its features are therefore sacred to Aboriginal people, and a spiritual link exists between the land and the people who were placed on it. This means that separate language groups have a spiritual connection to particular areas and features of the landscape. This attachment is the basis for the recognition of different homelands. Aboriginal people believe that the spirit beings also gave to each group its own distinctive spiritual practices, beliefs, customs and languages.

The Dreaming Stories are a central element of the sacred Aboriginal beliefs that have been handed down from one generation to the next for over 40 000 years. Two examples of the spiritual relationship between Indigenous Australians and landforms are provided below: the Gagudju People of Kakadu, in the Northern Territory, and the South Australian Ngarrindjeri Dreaming Story known as Ngurunderi.

The Gagudju of Kakadu

Archaeological evidence suggests that the Kakadu region was one of the first parts of the Australian continent to be occupied by people. If this is correct, the descendants of the Gagudju may have occupied the area for at least 50 000 years. For much of this time they recorded Kakadu's history on the walls of the sandstone escarpment that dominates the landscape. By examining this art and the other evidence of Aboriginal occupation we can build up our knowledge of how the Aboriginal people interacted with the landscape, its landforms and the environment more generally.

Did you know?

Originating more than 50 000 years or 1600 generations ago, Australia's Aboriginal heritage is one of the oldest continuous cultural traditions on earth.



Source 6.3.1 Warramurrungundje came from the sea and created Kakadu's spectacular landscape.

According to a Gagudju Dreaming Story, a female ancestral being called Warramurrungundje came out of the sea and created Kakadu's landscape. During her travels she left many spirit children and taught them the different languages they were to speak. When her work was completed she turned into a rock, which remains her Dreaming place. There are many such features throughout Kakadu. They are the sacred sites of the Gagudju People. These sites include caves, hills, rocks and waterholes (see Source 6.3.1).

The close spiritual bond that exists between the Gagudju People and the land means that they do not seek to dominate nature. Instead they live in harmony with it. They believe that they belong to the land and that they are part of it. Without the land, they believe they are nothing. The land and the life forms it supports are seen as a sacred trust, to be cared for and passed on to future generations.

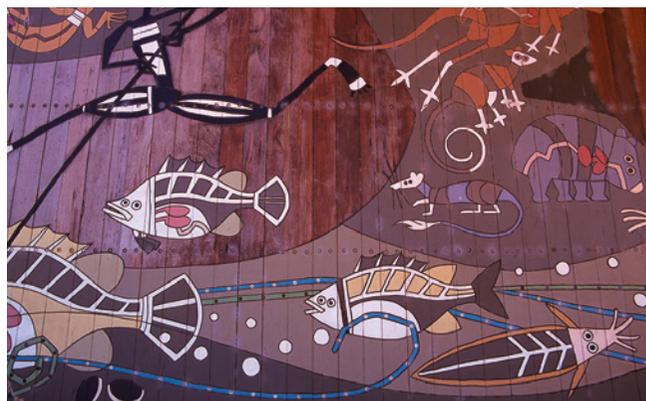
The Dreaming Story of Ngurunderi

In the Dreaming, Ngurunderi and his two sons searched for his two wives who had run away from him. They followed a massive Murray cod down the Murray from where the Murray and the Darling rivers meet. As the huge fish swam, its tail swept the water aside, creating billabongs and swamps. Long Island, near Murray Bridge, is said to be a spear thrown by Ngurunderi. Ngurunderi eventually speared the giant cod and proceeded to cut it into small portions. As he threw the small pieces into the river they became the

many different species of fish now found in the lakes and streams of the Murray–Darling.

When Ngurunderi discovered his two wives cooking a silver bream, a fish forbidden to women, he was very angry. The women sought to escape on a raft they had built. Ngurunderi pursued them down through the Coorong, creating the natural features of the landscape. When he caught up with the women, who were crossing to Kangaroo Island, he caused the sea to rise. The women drowned and became the rocky islands known as The Pages. Ngurunderi crossed to Kangaroo Island, removed his old skin of life and went to heaven. The Dreaming Story is depicted in Source 6.3.2.

The fate of Ngurunderi was re-enacted in the traditional funeral ceremonies of the Ngarrindjeri People. The skin of the dead was removed before the remains were cremated on a raised platform.



Source 6.3.2 A mural showing a Dreaming Story of Ngurunderi about the origins of the Murray River, Berri, South Australia

ACTIVITIES

Remembering and understanding

- 1 Explain what the Dreaming is and explain its role in Aboriginal and Torres Strait Islander culture.

Applying and analysing

- 2 In small groups, discuss and list how Indigenous Australians' relationship with the land influences how they use it. Share the key points of your group's discussion with the class.
- 3 Outline the Gagudju People's explanation for the creation of Kakadu and describe their relationship with the physical environment.

- 4 Reread 'The Dreaming Story of Ngurunderi'.
 - a What does the story seek to explain?
 - b List the features of the physical environment that have their origins explained by the Dreaming Story of Ngurunderi.
 - c Describe how the Dreaming Story of Ngurunderi influenced the cultural practices of the Ngarrindjeri People.

Evaluating and creating

- 5 Select a prominent feature of the **biophysical environment** and look for an Aboriginal Dreaming Story that explains its creation. Present an oral report to the class outlining the Dreaming Story and its connection to the physical environment.

The changing face of the earth

New landforms

Forces deep within the earth cause the movement of tectonic plates, which in turn create new landforms. Without these new landforms, the earth's surface would have long ago been reduced to a flat, featureless plain—worn down by the processes of weathering and erosion.

Plate tectonics

The earth's thin crust is broken into eight vast segments or plates (and several smaller plates) that travel slowly across the face of the planet at a rate of about 15 centimetres per year. This movement is caused by currents deep within the earth's liquid mantle (shown in Source 6.4.1). This process is known as **plate tectonics**, or continental drift.

Continents on the move

Scientists believe that all the earth's continents were once part of one large supercontinent, known as Pangaea (a Greek word meaning 'all lands'). Pangaea consisted of two main areas: Gondwanaland (Australia, Antarctica, Africa, India

and South America) and Laurasia (Asia, Europe, Greenland and North America). These two main areas began to move apart and break up about 200 million years ago. Over time they 'drifted' to their present locations.

Types of plate movements

Each of the earth's plates moves in a different way, as:

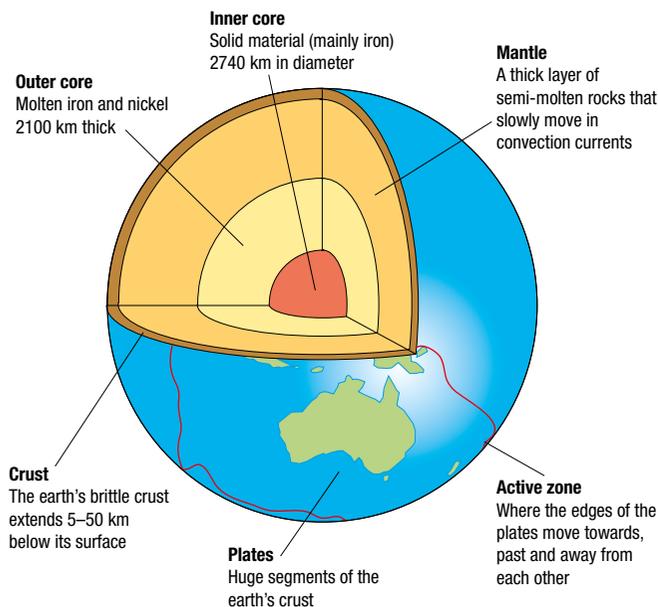
- a convergent plate boundary (towards each other)
- a divergent plate boundary (away from each other) or
- a transform plate boundary (past each other).

The places where the plates meet are known as plate margins. These are often areas of great stress and activity. Many of the earth's earthquakes, volcanoes and fold mountains are located at the plate margins. Source 6.4.2 shows the location of the earth's plates and the directions in which they are moving.

Convergent plate boundary

Collision plate margins

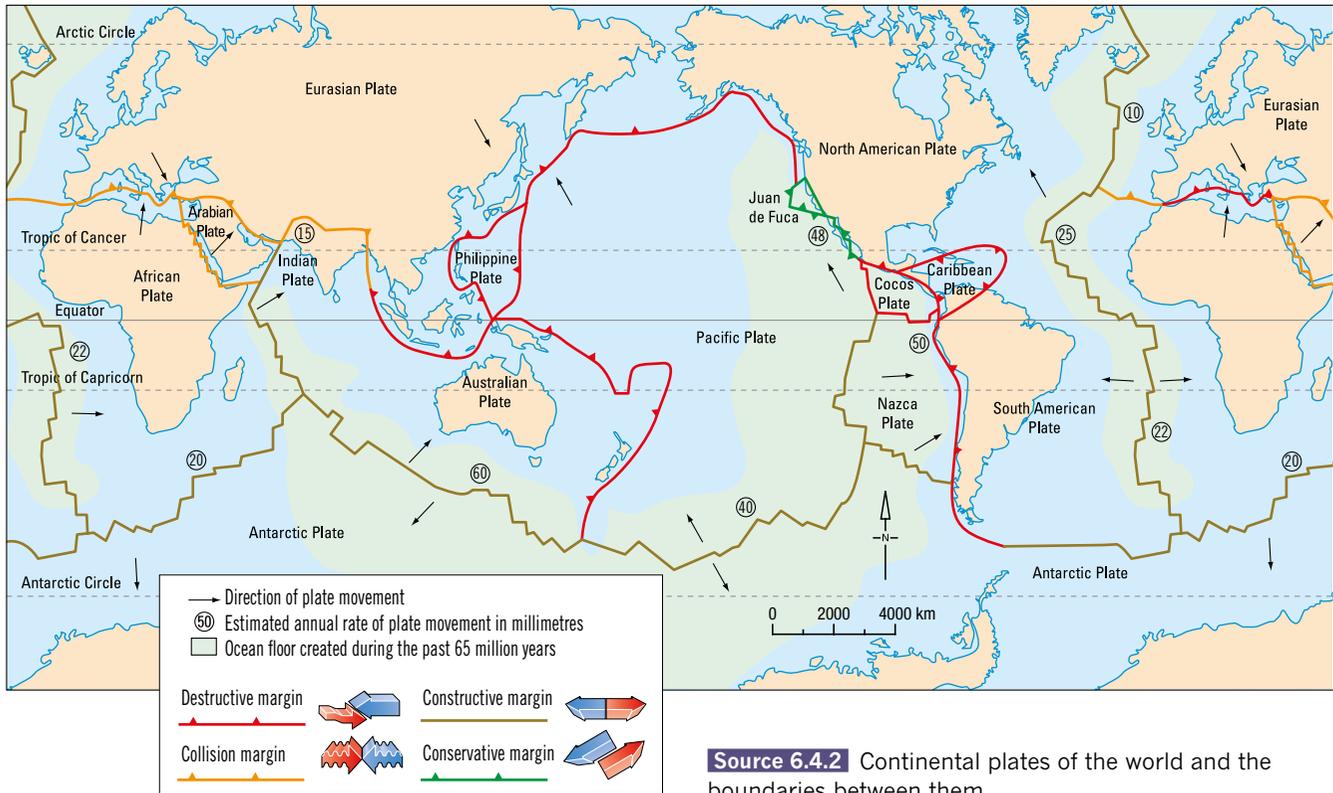
When two plates made of continental crust move towards one another they create a collision zone, as shown in Source 6.4.3. Because neither plate can sink beneath the other, their crusts crumple upwards to form fold mountains. The Himalaya (see Source 6.4.4), formed as a result of the collision between the Indian and Eurasian plates, is an example of a fold mountain system. Sometimes pressure builds up over time. Eventually the crust breaks, sending out shockwaves in the form of an earthquake.



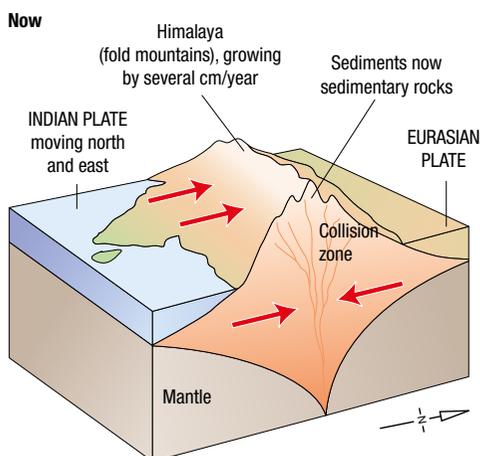
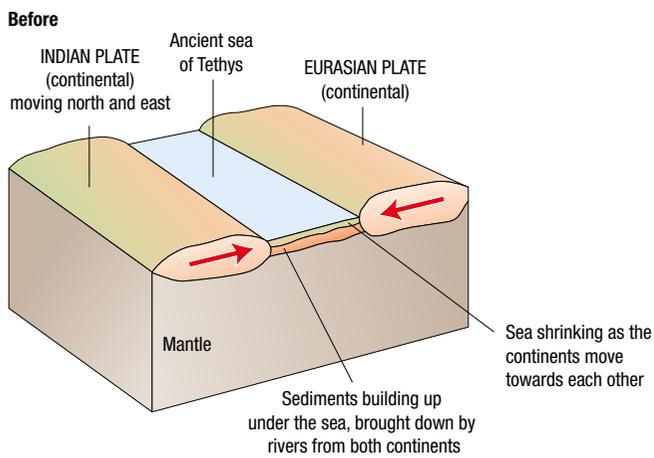
Source 6.4.1 The internal structure of the earth

Did you know?

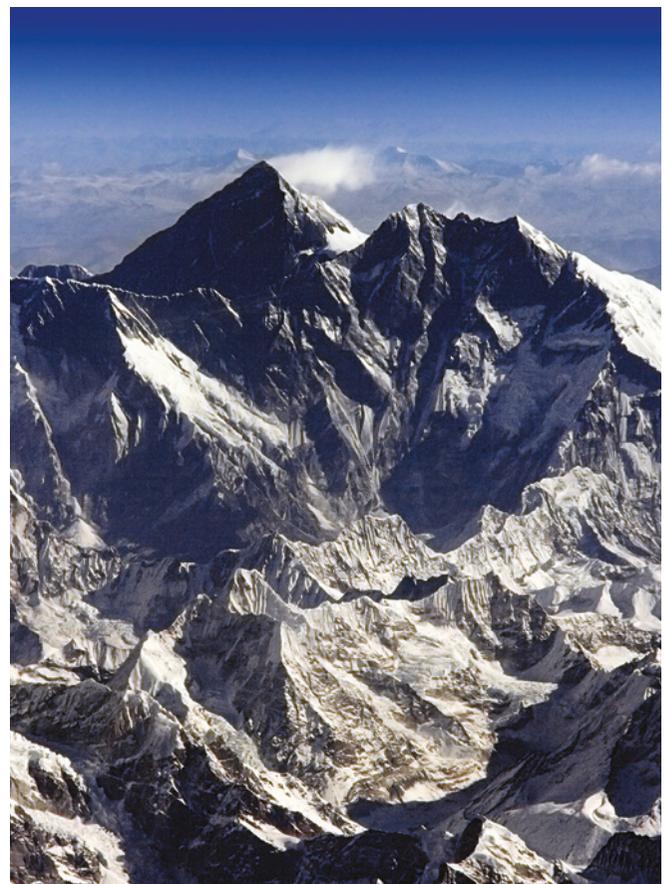
At 8848 metres above sea level, Mt Everest is the highest point on the earth's surface. It is not, however, the world's highest mountain. From base to peak, Mauna Kea in Hawaii measures 10 023 metres, 5818 metres of which is below the Pacific Ocean.



Source 6.4.2 Continental plates of the world and the boundaries between them



Source 6.4.3 A collision plate margin



Source 6.4.4 The Himalayan Mountains are still increasing in height at a rate of about 5 millimetres a year as the Indian Plate moves into the Eurasian Plate.

Destructive plate margins

Destructive plate margins occur where a plate made of heavy (dense) oceanic crust moves towards a plate consisting of lighter (less dense) continental crust. The heavier oceanic crust is forced down under the lighter continental crust, forming a deep-sea trench (shown in Source 6.4.5).

As the oceanic crust pushes beneath the continental crust, it melts. This is partly due to the friction that builds up between the two plates and partly due to the increase in temperature as it reaches the earth's mantle. This creates **magma**, which can escape to the surface along lines of weakness in the earth's crust, called faults, to form a **volcano**. Volcanic eruptions at destructive plate margins can be very violent.

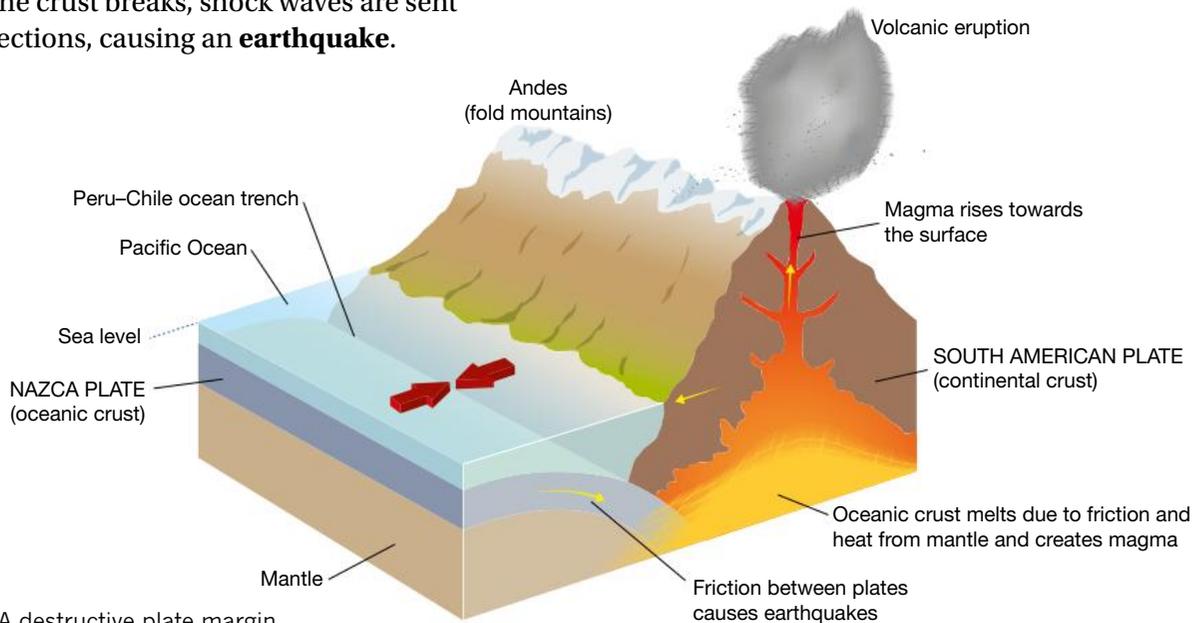
Because the plates do not slide smoothly past each other, there is often an enormous build-up of pressure. If the crust breaks, shock waves are sent out in all directions, causing an **earthquake**.

Divergent plate boundary

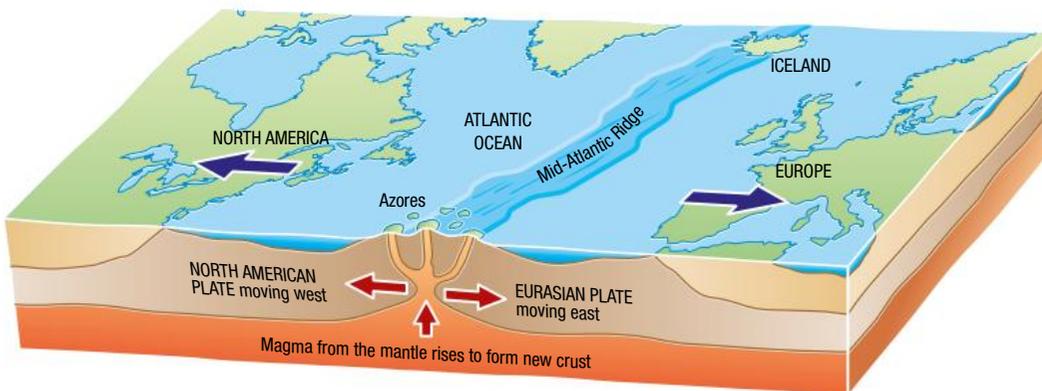
Constructive plate margins

When two plates move away from each other, magma rises from the mantle to form new crust. This creates a line of underwater volcanoes along what is called a **mid-ocean ridge**. Sometimes these volcanoes become large enough to emerge above sea level as volcanic islands. The Mid-Atlantic Ridge, shown in Source 6.4.6—formed by the separation of the North American and Eurasian plates—is an example of a constructive zone.

Constructive margins can also be found on land. The East African Rift Valley (see Source 6.4.7) continues to widen, with new land being created on the floor of the valley.



Source 6.4.5 A destructive plate margin



Source 6.4.6 The Mid-Atlantic Ridge was formed by the separation of the North American and Eurasian plates. Each year the Atlantic Ocean widens by about 3 centimetres.



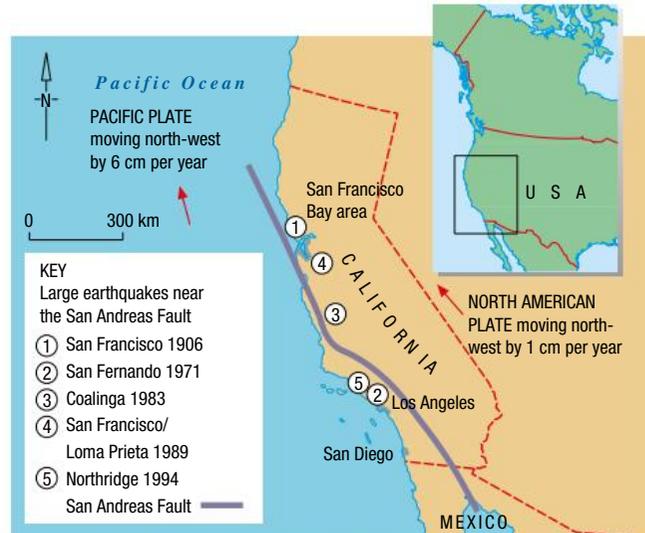
Source 6.4.7 The Great Rift Valley in eastern Africa was formed through the rifting (tearing apart) and separation of the African, Arabian and Indian tectonic plates.

Transform plate boundary

Conservative plate margins

Conservative plate margins occur where two plates move past one another. The San Andreas Fault in California, for example, marks the point at which the North American and Pacific plates meet. Although the two plates are moving in the same direction, the Pacific Plate is moving faster, causing the plate margins to 'grind' past each other. The tensions between the two plates build up over time. When this tension is suddenly released an earthquake

occurs. Minor earthquakes occur almost daily along the fault, but major earthquakes, causing loss of life and destruction of property, are less frequent. The last major earthquake was the 1994 Northridge earthquake. It measured 6.6 on the old Richter scale and killed 60 people (see Source 6.4.8).



Source 6.4.8 California's San Andreas Fault: a conservative plate margin

ACTIVITIES

Remembering and understanding

- 1 State the name given to the processes involved in the movement of the earth's crust. Explain the causes of this movement.
- 2 Name the types of plate margins.
- 3 Describe what happens to the earth's crust in a collision zone.

Applying and analysing

- 4 Study Source 6.4.2.

- a Name two plates that are colliding, moving towards each other, moving away from each other and moving past each other.
- b Discuss the plate that is moving the greatest number of millimetres per year.

Evaluating and creating

- 5 Study Sources 6.4.3 and 6.4.5. Write a paragraph comparing the formation of the Andes Mountains and the Himalayan mountain range.
- 6 Study Source 6.4.8. Explain why parts of California experience earthquakes.

Mountain building

Mountains

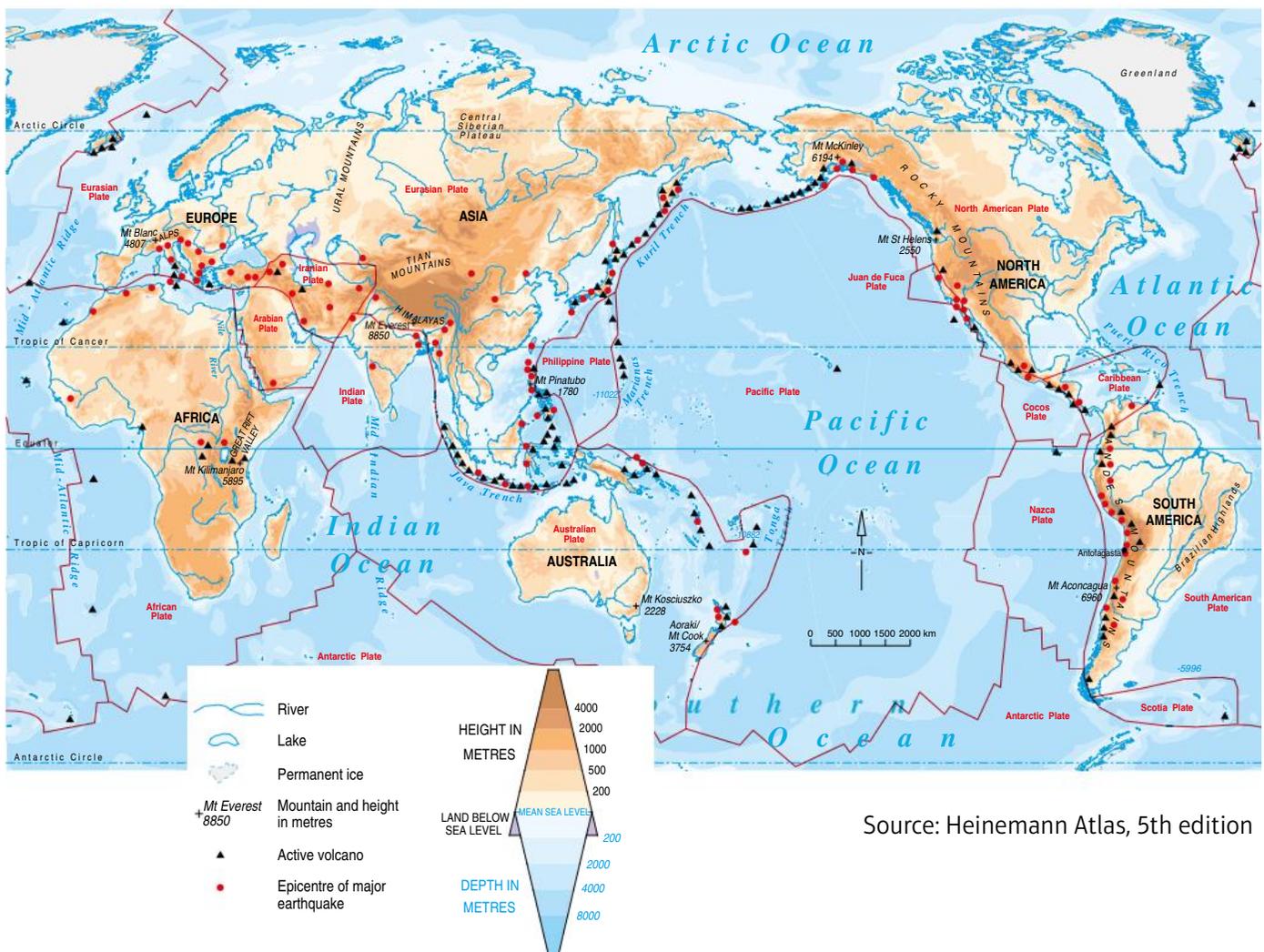
Mountains are defined as landform features that, when compared with surrounding landscapes, rise abruptly, and are impressive and noticeable. Factors taken into account when defining such landforms include elevation, relief, steepness and mass.

Location and formation

There are a number of great mountain ranges on earth—the Andes Mountains of South America, the Rocky Mountains of North America, the Alps of Europe and the Himalayas. These mountains are found along the active margins of the world's tectonic

plates. As the plates press against each other, the pressure increases and layers of rock are compressed and forced upwards, folding and faulting as pressure is released. Source 6.5.1 shows the location of these mountain ranges and also the distribution of the world's main earthquakes and volcanoes. Note the relationship between earthquakes and volcanic activity, the location of the mountain ranges and the margins of the earth's plates.

Because the movement of the plates tends to be very slow, the mountain chains they produce are dominated by folded layers of rock. These mountain chains can, however, include landform features that are the result of faulting and volcanic activity.



Source: Heinemann Atlas, 5th edition

Source 6.5.1 The distribution of the world's main mountain ranges, earthquakes and volcanoes

Folding results in wave-like patterns in the earth's crust (see Source 6.5.2). **Faulting** occurs when there are fractures in the rock structure. Source 6.5.3 shows both these features. **Rift valleys** and block mountains are examples of large-scale landform features associated with faulting.

As oceanic plates move apart (a process known as seafloor spreading), molten material fills the gap, forming a mid-ocean ridge. These ridges extend for 65 000 kilometres through all the earth's oceans. Ocean trenches are formed when oceanic plates are drawn down into the earth's mantle, where they melt.

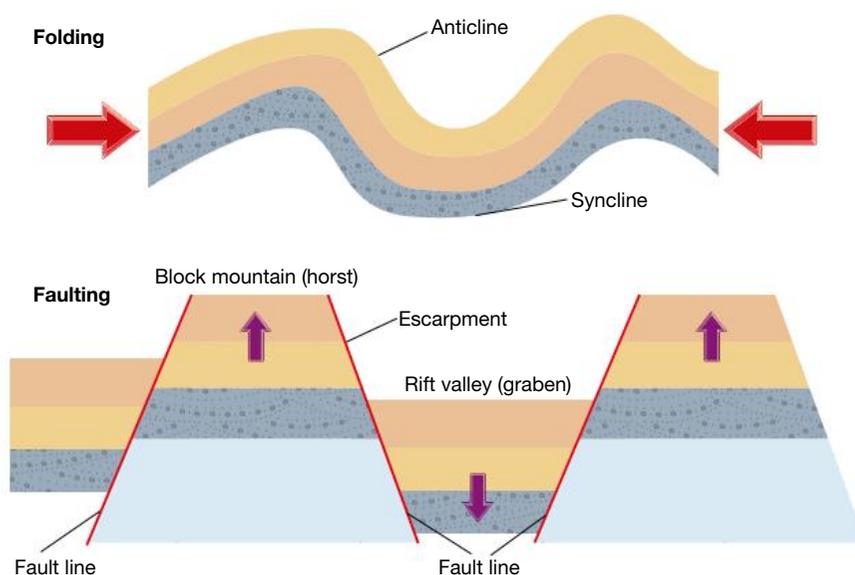


Source 6.5.2 Folded layers of rock

Source 6.5.3 Folding and faulting of rock layers

A **rift valley (graben)** is a long valley area formed by the sunken land between two or more parallel faults. A series of sinkings at different rates may produce a series of step-like landform features.

A **block mountain (horst)** is an elevated area of land that has been uplifted between two or more parallel normal faults. The edges of many block mountains may be distinguished by the presence of an escarpment.



ACTIVITIES

Remembering and understanding

- 1 Explain the difference between folding and faulting.
- 2 Identify the processes associated with the formation of rift valleys and block mountains.
- 3 Outline the conditions under which ocean trenches develop.

Applying and analysing

- 4 Study Source 6.5.1. Write a paragraph outlining the global distribution of earthquakes and volcanoes.

- 5 Create a pie graph of each continent's share of the world's mountainous areas using the following data:

- Asia (43.65%)
- Europe (6.7%)
- South America (8.4%)
- North America (15%)
- Australia and Oceania (1%)
- Africa (8.25%)
- Antarctica (17%).

Evaluating and creating

- 6 Choose three mountain ranges to research, one each from Asia, Europe and Australia. Create a poster to compare and contrast the similarities and differences between the three ranges.

Weathering, erosion and deposition

Changing landscapes

The shape and appearance of the earth's biophysical landscapes are constantly changing. The processes responsible for these changes are known as weathering, erosion and deposition.

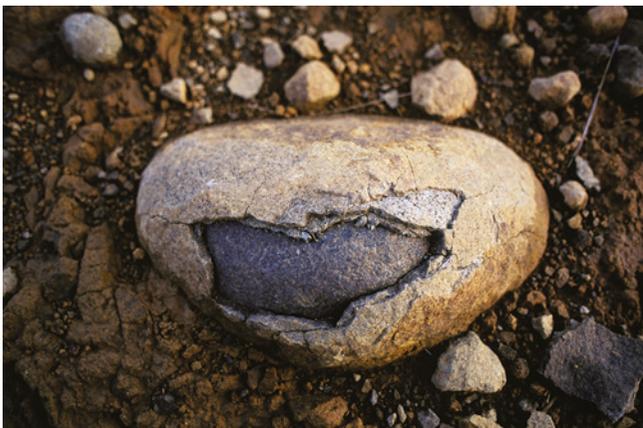
Weathering

Weathering involves the physical or chemical breakdown into smaller pieces of rocks that do not undergo transportation from their original position.

Physical weathering

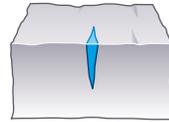
There are three main types of physical (or mechanical) weathering.

- **Temperature change**—As rocks are heated by the sun they expand. At night, as temperatures fall, the rocks contract. Over time, this expansion and contraction causes cracks to appear and the rock begins to break down. This process is called exfoliation and is common in deserts in which there are large daily differences in temperature (see Source 6.6.1).
- **Freeze-thaw action**—Water collects in the cracks in rocks, and when the water freezes it expands. This places a pressure on the rock and causes the cracks to widen and deepen. The pressure may eventually cause parts of rock

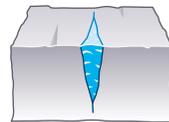


Source 6.6.1 Changes in temperature have caused the outer layer of this rock to crack and break away.

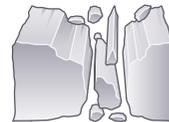
to break off, as is illustrated in Source 6.6.2. The small broken-down rocks are called scree. This type of weathering is common in high mountainous areas where the water freezes.



A crack in the rock fills with water



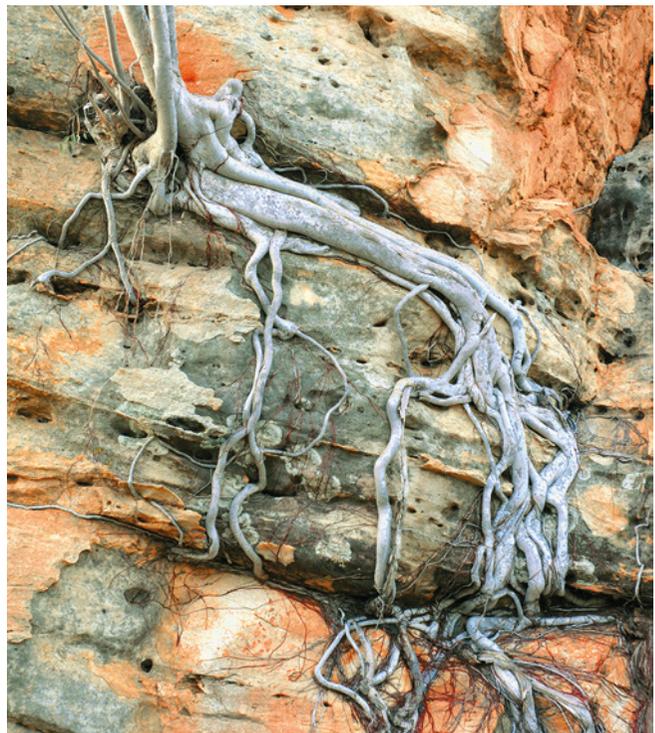
The water expands when it freezes and makes the crack wider



Eventually the crack gets so wide that the rock splits

Source 6.6.2 Freeze-thaw weathering

- **Organic action**—The growing roots of plants can exert a force that causes cracks in rocks to widen (see Source 6.6.3). Gradually, the rock breaks down into smaller pieces.



Source 6.6.3 Organic weathering



Source 6.6.4 Ngilgi Cave, Western Australia

Chemical weathering

When rainwater mixes with carbon dioxide (which is present in the atmosphere), it forms a weak acid that attacks many of the minerals contained in rock. This acid is especially effective in dissolving limestone. Limestone caves (such as Ngilgi Cave, Western Australia) are a result of this type of weathering.

Rocks that contain iron are affected by a process known as oxidation. When oxygen and water come into contact with the iron in rocks they change the chemical make-up of the rocks, which take on a rusty appearance. The surface of the rock gradually decays and is eroded away.

Organic acids are produced when water mixes with decaying vegetation. These acids help to break down minerals in rocks.

Erosion

Erosion is the transportation of material that has been weathered (worn away) from one place to another by water, wind and ice. Erosion occurs when rivers carve out deep canyons, glaciers grind out massive valleys, and water drips through limestone to create caves and sinkholes.

The processes of erosion are as follows.

- **Attrition**—Rocks collide as they are transported and are worn into smoother, rounded stones.
- **Abrasion/Corrasion**—Material rubs against riverbanks or valley sides as it is transported, or is thrown against cliffs by the sea. This acts like sandpaper on the landscape, gradually eroding it.
- **Corrosion**—Some rocks, especially limestone, are dissolved by the natural acids in water and are carried away by the water.
- **Hydraulic action**—Riverbanks or cliffs can be worn away by the sheer force of water hitting them, or can be blasted apart as air is forced into cracks.

Agents of erosion

The agents of erosion are water, wind and ice.

Water

Running water is the most powerful agent of erosion, transportation and deposition. It is especially effective in very dry areas and where humans have damaged the protective cover of vegetation that binds the soil together. When rain falls on exposed earth it causes deep channels called gullies to form as shown in Source 6.6.5.



Source 6.6.5 A landscape deeply scarred by running water—Death Valley, United States of America

Rivers

Rivers shape the land by eroding, transporting and depositing material. In a mountainous area, the river erodes downwards, creating narrow, V-shaped valleys.



Source 6.6.6 Wind-borne sand grains have worn away the base of a desert rock, leaving this pedestal-shaped feature.

Away from the mountains, valleys become wider and some of the river's load of sediment is deposited. Closer to the sea, the river weaves, or meanders, across a wide, flat plain, depositing fine particles of soil called alluvium. These alluvial soils are usually very fertile and are often used for agriculture.

Waves

Coastlines are constantly changing. Some are eroded by storm waves and are dominated by landform features formed by the processes of erosion, such as headlands, cliffs, rock platforms and arches. Other coastlines advance towards the sea as waves deposit large amounts of sand. Such coastlines are dominated by landform features formed by the process of deposition, such as sand dunes, sand bars and spits.

Wind

Wind is a very effective agent of erosion in areas with little or no vegetation, in deserts and in areas where the land has been damaged.

Wind can pick up weathered rock material and, with it, effectively 'sandblast' larger rock features. This process is known as abrasion. It results in sculpted rock formations such as that shown in Source 6.6.6. On a larger scale, rock-strewn desert surfaces form when strong winds sweep away the finer surface materials. This process is known as deflation.



Source 6.6.7 Findel Glacier, Zermatt, Switzerland

Ice

Glaciers are slow-moving rivers of compacted snow (glacial ice). They form when compacted snow that has gathered over many years gradually moves downhill under the influence of gravity. Glaciers erode land by transporting rock (see Source 6.6.7).

Deposition

Deposition is the process by which eroded material is added to a landscape. Water, wind and glacial ice transport weathered and eroded rock. As the speed of water slows, the strength of a wind declines and as a glacier melts and retreats, the load it carries is deposited, building up layers of sediment. Depositional landforms include beaches, sand bars and dunes; natural (river) levees and desert sand dunes.

Source 6.6.8 Weathering and erosion in summary

Changing landscapes

Weathering is sometimes called the passive, or inactive, agent of erosion because weathered material usually remains in place. Erosion and deposition (the removal and laying down of transported material) are known as active processes because the material is moved from its original position or location. A summary of this process is outlined in Source 6.6.8.

Weathering	
Physical weathering	Chemical weathering
Temperature change Freeze–thaw action Organic action	Weak acids (when rainwater and carbon dioxide mix) Organic acids
Erosion	
Erosional processes	Agents of erosion
Attrition Abrasion/Corrasion Corrosion Hydraulic action Deposition	Running water, rivers and waves Wind Ice

ACTIVITIES

Remembering and understanding

- 1 Explain the difference between physical and chemical weathering.
- 2 Outline the three processes of physical weathering.
- 3 Explain how chemical weathering helps to weaken and break up rock.
- 4 Explain why weathering is described as a passive, or inactive, agent of landform development.
- 5 State what erosion is.

- 6 Explain the following terms:
 - attrition
 - abrasion
 - corrosion
 - hydraulic action.
- 7 Explain what is meant by the term 'deposition'.

Applying and analysing

- 8 Identify the conditions under which water is the most effective agent of erosion.

Evaluating and creating

- 9 Construct a series of diagrams like those in Source 6.6.2 to explain how organic weathering occurs.

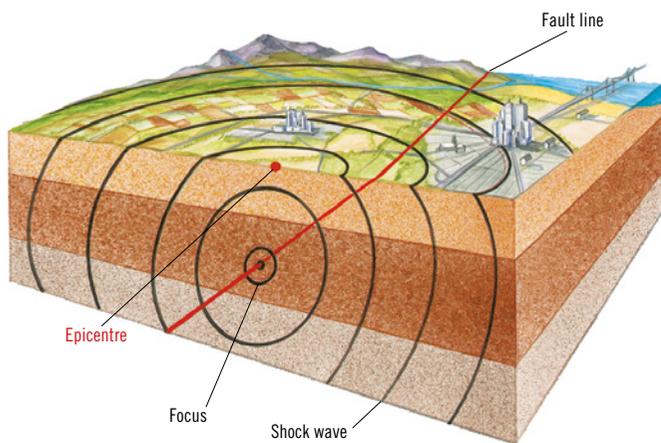
Earthquakes

Plates and faults

Earthquakes occur when energy that has built up in the earth's crust is released. While earthquakes are most commonly associated with the movement of the earth's plates, smaller, often less destructive earthquakes can occur well away from plate margins. These earthquakes are usually associated with fault lines (lines of weakness) in rock.

Shock waves

When the built-up energy within the earth's crust is released, shock waves go out in all directions. The point underground at which the sudden movement occurs is called the focus. The place at which the shock waves first reach the earth's surface is called the epicentre, as shown in Source 6.7.1.



Source 6.7.1 The focus, epicentre and shock waves of an earthquake

Measuring earthquakes

A seismograph measures the duration, magnitude and direction of an earthquake. The magnitude (or amount of energy released by an earthquake) is given a measurement on the Magnitude scale outlined in Source 6.7.2. The Magnitude scale replaced the Richter scale in 2002. Each point on the scale is 10 times greater than the point below.

This means, for example, that the Mexico City earthquake of 1985 was 10 times stronger than the earthquake that struck San Francisco in 1989.

Magnitude	Effects	Average number per year worldwide
2.5 or less	Usually not felt, but can be recorded by seismograph	900 000
2.5 to 5.4	Often felt, but only causes minor damage	30 000
5.5 to 6.0	Slight damage to buildings and other structures	500
6.1 to 6.9	May cause much damage in very populated areas	100
7.0 to 7.9	Major earthquake. Serious damage	20
8.0 or greater	Great earthquake. Can totally destroy communities near the epicentre	One every 5 to 10 years

Source 6.7.2 The Magnitude scale

Effects of earthquakes

Primary effects

Primary effects are effects that are directly related to the earthquake, such as collapsed buildings and open fissures.

Secondary effects

Secondary effects are the short-term effects of the earthquake, such as fires caused by broken gas pipes and electrocution caused by downed power lines.

Tertiary effects

Tertiary effects are the long-term effects of an earthquake, such as homelessness, business failure, disease outbreaks and famine.

Place and effect

While the strength of an earthquake is important, other factors can also influence the extent of damage and loss of life. These include:

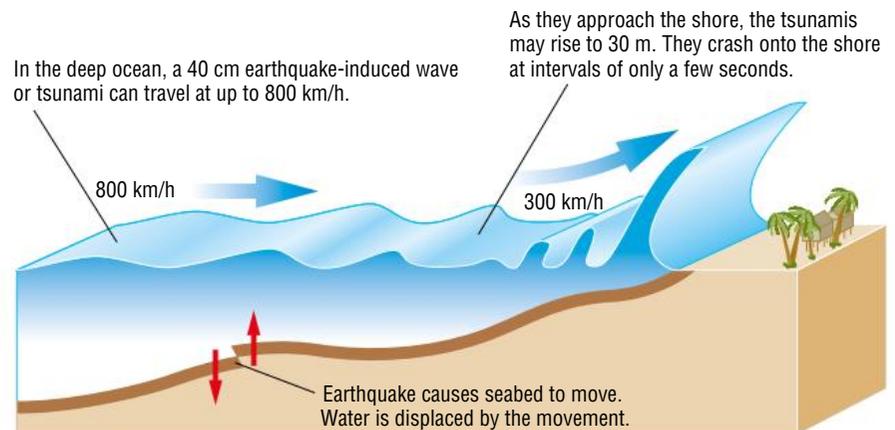
- distance from the epicentre—energy waves lose their intensity as they spread out
- level of preparation—building structures designed to withstand earthquakes means that the number of deaths caused by collapsing buildings is greatly reduced
- population density—damage and destruction in densely settled urban centres are more severe than in rural areas
- time of day—whether people are at home or out and about makes a difference to the number of deaths and injuries
- season—the secondary effects of earthquakes are much worse in winter
- type of land that cities are built on—silt and **reclaimed land** tend to magnify the effects of earthquakes.



Source 6.7.3 The primary devastation caused by the 2010 earthquake in Christchurch, New Zealand

Tsunamis

A tsunami is a series of ocean waves caused by underwater land movement. Movement can be caused by a landslide, a meteor strike or an earthquake, as shown in Source 6.7.4. Tsunami waves resemble surges of water tens of metres high. The length of time between waves can range from minutes to hours. Although the impact of tsunamis is limited to coastal areas, their destructive power can be enormous.



Source 6.7.4 Formation of a tsunami

ACTIVITIES

Remembering and understanding

- 1 State what an earthquake is. Explain why and where earthquakes occur.
- 2 Define the terms 'focus' and 'epicentre'.
- 3 Identify the instrument used to measure the magnitude of earthquakes.
- 4 State the difference between the primary, secondary and tertiary effects of earthquakes.

- 5 Outline the reasons why some places are more seriously affected by earthquakes than others.

Applying and analysing

- 6 Decide whether an earthquake measuring 7.0 on the Magnitude scale in a remote rural area will cause less or more damage than a 6.0 earthquake in a big city during winter. Explain your answer.

Earthquake-induced tsunamis

Case study: Asia's tsunamis

In recent years, Asia has experienced a number of massive natural disasters. Two of the biggest involved earthquake-induced tsunamis. One of these affected the countries surrounding the Indian Ocean. The other devastated low-lying coastal areas of eastern Japan.

Indian Ocean

On 26 December 2004, an undersea earthquake with an epicentre off the west coast of Sumatra, Indonesia, triggered a series of devastating tsunamis that killed more than 225 000 people in eleven countries surrounding the Indian Ocean, and inundated coastal communities with waves up to 30 metres in height. Officially known as the Great Sumatra–Andaman earthquake, the event is more commonly referred to as the Asian tsunami or the Boxing Day tsunami. Indonesia, Sri Lanka, India and Thailand were hardest hit (see Source 6.8.1).

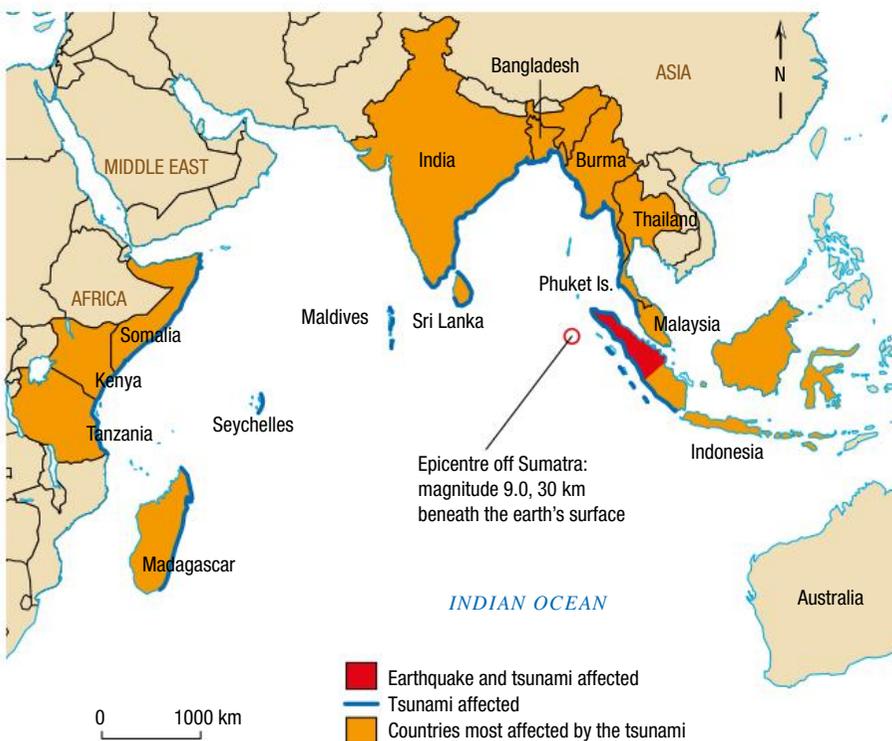
The quake, which lasted approximately 10 minutes, had a magnitude between 9.1 and 9.3—the second-largest earthquake ever recorded. So great was the movement, it caused the entire planet to vibrate by as much as 1 centimetre. The extent of the damage and the plight of those affected shocked the world and led to a worldwide humanitarian response. More than US\$14 billion of humanitarian aid was given to the countries affected.

East Japan

On the afternoon of 11 March 2011, a 9.0 magnitude undersea earthquake occurred at a depth of 32 kilometres, 70 kilometres off the east coast of Japan. It was one of the most powerful earthquakes ever recorded, moving the island of Honshu, Japan's largest, 2.4 metres to the east.

The earthquake caused a 180-kilometre-wide section of the seabed to lift by 5 to 8 metres. The resulting displacement of water triggered a massive tsunami that reached heights in excess of

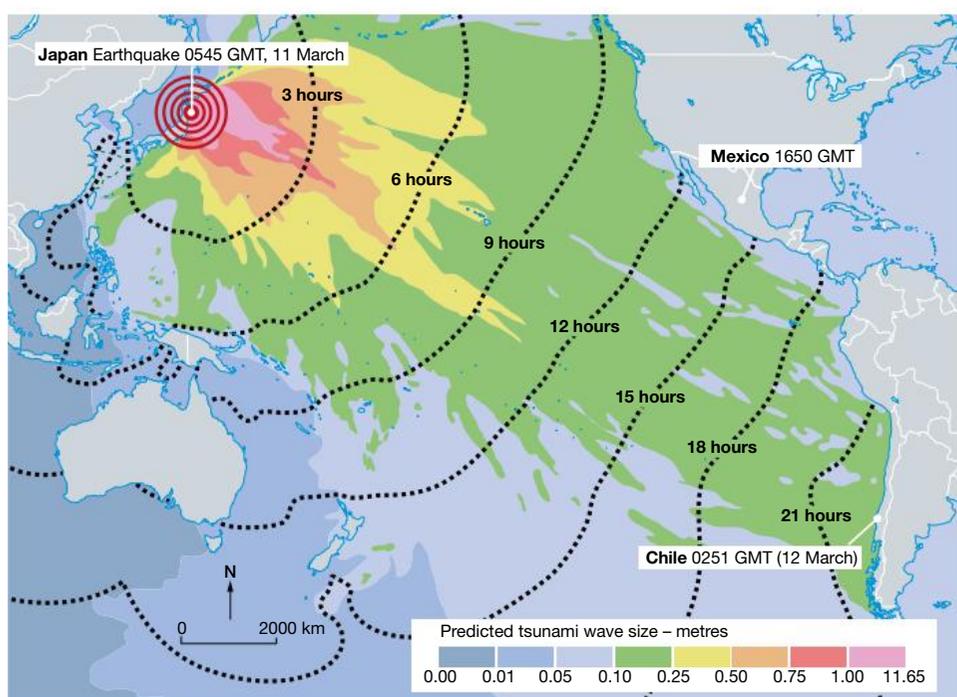
40 metres. The surging waters travelled up to 10 kilometres inland, sweeping aside all that lay in their path (see Source 6.8.2). More than 15 800 people died, 27 000 were injured and over 3000 remain missing, feared dead. Over a million buildings were destroyed or partially damaged. More than 4.4 million households were left without electricity and 1.5 million without water. The tsunami also initiated a meltdown at the Fukushima Daiichi Nuclear Power Plant. Residents within a 20-kilometre radius of the plant were evacuated and still cannot return to their homes. Source 6.8.3 shows the travel times of the waves of the tsunami.



Source 6.8.1 The source and extent of the Asian tsunami, 26 December 2004



Source 6.8.2 The estimate for the cost of rebuilding in Japan after the earthquake and tsunami damage is US\$300 billion.



Source 6.8.3 Estimated travel times of the waves generated by the 2011 Great East Japan earthquake.

ACTIVITIES

Remembering and understanding

1 Copy and complete the following table.

	Earthquake and tsunami	
	Indian Ocean	Great East Japan
Earthquake details		
Damage		

Applying and analysing

- 2 Study Source 6.8.2. Comment on the scale of the disaster shown in the photograph. As a class, discuss the descriptive terms used in your individual responses.
- 3 Study Source 6.8.1. Describe the extent of the 2004 tsunami's impact. How far did the wave of destruction travel?
- 4 Study Source 6.8.3. How long did it take for the tsunami wave to travel to:
 - a Mexico
 - b Papua New Guinea
 - c the North Island of New Zealand
 - d South America?

Volcanoes

Volcanic eruptions

Volcanic eruptions occur when molten material (magma) forces its way to the earth's surface through cracks or faults in the earth's crust. The molten material that flows from a volcano is called **lava**. The most active volcanoes lie in lines that coincide with the collision zones of the earth's plates.

Volcanic landform features

Volcanic eruptions can produce landforms in a rapid and spectacular manner. Some eruptions are explosive, while others are not—it depends on the thickness of the magma. Source 6.9.1 shows magma that is thin and runny, flowing easily out of a volcano. Such a lava flow is rarely a threat to human life because it moves slowly enough for people to escape, but it can destroy towns and villages in its path.

If the magma is viscous (thick), gases cannot escape easily. Pressure builds up until the gases escape violently and explode. Source 6.9.2 shows this



Source 6.9.1 A lava flow

type of eruption, as magma blasts into the air and breaks into pieces called volcanic bombs. Explosive volcanic eruptions can be deadly. Molten material can shower down on the surrounding countryside. When hot volcanic material mixes with water from streams, **lahars** (mudflows) form. These can bury whole villages.



Source 6.9.2 Volcanic bombs

Over time, layers of lava and volcanic ash build up a volcanic cone (see Source 6.9.3), or shield. A caldera crater forms when a violent eruption blasts away the top of an existing volcanic cone or shield.

Classifying volcanoes

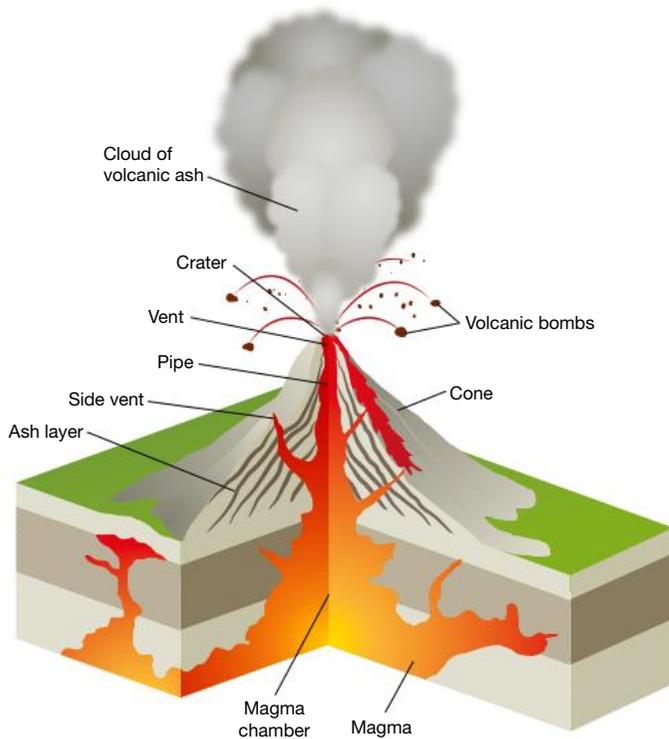
Volcanoes can be classified according to their shape.

Strato volcanoes

Strato, or composite, volcanoes are the most common type of volcano and are formed from layers of lava and ash, as shown in Source 6.9.3. Their lava tends to be viscous (thick) and flows very slowly. This causes them to form steep-sided volcanic cones. Examples are Mt Fuji in Japan and Mt Taranaki in New Zealand.

Shield volcanoes

Shield volcanoes are among the world's largest volcanoes. They develop a broad base because



Source 6.9.3 A cross-section through a strato volcano formed of layers of lava and ash

the very fluid lava from which they are made runs downhill rather than piling up. Examples include the Kilauea and Mauna Loa volcanoes of Hawaii.

Calderas

While calderas are the least common form of volcano, they are often huge and potentially very explosive. When they erupt they tend to collapse in on themselves and so they don't build up a cone. Famous calderas are Yellowstone in the United States of America and Greece's Santorini caldera in the Aegean Sea, shown in Source 6.9.4.

Recent volcanic activity

Some of the world's great mountains and many of the islands that dot the world's oceans are the result of past volcanic activity. There are 550 known active (that is, still capable of erupting) volcanoes on earth. Large eruptions may result in short-term climatic change as millions of tonnes of volcanic ash and smoke are released into the atmosphere, reducing the amount of sunlight reaching the Earth's surface. Some volcanic eruptions have caused great loss of life.



Source 6.9.4 Santorini clings to the rim of a collapsed volcanic caldera.

Year	Place	Impacts
1815	Tambora, Indonesia	92 000 people died, mostly in Indonesia—because of starvation caused by the loss of crops and livestock
1883	Krakatau, the Sunda Strait	The resulting tsunami between Java and Sumatra killed 36 000
1902	Pelee, Martinique	Poisonous volcanic gases and pyroclastic flows killed 36 000
1985	Nevado del Ruiz, Colombia	A wave of mud smothered 23 000
1991	Mt Pinatubo, the Philippines	900 people were killed, mostly from collapsing roofs

Source 6.9.5 Volcanic eruptions that have caused great loss of life

ACTIVITIES

Remembering and understanding

- 1 Explain why some volcanic eruptions are violent while others are not.
- 2 Explain what volcanic bombs and lahars are.
- 3 Describe how volcanic eruptions can bring about short-term climatic change.

Applying and analysing

- 4 Study Source 6.9.5.
 - a List the main causes of loss of life.
 - b Which cause killed the most people? Explain why.

Volcanoes transforming landscapes

Active volcanism

Volcanic activity is always occurring somewhere in the world. However, sometimes there is an eruption on a vast scale—an eruption so massive that it transforms landscapes.

Current areas of active volcanism include the Bagana and Manam volcanoes in Papua New Guinea; Dukono and Semeru in Indonesia; Karymsky and Shiveluch in Russia; Kilauea in Hawaii; Mount St Helens in the United States of America; Colima in Mexico; Fuego and Santa Maria in Guatemala; Masaya in Nicaragua; Arenal in Costa Rica; Sakura and Suwanose in Japan; Sangay and Tungurahua in Ecuador; Soufriere Hills in Montserrat, West Indies; and Stromboli and Etna in Italy. There are

many more inactive, or dormant, volcanoes and thousands of extinct volcanoes.

Even low-level volcanic activity can cause great inconvenience and economic loss. In April 2010, a relatively small eruption in Iceland disrupted air travel for six days across twenty countries in western and northern Europe. Flights were grounded and hundreds of thousands of travellers had their travel plans disrupted.

Mt St Helens

One of the most spectacular volcanic eruptions of recent times was the Mt St Helens eruption of 18 May 1980. The volcano, located in the Cascade Mountains of the United States of America (see Source 6.10.2) had been dormant for over a century.



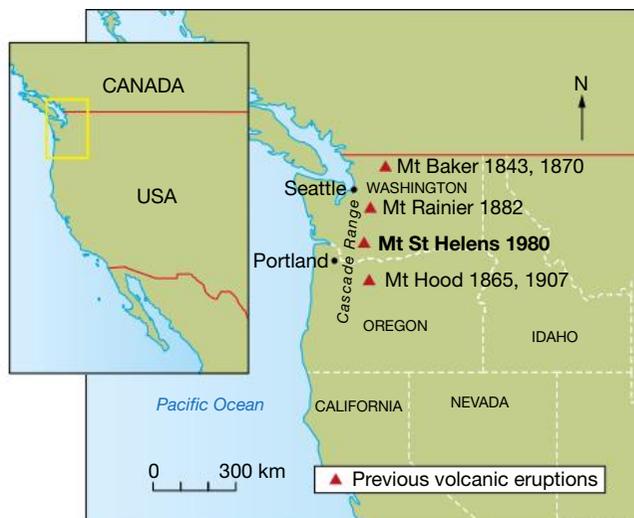
Source 6.10.1 The Mt St Helens eruption, United States of America, 1980

Source 6.10.3 shows the causes of the eruption. At 8.32 a.m. an earthquake of magnitude 5.1 rocked the earth directly beneath the mountain. The earthquake was caused by the collision of two plates, the Juan de Fuca Plate colliding with and descending under the lighter North American Plate. The earthquake started an avalanche, which was followed by a massive blast of gas, rock, ash and ice. The devastating effects are outlined in Source 6.10.4.

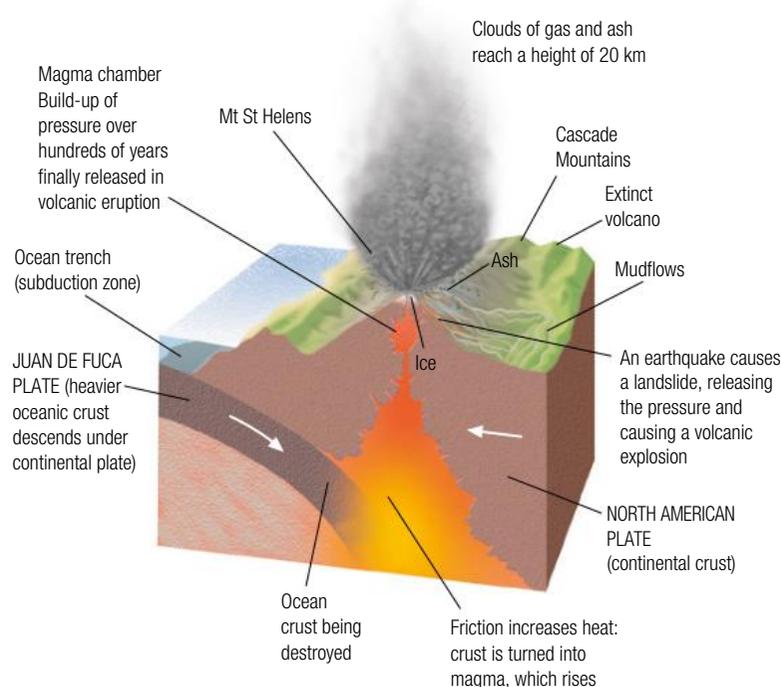
- One hundred and twenty metres of the summit vanished, and in its place was a crater 2 kilometres wide, 4 kilometres long and 1.5 kilometres deep.
- Three hundred and eighty square kilometres of land to the north of the mountain was stripped of its vegetation.
- Volcanic ash, carried by the wind, spread 1500 kilometres to the west.
- Sixty-two people died.

Rabaul

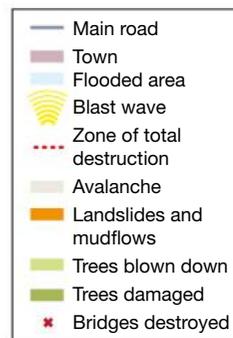
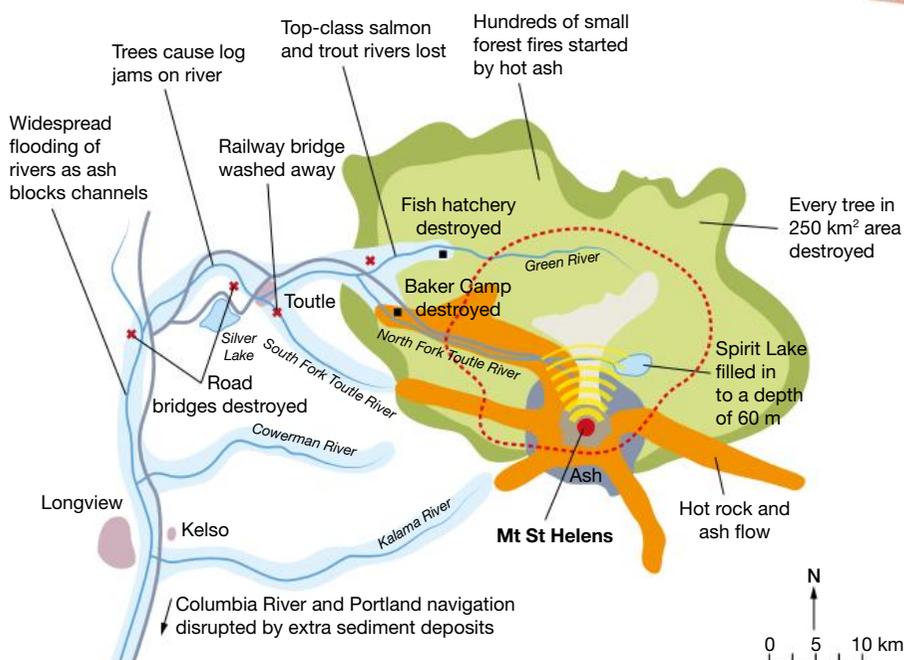
In September 1994, the town of Rabaul on the island of New Britain in Papua New Guinea was devastated by the eruption of two nearby volcanoes: Tavurvur and Vulcan. The location of these volcanoes is shown in Source 6.10.5. Volcanic ash, 75 centimetres deep, covered the town and damage to property was severe.



Source 6.10.2 Location of Mt St Helens



Source 6.10.3 Causes of the Mt St Helens eruption

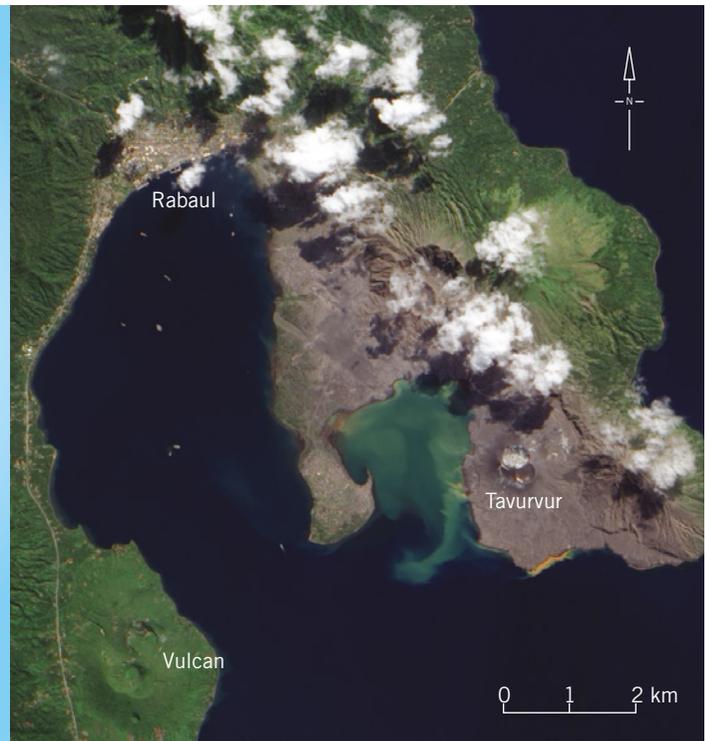


Source 6.10.4 Damaged caused by the Mt St Helens eruption, 1980

Most of Rabaul's town's buildings collapsed under the weight of the ash (Source 6.10.6). Rabaul's Simpson Harbour became clogged with floating **pumice**. The detection of early warning signs by volcanologists allowed authorities to evacuate the town's 53 000 inhabitants.

Rabaul's harbour is a large caldera, about 10 kilometres in diameter. Its collapsed floor is the

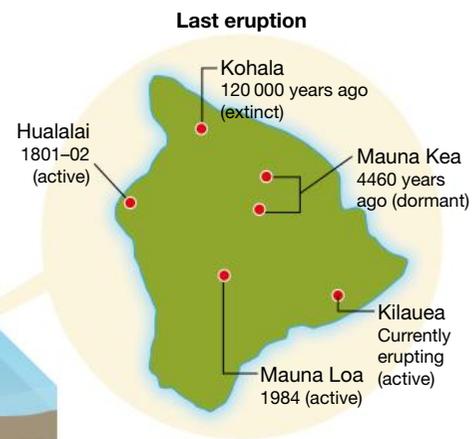
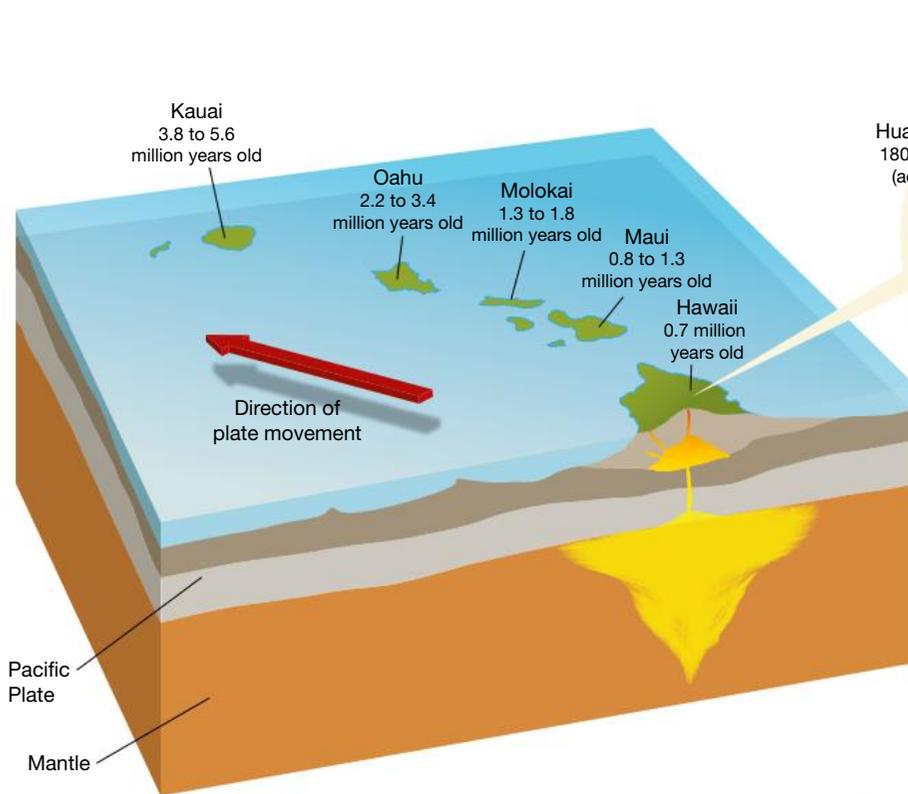
result of a large, explosive eruption that took place some 1400 years ago. That eruption partly emptied the underlying magma chamber (the reservoir of molten rock feeding the volcano). Many smaller eruptions have occurred since, mostly from minor cones that have developed near the rim of the caldera. After the 1994 eruption, Rabaul was rebuilt on a new site.



Source 6.10.5 The Rabaul caldera and the Tavorvur and Vulcan volcanoes



Source 6.10.6 Rabaul was buried with volcanic ash to a depth of 75 centimetres.

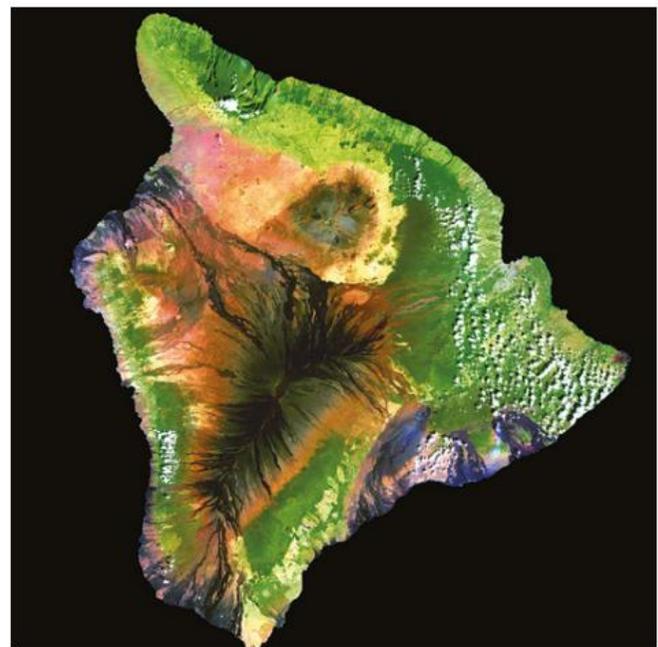


Source 6.10.7 The Hawaiian islands formed as the north-westerly moving plate moved over a hot spot in the earth's mantle.

Hawaii

Hawaii is a chain of volcanic islands in the north Pacific Ocean. It consists of hundreds of islands spread over a 2400-kilometre-long archipelago. The five largest of these islands—Hawaii ('Big Island'), Maui, Oahu, Kauai and Molokai—are located at the south-east end of the archipelago. The islands are the exposed peaks of a great undersea mountain range known as the Hawaiian-Emperor Seamount Chain.

Source 6.10.7 shows the formation of the Hawaiian archipelago. The volcanic islands formed over millions of years as the north-westerly moving plate moved over a **hot spot** in the earth's mantle. As the Pacific Plate moved, a new volcano or island was formed over the hot spot. Currently, the hot spot is under Hawaii's 'Big Island', shown in Source 6.10.8.



Source 6.10.8 Satellite image of Hawaii's 'Big Island'.

ACTIVITIES

Remembering and understanding

- 1 Study Source 6.10.3. Explain the cause of the Mt St Helens eruption.
- 2 Study Sources 6.10.3 to 6.10.6. List the damage caused by the Mt St Helens and Rabaul eruptions.

Applying and analysing

- 3 Study Source 6.10.5. Draw a sketch map of the Rabaul caldera. Locate the now abandoned Rabaul township and the volcanic vents Tavurvur and Vulcan.
- 4 Study Source 6.10.7. Explain how hot spots have created the Hawaiian archipelago.

Mass movements

Types of movement

Mass movements occur when rock material moves downhill under the influence of gravity. These movements may be rapid, as in the case of rock falls, landslides, earthflows, mudflows and slumps, or slow, as in the case of soil creep.

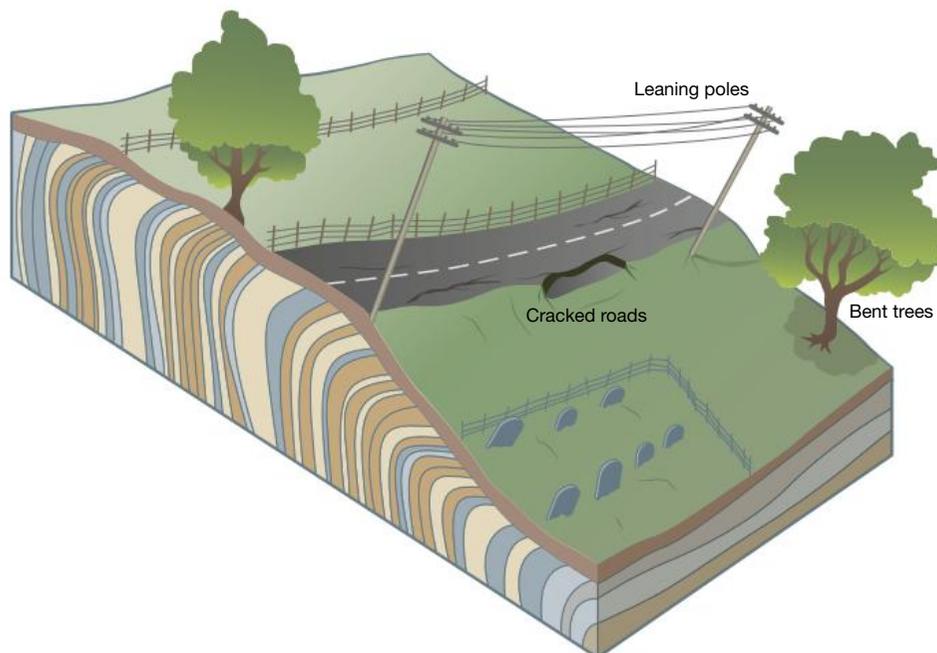
Role of water

Water plays an important role in most types of mass movement. It acts like a lubricant, weakening the binding properties of the soil and rock material. The amount of water is important. Think about building sandcastles at the beach. Water is needed to bind the sand together, but too much water results in the castle collapsing.

Slow movements

Soil creep

Soil creep is a long-term process. Over time, soil moves downslope under the influence of gravity. As a general rule, the steeper the slope, the faster the creep. Leaning fences and power poles, and the curved trunks of trees, are all evidence of creep, as illustrated in Source 6.11.1.



Source 6.11.1 Evidence of soil creep

Rapid movements

Rock falls

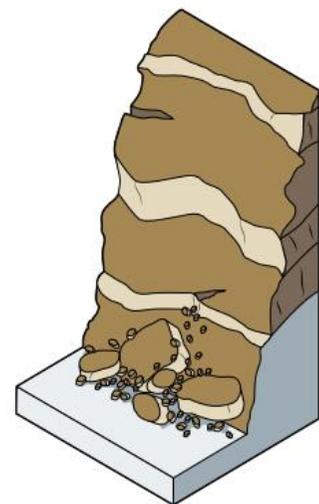
A rock fall occurs when weathered rock material moves downslope but is not enough to cause a landslide. Rock falls usually occur on very steep slopes such as cliff faces. Earthquakes, expanding ice, plant roots, the undercutting action of waves and water penetration may all dislodge rock material. The rock accumulation at the base of the cliff is called talus. A rockfall and talus can be seen in Source 6.11.2.

Earthflows

Source 6.11.3 shows an earthflow, which is the downslope flow of saturated fine-grained materials. The materials most commonly involved are small rocks, clay, fine sand and silt. When the earth cannot hold any more water, the flow will begin. The rate at which the earth flows depends on the amount of water present: the higher the water content, the greater the speed, or velocity.

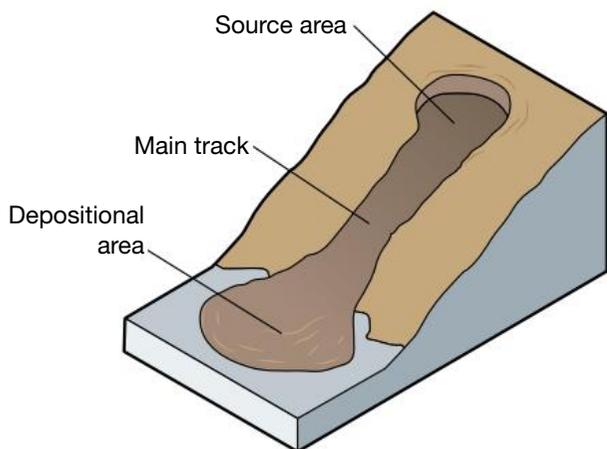
Mudflows

A mudflow (or mudslide) is the downhill movement of saturated earth and debris, made fluid by rain



Source 6.11.2 Rock fall and associated talus slope

or melted snow. Mudflows are often able to build up great speeds (up to 80 kilometres per hour). Mudflows are most likely to occur in areas that have been stripped of their vegetation, on slopes that have been altered for the construction of buildings, and on roads and other areas to which surface run-off has been redirected. Damage caused by a mudflow can be seen in Source 6.11.4.



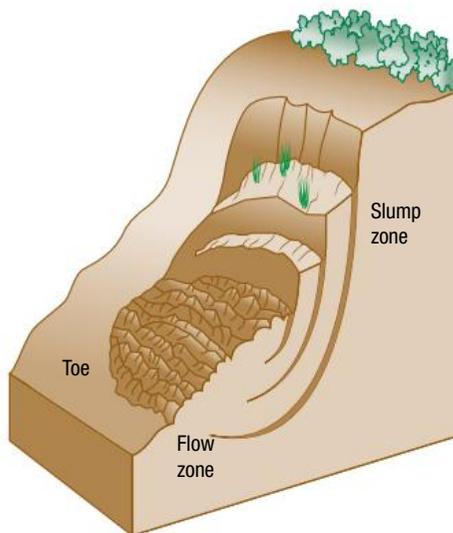
Source 6.11.3 When soil and rock cannot hold any more water they will start flowing.

Slumps

A slump occurs when a well-defined mass of soil or rock layers moves downslope. Slumps can be initiated by earthquakes, water saturation and the freezing and thawing of a mass of soil or rock layers. Source 6.11.5 shows an earthflow with slump features in the upper section.



Source 6.11.4 Mudslide in El Salvador, Central America, 2001. Because they occur suddenly and without warning, mudflows can prove deadly.



Source 6.11.5 An earthflow with well-developed slump features in the upper section

ACTIVITIES

Remembering and understanding

- 1 Define the term 'mass movements'.
- 2 Outline the role of water in mass movements.
- 3 Explain the difference between landslides and earth- and mudflows.

Applying and analysing

- 4 Study Source 6.11.1. List the damage caused by soil creep.
- 5 Study Source 6.11.4. Describe the damage you observe in the image.

Avalanches

Avalanche damage

An avalanche is a sudden, downslope movement of a mass of snow. Avalanches are triggered when the snow pack (the extent of the snow) becomes overloaded due to natural factors such as earthquakes or heavy snowfalls, or human agents such as skiers, snowboarders and snowmobile riders.

Avalanches can reach speeds of 130 kilometres per hour within just 5 seconds. The size and impact of an avalanche is influenced by the snow type and the rate at which it accumulates, the temperature, the nature of the sliding surface, the trigger, and the angle and aspect of the slope.

Powerful avalanches can cause large rocks, trees, and other debris to move downslope, adding to their destructive power. Avalanches cause loss of life, destroy settlements and disrupt transport when they block roads and railway lines. Because of their ability to move enormous amounts of snow rapidly over large distances, avalanches are a major hazard to life and property in mountainous regions.

Avalanches kill more than 150 people each year. Ninety per cent of avalanche deaths are the result of snow slides triggered by the victim or someone in the victim's party. Skiers, snowboarders and riders of snowmobiles are the most frequent triggers of avalanches.

Avalanche control

In populated alpine regions, avalanche control is an important management issue. Avalanche control begins with an assessment of the level of risk. This involves studying the topography, vegetation pattern and seasonal distribution of snowfall to determine the areas likely to be affected by avalanches. Once the avalanche risk areas have been identified, threatened elements of the constructed environment such as roads, railways, settlements and ski resorts can be protected. Avalanche prevention plans involve monitoring the snow pack and constructing structures to protect people and property.



Source 6.12.1 Two mountaineers were swept away by this avalanche on Europe's Mont Blanc. Fortunately, they escaped. Note the steep slope of the mountain.

Avalanche control includes the following measures.

- Management of the snow pack, by setting off small detonations, prevents large and dangerous snow packs from forming.
- Snow racks (see Source 6.12.2) and avalanche bridges (see Source 6.12.3) can be built to protect towns, roads and railway lines.
- Dams, ditches and earth mounds can be built to deflect and slow an avalanche.



Source 6.12.2 Snow racks are used to retain snow, thereby reducing the risk of avalanches.



Source 6.12.3 Avalanche bridges are used to protect vital transport infrastructure.

- Planting trees, as forested areas will slow an avalanche and may prevent one from occurring.
- Avalanche awareness programs educate and protect people engaged in recreational activities in alpine regions.

Surviving avalanches

If you are ever caught in an avalanche, try to get out of the avalanche pathway as quickly as possible. Source 6.12.4 outlines safety tips for skiers and snowboarders riding in avalanche-prone areas.

Avoiding avalanches

- Be aware when an avalanche is likely to occur, especially on steep slopes after heavy snowfalls.
- Always follow avalanche warnings and never ski or board alone in avalanche-prone areas.
- Avoid crossing steep slopes.
- If skiing or boarding in a group, always spread out. That way, if some of you are trapped in an avalanche, the others can dig you out.
- Avalanches can happen without notice. Be prepared and know what to do.

If caught in an avalanche

- Do not attempt to out-ski or board the avalanche. It will be travelling faster than you can ski. Try skiing towards the edge of the avalanche, where the mass of snow is thinner and less powerful.
- Try to stay on the surface, grab onto a tree or rock, or thrust yourself upward by kicking.

If you are knocked over

- Use a swimming-like stroke to avoid being covered in snow.
- When you come to a stop, curl up into a ball and use your hands to cover your face. Rotate your head to make an air pocket.
- To see which way is up, spit into your hands and feel which way the saliva runs. Remember you may be in complete darkness unless you are close to the surface.
- If you can see a hint of daylight, try to push one hand to the surface to attract attention.
- Breathe steadily to preserve energy and oxygen.

Source 6.12.4 Avalanche safety checklist

ACTIVITIES

Remembering and understanding

- 1 Explain what an avalanche is and the conditions under which avalanches take place.
- 2 List the factors that determine the nature of the avalanche.

- 3 Outline what can be done to manage, or control, the avalanche threat.

Evaluating and creating

- 4 Study Source 6.12.4. Produce a podcast to educate people engaged in alpine recreational activities about avalanche safety.

Living in areas of risk

Predicting hazards

Earthquake prediction

Scientists study the earth's crust in order to understand the processes involved in plate movements. As a result, they are able to assess the risk of earthquakes and volcanic eruptions. With this knowledge, authorities are able to plan for, and respond to, natural hazards such as earthquakes and volcanic eruptions.

Scientists study the past frequency of large earthquakes in order to determine the future possibility of similar large shocks. Where this possibility is high, special building laws can be made. Authorities can also plan emergency responses to earthquakes.

Tsunami warning systems

Tsunami warning systems are used to detect tsunamis and issue warnings to minimise the loss of life and the damage to property. A tsunami warning system consists of two equally important parts: a network of sensors to detect tsunamis, shown in Source 6.13.1, and a communications infrastructure to issue alarms in time for people to evacuate coastal areas.

Volcano monitoring

There are currently about 500 active volcanoes in the world. About 50 of these volcanoes erupt each

year. Volcanologists monitor high-risk volcanoes so that they can determine the level of risk and forecast eruptions. Experts now issue alerts using a classification system. In the United States of America, volcanoes are now classified according to the following stages: normal, advisory, watch or warning.

Adapting to threats

The forces involved in earthquakes and volcanic eruptions are so great that they are beyond the control of humans. All we can hope to do is minimise their impact and make sure we are ready to respond in a natural disaster.

Earthquakes

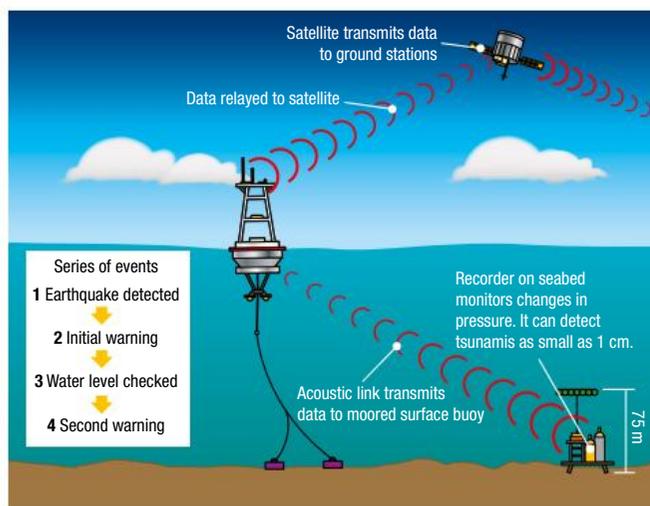
When an earthquake strikes, land may be moved up and down, and from side to side. Modern engineering techniques are used to construct buildings that can withstand such movements.

In earthquakes, the biggest danger is not the earthquake, but falling debris and collapsing buildings. Broken glass becomes deadly and falling concrete can crush people. Engineers have designed windows and walls that will not break when shaken by the intense motion caused by earthquakes, and specially designed foundations absorb the energy of the earthquake and allow buildings to flex rather than shake violently.

Tsunamis

Natural barriers such as sand dune systems, mangroves, plantations and native forests can reduce the impact of tsunamis. During the 2004 Indian Ocean tsunami, some coastal communities escaped with little loss of life and damage to property because trees such as coconut palms and mangroves absorbed the tsunami's energy. For example, while the entire Nagapattinam district in the state of Tamil Nadu, India, was severely affected by the tsunami, the town of Naluedapathy emerged virtually unscathed. This was due to the presence of a very large windbreak of 80 000 casuarina trees planted in 24 hours in 2002 as part of a Guinness World Record.

Tree planting along tsunami-prone coastlines has been recommended as a cheap and long-lasting way of reducing the effects of tsunamis and as an



Source 6.13.1 A tsunami warning system

alternative to the building of expensive barriers. In India's worst tsunami-hit state, Tamil Nadu, tree planting has begun along the coastline to act as a barrier against future tsunamis.

In coastal areas where it is not possible to use forest barriers, for example in existing urban areas, concrete walls are constructed and seawater barriers that deploy automatically when tsunami waves approach shorelines are built, such as the barriers shown in Source 6.13.2.

Volcanoes

Worldwide, an estimated 500 million people live near active volcanoes. Fortunately, the loss of life from volcanic eruptions has been relatively low. A notable exception was the Mt Pinatubo eruption (in the Philippines) of 1991. Despite the large-scale evacuation of people in the days leading up to the eruption—itsself a demonstration of the effectiveness



Source 6.13.2 A tsunami barrier and gate, Numazu, Japan

of eruption prediction by volcanologists—847 people were killed. Most died when roofs collapsed under the weight of accumulated ash. Mt Pinatubo's dense forest was home to several thousand indigenous people, the Aetas, many of whom were displaced by the disruption.

Surviving earthquakes

If you are indoors, remain there and:

- take shelter under a sturdy table or desk, stand or crouch in a strong doorway in a load-bearing wall, or brace yourself in an inside corner of the room
- shield your head with a blanket, doona or cushion
- stay clear of windows, mirrors, or other glass that might shatter
- keep clear of bookcases, cabinets and other pieces of heavy furniture that might topple or spill their contents
- stay away from fireplaces, and any area where bricks might fall from the chimney.

If you are outside:

- quickly move into an open space where nothing can fall on you
- stay clear of power lines and poles, trees or branches, building facades, chimneys, or anything else that might fall.

If you are in a city centre:

- avoid falling glass and masonry by taking shelter in a strong doorway or under a large vehicle
- don't use elevators or stairs during the quake.

ACTIVITIES

Remembering and understanding

- 1 Explain why scientists study the earth's dynamic crust.
- 2 Outline the ways in which we can respond to a high-level earthquake risk assessment.
- 3 Identify the ways in which coastal communities can be protected from the impacts of a tsunami.

Applying and analysing

- 4 Study Source 6.13.1. Explain how a tsunami warning system operates.

Evaluating and creating

- 5 Undertake internet research to investigate the ways in which buildings can be made earthquake-resistant.
- 6 Investigate a recent volcanic eruption. Identify the ways in which people were informed about the impending eruption and the actions they were able to take to minimise the impacts of the eruption.
- 7 Research the different ways to respond to hazards and develop a poster highlighting how people should respond in the case of a natural disaster such as an earthquake, a tsunami or a volcanic eruption.

Inquiry tasks

The value of environments

Landscapes have aesthetic, emotional, spiritual and economic value. In pairs, collect at least five images each of different landscapes. Using these 10 images, classify each landscape as having aesthetic, emotional, spiritual or economic value. With your partner answer the following questions.

- 1 Do any of the landscapes you have collected fit into more than one classification?
- 2 If you answered 'yes' to the question above, explain why you believe that the landscape has more than one value.

Developing a natural hazard information brochure

Using internet-based resources and relevant software, develop a multiple-page website promoting community awareness about a selected natural hazard relating to the geology of the surface of the earth. Include links to relevant government authorities, for example Geoscience Australia.

Your website should include information on:

- the nature of the geomorphological hazard
- the geographical processes involved
- the economic, environmental and social impacts of the geomorphological hazard
- the responsibilities of the various levels of government in respect to the geomorphological hazard
- the community-based groups involved in responding to the geomorphological hazard
- the strategies individuals can use to protect themselves and their property.

Good sources of information are:

- Emergency Management Australia
- Geoscience Australia
- US Geological Survey
- British Geological Survey.

Earthquake watch

Each year there are, on average, 150 earthquakes that have a magnitude greater than 6 (see Source 6.14.1).

Research a recent earthquake. Develop an oral report accompanied by a PowerPoint presentation using the following points as a guide.

- Details relating to date, location, extent and magnitude of the earthquake
- A description of the nature of the earthquake, including the depth of the earthquake's focus (deep or shallow); its relationship with crustal plate boundaries; the type of fault line on which it occurred; the number and intensity of aftershocks
- A description of any associated hazards, for example, tsunamis, landslides and avalanches
- An outline of the impacts of the earthquake, including the nature of the damage caused and the number of people affected
- A description of the response to the disaster

Illustrate your presentation with appropriate maps and images sourced from the media and the internet.

Magnitude	Number of earthquakes (per year)
8 and higher	1
7-7.9	15
6-6.9	134
5-5.9	1319
4-4.9	13 000
3-3.9	130 000
2-2.9	1 300 000

Source 6.14.1 Average annual occurrence of earthquakes by magnitude

Tsunami impact: the Asian tsunami, 26 December 2004

Refer to the information in Unit 6.8 in this chapter. Your task is to research on the internet the impact of the tsunami on one of the countries most affected, as shown in Source 6.8.1.

Using the information you find, provide a visual representation of the impacts under the following headings: 'Economic impact', 'Social impact' and 'Physical impact'.

You should include maps, graphs and photographs to illustrate the impact on people and their environment. Using information collected from various news sources, include a description in which you imagine what it might have been like to be standing on the beach the day that the tsunami occurred.

In conclusion, briefly describe what environmental warnings you should be aware of when holidaying or living in earthquake/tsunami-prone regions.

GLOSSARY

biophysical environment an area dominated by natural features

deposition the accumulation of sediment by the action of erosional agents, such as water and wind

earthquake a sudden movement of the earth's crust caused by the release of pressure

erosion the weathering down, transportation and deposition of material by water, wind and ice

faulting the fracturing of rock along lines of physical weakness

folding the buckling of rock due to pressure

hot spot a location where hot molten magma from deep within the earth rises up through the crust to reach the surface

landform a natural feature of the earth's surface

landscape the overall appearance of an area resulting from the interaction of landforms, vegetation and soils with human elements of the environment

lahar a mudflow formed when volcanic material mixes with water

lava molten rock at the earth's surface

magma molten rock below the earth's surface

mid-ocean ridge an underwater ridge formed when continental plates move apart, allowing molten material to fill the gap

plate tectonics the study of the movement of the earth's plates caused by currents deep within the earth's liquid mantle

pumice a very light and porous volcanic rock

reclaimed land land that has been gained from the sea or wetlands, or that has been restored for human use

rift valley a large, elongated depression with steep walls, formed by the downward movement of a block of the earth's surface between nearly parallel faults

volcano an opening in the earth's surface through which molten rock, lava and ash erupt

weathering the physical or chemical breakdown of rocks into smaller pieces



Coasts

Coastlines are dynamic environments, undergoing constant change. The main agents of change are waves, tides and currents. The formation and shape of a coast is also influenced by its geology—the harder the rock, the less likely it is to be affected by eroding forces. Variations in rock type create different-shaped coastlines.

Coastal landforms can be divided into two major categories—erosional and depositional. Erosional coasts are those dominated by cliffs and wave-cut platforms. Depositional coasts are those dominated by landforms made up of eroded materials, for example, beaches and sand dunes.

Coastlines are especially vulnerable to the impacts of human-induced climate change. Global warming is predicted to accelerate the rate of coastal erosion. As sea levels rise, beaches and coastal dune systems will be eroded and coastal wetlands inundated. A global temperature increase of 4–5°C and the resulting rise in sea levels will mean that many of the world’s coastal cities will have to be abandoned, as will the intensively settled and farmed coastal lowlands.

Processes shaping coastlines

A complex environment

Coasts are very complex environments that are constantly being changed by the forces of nature. Waves pound the coastline, sometimes bringing sediments such as sand onto the beach and at other times striking the coast with so much force that they erode its landforms.

Coastline types

Coastal landforms are categorised into two main types—erosional and depositional coastlines. **Erosional coasts** are formed by the powerful action of waves and other forces that weather and erode rock. The Victorian and South Australian coastlines are mostly erosional coastlines. Source 7.1.1 shows an erosional coast. **Depositional coasts** are made up of eroded materials transported along the coast. The Queensland and northern Western Australian coastlines are mostly depositional coasts. Source 7.1.2 shows a depositional coast.

Waves

Of all the processes shaping coastlines, waves are the most important. They play a role in both erosion and deposition. The sea's surface is constantly moving. When wind blows across the surface of the sea, energy is transferred from the wind to the water surface. A wave is energy travelling through the water.

In the open sea, far away from land, waves move as the ocean swells in a circular motion. As the wave approaches the shallow shoreline it begins to interact with the seabed. The seabed disturbs the circular motion of the wave, causing it to rise up, and then gravity eventually causes it to break. This process is shown in Source 7.1.3.



Source 7.1.1 An erosional coastline—the Twelve Apostles, Victoria



Source 7.1.2 A depositional coastline, Fraser Island, Queensland

Swash and backwash

When a wave breaks it creates turbulence in the water. This turbulence is called **swash**. As the swash water surges up the beach it carries sediment it has picked up with it. As the energy in the wave is gradually lost, most of the water soaks into the sand. The remaining water, called **backwash**, flows back down the beach and into the sea.

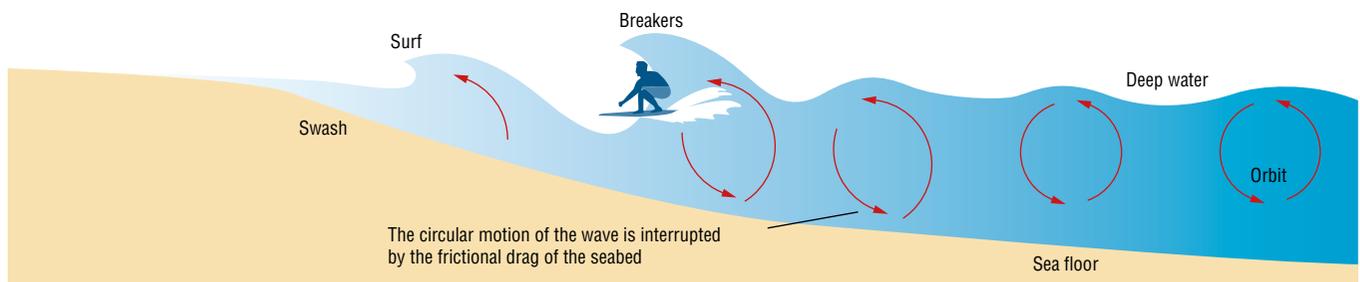
Constructive and destructive waves

Waves are very powerful—the energy within them is strong enough to wear down solid rock and cause widespread destruction to coastal zones, especially during storms. However, waves are also builders of the coastal system. They are able to carry and deposit large amounts of sediments and play an important role in constructing the coastal system.

When a low-energy wave crashes on a beach, it has less backwash and most of its sediment is dropped during the swash, so it becomes a constructive wave. However, if the wave has considerable energy, much of this energy will return to the sea in the backwash. In this instance, the wave can continue to pick up sand in the backwash and return it to the sea, becoming a destructive wave.

In Australia, waves are generally constructive during summer in southern Australia and during the dry season in northern Australia. During this time the beach expands as sand is deposited onto the beach. This sand builds up depositional landforms such as sand dunes. Wave size is determined by speed of wind, duration of wind and **fetch**.

In the winter months, there is an increase in the number of large storms and strong winds in southern Australia. This type of weather results in the creation of destructive waves. These are



Source 7.1.3 Waves increase in height when the wind blows strongly, for a long time and over a long distance (fetch). When they enter shallower water the circular movement of energy is disturbed. The forward movement of the wave causes it to break as surf.

waves with huge amounts of energy that wear away coastal areas. Destructive waves erode beaches and headlands, and create considerable damage.

Weathering

Although waves are the most important agents of erosion, there are other agents that impact on the wearing down of a coast.

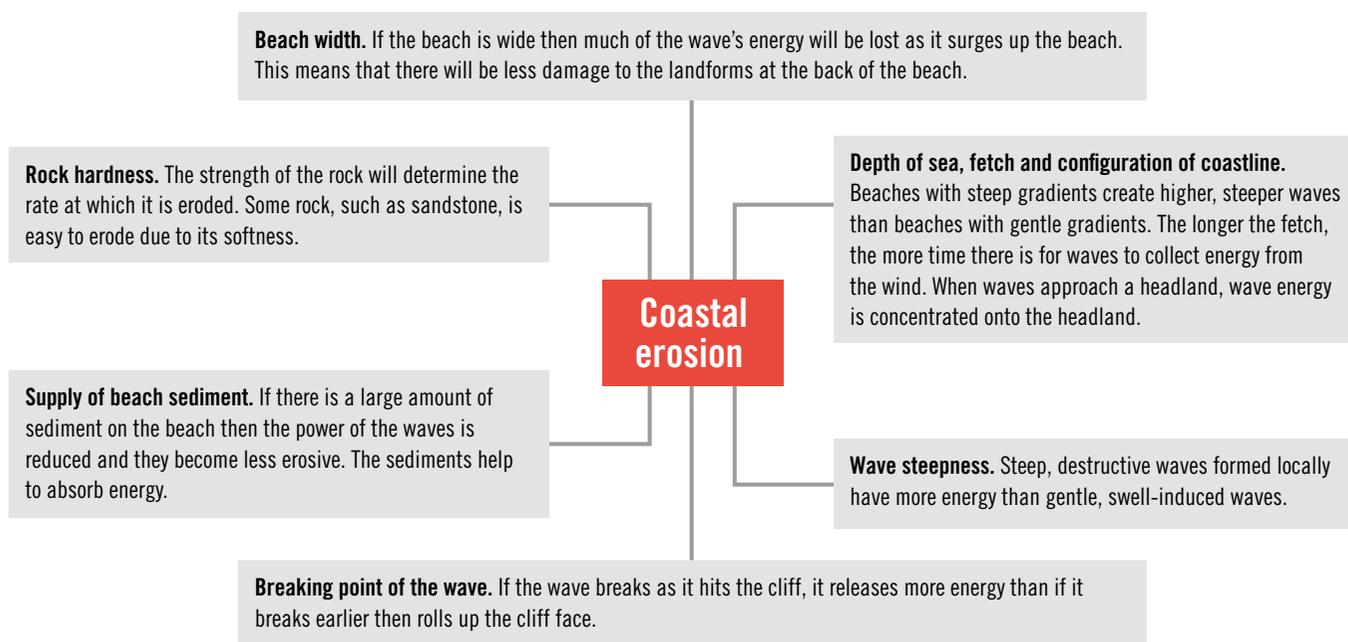
- Salt-spray weathering gradually breaks up the surface of rock because the salt particles expand and contract as they dry out in the sun.
- Plant weathering breaks up rock, as plants send tiny roots into **joints** (gaps within the rock).
- Animal weathering occurs when sea creatures attach themselves to rock. The animals produce chemicals that attack minerals in the rock, breaking it down.

Erosion

Erosion is the transporting of material that has been weathered (worn away) from one place to another. There are two types of erosion: wind and water. In the coastal environment, water erosion occurs mostly through waves and the coastal rivers that carry swash sediments from inland areas out onto the coast. Wind erosion is very important in the formation of sand-based landforms such as coastal dunes. The factors affecting the rate of erosion are shown in Source 7.1.4.

There are six main types of coastal erosion.

- **Wave pounding** Large waves transport huge amounts of energy. When waves break against rocks they weaken the rock's structure, causing small pieces of rock to break away.
- **Hydraulic pressure** When a wave strikes against a rock surface a small amount of air is trapped in cracks within the rock face. As the air is compressed by the weight of the water, pressure is exerted on the rock. Over time this weakens the rock face.
- **Corrosion/Solution** This process is similar to the formation of rust on metal. A chemical reaction between air, the salt in the seawater and the rock surface causes small particles of rock to disintegrate.
- **Abrasion/Corrasion** As a wave breaks it throws sand, small rocks and sometimes even large boulders against rocky coastlines. This action gradually wears away the rock, much like sandpaper does to a piece of wood.
- **Attrition** When a large piece of rock falls away, the waves gradually wear it down into smaller rock particles and eventually sand.
- **Land-based erosion** Water running from the land can also erode the coastal environment.



Source 7.1.4 Factors affecting the rate of erosion along a coastline

Deposition

Many of the features you see at the coast (such as beaches, sandbars and sand spits) are built up by deposition. Waves and currents move sand along the coast and deposit it in large piles or strips. Beaches are the best known of these features and are formed only where there is a good supply of sand and some form of protection to prevent the sand from being eroded away.

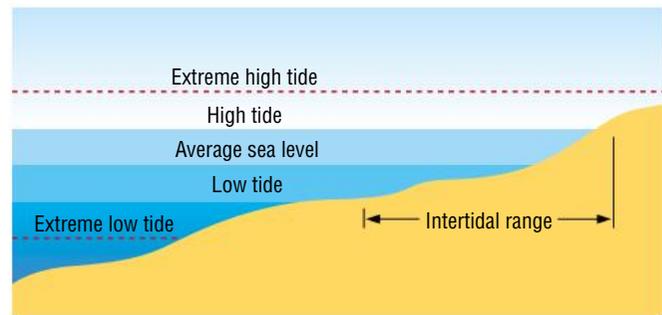
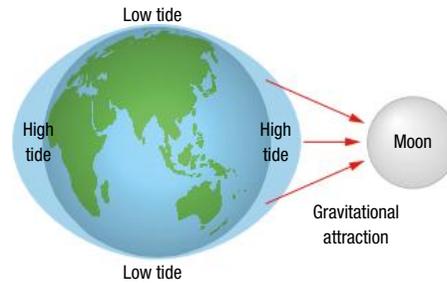
Tides and currents

Tides are caused by the gravitational pull of the moon on the oceans. Source 7.1.5 shows this effect. They vary greatly in height from one place to another. While most places have an average of a few metres between high and low tides, there are places where the height of the tide rises by 20 or 30 metres.

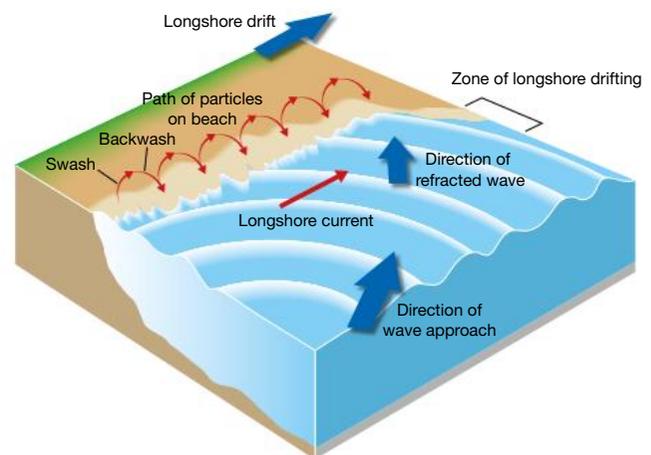
Ocean currents play a very important role in distributing sediments and also in regulating temperatures. Ocean currents carry cool water away from the North and South poles towards the Equator and warm water from the Equator towards the poles. In this way they help to create milder climates.

Longshore drift

Along many coastlines a special type of current known as **longshore drift** occurs. This current plays a major role in the movement and deposition of sediment, and is very common along the eastern coast of Australia. Longshore drifts, shown in Source 7.1.6, run parallel to the coastline, carrying the sediments that destructive waves have eroded from beaches. These sediments can be carried very long distances. The prevailing wind also affects longshore drift.



Source 7.1.5 The effects of gravitational pull by the moon and the sun cause the daily and monthly pattern of tides.



Source 7.1.6 Longshore drift

ACTIVITIES

Remembering and understanding

- 1 Distinguish between erosional and depositional coasts.
- 2 Explain how waves form.
- 3 Explain what weathering is.
- 4 Outline the various forms of weathering that shape the coastal environment.
- 5 Name three landform features associated with the process of deposition.

Applying and analysing

- 6 Study Sources 7.1.1 and 7.1.2.
 - a Construct a Venn diagram and list the similarities and differences between the coastal landscapes shown in the photographs. Include a definition explaining the differences between erosion and deposition.
 - b Construct a mind map of all the different ways that the coast is changed by natural processes.
- 7 Study Source 7.1.6. Explain, in your own words, the process of longshore drift.

Erosional landforms

Coastlines

Many coastlines are made up almost entirely of rock. Wave erosion dominates these coasts. Storm waves undermine cliffs and gradually wear away headlands. Sometimes the largest waves that break on coasts are caused by storms hundreds of kilometres away. The wind may be so strong that it builds up huge waves that travel uninterrupted across the sea.

Power of waves

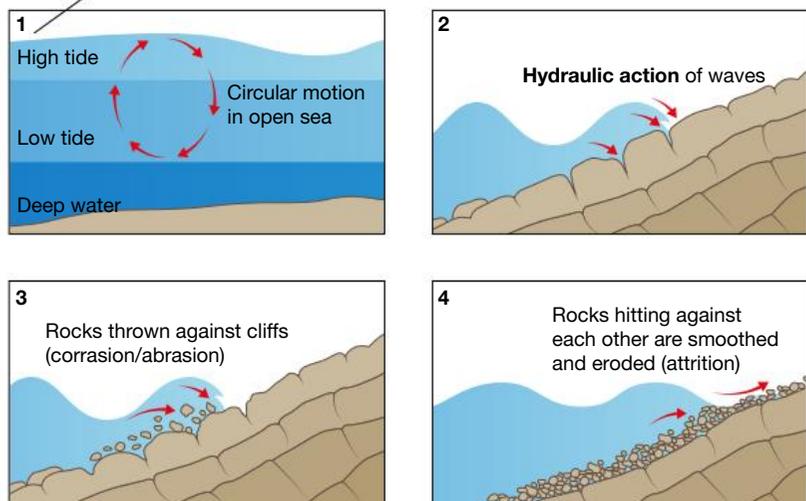
Waves move from the deep ocean towards the shallower waters of the coast. As they do this, their circular motion becomes affected by the frictional drag of the ocean floor. This causes the bottom of the wave to move more slowly than the crest and the circular motion is increasingly distorted; the wave increases in height until it finally plunges forwards as a breaker. The energy of the wave is released and the work of erosion, transportation and deposition takes place. This process is outlined in Source 7.2.1. On exposed coasts, these are the dominant processes in the area between low and

high tides. Waves are most active during storms, when high winds create large, high-energy waves.

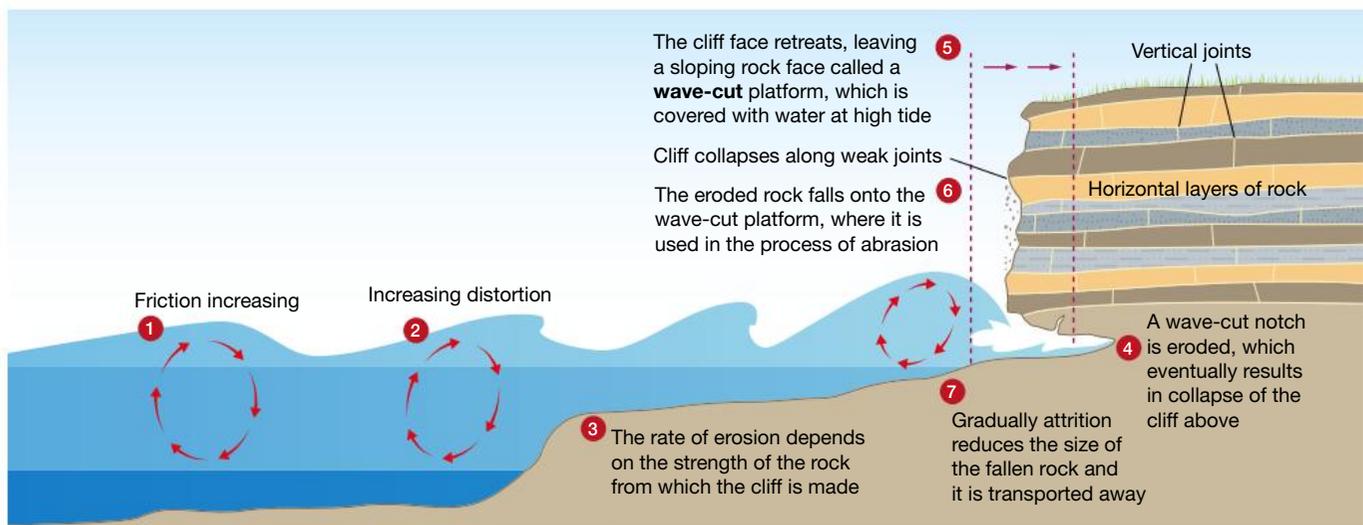
Coastal erosion

On coasts with cliffs, wave action is concentrated at the base of the cliff. This process is outlined in Source 7.2.2 and illustrated in Source 7.2.3. Coastal erosion occurs very quickly when the cliffs are formed from softer rock, such as sandstone.

At high tide, deep water allows bigger waves with greater energy to reach the cliffs, increasing erosion.



Source 7.2.1 Processes of wave erosion



Source 7.2.2 Coastal processes and landform features on a rocky coast

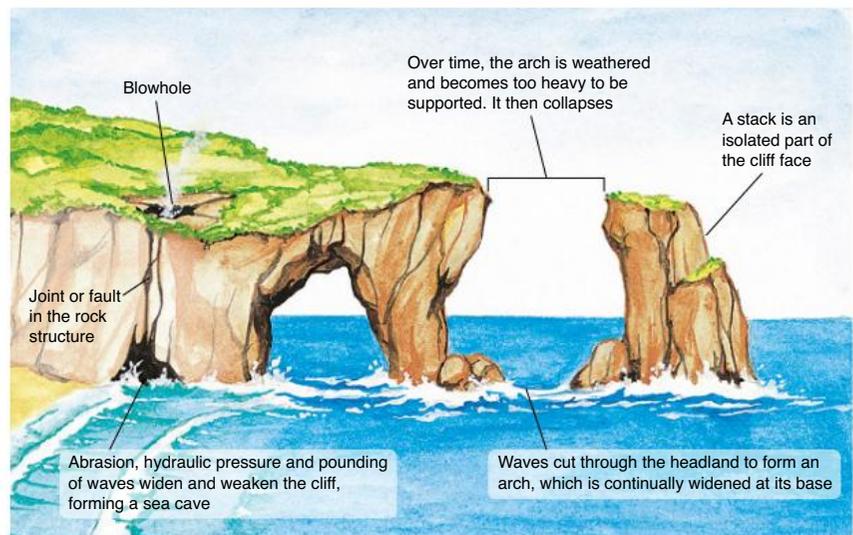


Source 7.2.3 Cliff face, notch and wave-cut platform, Newfoundland, Canada

Stacks and arches

Some sections of rock within a cliff face may be more erosion-resistant than others. The softer rock around more resistant rock is eroded more quickly, leaving the harder rock as an outcrop along the coast. The sea may then eventually erode the less resistant rock on all sides of this outcrop. The resistant rock is left as a small island or stack, shown in Source 7.2.4.

Occasionally, the stack may be left linked to the headland by an arch. This arch will eventually fall as more weathering and erosion occurs.



Source 7.2.4 Formation of sea caves, arches and stacks

ACTIVITIES

Remembering and understanding

- 1 Explain the power of waves and the effect of shallow water.
- 2 Explain why cliffs erode at different rates.

Applying and analysing

- 3 Study Sources 7.2.2 and 7.2.4. With knowledge gained from the text and your own research, write a report explaining the events and processes responsible for the formation of stacks and arches.
- 4 Construct a photo sketch of Source 7.2.3. Annotate your sketch with the names of coastal landform features mentioned in this unit.

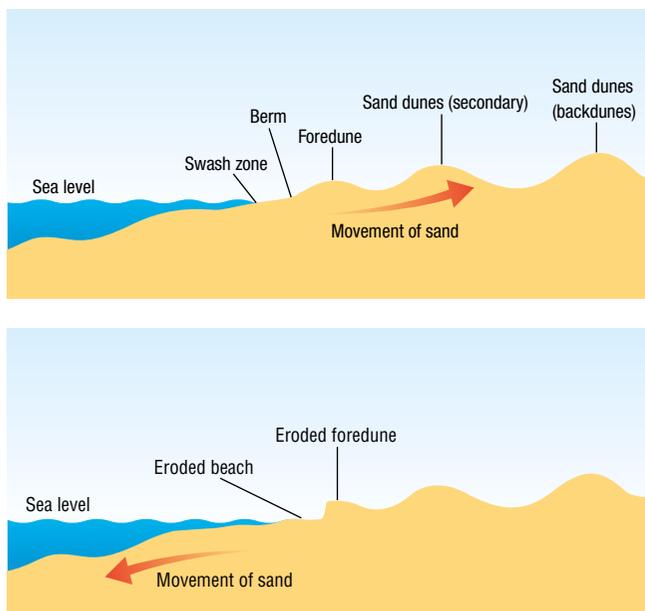
Depositional landforms

Beaches

Beaches are familiar landforms seen on many coastlines. They can be made up of any deposited material, including shingle (small, rounded pebbles), but most beaches are made from sand. The sand is distributed along the beach by wave movements. It may be brought to the coast by rivers, or it may be deposited by waves from eroded rock material along the coast.

Because beaches are made up of loose material, their location depends on the actions of the waves and rivers. Sand is continuously being deposited on beaches or taken away from beaches by waves. Beaches will form only in a place where there is a good supply of sand, and where they are protected enough to give the sand a chance to build up. On most beaches there is a continuous cycle of erosion and deposition. In seasons of strong winds and storms, the sand is taken from the beach and is often stored offshore as **sand bars** in shallow waters. In seasons of calmer seas and light winds, the sand is gradually deposited on the beach.

Source 7.3.1 shows this cycle of erosion and deposition. The cycle affects not only the size and shape of the beach but also the dunes behind the



Source 7.3.1 Sand deposition and erosion

beach. When storm waves are very large, they erode the beach and may also eat into the dunes.

Beach components

All beaches have three main components.

- 1 The **swash zone**—this is the most active part of the beach and is where the waves crash onto the beach and run up and back down. In this part of the beach the sand is always wet.
- 2 The **berm** and **foredune**—a ridge of sand called the berm develops at the top of the swash zone where waves lose their energy and begin the backwash. The waves deposit sand up to this point. The foredune begins after the berm.
- 3 Coastal sand dunes—dunes are landforms created by the wind. Dried sand is picked up by winds blowing from the sea and deposited over the land.

Dune formation

Behind a beach there are often **sand dunes**. These are built by the wind blowing loose, dry sand from the beach inland, where it accumulates to form a number of dunes called the foredune (or primary dune), secondary dune and backdune. The sand in the dunes is anchored, or stabilised, by plants.

Dunes are a very important part of the sand cycle. They prevent storm waves from extending into low-lying areas behind the beach. For a sand dune system to exist there has to be a large supply of sand, long periods of dry weather and frequent onshore winds.

As sand begins to accumulate in a dune, plants start to settle and grow. The first colonisers bind the sand together with their roots. This creates a more stable environment in which more and different plants can grow. Each following group of plants is taller and more complex, as the growing conditions are gradually improved by earlier plants.

Dunes are found along many beaches in Australia. They have been used for recreation, mined for sand and rare minerals, used as rubbish dumps, built



Source 7.3.2 The sand in these Tasmanian dunes is anchored, or stabilised, by plants.

over for housing and, in many areas, completely removed. People are now much more concerned about conserving dunes in their natural state. There is more public awareness and understanding of how easily dunes can be damaged. Planning rules now protect dune systems in many coastal areas.

Sand spits, bars and tombolos

Sand spits form in shallow water where waves dump sand, creating a narrow strip of land. The water behind the spit is usually very calm and it is common for mangroves or salt marshes to develop there. In some places, a sand spit forms across the mouth of a bay, joining two headlands. This is known as a bar. A tombolo is a rare form of spit that forms between the mainland and an island.



Source 7.3.3 A sand spit, Fingal Bay Tombolo, Port Stephens, New South Wales

ACTIVITIES

Remembering and understanding

- 1 Identify the conditions necessary for a dune build-up.
- 2 Outline how plants anchor the surface of a sand dune.
- 3 Explain what causes the changes in erosion and deposition on a beach.

- 4 Explain the difference between spits, bars and tombolos.

Applying and analysing

- 5 Describe the destructive effects on sand dunes of some human activities carried out on or near dunes, such as mining, building houses, walking, boating and planting trees.

Managing coastal landscapes

Damage to coastlines

Coastal landforms need to be carefully managed. There are many natural events that can cause damage to coastlines. For example, large storms create powerful waves that can erode depositional landforms such as beaches and sand spits. Coasts have evolved to deal with these natural events and, over time, they repair themselves.

Human activities

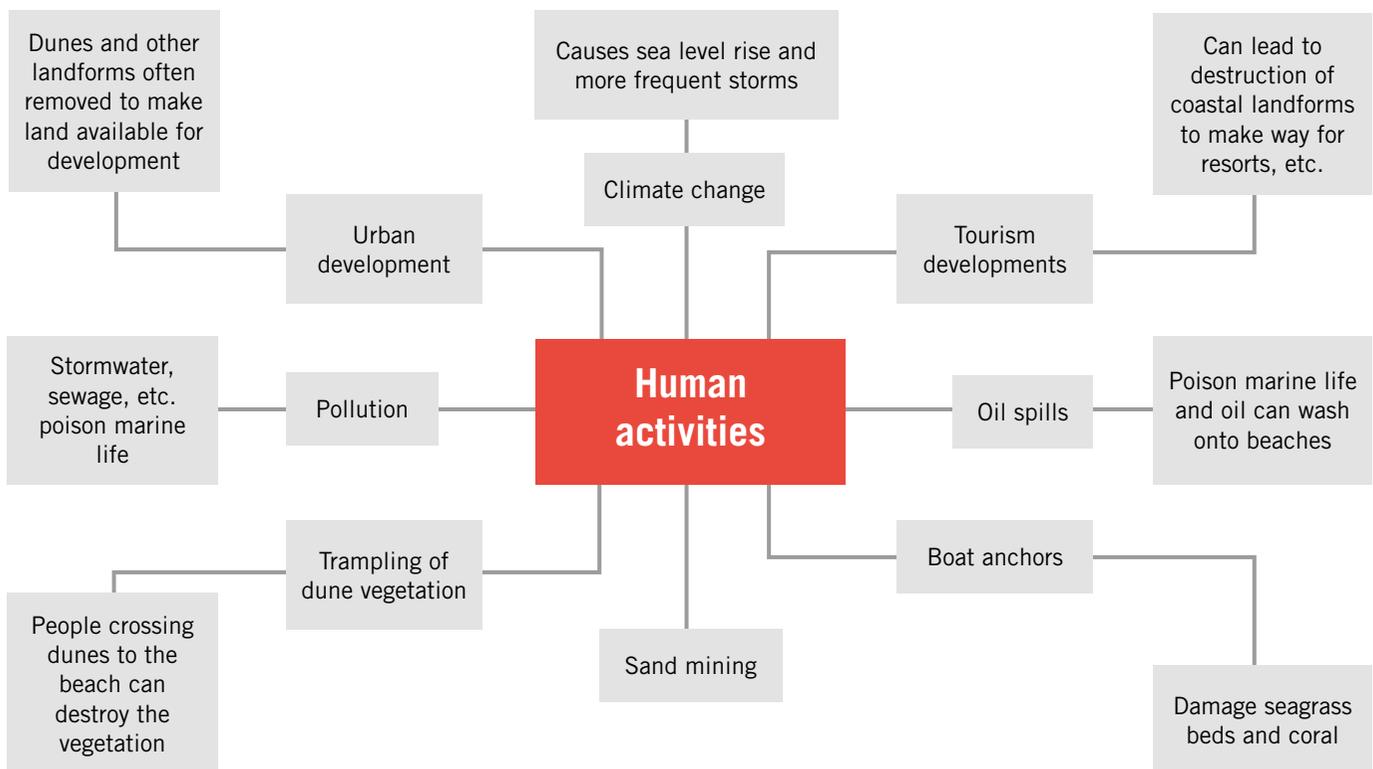
Human activities have a great impact on coasts. Thirty-eight per cent of the world's population live within 100 kilometres of the coast and 44 per cent live within 150 kilometres. In addition, many of the world's largest cities are found on the coast. As a result, there is significant competition for the resources of coasts. As the world's population continues to grow, and more and more pressure is placed on coastal environments, the need for careful management becomes ever greater.

Source 7.4.1 outlines some of the main human activities that threaten coastal environments.

Managing beaches

After a day of heavy human activity at the beach, the tide gradually washes away most of the signs of usage and redistributes the sand. However, humans can permanently damage beaches in more indirect ways.

Longshore drift is a natural process that shifts sand along the beach. If interruptions to this movement are built along the beach, the sand piles up against them, while other parts are deprived of sand. If the supply of sand is reduced (for example by building on the dunes or by damming rivers, which stops the supply of sand from rivers), the beaches may not be replenished sufficiently by longshore drift. This means that sand is stripped away at a faster rate than it can be replaced.



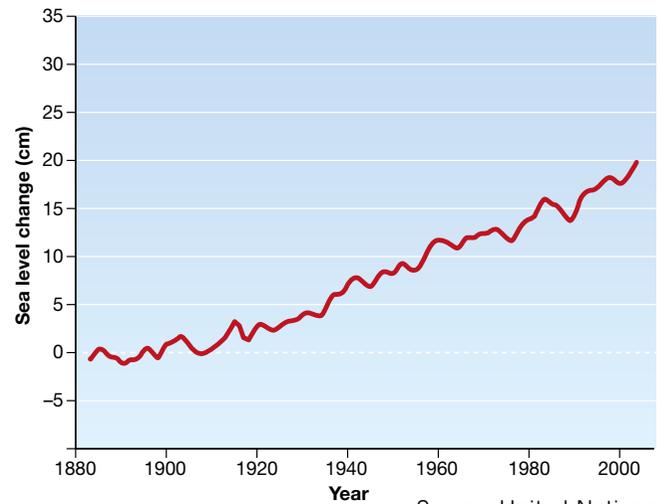
Source 7.4.1 Human activities that threaten coastal environments

Climate change and coastal landforms

Climate change is one of the most significant threats to the coastal environment. Global temperatures have been steadily rising for many decades and the overwhelming majority of scientists now believe that this is the result of humans burning fossil fuels, such as oil and coal, and the resulting release of CO₂ gas into the atmosphere.

Climate change will have two main impacts on coastal environments.

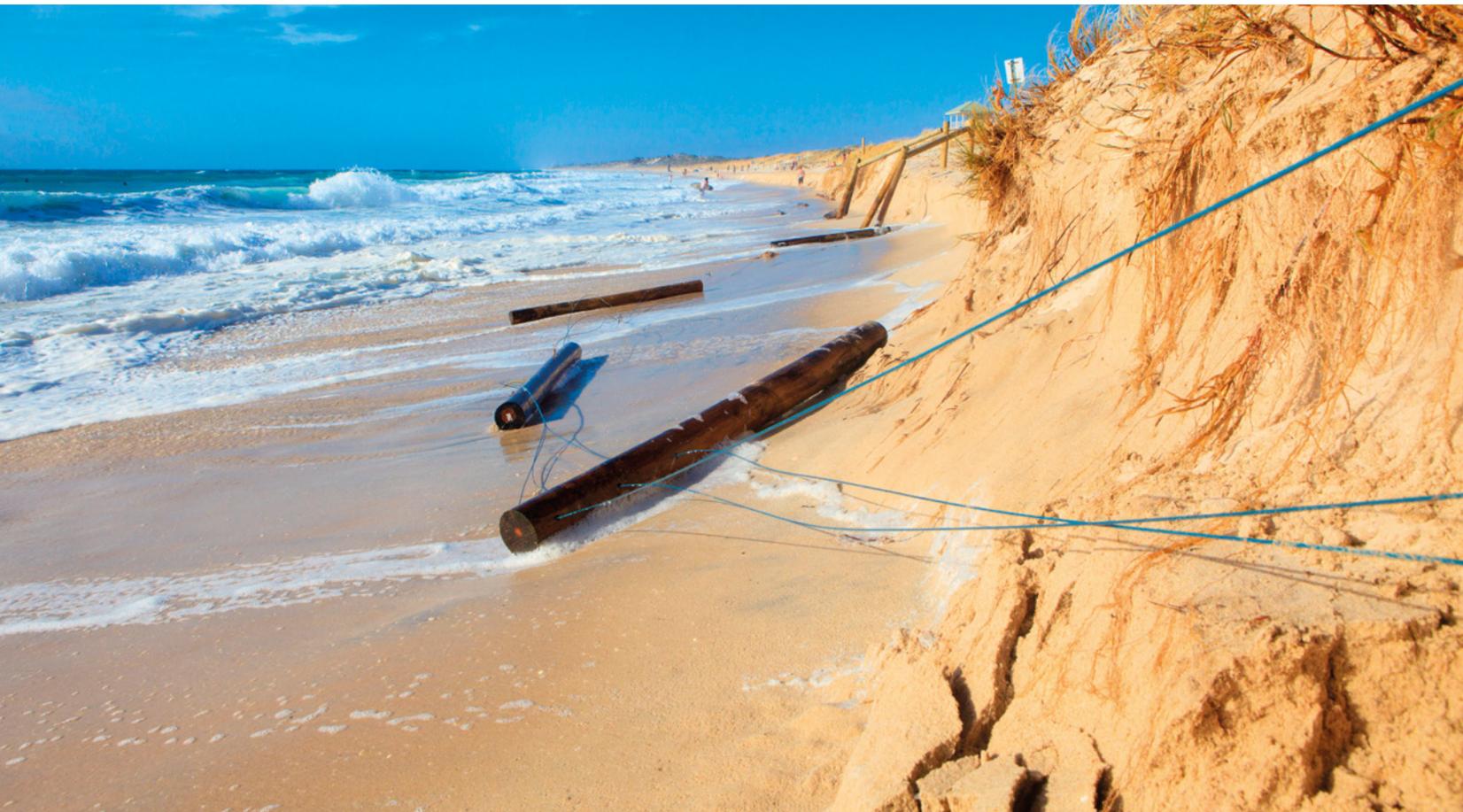
- 1 Sea-level rise** As sea temperatures rise due to global warming, the seawater expands. This is called thermal expansion. The melting ice caps in Antarctica and Greenland release huge quantities of water into the sea (Source 7.4.2). High sea levels pose a real risk to low-lying coastal areas, making them susceptible to flooding.
- 2 Increased storm activity** Warmer temperatures create ideal conditions for large storms,



Source: United Nations

Source 7.4.2 Rising sea levels are a major threat to coastal landforms.

especially cyclones. Climate change is leading to more frequent and more intense storms, and this is creating more erosion and damage along coastlines, as shown in Source 7.4.3.



Source 7.4.3 Coastal erosion, Swanbourne Beach, Western Australia

Building groynes

To overcome these problems, **groynes** may be erected to slow down longshore drift, as shown in Source 7.4.4. These trap sand so that it piles up on one side of the groyne. This means, however, that on the other side of the groyne the sand level is lower.

If the sand supply is limited, a scheme of artificial sand replenishment may be undertaken. This involves sand being taken from a beach with plenty of sand, or dredged from offshore, and transported to a depleted beach by truck or pipeline. Shifting and dumping sand by truck is reasonably effective and inexpensive in the short term. Building pipelines to bring sand from other beaches or from offshore is a more expensive approach but is often much more effective. Source 7.4.5 shows a range of coastal management strategies.

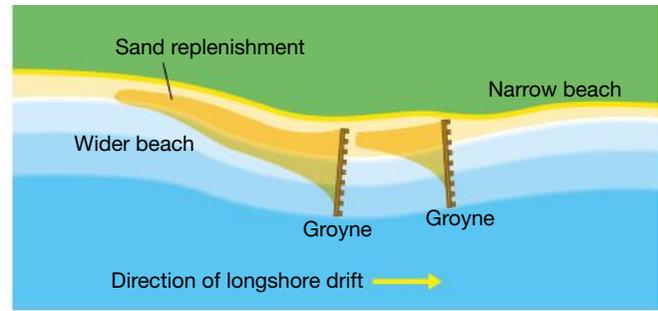
Managing dunes

Dunes are the most fragile part of the beach. Erosion of sand dunes is a major problem in many areas. It occurs whenever vegetation is removed, allowing the sand to blow away and the dune to shift. If a large section of a dune is blown away, a large, bare depression called a **blowout** forms. Strategies used to manage blowouts include the planting of new stabilising groundcover plants. To prevent the destruction of plant cover, walkways are often built through the dunes to keep people on set paths. The remainder of the dunes is then fenced off.

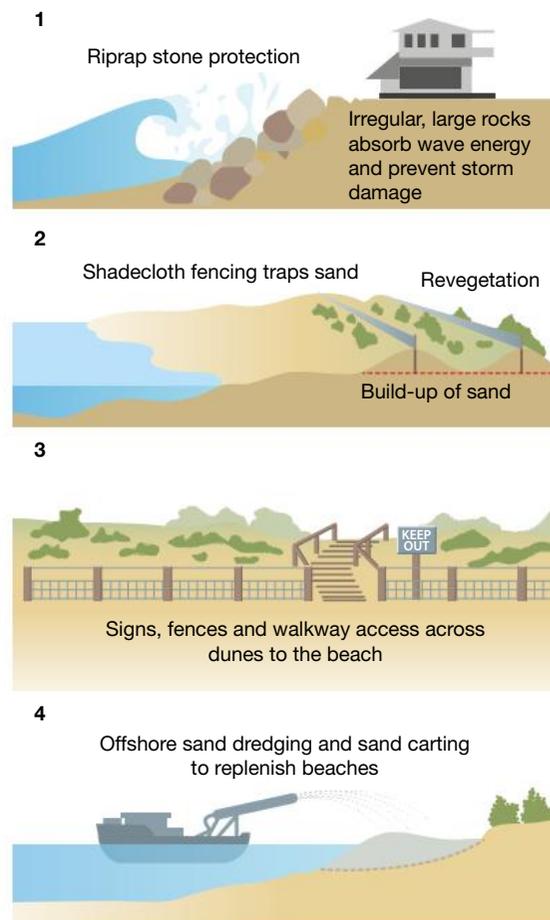
Managing coastal land uses

To ensure that the best use is made of coasts, careful planning and consistent management are required. In the past, most coastal areas were developed without any overall plan. Only when problems arose and it was recognised that the coastal land was under pressure was a plan developed. Therefore, any plans developed had to accept and take into account many of the existing land uses. Planners could only slowly change land uses due to the rights that owners had over their land.

Management now involves large-scale land use plans, together with day-to-day administration of development permits to make sure that anything that is built or altered fits into the overall planning aims. Local councils usually administer these processes. Their aim is to make sure that new developments do



Source 7.4.4 The natural movement of sand along a coast by longshore drift can be altered by constructing groynes or replenishing beaches with sand.



Source 7.4.5 Some of the strategies used to manage coastal environments

not interfere with existing land uses and the rights of residents, and that whatever is built is for the future benefit of the area.

State governments may have an overall management plan for the whole coast. The aim of this plan is to ensure that the physical and environmental character of the coast is not damaged.

Management options

There are four main options for managing coastal environments.

- **Use hard engineering** Building sea walls, groynes, **riprap** and other hard structures is very expensive and these structures are often unsightly. See Source 7.4.6 for an example.
- **Use soft engineering** Building up beaches with sand-replenishment schemes can be expensive
- **Discourage building and development** This is a long-term measure. It needs the cooperation of local, state and national governments. It is often unpopular with local residents or developers.
- **Do nothing** This may be possible in sparsely populated areas but is increasingly impossible in highly populated areas.



Source 7.4.6 Sea walls are examples of 'hard engineering' used to protect coastal development. While such walls absorb the power of the waves, they are expensive to build and maintain, and can cause more erosion because they reflect much of the energy of the waves; that is, as the wave bounces off the wall it carries away with it sand from the beach.

ACTIVITIES

Remembering and understanding

- 1 Outline the damage that natural events can cause to coastal areas.
- 2 Describe the impact of climate change on coastal environments.
- 3 Explain why artificial sand replenishment is used on some beaches.
- 4 Explain why development plans and permits are necessary for coastal areas.

Applying and analysing

- 5 Study Source 7.4.1.
 - a Describe one human impact on coastal environments and develop some strategies for dealing with the issue.

- b List the controls that should be put on coastal development. Do you agree that governments and councils should be able to control all building and development along all coastal areas? Use a SWOT analysis to help you with your discussion.

Evaluating and creating

- 6 Take on the role of an advertising agent. You have been commissioned by the state government to design a poster campaign to help reduce the damage done to sand dunes by people.
- 7 Write a report outlining the importance of dune systems and describing the strategies that can be used to manage dune systems.

Investigating coasts

The aim of this fieldwork is to investigate a coast. Coastlines are wonderful places to undertake fieldwork and there are many different activities you can do to investigate the geographical processes taking place along coastlines.

Preparation

The following equipment will be required to investigate a coast:

- ruler and measuring tape
- ranging pole (a pole on which measurements are marked)
- stopwatch
- camera
- compass
- three tennis balls
- anemometer, a hand-held weather device or a copy of a Beaufort scale
- **clinometer**
- hand lens

Select a beach that is easy to access at a variety of locations, as you will need a shoreline long enough to carry out activities.

Investigating waves

Waves can be either destructive or constructive. Destructive waves are powerful and cause erosion of the coastline. They are usually associated with storms. They commonly occur in winter in southern Australia but are more frequent during the summer cyclone season in northern Australia.

Constructive waves are much less powerful than destructive waves. Instead of eroding the coastline they deposit sediment on the beaches and in this way 'construct' the coast. They are usually associated with calmer weather, common during summer in southern Australia and winter in the north.

Constructive waves tend to be surging or spilling waves. Usually, the water is cloudier, as it contains sediment. You can often actually see the sand in the wave as it breaks.

Destructive waves are usually plunging and collapsing waves. The water is usually clear, although as these waves are very powerful there is often a lot of 'white water' associated with them.

STEP 1

Choose a location high up, such as a headland, and look carefully at the waves.

STEP 2

Take photos of the waves you observe and use Source 7.5.1 to help you identify them.

Wind direction and speed

To measure wind direction and speed, complete the following steps.

STEP 1

With the aid of a compass, record the direction from which both the waves are coming and the wind is blowing. Are they the same? What is the relationship between wave direction and wind direction?

STEP 2

Using an anemometer, a hand-held weather device or a copy of a Beaufort scale, estimate the wind speed.

STEP 3

Using a stopwatch or an appropriate app on your smart phone, count the number of waves breaking on the shore in one minute. Compare your count with the information in Source 7.5.2. Describe the potential impact of the waves observed.



a
A collapsing wave occurs when the whole wave becomes unstable and collapses on top of itself.



b
A plunging wave forms when the crest of the wave curls over the front face and falls into the base of the wave. This produces large amounts of foam and a high splash. It is often called a dumper.



c
A surging wave occurs when the crest of the wave remains unbroken while the base of the wave moves up the beach.



d
A spilling wave occurs when the wave crest becomes unstable and topples down the face of the wave. This wave is often referred to as a roller.

Source 7.5.1 Types of waves

Investigating longshore drift

To investigate longshore drift and the direction of water and sediment movement along a beach, complete the following steps.

STEP 1

Throw three tennis balls into the water in this order—one in the middle of the surf zone, one on the water's edge and one as far out as you can throw it. Before you do so, guess which ball will travel the furthest.

STEP 2

Mark the point on the beach where you cast the balls into the water. It is important that the balls are thrown in a straight line perpendicular to the beach.

STEP 3

Follow the progress of the balls. Use a tape measure to measure the distance travelled along the beach by the balls. Take the measurement every five minutes. Record your data.

Number of waves per minute	Potential impact
6–9	Beach is being built up
0–5	Beach is stable
11–15	Beach is being eroded

Source 7.5.2 Potential impact of waves on beaches

STEP 4

Record the direction the balls travelled over the course of the activity. The results of this activity will show you the direction in which water (and therefore sediment) is moving along the beach.

STEP 5

Using a camera, identify any landform features along the section of coastline that are a result of the process of longshore drift.

Identify any biophysical or constructed features of the landscape that would disrupt the movement of sediment associated with longshore drift.

Constructing a transect

A transect is a straight line that joins two points. Geographers use transects to show how things change. For example, you can construct a transect to see how the shape of the land (topography) changes. This is called a cross-section. You can also construct transects that show vegetation, soils and human activities.

By constructing a transect through a coastal dune you can see how they change as you move further inland away from the beach. You can investigate topography, vegetation and soil, as well as the impact of humans.

Remember, as you collect your data, stay on the paths through the dunes so you don't damage the fragile vegetation.

STEP 1

Working in small groups, begin to record the data for your transect. To construct your cross-section you will need a tape measure and a clinometer (a instrument that measures the angles of slopes). Sources 7.5.3 and 7.5.4 show you how to make and use a simple clinometer.

STEP 2

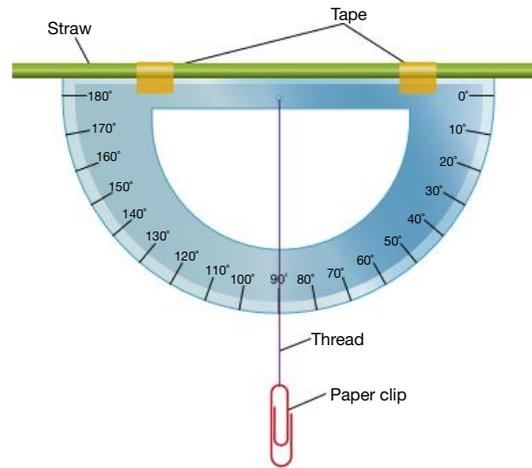
Use the tape measure to calculate the horizontal distance between the dune features, for example from the beach berm to the foredune. Then use the clinometer to measure the steepness of the incline (or decline). Record the distance and the angle for each feature.

STEP 3

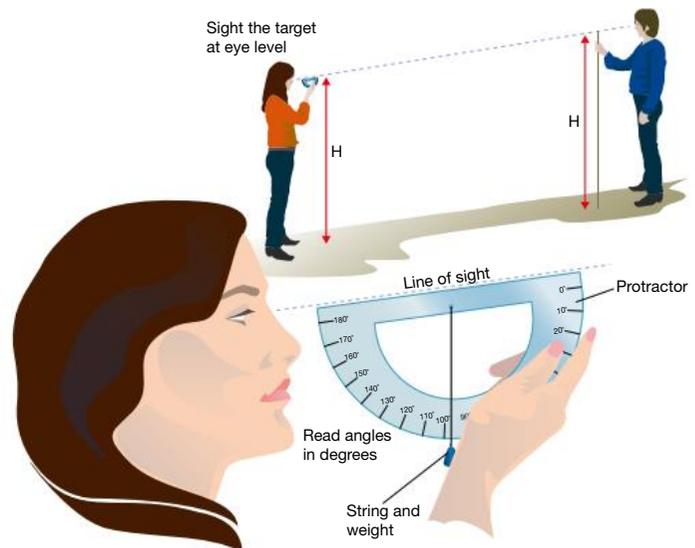
At each feature also investigate the soil and the vegetation. Using a hand lens and a ruler, measure the size of the grains of sand and note their colour. Usually, the grains become smaller the further away they are from the beach, and the soil becomes darker, as it contains more organic material. Record this data on your table. For each feature write a description of the vegetation and take a photo. Lastly, record any evidence of human impacts.

STEP 4

Source 7.5.4 shows how to use the clinometer. For your transect, measure the angles of the slope each time there is a change. For example, start at the berm and work backwards to measure the change in angle to the foredune, and so on. You will need to



Source 7.5.3 Making a simple clinometer. Clinometers are special instruments that show the steepness of a slope by measuring its angle. If you don't have access to a clinometer you can make one using a simple protractor, some string and a weight.



Source 7.5.4 Using a simple clinometer

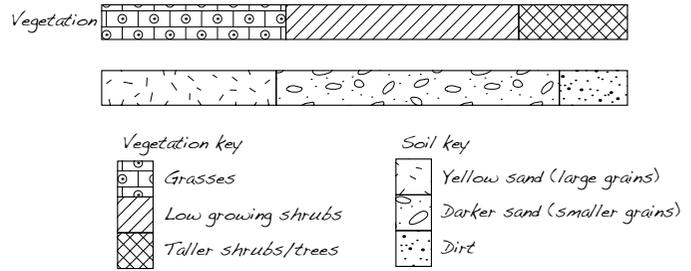
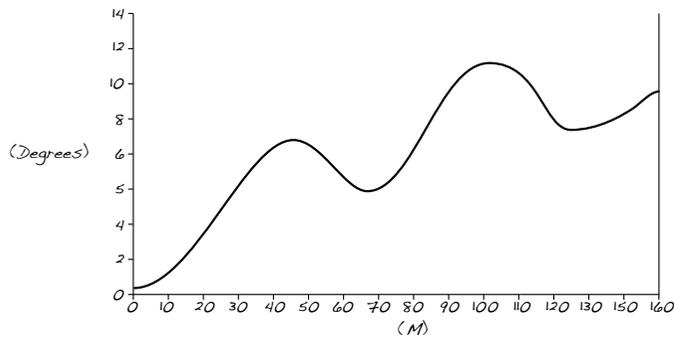
use a common marker, for example a metre ruler or even the top of your partner's head.

STEP 5

Back at school you will need to draw up a frame in which to construct your transects. Along the base of the frame make a scale and then include scales for the horizontal distance as well as the changes in angle measured in degrees.

STEP 6

Transfer the data from your field trip and join the dots with a line. Add boxes to record soil and vegetation. You will need to develop a key for this. Source 7.5.5 shows an example of a series of simple transects.



Source 7.5.5 Example of transects

ACTIVITIES

Aim

To investigate a coastline

Instructions

- Select a suitable beach to investigate and obtain a map of the area investigated.
- Investigate waves.
 - Observe and collect images.
 - Paste and annotate your images.
- Record the wind speed on the beach.
- Measure wave direction and speed.
- Investigate longshore drift and record your data in a table like the one below.

Longshore drift record sheet

Time (minutes):	10	20	30	40	60
Ball 1: Furthest out					
Ball 2: Surf zone					
Ball 3: Beach zone					

- Construct a transect of the beach area being investigated. Use the table below as a guide.

Data record sheet

Dune feature	Distance from the berm (m)	Change in angle	Soils		Vegetation description	Evidence of human impact?
			Grain size (mm)	Soil colour		

- Provide a field sketch of the beach area being studied.

Evaluation

- Comment on your findings, including the following information in your response.
 - Identify the relationship between wind speed and direction.
 - Describe the impact of the wave speed and direction on the beach. For example, is the beach being built up, is it stable or is it being eroded? Explain.
 - Describe the impact of the direction of water movement on the distribution of sediment (i.e. longshore drift) in this section of the coastline.
 - Identify any landform features along the section of coastline that are a result of the process of longshore drift.
 - List any natural or constructed features of the landscape that would disrupt the movement of sediment associated with longshore drift.

Conclusion

- Describe what you have learnt about coasts.

Inquiry tasks

Deposition diagrams

Beaches are familiar landforms seen on many coastlines. They can be made up of any deposited material, but most beaches are made from sand. The sand is distributed along the beach by wave movements. It may be brought to the coast by rivers, or it may be deposited by waves from eroded rock material along the coast.

Using this information, your task is to select two landforms that are created by deposition and are found along the coast. Draw a sketch of these landforms and include annotations describing the processes that have formed them.

What is Coastcare?

Many natural events can cause damage to coastlines. Coastal landforms need to be carefully managed in order to maintain them. One organisation that focuses on the management of our coastal and marine environments is Coastcare.

In pairs, undertake internet research to find out the following:

- What is Coastcare?
- What does it do?
- Where does it operate?
- Give some examples of its programs.

Once you and your partner have completed this research, share and discuss your findings with your class.

Problems with groynes

A groyne is a wall of rocks or timber built to trap sand on a beach. The purpose of groynes is to slow down longshore drift.

Look back at the information provided in unit 7.4 and in small groups, discuss the disadvantages of constructing groynes along the coast to control the process of longshore drift. How does this affect the environment and the natural movement of sand?

With your group, research case studies such as the Tweed River Entrance Sand Bypassing Project to investigate the problems associated with the use of breakwaters which act as groynes.

A coastline story

Victoria's Port Campbell National Park is home to one of the world's most spectacular coastlines. The coastline originated 10 to 20 million years ago and, over time, the raging seas of the Southern Ocean and the strong winds that batter the coast carved an amazing collection of soaring cliffs, sea stacks, arches, gorges and blowholes.

Using internet research, create an annotated visual display (AVD) telling the story of the Port Campbell National Park coastline. An AVD is a poster or wall display combining information presented in a variety of graphic forms, including photos, sketches, tables or graphs and a summary. The word 'annotated' means to add notes or comments to the data.

The AVD should include a map showing the location of the Port Campbell National Park (include BOLTSS), and interesting facts about its:

- geographic characteristics
- environment
- use by humans, including
 - historical use
 - plant life
 - animal life
 - human impact
- management and future.



Source 7.6.1 An aerial photo of Coolangatta, Queensland and Tweed Heads, New South Wales, showing the mouth of the Tweed River

GLOSSARY

backwash the return flow of water down a beach after a wave has broken

berm a small wall of earth or sand at the back of the swash zone

blowout a gap, or break, in the dune system formed by the inland movement of sand; often caused by the destruction of dune vegetation

clinometer an instrument for measuring slope angles

corrasion the process by which surging water bombards a cliff with rock fragments and drags other fragments over rock surfaces, wearing them away; also called abrasion

depositional coast a coastline dominated by landforms made up of eroded materials

erosional coast a coastline dominated by landforms created by erosion

fetch the length of water over which wind has blown

foredune the sand dune closest to the beach

groyne a wall of rocks or timber built to trap sand on a beach

joint a gap in layers of solid rock

longshore drift the process whereby sand is moved along a beach shoreline as a result of waves approaching the shore at an angle; also called littoral drift

ocean current a flow of water in the ocean with a different temperature or salinity from the water through which it is passing

riprap a barrier built from large rocks or boulders to protect the shoreline

sand bar an area of sand deposited in shallow water

sand dune a hill of sand shaped by the wind

swash the rush of water up a beach after a wave breaks

tide the rise and fall of sea levels caused by the gravitational forces exerted by the moon and the sun, and the rotation of the earth

wave-cut a flat rock surface found at the base of a platform cliff or headland



Changing nations

The world has never before experienced urbanisation at the scale and speed that we see now in the countries of the developing world. Megacities are emerging from Jakarta to Istanbul, São Paulo to Cairo. Poor rural families are flooding into the world's urban centres, bringing challenges that have never before been seen—or met. Even the large cities of the developed world are facing challenges.

World cities

Growth

In 2007, for the first time in human history, more than half of the world’s population were living in towns and cities. This was a big increase from 1800, when just 3 per cent of people lived in cities.

Today’s urban population of 3.2 billion will rise to nearly 5 billion by 2030, when three out of five people will live in cities. Current urban population statistics are shown in Source 8.1.1. In the future, it is estimated that 93 per cent of **urban growth** will occur in developing nations, with 80 per cent occurring in Asia and Africa. In 1950, there were 83 cities with populations exceeding one million; by 2008, this number had risen to 468. Source 8.1.2 shows the increases in urban populations for different world regions, both historical and predicted.

Urbanisation

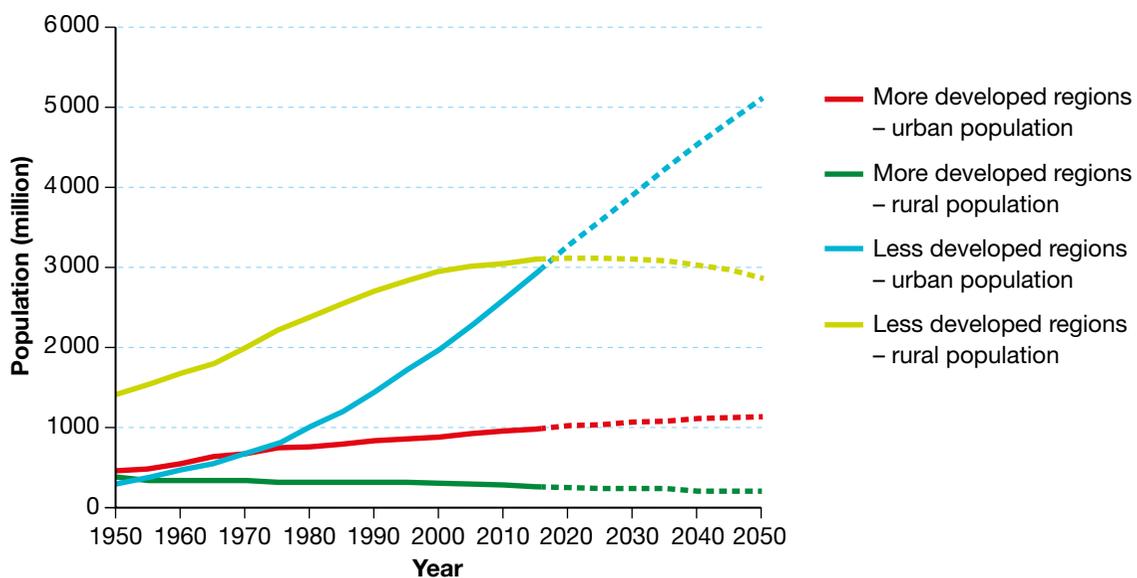
Urbanisation is the movement of people from rural areas to large cities, and occurs because of a number of **push and pull factors** (Source 8.1.3).

The most rapid rates of urbanisation are found in developing countries. Due to the enormous economic costs of providing employment, housing,

transport, clean water, electricity and sewerage systems, developing countries are experiencing difficulties in meeting the infrastructure needs of their rapidly growing populations. The world pattern of urbanisation is shown in Source 8.1.4.

Area	Percentage of people living in urban areas in 2015
Africa	40
North America	81
South America	84
Asia	47
Europe	73
Oceania	70
World	53
Developed countries	77
Less developed countries	48
Least developed countries	29

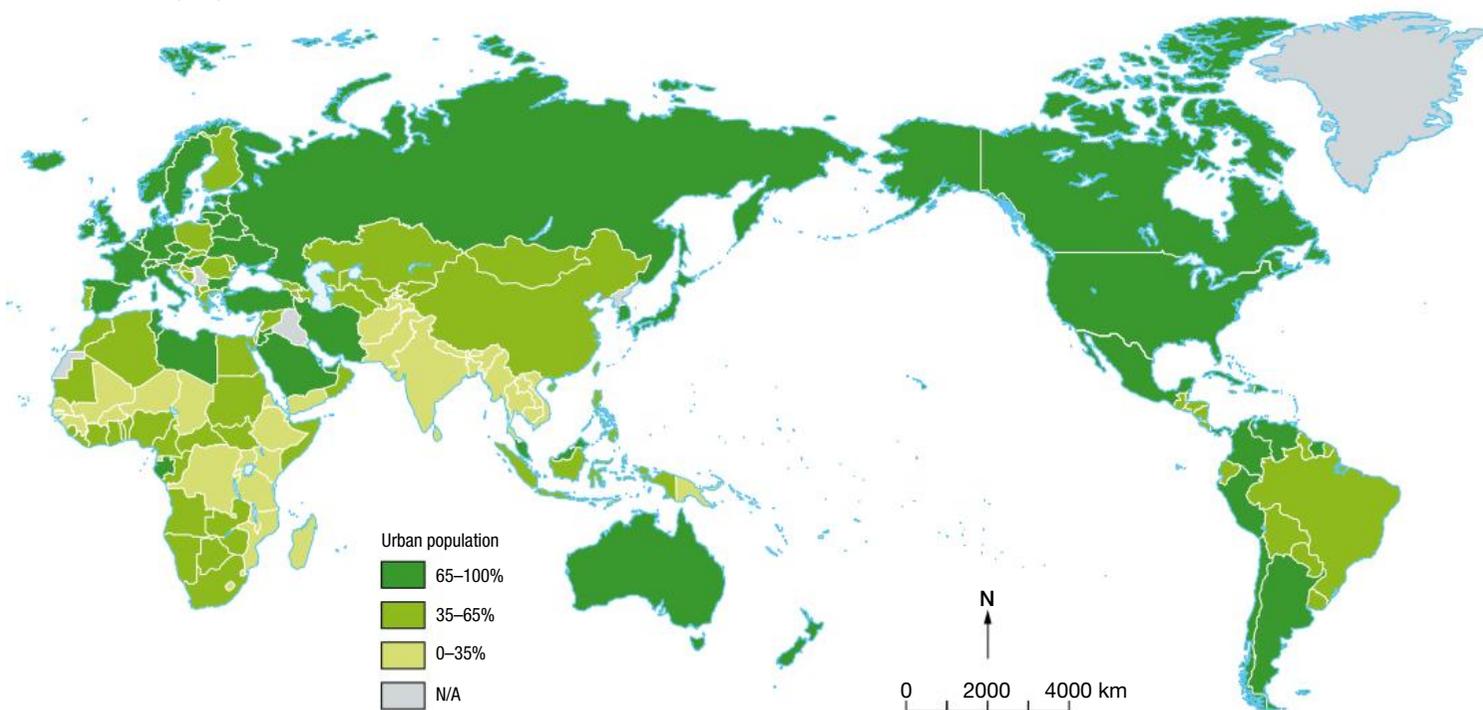
Source 8.1.1 The proportion of people living in urban areas, Population Reference Bureau World Population Data Sheet, 2015



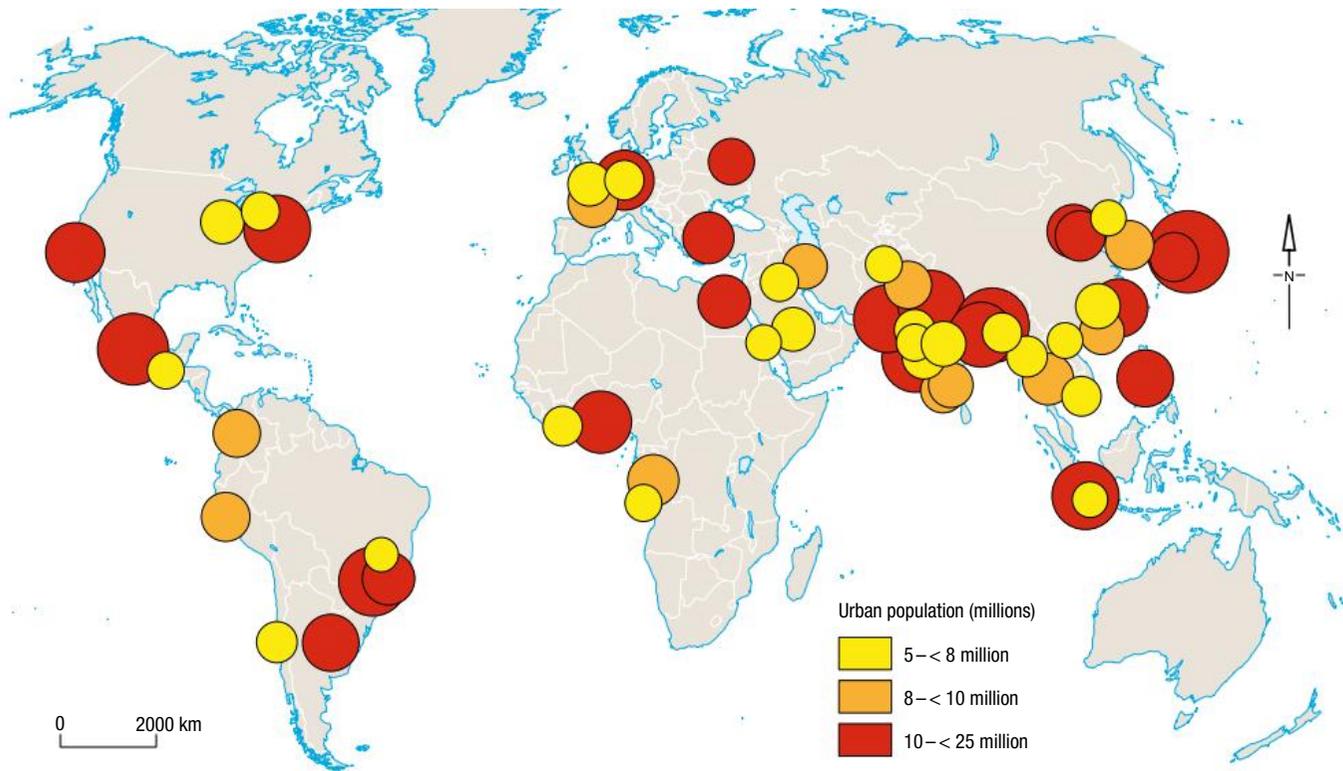
Source 8.1.2 Urban and rural populations, 1950–2050



Source 8.1.3 The decision to move to large cities often involves both push and pull factors. They may be economic, environmental, political or social factors. Push factors are reasons why people leave rural areas. Pull factors are factors that attract people to cities.



Source 8.1.4 World pattern of urbanisation, World Urbanization Prospects, the 2014 Revision



Source 8.1.5 The distribution of the world's largest cities. The biggest concentration of world cities is found in southern and eastern Asia.

Megacities

A **megacity** is a city with more than 10 million inhabitants. In 1950 there was just one megacity, New York; by 2011, there were twenty-three. Of the 10 largest megacities, seven are in Asia (Tokyo, Delhi, Shanghai, Mumbai, Beijing, Dhaka and Kolkata) and two (São Paulo and Mexico City) are in South America. New York City is the only megacity in the developed world in the top 10. The distribution of the world's largest cities is shown in Source 8.1.5.

World cities

A city that has developed into a centre of global significance is called a **world city**. These cities have a level of economic and cultural control that extends well beyond their countries. Decisions made in these cities affect the wellbeing of people throughout the world. The most important of these cities are New York, London, Paris and Tokyo. Sydney is also classified as a world city.

Impacts on rural areas

When people move from rural areas to the city there are consequences in rural areas.

More developed

In more developed countries, such as Australia, it is usually young people and people with young families who migrate to the cities. There can be severe effects on rural areas when families move to the cities. These effects include primary school closures due to lack of students, and shop and service closures because the remaining population is too small to support them.

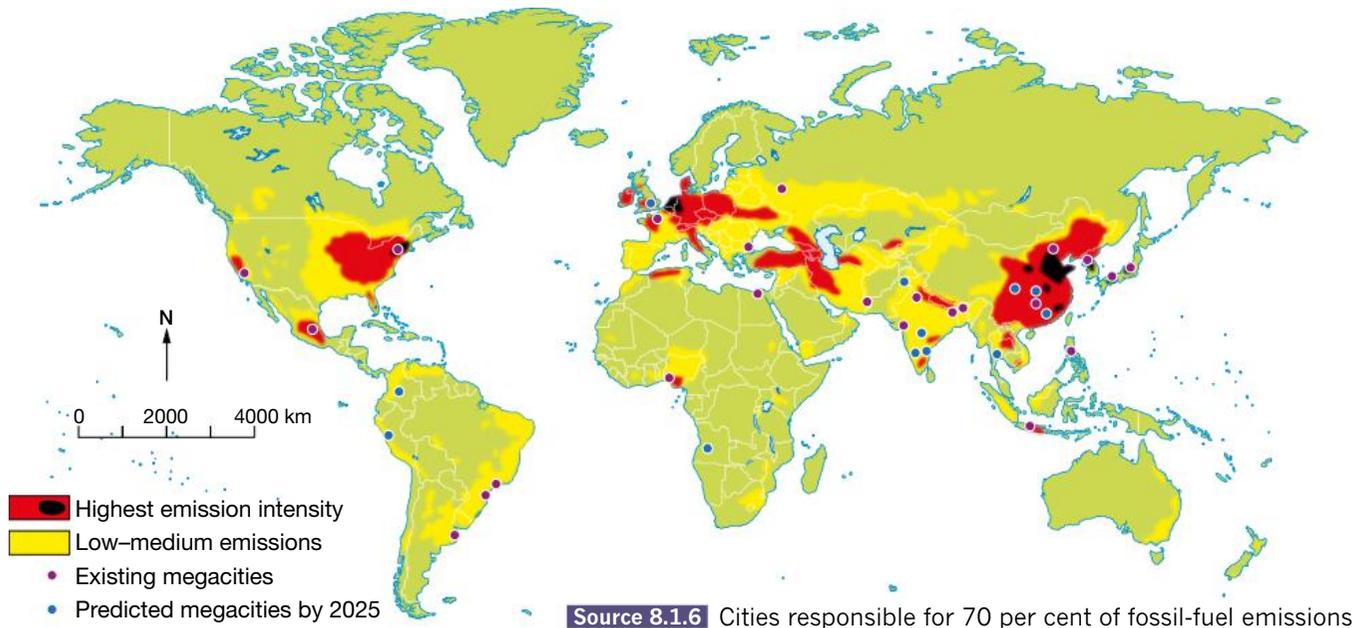
Less developed

In less developed countries it is usually men between the ages of 15 and 45 who migrate to the cities. This means that families are split up. If the family goes too, the loss of a family can have an even more severe effect on the area they leave. Often the elderly are left in the countryside—those who are least able to look after themselves and tend the land.

Environmental impacts

Carbon emissions

Cities cover three per cent of the land's surface but are responsible for 70–75 per cent of fossil fuel carbon dioxide emissions, as shown in Source 8.1.6.



Megacities are the biggest contributors to human-induced carbon emissions. Populations in cities are increasing and carbon emissions are increasing faster than population growth. The World Bank predicts that in the developing world megacities will grow by 4 per cent while their carbon emissions will grow by 10 per cent in the next 20 years. People living in cities on average use 5–10 times more energy than those living in rural areas.

Urban heat island effect

The heat island effect occurs when cities are warmer than the surrounding areas. The heat comes from

the built surfaces such as roads and buildings, which absorb heat during the day and slowly release it at night.

Water consumption

Cities use large amounts of water and produce large quantities of wastewater. As cities increase in size by population and area there is increased pressure on:

- access to safe water
- proper sanitation
- stormwater and wastewater disposal.

ACTIVITIES

Remembering and understanding

- 1 Explain the process of urbanisation in your own words.
- 2 State where the rates of urbanisation are greatest. What problems does this create?
- 3 Outline the impact that urbanisation has on rural areas in 'more developed' and 'less developed' countries.
- 4 Explain the difference between a megacity and a world city. Give examples of each.

Applying and analysing

- 5 Study Sources 8.1.1 and 8.1.2 and do the following tasks.

- a Identify those parts of the world with the highest and lowest levels of urbanisation.
 - b Describe the trends in rural and urban populations in the developed and developing worlds using data from Source 8.1.2.
- 6 Study Source 8.1.4. With the aid of an atlas, do the following tasks:
- a List the countries with more than 65 per cent of their population living in urban areas.
 - b Name 10 countries in which 0 to 35 per cent of the population live in urban areas. Where are the majority of such countries located?

Evaluating and creating

- 7 Study Sources 8.1.5 and 8.1.6 and explain the following statement. *There is a strong link between the location of megacities and increased carbon dioxide emissions.*

Urbanisation in Australia

Australia's urban population

Australia's small population (24 million in early 2016) is one of the world's most urbanised, with an estimated 86 per cent of people living in towns and cities. Australia has thirty cities with more than 50 000 people.

The growth of the state capitals

In 1910, fewer than 40 per cent of Australians lived in the six state capitals. Today the state capitals account for 67 per cent of the population. A common characteristic of these cities is **urban sprawl**. The population density of Brisbane and Perth, for example, is only one-fifth of the average in European cities. Sydney and Melbourne, Australia's two largest cities, sprawl over an area four times larger than European cities with a similar population, consume more than double the amount of fuel for transport and generate three times the amount of greenhouse gases. The continued growth of these cities threatens the quality of the water from their surrounding catchments, the quality of air and the cleanliness of the oceans.

Non-capital cities

Australia's non-capital cities tend to be much smaller than the capital cities. The largest of these are the industrial cities of Newcastle, Wollongong and Geelong, and tourist centres such as the Gold Coast. There are also **regional centres**, groups of large cities and towns, such as Tamworth, Dubbo, Ballarat, Townsville, Alice Springs and Launceston. Each of these cities and centres exists to supply goods and services to its surrounding area, or hinterland, on the edges of towns and cities. They have large shops, educational centres, professional services (such as lawyers and specialist doctors) and regional government and business offices.

Most of these regional centres continue to grow, but often at the expense of smaller rural communities. In smaller rural communities, populations are declining and levels of unemployment and welfare dependency are rising. Some shops, banks and businesses in these communities have been forced to close and some government services have been withdrawn or are now delivered by new technologies.



Source 8.2.1 Sydney is Australia's largest city.

Recent trends

The most rapid urban growth between 2014 and 2015 occurred in greater Melbourne (see Source 8.2.2). Strong growth has also taken place in Queensland coastal areas. Much urban growth is associated with the expansion of tourism and the attractiveness of these locations to retirees. Families leaving the large cities for a **sea change**, or more relaxed lifestyle in the smaller coastal communities, also contribute to this growth.

Another trend is the **tree change**, or movement of people from suburban areas to communities just beyond the fringes of large cities. Many of these people **commute** to the city for work.

Regional centres located close to Australia's major resource projects such as Karratha in Western Australia and Singleton in the Hunter Valley experienced rapid population growth during the mining boom of the mid-late 2000s. However, between 2013 and 2015, as the resources boom came to an end, the population in such areas generally began to decline.

Did you know?

Melbourne's population is expected to be larger than Sydney's by 2028.

Rank	Name	Population	Average annual growth rate 2014–15 (%)
1	Sydney	4 526 479	1.5
2	Melbourne	4 353 514	2.0
3	Brisbane	2 209 453	1.5
4	Perth	1 958 912	1.4
5	Adelaide	1 288 681	0.9
6	Gold Coast–Tweed Heads	624 918	1.8
7	Newcastle–Maitland	434 454	0.9
8	Canberra–Queanbeyan	424 666	0.7
9	Central Coast	325 082	0.7
10	Sunshine Coast	302 122	1.6
11	Wollongong	292 388	1.2
12	Hobart	209 254	0.8
13	Geelong	187 417	1.8
14	Townsville	180 333	1.0
15	Cairns	147 993	0.9
16	Darwin	123 396	1.6
17	Toowoomba	114 622	0.9
18	Ballarat	99 841	1.4
19	Bendigo	92 888	1.2
20	Albury–Wodonga	88 949	1.3

Source 8.2.2 Australia's 20 largest urban areas, 2015

Source: Australian Bureau of Statistics, cat. no. 3218.0 ds003

ACTIVITIES

Remembering and understanding

- 1 Explain why Australia is described as one of the world's most urbanised countries.
- 2 Identify the factors that distinguish Australian cities from those in Europe.
- 3 Describe the impact of the continued growth of the capital cities on the environment.

Applying and analysing

- 4 As regional centres grow, smaller communities decline. What effect does this have on the smaller community?

Evaluating and creating

- 5 Study Source 8.2.2 and then do the following tasks.
 - a Identify the capital cities with the highest and lowest rates of growth. Can you suggest reasons for this variation?

- b Identify the fastest growing non-capital urban centres. Speculate on the factors responsible for this growth.
- 6 Your advertising firm has been asked to prepare a campaign to attract people and investment to a major regional centre. In groups, develop your ideas for promoting the city. Use the following questions to guide your discussion.
 - a What does the city have to offer?
 - b Who should the campaign target?
 - c What would be the most effective way of promoting the city?
 - 7 Working in groups, develop a concept map featuring the advantages and disadvantages of a sea change or tree change. Share your group's findings with the rest of the class.

Case study: Perth

Perth

Perth is one of the world's most remote large cities. It is more than 2000 kilometres from Adelaide and over 3000 kilometres from Australia's east coast. Despite its isolation, Perth is a modern, vibrant and cosmopolitan city at the forefront of Australia's mining-based economic boom.

Population growth

Since the year 2000, Perth, shown in Source 8.3.1, has experienced a rate of population growth greater than Australia's other large cities. This growth closely reflects the changes taking place in the Australian economy. Australia's mining boom and associated development greatly increased the demand for skilled workers. People moved to the west from other Australian states

(**internal migration**) and from overseas. More than any other city in Australia, Perth attracts migrants from the United Kingdom and South Africa. People from the United Kingdom now make up 12 per cent of the city's population (compared with 5 per cent Australia-wide), and South Africans make up 1.3 per cent (0.5 per cent Australia-wide).

Geography

Metropolitan Perth extends 150 kilometres north to south along the Western Australian coast—from Two Rocks, 61 kilometres to the north of Perth, to Dawesville (south of Mandurah), 89 kilometres south of Perth. For most of this distance the urban area rarely extends for more than a few kilometres inland. Perth's most easterly suburbs are located in the Shire of Mundaring, only 30 kilometres from the CBD, shown in Sources 8.3.2 and 8.3.3.



Source 8.3.1 Perth's skyline reflects the conditions associated with the state's mining and development boom.

Perth has a Mediterranean climate with hot, dry summers and mild, wet winters. There is very little rainfall in summer, with most of the rainfall coming in winter. Perth's total annual rainfall is 850 millimetres.

Population

Perth is Australia's fourth largest city. Most of Western Australia's 2.4 million people—1.75 million people, or approximately 74 per cent of the state's total population—live in Perth. This is the highest proportion of any state's population living in its capital city.

In the decade 2001–11, the city's population grew by 25 per cent, or 346 000 people. Much of this growth was driven by the state's mining boom and associated development. At 2.5 per cent, Perth's annual rate of population growth is much higher than Sydney's (1.3 per cent), Melbourne's (1.6 per cent), Brisbane's (1.7 per cent), or Adelaide's (1.1 per cent).

It hasn't always been this way. For many years, Perth was a small, isolated city. Most of the city's growth has occurred since World War II, the era in which private car ownership became common. As a result, the city does not have a dense Victorian-era core like the large urban centres of the eastern states. Only in 1980 did the level of Perth's population overtake that of Adelaide. Today, Perth has nearly half a million more people than Adelaide.

Where population growth is occurring

Perth's population growth in recent years has been concentrated in the outer suburbs, especially those hugging the coastline. The City of Wanneroo, in the north of the metropolitan area, almost doubled in size between 2001 and 2011—an increase from 84 000 to 156 000. Most of the other high-growth areas were in the coastal suburbs to the south of the



Source 8.3.2 This satellite image of Perth highlights the importance of the ocean in shaping the geography of the urban area.



Source 8.3.3 Metropolitan Perth

city centre (shown in Source 8.3.4). These include Rockingham (up 46 per cent), Kwinana (40 per cent) and Cockburn (36 per cent). Mandurah's population increased by 52 per cent and Murray Shire's by 42 per cent. The city's south-eastern corridor also grew strongly. The population of Serpentine–Jarrahdale grew by 57 per cent and Gosnells by 31 per cent. The suburbs in the city's east are also growing. The population of the City of Swan has grown 19.1 per cent. Areas such as Mundaring and Kalamunda are attracting smaller numbers of lifestyle-focused 'tree-changers'.

The lowest rates of population growth are found in Perth's established suburbs, especially those in the affluent inner and western areas such as Claremont (up 6 per cent), Nedlands (6 per cent) and Subiaco (9.8 per cent).

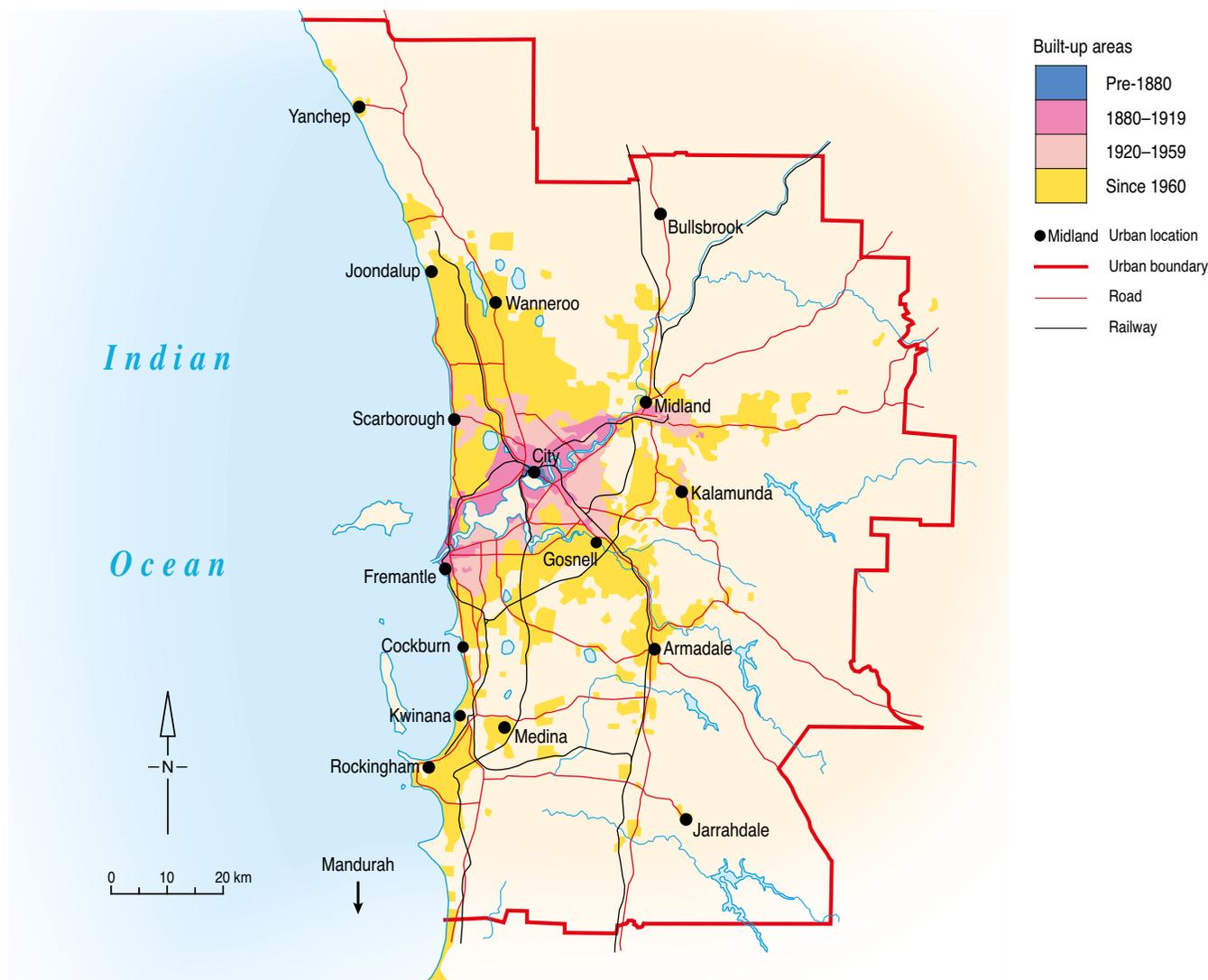
High-rise apartment living in the city's CBD is a relatively recent development.

Perth's ethnic diversity

The ethnic landscape of Perth has changed quite significantly over the past decade and will continue to do so into the future. Perth is clearly on a pathway to becoming a more multicultural city. In 2011, 34.9 per cent of Perth's 573 255 population was born overseas, as shown in Sources 8.3.5 and 8.3.6.

Did you know?

In 2011, 576 731 people living in Perth were born overseas and 27 per cent had arrived in Australia within the previous 5 years.



Source 8.3.4 Growth of Perth's metropolitan area

Country of birth	Number of people	Percentage of overseas-born population
United Kingdom	186 546	32.3
New Zealand	49 806	8.6
South Africa	29 160	5.0
India	27 849	4.8
Malaysia	23 685	4.1
Italy	17 489	3.0
China	15 714	2.7
Singapore	13 372	2.3
Philippines	12 987	2.3
Ireland	12 246	2.1
Other	187 876	32.6

Source 8.3.5 Origin of overseas-born residents of Perth, 2011 *Source:* Australian Bureau of Statistics, Census 2011

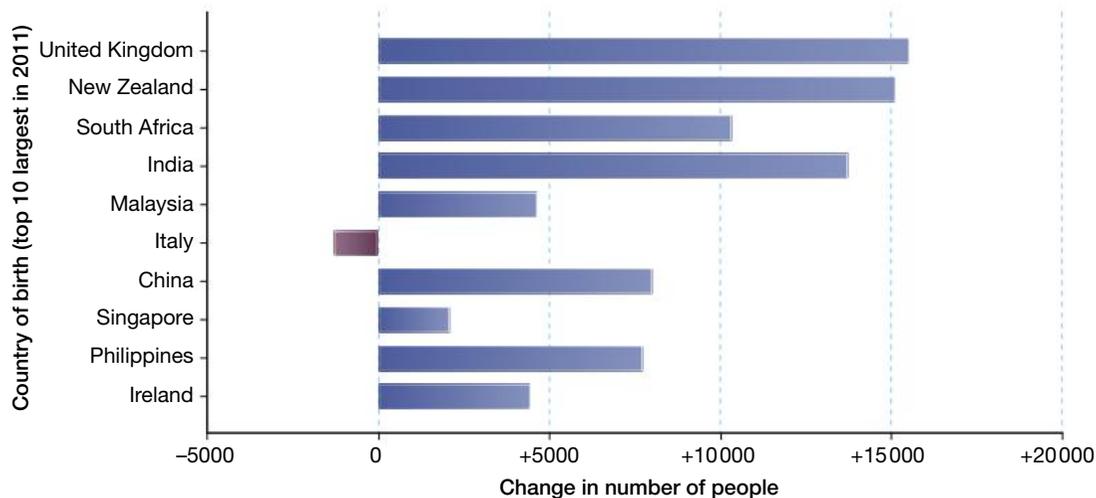
Infrastructure needs

In response to Perth's rapid population growth, a range of infrastructure projects are either in development or being planned. These projects are aimed at improving the liveability of the city. Projects include:

Projects include:

- a desalination plant at Kwinana (built)
- a desalination plant near Inningup (under construction)
- new freeways and highways
- expansion of the metropolitan railway
- removal of roads and barricades to open up the city to the river.

Many people believe that the government still needs to improve the metropolitan railway and connecting bus network. This includes extending the railway network.



Source 8.3.6 Change in country of birth of migrants in Perth, 2006 to 2011

ACTIVITIES

Remembering and understanding

- 1 Explain why Perth experienced such rapid population growth in the period 2001–11.
- 2 Describe the geography of Perth.
- 3 Explain how Perth differs from the large urban concentrations on the east coast.
- 4 State the parts of Perth in which population growth has been most rapid in the decade 2001–11.

Applying and analysing

- 5 Study Source 8.3.4. Suggest reasons for the rapid expansion of metropolitan Perth after 1960.
- 6 Study Source 8.3.5. Construct a pie graph showing the country of origin of foreign-born Perth residents.

Evaluating and creating

- 7 Study Source 8.3.6. Using data from the graph, outline the change in country of birth of Perth's foreign-born population in the period 2006–2011. As a class, list reasons why these trends occurred.

International migration

Migration

Migration can be defined as simply the movement of people. Movement within a country, for example people moving from rural areas to the city, is called internal migration. Movement between countries is called international migration.

Who migrates

Each migrant undertakes the move for their own reasons. For some people the choice is voluntary and is made for lifestyle or economic reasons. For others there is no choice: natural disaster, war or a range of other concerns force them to move.

There are five broad categories of migrants: settlers, contract workers, professionals, undocumented workers, and refugees and asylum seekers.

Settlers

Settlers choose to move permanently to a new country. These people need to apply and then be accepted into their new country, usually by passing some type of test.

Contract workers

Contract workers are accepted for a short time into a country, usually for a set type of employment. For example, ski instructors may be permitted into Canada for the ski season.

Professionals

As the world economy grows and companies become more global, the need for company employees to travel increases. Many of these transnational corporations move their staff around the world. These migrants are often referred to as expatriates and are usually short-term (2–3 years) migrants.

Undocumented workers

Undocumented workers are usually referred to as illegal immigrants. Many people in this category are smuggled into host nations. For example, there are an estimated six million illegal immigrants in the United States of America, mostly from Mexico. Other illegal immigrants may arrive in a country legally, usually as tourists, but then overstay.

Refugees and asylum seekers

Refugees and asylum seekers flee their homes because of fear. If the authorities in the countries to which they flee confirm that they are in danger they are entitled to protection and perhaps even resettling in a new country.

Asylum seekers are people who seek to have a government accept them. This type of migration is often referred to as involuntary migration because the migrants are forced to move.

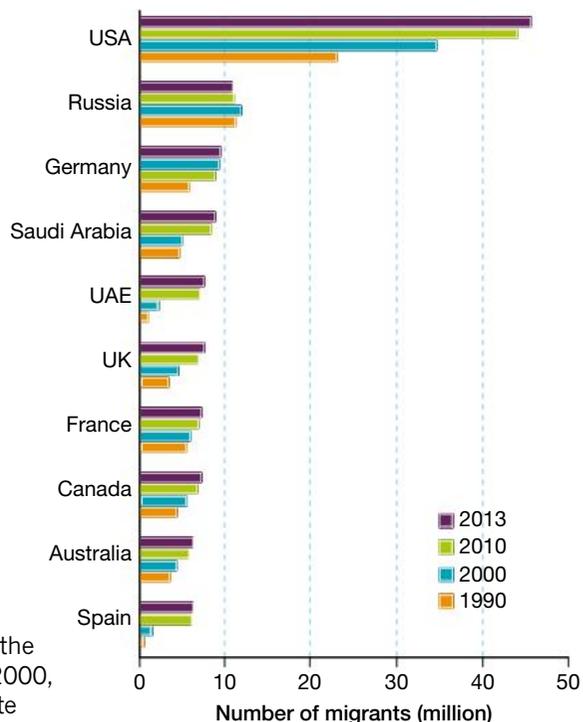
Why migrate

The reasons for migration are complex and differ from person to person. However, there are two main reasons why a person would want to move to another location. They can be summarised as follows.

- **Pull factors** These are often referred to as demand factors. They are those things that make a person want to go to a new location. Better employment opportunities and higher wages are typical pull factors. Social factors, such as the desire to be reunited with family members, are also pull factors. These factors include the desire for a new experience or moving as a result of a company restructure.
- **Push factors** These are often referred to as supply factors. They are those things that make a person want to leave a place. Unemployment, low wages, natural disasters—for example drought or famine—and war are common push factors. When people flee conflict they try to bring as many of their belongings as possible, as shown in Source 8.4.1.

Migration has taken place for thousands of years. Globalisation, however, has made it easier for people to move. Work and education have become more international and many people spend some of their lives in countries other than their own.

Many migration patterns reflect traditional links. For example, many migrants to Great Britain come from Pakistan and India. Pakistan and India are former dominions (colonies) of Britain and so have historical links with Britain and British influences in their cultures. Changes in government policies—such as the dismantling of Australia’s White Australia Policy—have enabled more global migration patterns. Source 8.4.2 shows the 10 countries with the largest migrant populations.



Source 8.4.2 Top 10 countries with the largest migrant populations, 1990, 2000, 2010, 2013. Migration Policy Institute



Source 8.4.1 Bangladeshi men who had been working in Libya flee the unrest there, heading to a refugee camp after crossing the Tunisian–Libyan border

Migrant destinations

Many countries around the world have large overseas-born populations. These countries often offer opportunities for work, for example the United States of America, Canada and Germany.

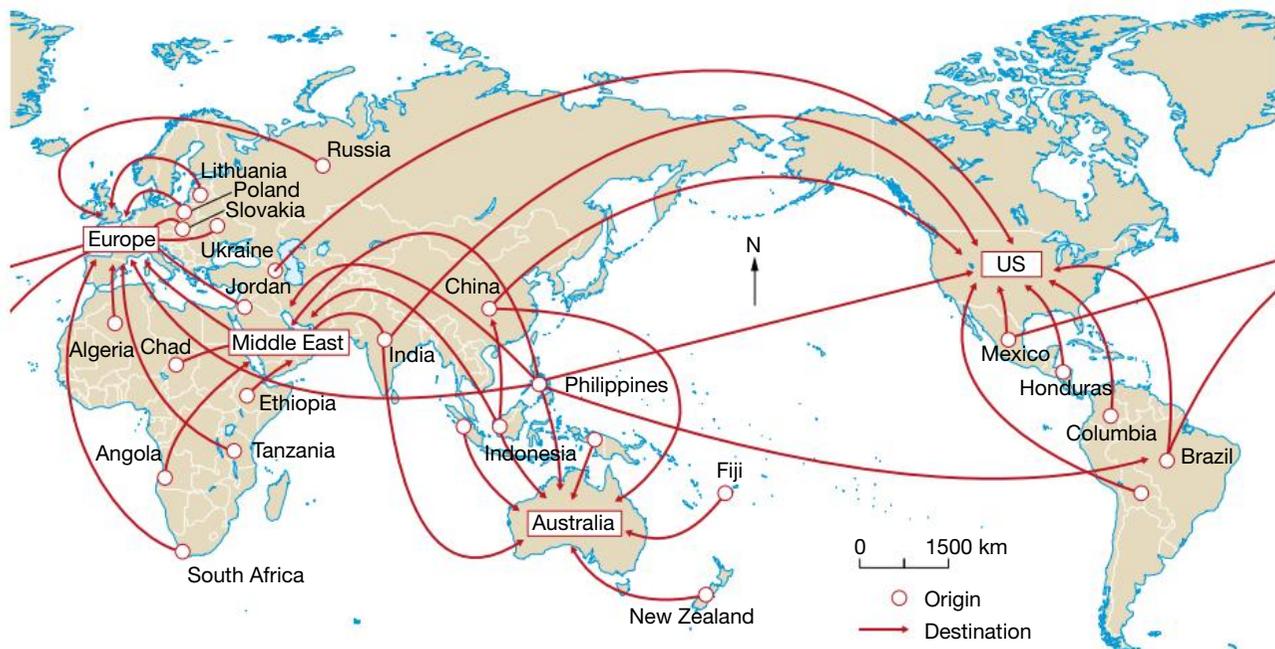
Some countries have a large population of temporary migrants. For example, Saudi Arabia has a very large number of **guest workers**. These are people who temporarily move to a country for work. These guest workers do not have the full rights of other residents and usually do work that local people do not want to do. In Saudi Arabia, guest workers commonly do construction work, domestic work and other manual labour. In Hong Kong, an estimated 100 000 Filipino guest workers work as maids. These guest workers—all women—send the money they earn back to the Philippines, to help their families. Source 8.4.3 shows Filipino guest workers sending money back to the Philippines.

Source 8.4.4 shows some of the main flows of people for work around the world. This map shows that the most common pattern of movement is from less developed countries to more developed economies. For example, there are significant flows of people from Mexico and South America to the United States. There are also large numbers of people moving from North Africa and Eastern Europe to the more prosperous and developed Western Europe.

Guest workers are not common in Australia, although in recent years there has been some movement of people to fill skilled vacancies in the mining industry. It is more common in Australia that people migrate permanently, or at least for long periods of time. Australia also has a large number of migrants from New Zealand. Australia and New Zealand have a special arrangement that allows the citizens of one country to work freely in the other for an unlimited period of time.



Source 8.4.3 Filipino guest workers sending money back to the Philippines



Source 8.4.4 Major movements of people for work

People trafficking

Unfortunately, not all migration is undertaken willingly. Human trafficking occurs when people are taken against their will from one country to another. In most cases this involves people being kidnapped or tricked into travelling to other countries for work, in many cases in the illegal sex industry. The United Nations estimates that up to 800 000 people are trafficked across borders illegally each year.

Research indicates that there are an estimated 700 000 victims of trafficking currently in the United States. This includes a large number of labourers who are forced into working in terrible conditions on farms and in small factories. Other countries in which there are large numbers of people-trafficking victims are Britain, Nigeria, Brazil, France, Saudi Arabia, the Netherlands and Japan.

Here in Australia there have been 184 victims of trafficking identified by police and assisted between 2004 and 2008, mostly young women from South-East Asia who were trafficked into Australia to work in the sex industry. Thirteen people were convicted under Australian law in this period. There have also been allegations of labour trafficking in connection with Australia's 457 worker visa program. Under this program workers mainly from the Pacific have been employed to work on Australian farms. In some cases, however, the farm workers have been exploited under the program.

People-trafficking victims nearly always come from developing nations. Common source countries are in central Africa, South-East Asia and Eastern Europe.

What do you see
when you look at
your fellow man?

W szS Dept. 2
\$750
compare at: \$1000
42000 06200

some people see a profit.

Help Stop Human Trafficking Now.

There are more people being bought and sold at this moment, than in the entire 300-year history of the Atlantic Slave Trade.

Source 8.4.5 This advertising campaign was run in the USA to highlight the problem of human trafficking.

ACTIVITIES

Remembering and understanding

- 1 Distinguish between internal and international migration.
- 2 Explain what a refugee is. How does a refugee differ from other types of migrants?
- 3 Outline the pull factors for migration.
- 4 Outline the push factors for migration.
- 5 Explain what a guest worker is.
- 6 Describe the meaning of the term 'people trafficking'.
- 7 Explain the extent of the problem of people trafficking around the world.

Applying and analysing

- 8 Study Source 8.4.2. What percentage of the world's migrants live in the United States?
- 9 Study Source 8.4.4. Write a short report outlining some of the major flows of workers shown on the map. Explain why you think these flows exist.

Evaluating and creating

- 10 Select one of the types of migration discussed in the text. Take the perspective of a migrant and write a letter to a family member about your migration experience and the reasons you migrated to your new country. Consider both push and pull factors.
- 11 In many countries, guest workers are open to exploitation. In a small group, discuss why you think this is the case. Share your ideas with the class.

Australian migration

Multicultural Australia

In the first half of the twentieth century the White Australia Policy ensured that migrants were white Europeans. After World War II, more and more migrants, initially from southern Europe, particularly Greece and Italy, arrived. As the White Australia Policy was gradually relaxed, migrants from Asia and finally the Middle East also came to settle in Australia. Australia is now one of the most multicultural countries in the world (see Source 8.5.1). More than 200 different languages are spoken. Almost a quarter of all people living in Australia were born in another country. This is one of the highest percentages of any country. For example, less than 14 per cent of people in the United States of America were born outside the United States of America.



Source 8.5.1 Australia is now one of the most culturally diverse countries in the world.

Origin of settlers

Australia accepts migrants from around the world. The major source countries for migrants to Australia in 2013–14 are shown in Source 8.5.2. As can be seen in the table, most migrants to Australia now come from less developed countries. This is a significant change. In the past, migrants mostly came from

countries that were ethnically and culturally similar to Australia, such as the United Kingdom and Ireland.

Types of migrants

Under Australia’s permanent Migration Programme, the largest category of new settlers is skilled migrants, making up approximately 64 per cent of migrants. Another 32 per cent of visas are granted

Citizenship	2011–12	2012–13	2013–14	% change 2012–13 to 2013–14
India	29 018	40 051	39 026	-2.6
People’s Republic of China	25 509	27 334	26 776	-2.0
United Kingdom	25 274	21 711	23 220	7.0
Philippines	12 933	10 639	10 379	-2.4
Pakistan	4 295	3 552	6 275	76.7
Ireland	4 938	5 209	6 171	18.5
Vietnam	4 773	5 339	5 199	-2.6
South Africa	7 640	5 476	4 908	-10.4
Nepal	2 472	4 107	4 364	6.3
Malaysia	5 508	5 151	4 207	-18.3
Other	62 638	61 431	59 475	-3.2
Total OECD countries	52 517	50 365	51 114	1.5
Total	184 998	190 000	190 000	0.0
New Zealand settlers	44 311	41 230	27 274	-33.8

Source 8.5.2 Migration currently accounts for much of Australia’s population growth.

Source: Department of Immigration and Citizenship, 2013–14 Migration Programme Report

through the family stream. For the 12 months between July 2013 and July 2014, 128 550 people migrated to Australia under the skilled migration program. This special program is designed to encourage migrants who have skills that Australia needs. For example, 6418 accountants, 5764 cooks, 2359 software engineers, 1972 registered nurses and 1235 developer programmers from around the world were allowed to migrate to Australia in 2013–2014. These are all industries in which Australia has a skills shortage.

Employers can sponsor skilled migrants and individuals can apply to become skilled migrants. State governments can also nominate skilled migrants for visas in areas where they have a skills shortage.

Destination of settlers

Australia's large capital cities are the destination of most migrants when they arrive in Australia. More than 80 per cent of newly arrived migrants first settle in Sydney, Melbourne, Brisbane, Perth or Adelaide. More than 30 per cent of migrants settle in Sydney and about 25 per cent make their home in Melbourne. This reflects the fact that these large cities provide better employment prospects, especially for skilled migrants. The large cities also tend to have better access to support networks for migrants, such as intensive English language schools.

Source Country	Number
Iraq	2335
Syria	2232
Burma	2029
Afghanistan	1813
Democratic Republic of Congo	384
Eritrea	362
Bhutan	354
Iran	331
Somalia	287
Ethiopia	282
Other countries combined	600
TOTAL	11 009

Source 8.5.3 Top 10 countries of birth of refugees accepted into Australia in 2014–15 under the offshore humanitarian program

Source: Australian Department of Immigration and Border Protection

Humanitarian migration

An important part of Australian migration is the humanitarian program. This program supports refugees. Refugees are people who need the protection of another country as they can no longer live in safety in their own country. In 2014–15, more than 13 000 people were accepted into Australia under this program. Typically, these people were fleeing war and persecution in their homelands, such as Burma, Afghanistan, Iraq and Syria.

ACTIVITIES

Remembering and understanding

- 1 Describe how Australia's approach to migration changed throughout the twentieth century.
- 2 What is a skilled migrant?
- 3 Why do you think Australia has a focus on skilled migration?
- 4 Outline Australia's humanitarian migration program.
- 5 List the main destinations of migrants once they arrive in Australia.

Applying and analysing

- 6 Study Source 8.5.2. Write a short report outlining the major sources of migrants to Australia.
- 7 Study the data in Source 8.5.3 and do the following tasks.
 - a Describe the region/s from which the majority of refugees come.
 - b Construct a column graph to summarise this data.

Evaluating and creating

- 8 Select one of the countries shown in Source 8.5.3 and use the internet and library resources to conduct research and prepare a short digital presentation on why refugees would be leaving this country. Include in your presentation:
 - map of the country and an overview of the population (for example size and ethnic diversity)
 - history behind the reason people are fleeing and the current situation.

International migration

Lifestyles

Immigration has helped to shape the urban lifestyles of Australia since the first European settlement was established at Sydney Cove in 1788. Today, the lifestyles of those living in Australian cities reflect the growing ethnic and cultural diversity of the Australian population.

Increasing urban concentrations

After the end of World War II, there was an increase in the number of Australians living in cities and this trend has continued. This pattern can be clearly seen in migrant populations. Between 1947 and 2010 the following changes have been observed between Australian-born and overseas-born Australians:

Australian-born population:

- living in large cities grew from 50 to 64 per cent
- living in rural areas decreased from 32 per cent to 14 per cent.

Overseas-born population:

- living in large cities grew from 62 to 85 per cent
- living in rural areas decreased from 25 to just 6 per cent.

Capital cities

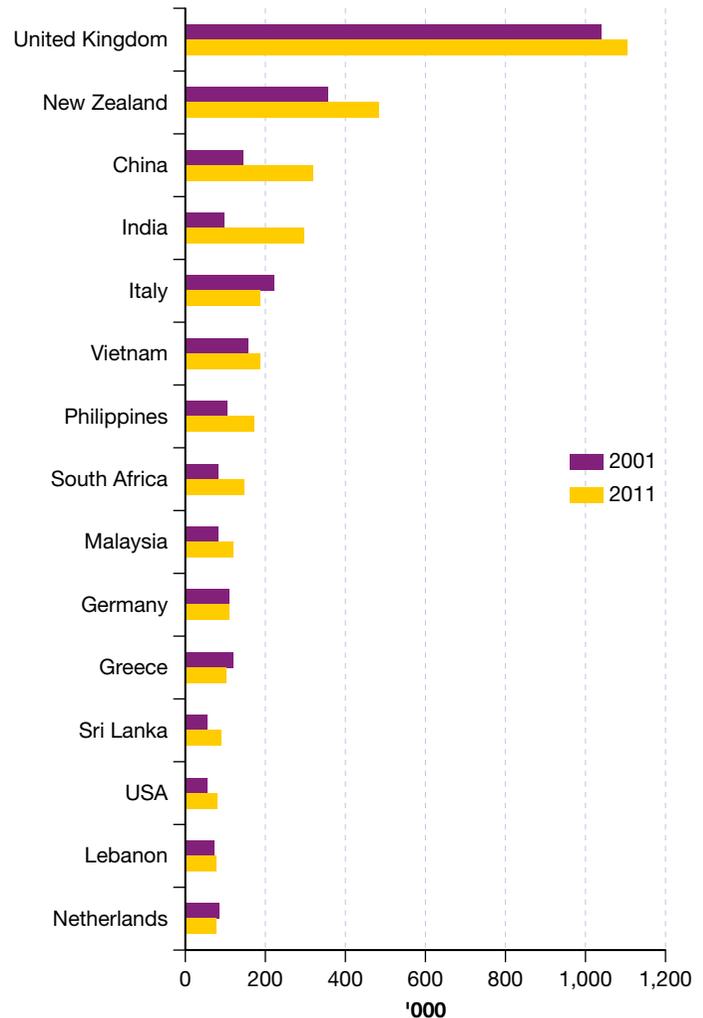
The majority of post World War II migrants decided to settle in Sydney and Melbourne. As a result, these cities have the most international or **cosmopolitan lifestyles**.

In 2014, Sydney and Melbourne's share of the nation's overseas-born population was almost 55 per cent. While Sydney remains the most important centre of immigrant settlement, there is some evidence of a shift, as people move from Sydney to the other capitals. There is also evidence of increased settlement beyond the capital cities.

Ethnic and cultural influences

The diversity of Australia's cities has been influenced by waves of migration, each characterised by a different mix of birthplace groups. These waves reflect changes in Australia's

Migrants in Australia by Country of Birth—2001 and 2011



Source 8.6.1 New migrants living in Australia's capital cities, by country of birth, 2001 and 2011

immigration policy and the changing national and global economic and political situation.

Migrant settlement patterns

Patterns of settlement vary among migrant groups. New South Wales, for example, has 75 per cent of Australia's Lebanese-born population, 63 per cent of the Iraqi-born, 63 per cent of the South Korean-born, 60 per cent of the Fijian-born and 60 per cent of the Chinese-born. Victoria has 51 per cent of Australia's Sri Lankan-born population, 50 per cent of the Turkish-born, 49 per cent of the Greek-born and



Source 8.6.2 Melbourne's cafe culture is a lifestyle-related outcome of Australia's ethnic diversity.

42 per cent of the Italian-born. Western Australia, the state with the highest foreign-born proportion of population, attracts 30 per cent of all Singapore-born Australian residents, and is narrowly behind New South Wales in having the largest population of British-born. Queensland has attracted the greatest proportion of people born in Papua New Guinea (52 per cent) and New Zealand (38 per cent).

Impact on urban lifestyles

The cosmopolitan lifestyle enjoyed by residents of cities such as Sydney and Melbourne owes much to the cultural and ethnic diversity of their migrant populations. Some urban neighbourhoods have, over time, become associated with particular ethnic groups. These ethnic precincts are essentially clusters of immigrant entrepreneurs and service providers. These, in turn, attract the people who rely on these providers.

One of the most obvious outcomes of this process is the concentration of restaurants representative of different cultures. European, Middle Eastern and Asian cuisines are now an important part of our urban lifestyle. There are clearly defined restaurant and cafe areas in both Sydney and Melbourne. These are good examples of how different ethnic groups can enrich a culture. Residents of both cities have also embraced the European-inspired tradition of outdoor eating. Most cafes now have tables and chairs on the footpath, as shown in Source 8.6.2, and some have outdoor areas to match

those seen in Italy and France. The practice of eating out at restaurants and relaxing at pavement cafes is now common everywhere, and Australians' obsession with espresso coffee (introduced into Australia by southern Europeans) is central to the country's cafe culture.

ACTIVITIES

Remembering and understanding

- 1 Explain why Sydney and Melbourne have the most international, or cosmopolitan, lifestyles.
- 2 Outline how the pattern of settlement arrivals has changed since World War II.
- 3 Identify some of the important differences in migrant settlement patterns.
- 4 Outline the impacts of migration on urban lifestyles.

Applying and analysing

- 5 List the ways in which your town or neighbourhood has been influenced by migration. Use the information collected to produce a whiteboard or pinboard-mounted mind map.
- 6 Draw on the ethnic diversity of your community to explore reasons why people chose to settle in Australia. Identify the ways in which different cultures have enriched your community.

Australia: Internal migration

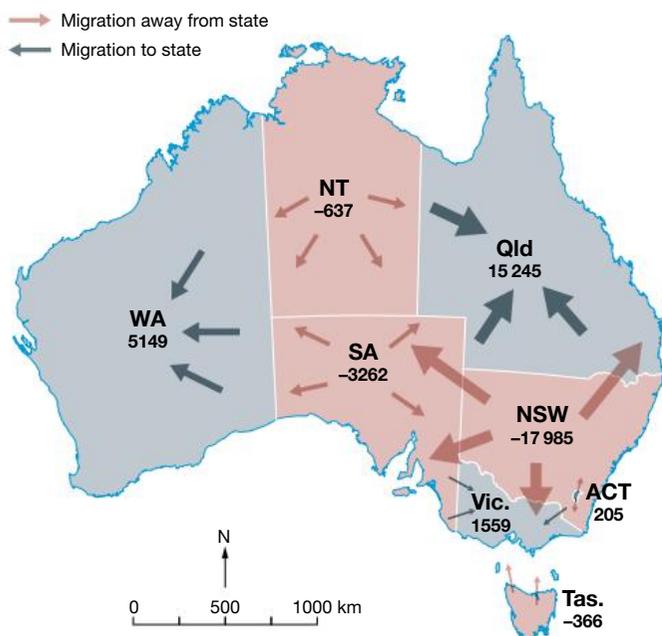
Movement of people

Internal migration occurs when people move to other places within their own country. In Australia, Queensland and Western Australia receive the highest number of internal migrants. In 2010, more than 86 400 people moved to Queensland from other states and territories.

Four of the five fastest-growing regions in Australia are now found in Queensland. These are Brisbane, the Gold Coast, Moreton Bay and the Sunshine Coast. All are located in the south-east corner of Queensland. Source 8.7.1 shows average net interstate migration, 2004–05 to 2013–14.

Economic migration

The reasons for internal migration are varied. Employment opportunities can attract people to certain areas. For example, there was significant migration to North Queensland and parts of Western Australia prior to 2014 due to those states' booming mining industries, where people could earn higher incomes.



Source 8.7.1 Net interstate migration, annual average movement 2004–05 to 2013–14. Australian Bureau of Statistics

Economic migration can bring about very significant change within communities. The increase in the population can be so sudden that local communities can be overwhelmed. Important infrastructure, such as roads, utilities (water and electricity supply), schools and hospitals, and a range of community services, are quickly overstretched. There can be many economic benefits to local communities of internal migration, but in some cases, where the population grows very quickly, the impact on local economies can be negative. For example, housing shortages are very common and this has meant that house prices and rents have skyrocketed.

Lifestyle and retirement migration

Another group of internal migrants are the retirees and those who choose to move out of the cities for lifestyle reasons. Moving to be closer to family is another key factor in internal migrations.

There is also a significant movement of people within states. For decades, populations have been declining in many of Australia's smaller country towns. The people who once populated these towns have moved to the large cities on the coasts or to the larger rural centres.

Tree and sea changes

Over the last 15 to 20 years there has been an increase in the number of people moving away from cities to a rural or coastal area.

The terms '**counter-urbanisation**' and '**exurbanisation**' are used to describe the process of people moving away from cities but maintaining important links with the city, such as work. For example, in South Australia many people have moved from Adelaide to the Adelaide Hills. Here they have access to a rural lifestyle but, because the Adelaide Hills are relatively close to Adelaide, they are able to continue to work in the city.

Tree changers are those people who move from the city to inland areas, such as from Melbourne to Ballarat and Bendigo in Victoria. Such regions offer larger blocks of land suitable for small farms and

large gardens, smaller communities and a cleaner and greener environment.

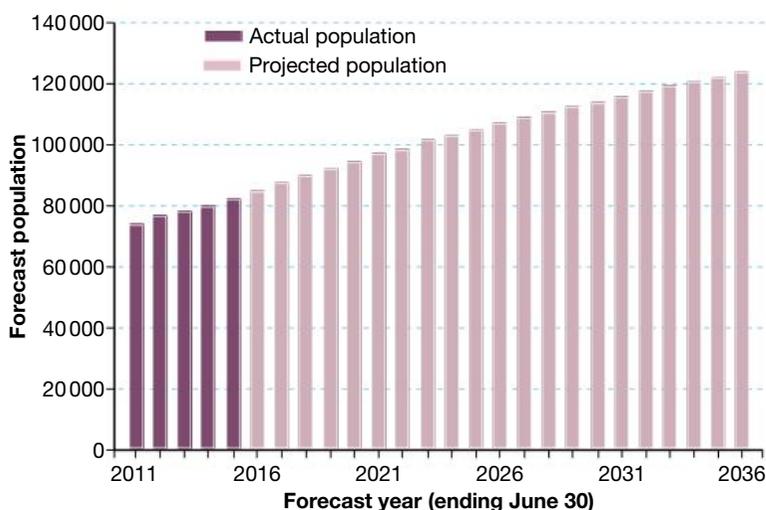
Sea changers make their move from the city to the coast. The most popular coastal areas are those relatively close to the big cities.

Mandurah, Western Australia

Located just 73 kilometres from Perth, Mandurah has become a popular sea change destination for Western Australians. It has a population of more than 70 000 people, and is expected to double in the next decade (see Source 8.7.2). This makes Mandurah Western Australia's fastest-growing region. Mandurah is linked to Perth by a freeway and a railway, which opened in 2007. The opening of the railway made Mandurah a more popular destination. A significant proportion of the population, around 20–25 per cent, are expected to be aged over 65. This presents some challenges for the city, especially in terms of providing the health and other services needed by an older population.



Source 8.7.3 Canal housing development in Mandurah



Source 8.7.2 The projected population increase in Mandurah to 2036. Forecast.id® website

As Mandurah has grown, it has ceased to be the small, quiet fishing village it once was. Large shopping malls and housing estates now dominate much of the city. Some long-term residents fear that their town has lost some of its unique character. However, others welcome the increased population and the services and opportunities that this brings. There are also concerns about the local environment. For example, there are currently 22 kilometres of canals in the city. These canals are carved out of the natural intertidal wetland and mud flats that form along the Mandurah Estuary, shown in Source 8.7.3.

ACTIVITIES

Remembering and understanding

- 1 Write your own definition of the term 'internal migration'.
- 2 Outline some of the main reasons for internal migration.
- 3 Describe how internal migration can become a problem for local communities.

Applying and analysing

- 4 Study Source 8.7.1. List the states that have experienced population gains and losses from internal migration. For each state, outline reasons that help explain this movement of people.

Evaluating and creating

- 5 In your opinion, has internal migration had a positive or negative impact on Mandurah? Write a paragraph stating and supporting your opinion.

China: An emerging economic giant

Biggest economy

The global economy is changing as China claims an increasing share of the world's manufacturing. Since the 1970s, China has been transformed from a relatively poor and very inaccessible nation into a giant of the international economy. The extent and speed of this change are staggering and look set to continue.

China will become the biggest economy in the world within the next decade. This has huge implications, as it will be the first time in centuries that the title of world's largest economic power will be claimed by a non-Western nation.

A tumultuous history

China was the world's leading civilisation for centuries, due to its vast wealth, sophisticated culture, art and inventions. In the nineteenth and early twentieth centuries, China became caught up in civil unrest. The country was torn apart by war and its people lived in terrible poverty. In 1949, the Communist Party under Mao Zedong took control and the People's Republic of China was formed. Under communist rule, all business enterprises and private land were seized and became the property of the state. There were heavy restrictions on people's everyday lives. Men and women were given jobs on farms or in factories and issued with food rations. Life was very hard and millions of people starved.

For decades China had a 'closed door policy' in its dealings with the rest of the world. The communist government discouraged any economic, political or cultural links with other countries.

Did you know?

There were nearly 4 million millionaires in China in 2015, second only to the number in the United States, where there were 7 million millionaires.

Reforms and open policy

Reforms in China started in 1978 in agriculture. Eventually people were allowed to own their own

land and businesses. State-owned industries were assisted and supported by the government and China's economy started to grow.

Opening the economy

The most visible economic reform was the creation of **special economic zones**. Foreign countries were permitted to establish factories in these zones and were exempted from the taxes and controls imposed elsewhere in China.

Billions of dollars of foreign investment flowed into China, as it became the preferred destination for manufacturing. Exports drove the expansion of the Chinese economy and the 'Made in China' label is now commonplace on consumer goods right across the world. As the wealth of the country increased, China also invested heavily overseas to secure the energy and commodity resources needed by its industries.

China joined the World Trade Organization in 2001 after removing trade barriers.

Rapid economic growth

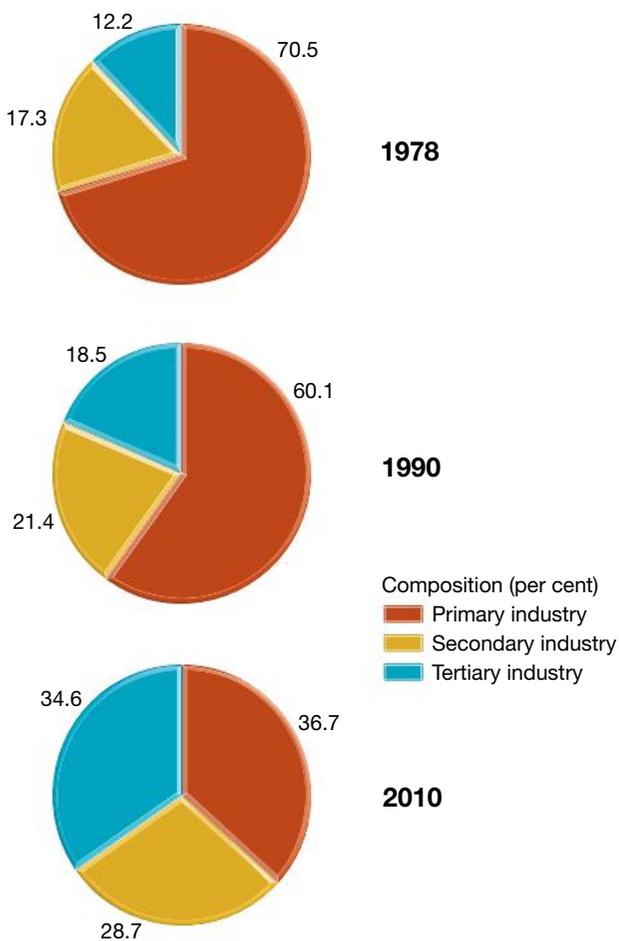
China has undergone a major economic transformation in recent decades. China became involved in the free market system, and exports generated considerable wealth. Both foreign investment and international trade soared, generating an extraordinary growth in **gross domestic product** (GDP). China has had an average economic growth rate of over 9.5 per cent for over two decades. This growth has raised the living standards of millions of Chinese. In 2010, China displaced Japan as the world's second largest economy, as shown in Source 8.8.1.

China will continue to grow. The size of its population and economy will drive regional and global growth into the future. The changes in the structure of the economy are reflected by changes in the patterns of employment. As China has developed, employment in primary industry has declined, while employment in tertiary industries has increased, as shown in Source 8.8.2.

Country or region	2010 GDP (100 million US\$)	GDP growth rate (%)				
		2005	2007	2008	2009	2010
World	629093	4.57	5.40	2.87	-0.52	5.01
Australia	12355	3.13	4.59	2.59	1.33	2.75
China	58783	11.30	14.20	9.60	9.20	10.30
India	15380	9.17	9.88	6.18	6.76	10.37
Japan	54589	1.93	2.36	-1.16	-6.24	3.94
UK	22475	2.17	2.69	-0.06	-4.87	1.25
US	146578	3.05	1.95	-0.4	-2.63	2.83

Source 8.8.1 GDP growth rates for selected nations, 2005 to 2010. China and India maintained high growth rates while the rest of the world suffered in the global financial crisis (2007).

Source: International Monetary Fund, China Statistical Yearbook 2011



Source 8.8.2 China's changing employment structure

Source: China Statistical Yearbook 2011

ACTIVITIES

Remembering and understanding

- 1 Describe the nature of communist government control in China before 1978.
- 2 Outline the changes in government policy that have occurred since 1978.
- 3 Describe the transformation of the Chinese economy.
- 4 Explain why China's economy will continue to grow.

Applying and analysing

- 5 Study Source 8.8.1 and do the following tasks.
 - a Construct a multiple line graph of the GDP growth rates for the countries shown.
 - b In what year did China experience its highest growth rate?
 - c Which countries experienced negative growth rates? Give reasons for your answer.
 - d Explain why Australia did not experience a negative growth rate.
- 6 Study Source 8.8.2 and do the following tasks.
 - a Write a paragraph describing the changing structure of Chinese employment.
 - b Suggest reasons why so many Chinese people are still employed in primary industries.

China's internal migration

Rural-urban migration

China's economic transformation has triggered one of the largest population movements in human history. The country's economic success has led to a rapidly rising standard of living. The main driver of urban growth has been, and will continue to be, rural-urban migration.

The facts

- Between 2010 and 2025 the population of China's cities will grow by 350 million people, which is equal to today's population of the United States of America.
- One billion people will live in Chinese cities by 2030.
- The number of cities with more than one million people will reach 221 by 2030. Europe has only thirty-five today.
- Five billion square metres of roads will need to be paved.

- Forty billion square metres of floor space will need to be built in five million buildings. Fifty thousand of these buildings will be skyscrapers.
- One hundred and seventy-five new mass-transit systems (public transport networks) will need to be built.

Population mobility

Until the end of the 1970s, 80 per cent of the population were rural dwellers and it was almost impossible for them to leave their villages. Under the **hukou system**, a person was registered in a household and identified as a resident of a particular area. People were required by law to stay in their district and they were not permitted to move elsewhere looking for work. People could qualify for coupons for food or receive medical treatment only in their own designated hukou and so the government services that people needed to survive were tied to where they were registered. This kept the people in the countryside for decades.



Source 8.9.1 Internal migration in China post-1978 economic reforms



Source 8.9.2 Migrants on the move, seeking jobs in the cities

A shift in government policy

As the post-1978 economic reforms took hold, the rules of the hukou system were progressively relaxed. Most significantly, coupons were no longer required to buy food, and a worker without an urban hukou could work in the city, as the government no longer assigned jobs to people. However, in doing so, workers were still ineligible for services such as healthcare, free education for their children and subsidised housing, all of which people who were registered in urban areas received. Despite these remaining limitations, the relaxing of the hukou system was enough for urbanisation to get underway. China's policy shift to accept and promote migration to urban areas was designed to create the pool of labour necessary for economic growth.

The hukou system today

The hukou remains one of the most valuable documents in China today. Migrant workers without an urban hukou still have trouble finding decent housing and education for their children. They are also denied a range of government benefits. It is especially hard to gain admission to university without being an urban hukou holder.

There has been a push to reform the hukou system. Shanghai, Guangzhou and Shenzhen have relaxed the rules. The local hukou can be obtained if the

migrant invests in the city or buys property. However, in crowded cities such as Beijing, where one-third of the residents are without the hukou, the government is hesitant to abolish the system, fearing that it would result in a surge of migrants to the city. They fear that such an influx would overwhelm the city's infrastructure and lead to even more overcrowding.

Internal migration

China's economic reforms involved its integration into the global economy. China quickly became the world's largest exporter of manufactured goods and a major importer of resources. Once-sleepy coastal fishing villages were suddenly transformed into major ports and manufacturing centres. The most rapid growth occurred in large cities in the coastal provinces, where the export industries boomed, as shown in Source 8.9.1. Guangdong was known as the 'world's factory' due to the high number of factories and factory jobs there.

As the economy grew, it created new jobs and there was a flood of people leaving the countryside for the towns and cities in search of jobs and higher wages. Migrants on the move are shown in Source 8.9.2. Migrants were employed in factories, on construction sites and in services (security guards, cleaners, couriers and domestic workers).

Most of the migrants were young people who did not want to stay in the rural villages, which offered little in the way of career options.

Lives of internal migrants

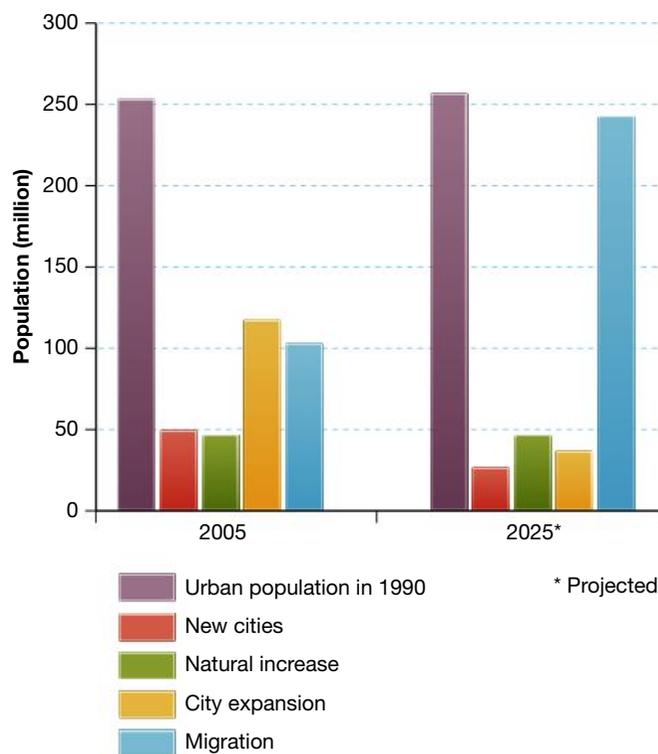
Migrant workers from rural areas make up to half of China's urban workforce and half of the country's gross domestic product (GDP), but suffer from discrimination. The migrants are denied access to public services in the cities, due to the hukou system, and often experience exclusion and abuse.

The future

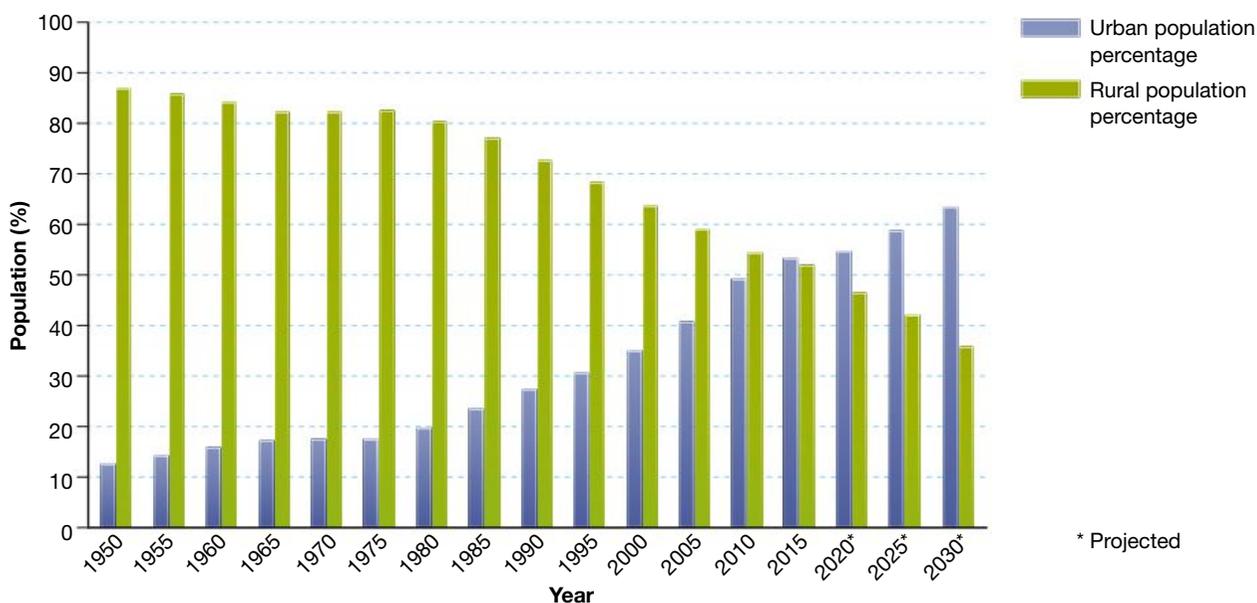
In 2012, the number of people living in urban areas exceeded the rural population for the first time, after 21 million people were added to the population of urban areas in just one year, as shown in Source 8.9.3. The sheer numbers involved are staggering. Between 1990 and 2005, 103 million people migrated from rural areas to urban areas and in the following 20 years another 243 million are expected to do the same (see Source 8.9.4).

China's urban economy is expected to generate over 90 per cent of GDP. China's economic goals are closely tied to continued urbanisation. The government is committed to quadrupling **per capita** GDP by 2020 (from the 2000 level). This goal implies the continued growth of towns and

cities, where the wealth is generated. This growth will create employment—a major pull factor—and internal migrations will continue to impact on China's cities and rural areas.



Source 8.9.4 Sources of urban population increase in China, 2005 and 2025. McKinsey Global Institute, China All City Model



Source 8.9.3 China's rural and urban population growth, 1950–2030



Source 8.9.5 A densely built residential apartment development near Ordos City in China. With an investment of over US\$161 billion by local government and revenue from the region's rich coal deposits, buildings to accommodate at least 300 000 residents, complete with modern facilities and grand plazas, were built on the site of an old desert village.

Cha Guoqun's story

Cha Guoqun left his village in search of work in the city of Hangzhou, in eastern China. When a cut on his leg became infected in November 2006 and prevented him from working, he visited a state hospital. As Cha had no health insurance, the doctor gave him two options: pay 1000 yuan (A\$120) a day for treatment, the equivalent of his entire monthly income; or have his leg amputated. Fortunately, Cha received help from a Christian charity hospital, which was able to save his leg.

This case highlights the plight of an estimated 150 to 200 million rural–urban migrants who have moved to China's cities in search of work and better lives.

While their labour has fuelled China's economic growth, the majority of internal migrants never gain permanent residency in urban areas. For the most part, the lives of migrant workers are miserable. They have to live in makeshift shelters and eat the cheapest bean curd and cabbage. They have no insurance and their wages are often delayed. They are also discriminated against by urban people.

ACTIVITIES

Remembering and understanding

- 1 Explain what the hukou system is. How did it restrict population movements?
- 2 Describe and account for the change in China's population movement policy. What was the impact of the change?
- 3 Outline the urban population projections into the future.
- 4 Compare the opportunities for those who have an urban hukou and those new migrants who do not.

Applying and analysing

- 5 Study Source 8.9.4 and do the following tasks.
 - a How many people will migration have added to cities in China by 2025?
 - b Of the total urban population in 2025, what percentage will be migrants?
- 6 Study Source 8.9.3 and answer these questions.
 - a In which year did China have the highest percentage of rural dwellers?
 - b When did the rate of urbanisation start to accelerate?
 - c What percentage of the population is expected to be urban dwellers by 2030?

Impact on Chinese cities

Rapid change

China is becoming an urban nation at a rate and scale never before seen. In just two decades, the lives of millions of Chinese people have been transformed. With increasing concentrations of people in industrial cities, the environment has become a casualty of the rural–urban migration. Huge areas of the countryside have become part of the rapidly advancing urban sprawl.

Urban development

In China’s eastern provinces are six of the world’s top twelve economic ‘hotspots’: Shanghai, Beijing, Tianjin, Chongqing, Nanjing and Guangzhou. These cities are the favoured destinations of migrant workers. China’s cities make up approximately 40 per cent of the global growth in the demand for residential and commercial floor space.

The government has built over a million new housing units in cities throughout China to deal with the rapid urbanisation. It has also provided assistance to workers to set up savings plans to purchase them. The skylines of cities and the countryside are filled with construction cranes, as high-rise apartments are built. Urban sprawl is consuming the east coast of China.

Impact on urban dwellers

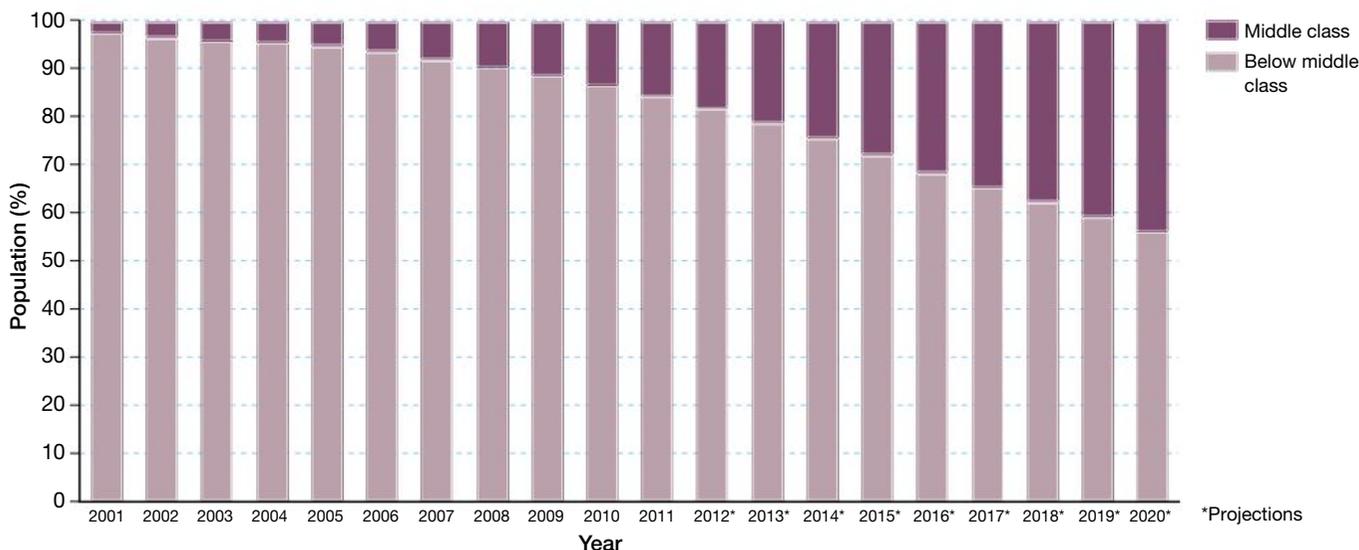
Economic growth has delivered greater prosperity to urban dwellers. People living in Guangzhou in 2010 were earning four times the income that people earned in 1993. Urban residents also receive more benefits and social services from the government, such as health insurance, pensions and education. As city dwellers become more educated, they enter high-skilled jobs, where they earn even higher incomes. As a result, a **middle class** of wealthy consumers has emerged, and the numbers involved will lead to further economic growth. Source 8.10.1 shows the rise in China’s middle class.

Middle class

The increasingly wealthy middle class provides a huge market for consumer goods. Between 2000 and 2014, the number of automobiles per 100 urban households rose from less than one to approximately 26; the number of computers from 8 to 87; the number of mobile phones from 16 to over 200; and the number of microwave ovens from 16 to 73.

Inequalities within cities

Migration has led to greater inequalities within cities. The incoming rural migrants are generally



Source 8.10.1 The growth in China’s middle class



Source 8.10.2 Pollution over Shanghai, 2013

uneducated and low skilled, and find it difficult to get well-paid jobs. This has led to tension between the rich and the poor. Over one-third of urban crimes have been linked to young migrants. There has also been a disturbing number of suicides among young migrant workers unhappy with their wages and working conditions.

Environmental effects

As urban expansion continues to accelerate in China, the environmental consequences are alarming. A toxic, grey cloud often hangs over many of China's cities, as shown in Source 8.10.2. Industrial wastewater and household sewage have contaminated rivers and coastlines. Water shortages and water pollution are becoming real threats. Air pollution has the potential to become the main cause of death in China. Heavy smog from factory emissions and car pollution can cause lung cancer and cardiovascular illnesses.

Some government initiatives to develop clean energy sources are underway. However, imposing controls on pollution would slow the economic growth to which the government is heavily committed.

Did you know?

If current patterns continue, the number of middle-class Chinese will soar to 607 million by 2020, and spending by China's middle class will rival that of the United States of America.

ACTIVITIES

Remembering and understanding

- 1 Describe where the most rapid urban development has occurred and will continue to occur.
- 2 Outline how the government has assisted with housing.

Applying and analysing

- 3 Create a PMI chart of the outcomes of China's urban expansion.
- 4 Write a short response to the following topic: *The greatest achievement of China has become its biggest burden.* In your response, consider the difficulty in balancing economic growth with environmental quality.

Evaluating and creating

- 5 Investigate the environmental issues of Chinese cities. Prepare an annotated visual display for a city of your choice entitled 'Choking in growth'. You should include:
 - a map of the city
 - an overview of the city—population size, demographics, main industries, growth rates
 - an outline of the main causes of the pollution
 - current solutions to the pollution problem. For example, have policies been introduced? Are they working? Why or why not? Provide alternative solutions.

China's rural towns and villages

Urban versus rural

Much of China's economic transformation has taken place in the special economic zones and big cities of eastern China. China's largely rural western provinces, in comparison, have not benefited from the economic transformation.

Promoting cities

For decades the Chinese government has focused on promoting industrial development in the urban and eastern parts of China. This is where the government has invested in transport and communications infrastructure. The poorest people in China are now concentrated in remote townships and villages in the western provinces. The educational, health and nutritional status of people in these provinces is well below that of people living elsewhere in China.

The Chinese government seeks to avoid social unrest, which could quickly take hold and threaten the stability of the vast country, by concentrating government spending in urban centres. In rural areas, discontent is less likely to escalate, as the rural settlements and their populations are quite scattered.

An exodus of migrants

The big cities offer a wider range of employment opportunities, which is an attractive prospect for young people living in rural areas. The potential for a more enjoyable, modern and adventurous lifestyle is also a major attraction.

City-based workers retain strong ties to their family. They travel home for important events, but return to their relatively well-paid jobs in the cities.

The flow of people is not always one way. During the 2008 global financial crisis, over 20 million workers returned to the countryside. Most returned to the cities as the world's economy recovered.

With so many young labourers leaving for the city, there are now many rural areas where it is mostly the elderly and women who are left to work on the farms. There are also many children left in the care of grandparents, while their parents work in the cities.

China's ageing population

In 1978, China introduced a new family planning policy, commonly known as the One Child policy. The policy permitted families to have only one child and caused the birth rate in China to fall. The policy was ended in 2015, in a response to the challenges of an ageing population.

Source 8.11.2 illustrates China's falling birth rate in certain regions and an increasingly ageing population. Chinese officials are now discussing the emergence of a '4-2-1' family structure developing throughout China as families have only one child. The '4' refers to two sets of grandparents, the '2' to the parents and the '1' to the only child.



Source 8.11.1 An old man and his grandson in Hebei Province, China

Traditionally, children look after their parents and grandparents in their old age. This will now be the responsibility of the one child—and people are living longer. China's ageing society and this new family dynamic provide China with many challenges.

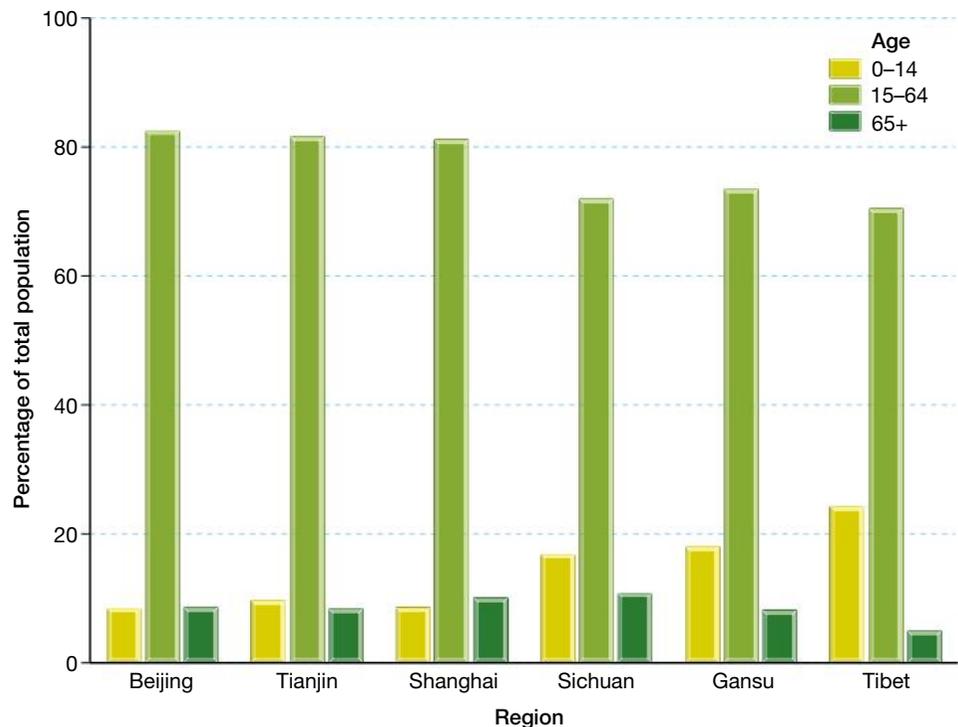
A widening gap between rural and urban

Half a billion people still live in rural areas, where almost 40 per cent of China's labour force work in agriculture. Some remote, inland regions remain much as they were 25 or even 100 years ago, with homes made of mud walls and earthen floors. Lack of adequate water supplies and sanitation services is common in many rural communities.

Despite China's economic transformation, the incomes of farmers are increasing more slowly than those of people working in the cities. The incomes of the rich have grown rapidly, which has widened the gap between rural and urban regions. The incomes of those living in the cities are two and a half times those of people living in rural areas.

Wide disparities are evident between the coastal provinces (where increasingly more people live in cities) and the inland provinces. This trend looks set to continue, as there are fewer opportunities in rural settlements. Rural schools have higher fees but fewer facilities than those in the city, so young people are disadvantaged. Many have to depend on farm labouring if they choose to stay in their village.

It is estimated that less than 30 per cent of the population in poor areas have safe drinking water and 22 per cent of rural residents cannot afford healthcare. The geographic distribution of health system coverage corresponds almost exactly with China's pattern of economic development, with the eastern provinces having the highest, followed by the central and then the western provinces.



Source 8.11.2 Population of selected Chinese regions, mid-2010

ACTIVITIES

Remembering and understanding

- 1 Explain why the Chinese government concentrates its spending in urban areas.
- 2 Analyse the movement of young people to and from the cities.
- 3 Describe and account for the widening gap between rural and urban areas.
- 4 Identify evidence for this widening gap.

Applying and analysing

- 5 Discuss the outcomes of the One Child policy and the creation of the '4-2-1' family structure.
- 6 Study Source 8.11.2 and answer the following questions.
 - a List the region with the highest percentage of people aged 0-14 years.
 - b List the regions with the lowest percentage of people aged 0-14 years.
 - c Tibet, a remote rural area, has the lowest percentage of people over 65 years of age. Suggest reasons for this.

Inquiry tasks

Urbanisation in Australia

Australia's small population (24 million in early 2016) is one of the world's most urbanised, with an estimated 86 per cent of people living in towns and cities. Australia has thirty cities with more than 50 000 people. Using the information provided in Source 8.2.2 and an atlas, plot Australia's 20 largest urban areas on a map and then answer the following questions.

- Where in Australia are most of these cities located?
- How many of these cities have you heard of before and why?

Movement of people into Australia

People from these countries migrate to Australia for work:

- New Zealand
- India
- Indonesia
- Philippines
- China
- Fiji
- Papua New Guinea.

Select one country and research some of the reasons that could account for people wanting to leave their country of birth to seek employment in Australia. What are some of the fields of work these migrants undertake when they arrive in Australia?

Visit the Museum Victoria website and search for 'origins of immigrant communities in Victoria' for additional information to help you with this task.

Compare and contrast

Select one of Australia's capital cities and one capital city in China. Undertake research to find the following information.

- When was the city established and by whom?
- What is its population?

- What is the next largest urban centre in the same state, territory or province?
- Describe the site of the city.
- List its major industries, notable buildings and landmarks and any special events for which it is famous.
- Describe the environmental impacts of this city. Identify any progress that has been made in protecting environmental quality.

Present an oral report to the class outlining the findings of your research. Include in your presentation a map of each of the cities highlighting its major features.

Impact on Chinese cities

Read the article about house quality in China, and then answer the questions that follow.

• • • • • • • • • •

In recent decades, Chinese cities have experienced profound social, economic and spatial transformations. In particular, Chinese cities have witnessed the largest housing boom in history and unprecedented housing privatisation. As a result, urban residents have enjoyed spectacular housing improvement with better housing quality, higher residential mobility and higher rates of home ownership than before. Dominated by public rental housing only three decades ago, China now is a country of home owners, with more than 70 per cent of urban residents owning homes—higher than in many developed countries. Moreover, more than 15 per cent of urban households own multiple homes. Yet, this spectacular housing success is not shared by all social groups. Housing inequality is rising rapidly, and residential segregation is increasingly prevalent in previously homogenous Chinese cities. Low-income groups such as migrants have to live in crumbling shacks in so-called 'urban villages', while the new nouveaux riches live in exclusive gated villa communities that are

on par with upmarket gated communities in the West. The residential landscape in Chinese cities is becoming increasingly polarised, which is reshaping the social, economic and political landscape in Chinese cities, and is challenging our perception of Chinese cities.

Source: *Housing inequality in China*, edited by Si-ming Li and Youqin Huang, Routledge, 2013

- 1 What do urban residents enjoy now as a result of the social, economic and spatial changes in Chinese cities?
- 2 Are good-quality homes available to all people in Chinese cities? Explain your answer.
- 3 What similarities do Chinese cities share with cities in developed countries?
- 4 In parts of China whole cities have been built but are not occupied. Investigate why these cities are not occupied when there is a housing crisis.

GLOSSARY

commute to travel regularly between home and work, school or university

cosmopolitan lifestyle a way of life drawn from aspects of the lifestyle of a range of cultures across the world

counter-urbanisation the process whereby people move away from urban areas to settle in rural areas

exurbanisation the movement of people into communities within two or three hours' drive of major urban centres

gross domestic product (GDP) the total monetary value of goods and services in a country

guest worker a person who moves temporarily to another country for work

hukou system a Chinese household registration system that entitles the holder to a range of services such as healthcare and education, used to regulate the movement of people in China

internal migration the movement of people within a country

megacity a city with more than 10 million people

middle class a class in society between upper and lower

per capita per person; often used with the term GDP

push and pull factors the factors that cause people to leave the places where they live and the factors that draw people to places

regional centre a rural city that supports smaller surrounding towns with services

sea change a relocation from the city to the coast

special economic zone a geographical region of China in which economic and other laws are more accommodating of capitalism (free market) than the national laws

tree change a relocation from the city to a rural or regional area

urban growth the increase in the population living in cities, expressed as a number measured over a period of time

urban sprawl the outward spread of a city and its suburbs as they grow

urbanisation the process by which an increasing proportion of a population lives in towns and cities, measured as a percentage

world city a city considered to be an important centre of global economic activity, such as New York, Tokyo, London and Paris

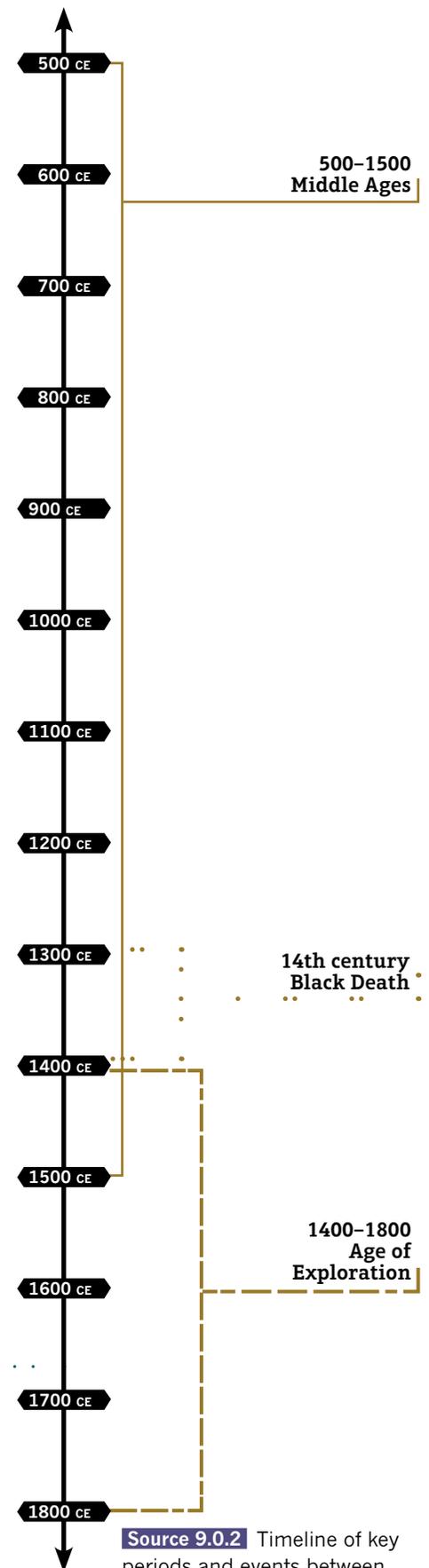


Overview: The ancient to the modern world

After the fall of Rome, societies in Europe, the Middle East and Asia changed significantly. Across medieval Europe, society was organised under **feudalism**. The Catholic Church became the most powerful force in Europe. During the fifteenth to eighteenth centuries CE, Europeans ‘discovered’ and **colonised** other parts of the world; this was to become known as the age of exploration.

In the Middle East, the Islamic religion spread and became the dominant power. In present-day Turkey, the Ottoman Empire emerged. Religious clashes between Christians and Muslims occurred in a series of wars known as the **Crusades**.

Source 9.0.1 Ottoman forces preparing for battle outside the walls of Rhodes in 1480, from *A History of the Siege of Rhodes* by Guillaume Caoursin, 1483



Feudalism

A medieval system of governance

Feudalism was the dominant political system in Europe between the ninth and fifteenth centuries. It was a system of structuring society based on mutual dependency and obligation. In England, the Normans, led by William the Conqueror, imposed feudalism on the largely Saxon population in England, after defeating the Saxon king, Harold Godwinson, at the Battle of Hastings in 1066 CE.

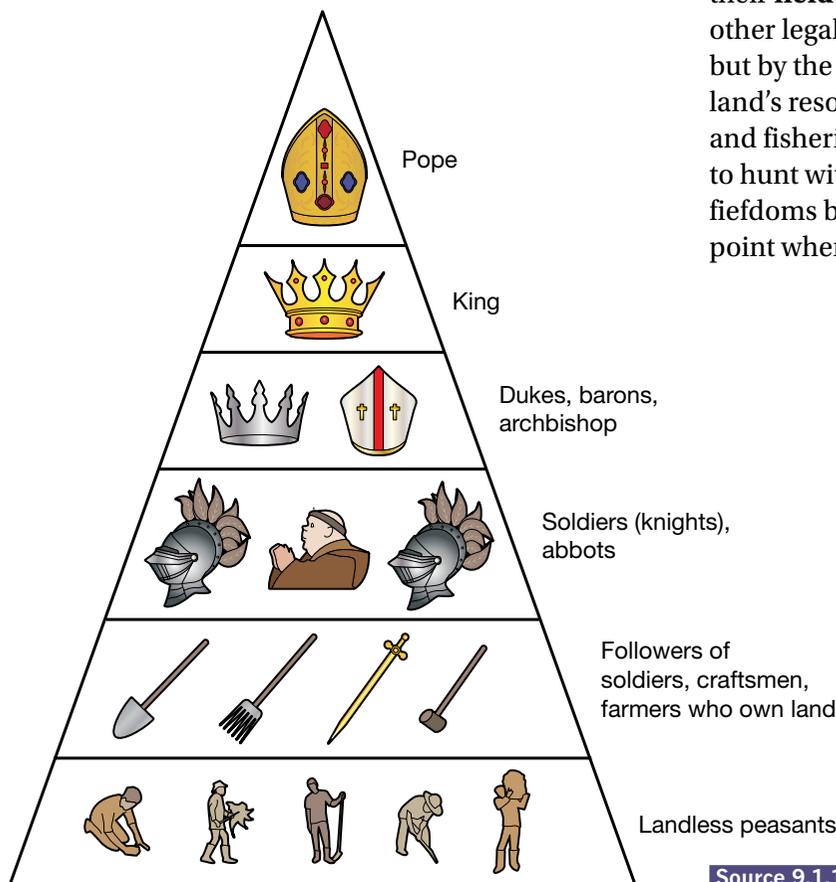
Generally, a king or emperor did not have a large enough army or enough educated men available to him to rule effectively over a large territory. The feudal system addressed this problem by giving land to important lords who were required, in return, to fight for the king if necessary and ensuring the continued wealth of the country through its agricultural production.

The feudal system

The Pope was at the peak of the feudal system. The king was only accountable to the Pope. The king then gave land, called 'fiefs,' to important nobles, who became **vassals** of the king. The king became the liege lord of the vassals. In return the nobles were obliged to provide military support to the king in time of war. In turn, nobles would give land to knights, also under the condition that they would provide military support to the noble when required. Knights and the lord allowed peasants use of land to grow food for their needs and provided them with protection. In return, peasants provided labour, food and service to their superiors, but had no rights.

Power of the nobles

In some parts of Europe the lords became more or less independent. They had their own armies and often very strong legal authority within their **fiefdoms**. In fact for most people, crimes or other legal issues were not handled by the king, but by the local lord. Lords also controlled their land's resources, which could include forests, mines and fisheries. In many places no one was allowed to hunt without the permission of the lord. Some fiefdoms became very rich and powerful, to the point where they could defy the king.



Source 9.1.1 The feudal system

The Crusades: Two major religions at war

Two major religions

During the medieval period, in Europe and the area of Asia often referred to as the Middle East, there were two major religions. Christianity was the religion that dominated European medieval society while the people of the Middle East followed the beliefs of Islam.

Christianity

Beliefs of Christianity

Followers of Jesus Christ are called Christians. Christianity is a **monotheistic** religion as its followers believe in one God and that Jesus Christ was his son, sent to live among people as a man to save humanity from their sins. Their sacred book is called the Bible. Jesus Christ taught that everyone should love God and love one's neighbour.

JESUS CHRIST

Jesus Christ was born sometime between 6 and 4 BCE in Bethlehem, Palestine. He was often also called Jesus of Nazareth or Jesus of Galilee. His followers believed him to be the Son of God and his teachings were recorded by his disciples among others in the New Testament of the Bible. He was crucified by the Romans in Jerusalem around 30 CE and his followers believe that Jesus was resurrected after three days and ascended to heaven. Afterwards, his teachings spread throughout the Roman Empire and then Europe, and are still followed by many people today.

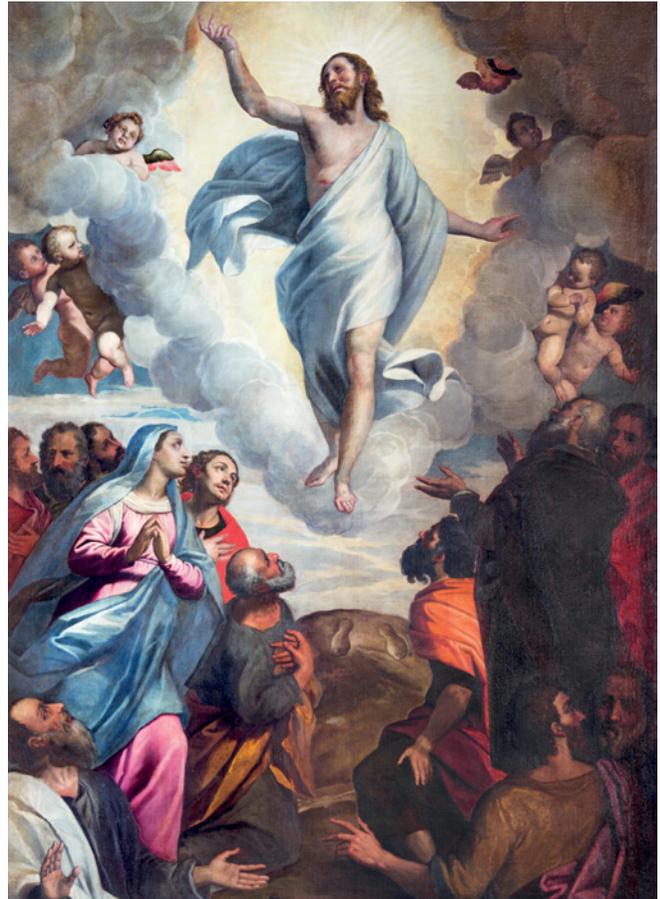
MEDIEVAL CHRISTIANITY

For much of the medieval period, Christianity was the dominant religion in Europe and Turkey. However, Christianity was not truly united. In the early eleventh century, the only Christian Church, the Catholic Church (the word 'catholic' means 'universal'), began to split into two divisions. In the west, largely in Europe, was the Roman Catholic Church. Its spiritual home and central administration were in Rome. In the east was the Eastern Orthodox Church. Constantinople was its administrative centre.

The Roman Catholic Church

The head of the Roman Catholic Church was called the Pope. The Pope did not rule a large area directly,

but he was powerful because the majority of people in Europe were **devout** Christians. The Church influenced all aspects of people's lives. Christians believed that those who worshipped God and obeyed the Church would go to heaven. The Catholic Church effectively gave them rules by which to live.



Source 9.2.1 The ascension of Christ

The Eastern Orthodox Church

Orthodox believers did not recognise the authority of the Pope. In fact, the head of the Church was the emperor. He was responsible for the major appointments and controlled most of the Church's funds. However, like the Catholic Church, the Eastern Orthodox Church had monasteries and dioceses. By the end of the thirteenth century, with the rise of the Ottoman Empire (in what is now Turkey), Islam took over the territory of much of the Orthodox Church and became the dominant religion.

This meant that Christians became a minority in many countries in Eastern Europe and Christianity ceased to be the state religion. In contrast, in Western Europe, Christianity not only retained but also strengthened its political position and power.

Islam

Beliefs of Islam

Followers of Islam are called Muslims. Islam, like Christianity, is a monotheistic religion. Muslims believe that the prophet Muhammad was God's last and most important prophet. Their sacred book is called the Qur'an. All Muslims are required to perform five basic acts, called the 'Five Pillars of Islam':

- Every Muslim must say they believe in one God and that Muhammad is His prophet.
- A Muslim should pray five times a day.
- Those who can afford it should give money to the poor.
- For one month every year, during **Ramadan**, Muslims do not eat or drink between sunrise and sunset. This month is to encourage believers to think about God and to be grateful for the good things in their lives.
- Anyone who can afford it should go on **pilgrimage** to the city of Mecca at least once.

..

*In the name of Allah, most gracious,
most merciful.
Praise be to Allah the cherisher and
sustainer of the worlds:
Most gracious, most merciful;
Master of the Day of Judgement.
Thee do we worship, And Thine aid we seek.*

..

Source 9.2.2 Opening chapter of the Qur'an, trans. General Presidency of the Departments of Islamic Researches, 1984

THE PROPHET MUHAMMAD

Muhammad was born in Mecca, in what is now Saudi Arabia, around 570 CE. He spent much of his life as a trader. Muslims believe the archangel Gabriel spoke to Muhammad, commanding him to recite poetry, which later became part of the Qur'an. Muhammad began to preach and built a reputation as a spiritual, then political and military leader. He was especially good at helping Arabian tribes to end their disagreements.



Source 9.2.3 Every year, devout Muslim pilgrims travel to Mecca to deepen their spiritual experience.

The spread of Islam

The influence and power of Islam spread very quickly, partly through military conquest. By the time Muhammad died in 632, Islam had united all the tribes of Arabia. Afterwards, it continued to expand, even though there were disagreements among Muhammad's followers about who would be the new leader of the Islamic community. By 750, Islamic governments ruled from Spain, across North Africa, Arabia and through Iran and Iraq to Afghanistan. Some of this territory they took from the Byzantine Empire. Islam gathered followers even in places outside of Arabic or north African influence, for example among the Turks. The Islamic political system was called the **caliphate**, because it was ruled by a caliph.

Christianity and Islam clash

Christian countries were uneasy about the expansion of Islam. Places that Christians regarded as holy, like Jerusalem, were now ruled by Muslims. These places were also regarded as being holy according to Islam. Historians differ in opinion about the early sources of disagreement between Christians and Muslims. Some historians argue that the disagreements were primarily about religion.

Others argue that many of the disagreements were not based on religion itself, but were founded instead in concerns about lucrative trade routes to China, and access to resources and power. Christianity and Islam clashed violently during the Crusades of the eleventh to thirteenth centuries.

The Crusades

Starting in 1095 CE and continuing for about 200 years, Christianity and Islam clashed in a series of wars known as the Crusades. A crusade was a military pilgrimage undertaken by European Christians to regain control of the Holy Land from the Muslims. Over this period there were nine separate crusades into the Middle East.

The Crusades begin

Many places that Christians regarded as holy, such as Jerusalem, were under the control of Islamic governments. Many of these places were also holy to Muslims. Up until 1095, Muslims had allowed Christian pilgrims to visit Jerusalem. However, around this time, they forbade Christian pilgrims to enter Jerusalem and executed any who ignored their directive. As a result of these murders, Pope Urban II in 1095 called on Christians to fight to restore Christian control of these holy places.

.. .. .

All who die by the way, whether by land or by sea, or in battle against the pagans, shall have immediate remission of sins. This I grant them through the power of God with which I am invested. O what a disgrace if such a despised and base race, which worships demons, should conquer a people which has the faith of omnipotent God and is made glorious with the name of Christ!

.. .. .

Source 9.2.4 The speech by Pope Urban II calling for a crusade, Council of Clermont, France, 1095, in O.J. Thatcher and E.H. McNeal (eds), *A Source Book for Medieval History*, Scribners, New York, 1905, pp. 513–17

The Crusaders

Crusaders were from nearly all levels of society, from peasants to powerful lords. There were many reasons why people undertook such a difficult and dangerous journey, but often it was for reasons of



Source 9.2.5 The Crusader states in 1142

religious faith. Additionally, knights were keen to have the opportunity to use their fighting abilities, while peasants saw it as a means of escape from harsh lives. Many people hoped for adventure and wealth.

The early Crusades

The First Crusade (1096–1099) was planned to recapture Jerusalem and establish a Christian Holy Land. It succeeded, although many lives were lost in the process. The Crusader states were established. These were Edessa, Antioch, Tripoli and Jerusalem.

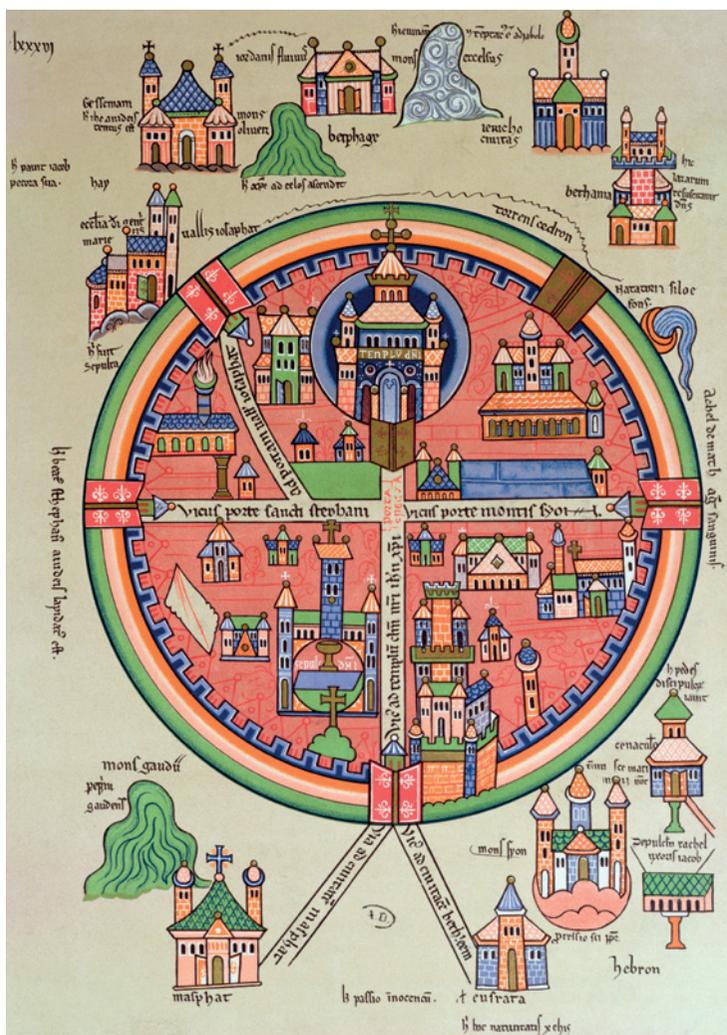
The Crusader states soon ran into major problems. In 1144, the city of Edessa fell to Islamic forces. This news was met with great alarm in Europe. Pope Eugene III called for the Second Crusade (1145–1149), which was a complete failure. The Crusaders attempted to capture Damascus, rather than retake Edessa, but were not able to achieve this.

The Third Crusade

In 1171, the Muslim general Saladin united Egypt and Syria under his rule, surrounding the Crusader states. In 1187, he captured Jerusalem and the important city of Acre. This caused uproar in Europe and, in response, several important

rulers raised armies to go to the Holy Land. These included King Richard I of England, King Philip II of France and the Holy Roman Emperor, Frederick Barbarossa.

Largely because Richard was an effective general, the Crusaders were successful at first. They recaptured Acre, murdering many of the inhabitants. However, they were never able to retake Jerusalem, which had been their main aim. This was partly due to disagreements among the Crusader leaders. Their enemy, Saladin, also had to deal with internal problems. Eventually, a compromise was reached between the warring parties. Jerusalem would stay under Muslim rule, but Christian pilgrims would be allowed to visit the holy sites.



Source 9.2.6 This medieval map of Jerusalem and Palestine shows sacred sites, including the Temple of Solomon. Colour lithograph, nineteenth-century copy of a miniature from a chronicle of the Crusades of Robert Le Moine de Reims (completed before 1107), Musée des Arts Décoratifs, Paris, France

Later Crusades

The remaining Crusades were even less successful. Competition and disagreement among the European powers meant that Jerusalem was never retaken. This was partly because of religious and political differences between eastern and western Christianity, but also because of commercial disagreements between trading cities such as Genoa, Venice and Constantinople. In fact, the Fourth Crusade (1202–1204) invaded Constantinople, a Christian city.

The end of the Crusader states

The Crusader kingdoms were not long-lived. They were located in foreign lands, far away from military support. The County of Tripoli fell to an Islamic army in 1289. The last Christian city, Acre, fell in 1291.

ACTIVITIES

Remembering and understanding

- 1 Explain the power that the Roman Catholic Church had in European medieval society.
- 2 Describe the relationship between the Byzantine emperor and the Eastern Orthodox Church.
- 3 List some of the causes of disagreement between Christians and Muslims.
- 4 Identify the reasons for the failure of:
 - a the later Crusades
 - b the Crusader states.
- 5
 - a Why did Pope Urban II call a crusade?
 - b Examine Source 9.2.4. What did Pope Urban II believe about Muslims?
 - c What did he offer people who went on crusade?

Applying and analysing

- 6 Create a Venn diagram to compare and contrast Christianity and Islam.
- 7 Read Source 9.2.2. What conclusions can you draw about Muslim beliefs from this description of Allah?

Evaluating and creating

- 8 In 1212 CE, The Children's Crusade took place, a crusade led and made up of young children. Undertake some research in the library and on the internet to enable you to create an AVD on this unusual crusade.

Voyages of trade and discovery

The Silk Road

From around the first century BCE, a network of trade routes grew that would eventually stretch from China to Europe and North Africa, a distance of nearly 6500 kilometres. These routes were referred to collectively as the **Silk Road** because silk was the first important commodity transported along these routes. Silk was produced in China but became a coveted luxury item in Europe. Eventually, all kinds of goods, especially expensive ones like spices, were transported along these routes.

Use of the Silk Road started to decline with the disintegration of the Mongol Empire during the fourteenth century CE. Without a strong government to protect the trade routes from bandits, people were reluctant to use them.

Trade and exploration by sea

Europeans still wanted to trade with the Far East, because they needed things such as silk and spices. There was also a thirst for new knowledge and

the desire to spread Christianity, to counteract the spread of Islam throughout Asia. However, Europeans could no longer go overland, so merchants and explorers began to look for new sea routes to move their goods around the world.

China

China was seen as a lucrative market for trade. The first Europeans to explore the Indian Ocean and arrive in China to trade were the Portuguese in 1513. On the way, they set up trading posts in Africa and India. The English and the Dutch followed. Many Europeans at the time thought that it was possible to sail to China by heading west. It is believed that Christopher Columbus was looking for such a route when he discovered the Americas by accident in 1492.

There were also attempts to get to China by sailing to the north of Canada (the North-West Passage) or north of Russia (the North-East Passage). All these attempts, however, were unsuccessful until the nineteenth and twentieth centuries.



Source 9.3.1 The Silk Road, trade routes and Portuguese exploration, fifteenth century

European explorers

Spanish and Portuguese explorers such as Christopher Columbus and Ferdinand Magellan led the new era of exploration. The Spanish explored and colonised vast areas of the New World: the Caribbean, Central America, Mexico, the south-west United States and western South America. The Portuguese colonised Brazil.

The Spanish, Dutch, French and British explored the South Pacific. The Spanish located New Guinea and the Solomon Islands. They also looked for a land known as 'Terra Australis' (South Land) but did not find it. The Dutch located Tasmania and New Zealand. Captain James Cook, the British explorer, mapped part of the Australian coast and New Zealand in 1769–1770.

Indigenous rights

As European explorers found 'new' territory, they also came into conflict with indigenous civilisations such as the Aztecs in Central Mexico and the Incas in Peru. Little regard was paid to indigenous peoples, and many cultures across different geographical areas were destroyed by disease and violence. As trade and commerce developed, many indigenous people were also enslaved.

Did you know?

One of the worst diseases sailors contracted was scurvy. Sufferers became tired and experienced shortness of breath and bone pain. This was followed by high fever, convulsions and death. One voyage lost 1400 out of 1900 men to the disease. Scurvy is caused by vitamin C deficiency. Sailors lived on dry meat and grains, and it was not proven until the late eighteenth century that a little lemon or orange juice could prevent the disease that killed more sea travellers than war or shipwreck.

• • • • • • • • • •
On the road we had come across many of the signs which the natives of that province had warned us about, for we found the highroad closed and another made and some holes, though not many; and some of the streets of the city were barricaded, and there were piles of stones on all the roofs.
• • • • • • • • • •

Source 9.3.2 A letter from the explorer Hernán Cortés in Mexico to Emperor Carlos V of Spain, 1522, in *Hernán Cortés: Letters from Mexico*, trans. A. Pagden, Yale University Press, New Haven, 1986, pp. 72–4

Unexplored territory

By the eighteenth century, European explorers had reached most of the world by sea and mapped their routes. European colonies had been established and new sea routes created. However, the interiors of continents still remained a mystery to Europeans. For example, it was not until the nineteenth century that much of Africa and the interior of Australia were explored.

ACTIVITIES

Remembering and understanding

- 1 Why did early explorers want to find a way to trade with China by sea?
- 2 Which were the two most important countries involved in the European settlement of South America?

Applying and analysing

- 3 Examine Source 9.3.1.
 - a Was the trade of goods only one-sided? Explain.
 - b What were the Portuguese trying to achieve with their explorations?
- 4 Examine Source 9.3.2. What evidence is there that the Aztecs were prepared for a fight?

Evaluating and creating

- 5 Undertake some further research in the library and on the internet to find out five facts that support the following statement. *The Silk Road was one of the most significant trade routes in history.*

Inquiry tasks

The Crusades

The year is 1096 CE. Christians across Europe are preparing to embark on a Crusade to regain control of the Holy Land. You have decided to join the Crusaders.

Conduct some research into the First Crusade. Take notes on the following:

- reasons for the Crusade
- who led the Crusade
- who joined the Crusade
- the route taken to reach the Holy Land
- the outcome of the Crusade
- the dates.

Present your experiences in the form of a diary with at least four entries. Each entry should be a minimum of 150 words. Your diary should include illustrations and maps.

Medieval monasteries

The Catholic Church was a very powerful force in Western Europe during medieval times. Many religious people were monks living in monasteries.

Conduct some research into medieval monasteries. Your research may include:

- monastery architecture
- different parts of the monastery
- daily routine for monks
- clothes worn by monks
- services offered to the public
- scholarship and illustrated manuscripts.

Prepare a poster about medieval monasteries. Include at least four subheadings, each covering an aspect of monasteries. Include both text and visual material.



Source 9.4.1

Stained-glass window depicting the First Crusade (eleventh century) in the cathedral of Brussels, Belgium

Significant people

There were many influential individuals in the period between the end of the ancient world and the start of the modern world. Select and research one individual. The following list includes some possible individuals to investigate:

- Süleyman the Magnificent
- Christopher Columbus
- Ferdinand Magellan
- James Cook
- Hernán Cortés
- Leonardo da Vinci
- Nicolaus Copernicus
- Galileo Galilei
- Andreas Vesalius.

Prepare a report that includes:

- a timeline of key events in the person's life
- a description of the historical period during which the person lived
- an explanation of why this person is a significant historical figure.

Christianity and Islam

Work with a partner to each prepare a poster, one showing the features of Christianity and the other of Islam. The posters should be largely visual with annotations to describe each religion. Base your posters on Unit 2 'The Crusades: Two major religions at war' but add your own research from the school library or the internet.

Once you have finished, compare your poster with your partner's and write a brief list of similarities and differences between the two religions.

GLOSSARY

allegiance loyalty or obligation

caliphate a political region that is governed by a caliph

colonise migrate into an area that is occupied by other people, establish a settlement and take political control

crusade a military religious pilgrimage

devout deeply religious

feudalism a system of mutual obligation used in the Middle Ages to organise politics, society and the economy

fiefdom an area or domain overseen and controlled by the feudal lord under the feudal system

monotheistic believing in one god

omnipotent with unlimited power or very great authority

pilgrimage a journey to a place of religious importance

Ramadan The ninth month of the Islamic calendar, observed as a holy month

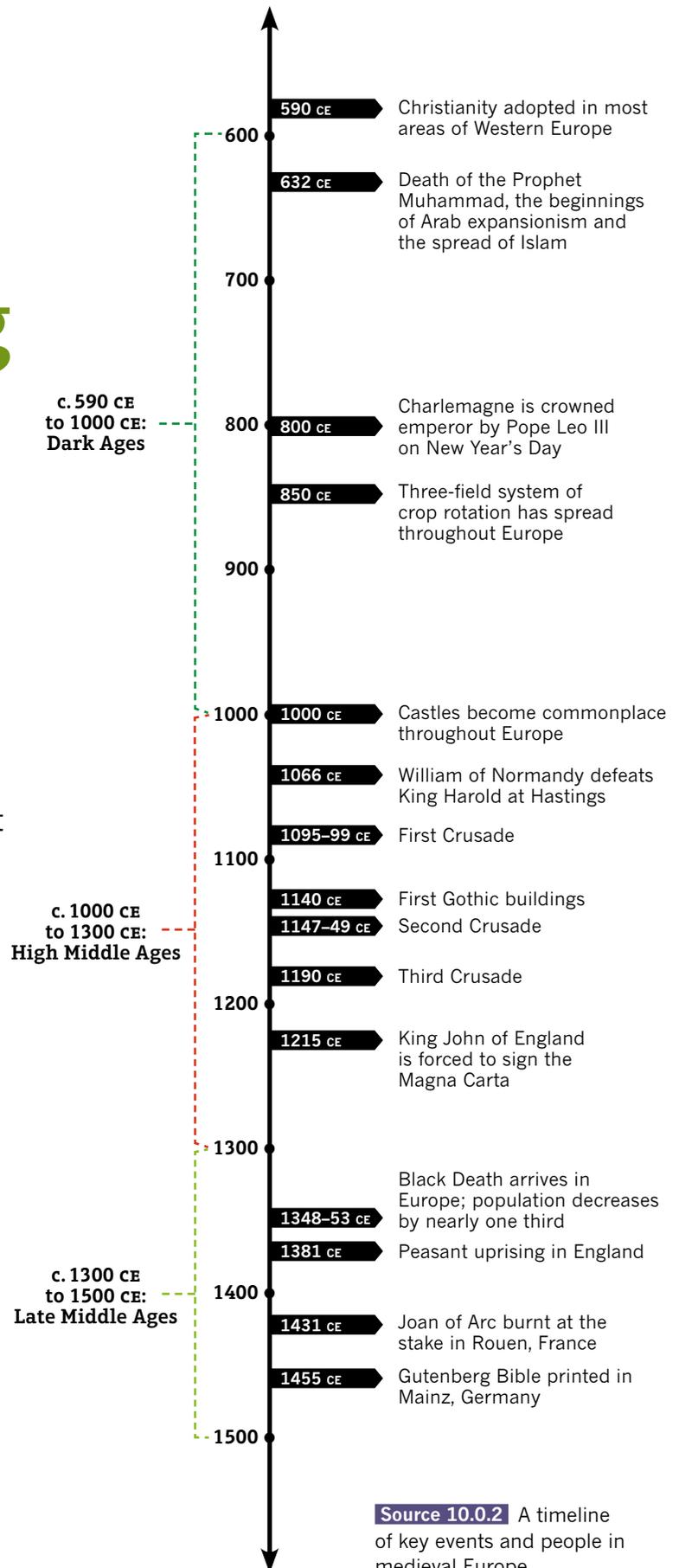
Silk Road a major trade route linking Asia with Europe and North Africa

vassal a person holding land of another and owing them military service in return



Investigating Medieval Europe

The era of Medieval Europe, also known as the Middle Ages, was a time of contrasts. It began as a period of underdevelopment and stagnation, and ended with a rich legacy of castles, cathedrals, universities and the concept of parliamentary rule.



Source 10.0.1 The medieval Citadel of Carcassonne, southern France. The city was protected by two concentric walls, many watchtowers and heavily fortified gates.

Source 10.0.2 A timeline of key events and people in medieval Europe

The medieval European world

The extent of medieval Europe

The Middle Ages, or *Medium Aevum* in Latin ('medieval' in English), refers to the period between the collapse of the Roman Empire in 476 CE and the beginnings of early modern history around 1500 CE.



Source 10.1.1 Kingdoms of Western Europe by 1500

Crisis and economic revival

After the collapse of the Roman Empire, Europe remained in a state of nearly constant crisis and turmoil. Despite this, there were periods of economic revival and prosperity.

The Dark Ages

In the Dark Ages or Early Middle Ages (about 500–1000), most peasants lived in poor conditions, suffering and dying from regular famine and diseases. The economy was based on **subsistence farming** and the population growth was static. There were small local markets and people relied on a **barter system** rather than coinage.

The High Middle Ages

During the High Middle Ages (1000–1300), there was a revival of agricultural production through new

farming techniques. Population growth encouraged territorial expansion to the east and south. More towns were established and older ones became larger. Merchants travelled further afield and trade routes were re-established across Europe towards the east.

The Late Middle Ages

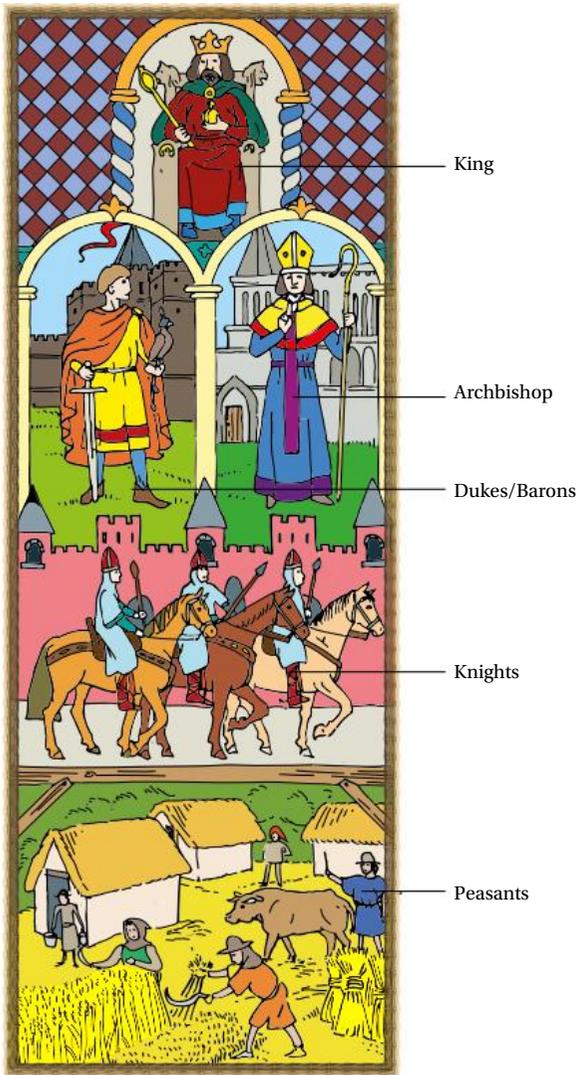
Economic growth slowed down during the Late Middle Ages (1300–1500). Continued warfare brought economic burdens and widespread looting by **mercenary armies**. There were continual natural disasters such as drought or flooding, which led to widespread destruction of crops across France and England. Successive outbreaks of the **Black Death** decimated populations and caused labour shortages. Peasants rebelled in France and England because they felt unfairly burdened by taxes.

Society in the Middle Ages

There were many social divisions and limited opportunity for social mobility. Few if any people rose above the social class into which they were born. There was a division between those who were part of the church **clergy** and those who were not, and there was a strict hierarchy within social groups.

Hierarchy among the lower classes

There were two categories of peasants. Peasants called 'villeins' were freeborn and could own or rent land to grow crops. They had to work on the lord's land two to three days a week and owed him military service. Although free, they needed the lord's permission to move away from the lord's manor or estate, to arrange a daughter's marriage or hunt in the lord's forests. Peasants who were bonded to a lord were called 'serfs'. They were bound to a particular estate and were sold with it to whoever bought the land. Serfs farmed plots of the lord's land for their livelihood in return for payment in crops. They also worked about three days a week on the lord's land.



Source 10.1.2 The main social groupings in medieval Europe

The nobility

Strict hierarchical relationships were based on the feudal bond, a promise made between a high-ranking lord and his vassal, and on values such as fidelity and allegiance. A **knight** swore to serve his lord faithfully in war and was rewarded with protection and a gift of land or fief. Knights became rich landowners and in turn made gifts of land to lower-order vassals as a reward for military service.

Over time, kings across Europe asserted their rights as feudal lords. William, Duke of Normandy, relied on the support of his knights to invade England in 1066. Once established as king of England, he encouraged the development of feudalism by rewarding his nobles with English land. This way, ‘William the Conqueror’ controlled the entire English countryside.

Chaucer and the order of knighthood

Geoffrey Chaucer was an English writer of the fourteenth century. His collection of stories, *The Canterbury Tales*, provides us with some insight into the knightly code of behaviour, which was based on Christian virtues such as loyalty, honesty and honour. Other poetry and tales of chivalric romance included knights who were motivated by love. Love poetry featured references to castles, tournaments, perfumed gardens and images of knights offering their hearts, such as in Chaucer’s *The Knight’s Tale*.

.....
*A knight there was, and he a worthy man,
 Who, from the moment that he first began
 To ride about the world, loved chivalry,
 Truth, honour, freedom and all courtesy.
 Full worthy was he in his liege-lord’s war ...*

Source 10.1.3 Extract from Geoffrey Chaucer’s *The Canterbury Tales*, General Prologue, end of fourteenth century

ACTIVITIES

Remembering and understanding

- 1 Identify at least three ways in which Europe grew strong again during the High Middle Ages.
- 2 What were the key social groups in medieval society?

Applying and analysing

- 3 With a partner, hypothesise the circumstances in which wealthy lords needed to rely on the feudal bond to raise an army.
- 4 Examine in the text the values that knights in medieval Europe were expected to follow. With a partner, discuss why these virtues were so important in medieval society.

Evaluating and creating

- 5 Devise a plan that would make medieval society less rigid and would allow greater mobility between social classes.

Everyday life

Families

Medieval families were of a moderate size and included the married couple and two or three children. Although the birth rate was high, high mortality rates meant that half of all children died before they reached the age of seven. Boys were considered to be adults by fifteen and girls could marry by fourteen. Life expectancy was low by modern standards. The average person lived about 30 to 35 years. Population mortality rates also meant that step-parenting was common.

Women

Women were always subject to the authority of the male members of their families. They spent half their lives pregnant, facing great dangers giving birth. They had few legal rights and had no financial independence. Works of art show noble women doing embroidery, spinning or weaving. Peasant women are often shown doing strenuous work

in the fields alongside their husbands. Women who joined religious communities or convents worked according to their social status: the nobles embroidered and weaved; the poor cultivated soil because convents were self-supported communities.

Life on the land

Peasant men and women worked in the fields in all seasons. Their tasks included manual ploughing, sowing, weeding, harvesting and threshing. Medieval agriculture was based on the open-field system where common land was divided into three fields. Crop rotation allowed two fields to be cultivated and harvested in autumn and spring. The third field was left fallow so that it became fertile again for the following year. Livestock grazed on the third field and provided fertiliser. The only form of mechanisation available was the mill, which used the power of water and wind to grind grain. Watermills had existed since Roman times, but windmills were an innovation of the twelfth century.



Source 10.2.1 Detail of a miniature of the marriage of Philippe d'Artois to Marie, daughter of the Duc de Berry, from *Chronicles* by J. Froissart, fifteenth century, The British Library, London



Source 10.2.2 The agricultural year was a common theme for religious and secular art as shown in this thirteenth-century German illustration of peasants in the field, *Harvesting* (vellum), Rheinisches Landesmuseum, Bonn, Germany.

Clothes

Male peasants wore rough home-spun woollen tunics, usually with hoods. Women peasants wore a sleeveless shift with a coarse gown over it. Shoes had leather tops and wooden soles. Outer clothes were rarely washed.

The wealthy wore fur-lined clothes for warmth. Their clothing was colourful, elaborate and changed with fashion trends. By the end of the Medieval period, rich women wore long, flowing gowns and elaborate headwear that was designed on wire frames. Men wore jackets, skirts and hose, or belted tunics and surcoats.

By the Late Middle Ages, more fabrics were available for clothing: wool, linen, silk, hemp, cotton, leather and fur. Only the rich wore expensive fabrics.

Housing

Housing reflected social status and wealth in the Middle Ages. Castles and manor houses were designed to defend a lord's family and his possessions and to overawe his enemies. They were built out of stone and were large enough to entertain and accommodate lots of people. They included large halls, big kitchens, bakeries, food storerooms and many bedchambers. Fresh water came from a well and the many fireplaces were used for warmth and cooking.

By contrast, peasant houses were modest, mostly constructed of wood and thatch. While the organic materials used kept the heat in, they attracted mice and rats. The house of a successful peasant might have had two storeys with the bedchambers upstairs. But the poorest lived in cottages consisting of a single room and a turf roof that made the whole place damp and dark. One fireplace was used for cooking and heating and was the only source of light. Floors were earthen and covered with rushes and sweet-smelling herbs.

Furniture was scarce at all levels of medieval society. Lice and bedbugs bothered everyone regardless of social status, and having a room for bathing was a luxury. Most people in towns visited public bathhouses called 'stews'.

Food

Meals were very bland for the majority of the population. Households prepared their own food,



Source 10.2.3 A medieval kitchen interior, copy of the sixteenth-century *Le miracle du tamis brisé* (*The Miracle of the Broken Sieve*), triptych panel by the southern Netherlands school of painting, from *Dictionnaire de l'ameublement de la décoration* (*Dictionary of Furnishing and Decoration*), Volume 1, 1878, by Henry Harvard (1838–1921)

although townspeople could buy their bread from a baker and their meat pies and pasties from cooks. Peasants ate two meals a day, the main meal being around eleven in the morning. A lord might eat breakfast.

A few other facts about diet in the Middle Ages:

- Bread made from wheat, barley or rye was the main energy food.
- Butter, cheese, eggs and milk provided most protein. Only the wealthy ate meat regularly.
- The staple drink was ale, cider or water. In northern Europe the rich could afford wine.
- Fruits and vegetables were only available in season. For example, apples, pears, cherries and plums were picked in late autumn.
- Kitchen gardens provided peas, onions, leeks, cabbages and beans.
- The poorest mainly ate meals of brown bread and pottage, which is a thick soup or stew made with vegetables and grains.



Source 10.2.4

Sir Geoffrey Luttrell dining with his family, an illustration from the Luttrell Psalter, c. 1325–1335 (vellum), The British Library, London

Health care

Medieval remedies for sickness included medical attention from a doctor and prayers for God’s mercy. Epidemics like the plague were considered to be a punishment from God, and only penance, prayer and self-punishment were believed to be cures. Some trained doctors provided diagnoses

based on the colour and smell of urine and some tasted their patient’s blood. Hospitals were paid for by the wealthy and usually run by religious orders, as physical health was considered a matter of spiritual health. Medical treatment was still based on practices dating from classical antiquity.

Did you know?

By 1390, townsfolk could purchase imported exotic items such as licorice roots, and fennel, cardamom and cumin seeds. These were chewed in order to give fresh breath.



Source 10.2.5 Bloodletting was a common method of treatment for a range of maladies. An illustration from *Tractatus de Pestilencia* (vellum), fifteenth century.

Travel

Manuscripts, maps and paintings show that people in the Middle Ages were on the move even though road travel was dangerous, uncomfortable and slow. Men and women travelled in England, France and Spain to visit holy sites such as the shrine of St Thomas à Becket in Canterbury or that of St James of Compostela in Spain. Furthest afield was the holy city of Jerusalem and **pilgrimages** there began in the tenth and eleventh centuries. Wandering scholars also travelled across Europe as more universities opened in renowned learning centres such as Bologna and Paris.

Towns were linked by roads but also by rivers and seas. Merchants travelled by water as it was cheap. The great maritime trade routes across the Mediterranean allowed the Italian cities of Venice and Genoa to flourish.

The Church

The Catholic Church was the most important institution in medieval Europe. People believed that God was in control of absolutely everything and that life's joys and struggles were rewards and punishments from God. It provided a unifying culture across all regions and people identified themselves as Christians living in **Christendom**.

Religious celebrations such as Lent, Easter, Pentecost, Advent and Christmas divided the year. All families undertook Church sacraments such as baptism and marriage. Churches and cathedrals were the tallest buildings in towns. Stained glass and colourful wall paintings provided spiritual lessons for those who could not read.

There was a strict hierarchy within the Church, with the Pope holding ultimate power and responsibility. Other members of the clergy included cardinals, bishops, priests and deacons. Emperors and kings obeyed the Pope, and the authority of the Church was rarely challenged, though this began to change in the Late Middle Ages. Disobeying the Church was considered to be heresy and was punishable by **excommunication**.

Monasteries and nunneries

Medieval Christian monastery life was well established by 1000 CE. Monks and nuns lived a peaceful communal life that centred on prayer, work, study and meetings.

Priests and monks provided basic education to boys in Latin and were in charge of copying manuscripts from the monastery libraries. Nuns and monks looked after the poor, the ill and pilgrims by providing basic health care, food and clothing.

By the eleventh century, some monasteries had become very rich through gifts of land by kings and lords. In a reforming movement, friars or mendicants (begging monks) followed the model of St Francis of Assisi and led a life of wandering and preaching while living in poverty. During the thirteenth century, the Franciscan and Dominican friars spread across Europe, forming an intellectual elite who were dedicated to preserving learning.



Source 10.2.6 Edwin the Monk (c. 1450), Christ Church, Canterbury Cathedral. Line engraving by George Vertue, 1755, held in the National Portrait Gallery, London.

ACTIVITIES

Remembering and understanding

- 1 Identify three kinds of work that women could do in medieval society.
- 2 Describe the open-field system of medieval farming.
- 3 Provide three reasons why people travelled in the medieval period.

Applying and analysing

- 4 Interpret the medieval diet by creating a menu for a banquet or an illustrated concept map.
- 5 Explain the importance of the Church in the lives of ordinary people.

Evaluating and creating

- 6 Using a Venn diagram, compare and contrast the key indicators of social status (for men and women) in medieval society and in Australian society today.

The Crusades

The Christian and Islamic worlds

By 900 CE, the common culture of the Mediterranean world had split into:

- Western Europe or Christendom
- the Byzantine East, which was dominated by the Orthodox Christian Church
- the **Levant**, which was dominated by Islam.

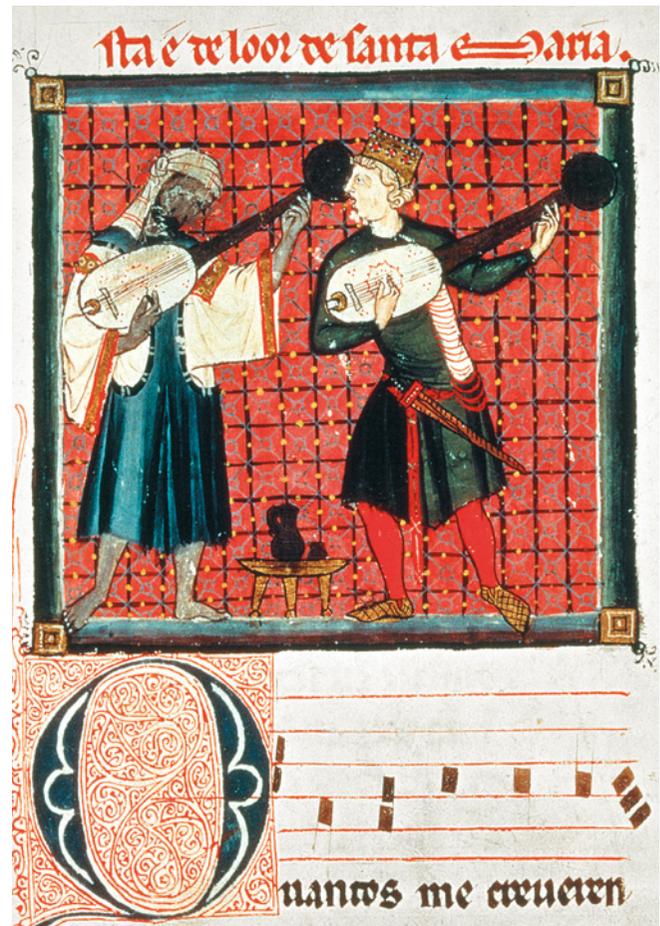
The language, architecture and religion of all three regions were very different. The relationship between Christians and Muslims changed significantly during the period 1000–1300 CE.

Contact between Christendom and Islam

The followers of the prophet Muhammad controlled Arabia, the Levant, North Africa and most of Spain from the eighth century. The Arabic language spread rapidly in these regions and a distinctive architectural style followed. The heritage of the Moors, or Muslim Spanish, can be seen in the richly decorative architecture of Granada (see Source 10.3.1).



Source 10.3.1 The fourteenth-century Alhambra, a Moorish palace in Granada, Spain



Source 10.3.2 A Moor and a Christian playing the lute, miniature in a book of music from the *Cantigas* of Alfonso X 'the Wise', thirteenth century, Monasterio del Escorial, Madrid, Spain

Contact with Muslims in Spain and through the pilgrimages to the Holy Land (today known as Israel and Palestine) brought change to medieval Europe. Arabic science, mathematics, medicine and technology, which were more advanced, were introduced to the whole of Europe. Christian scholars learnt how to access Arabic sources, which had preserved the works of Greek philosophy, biology, astronomy and technology.

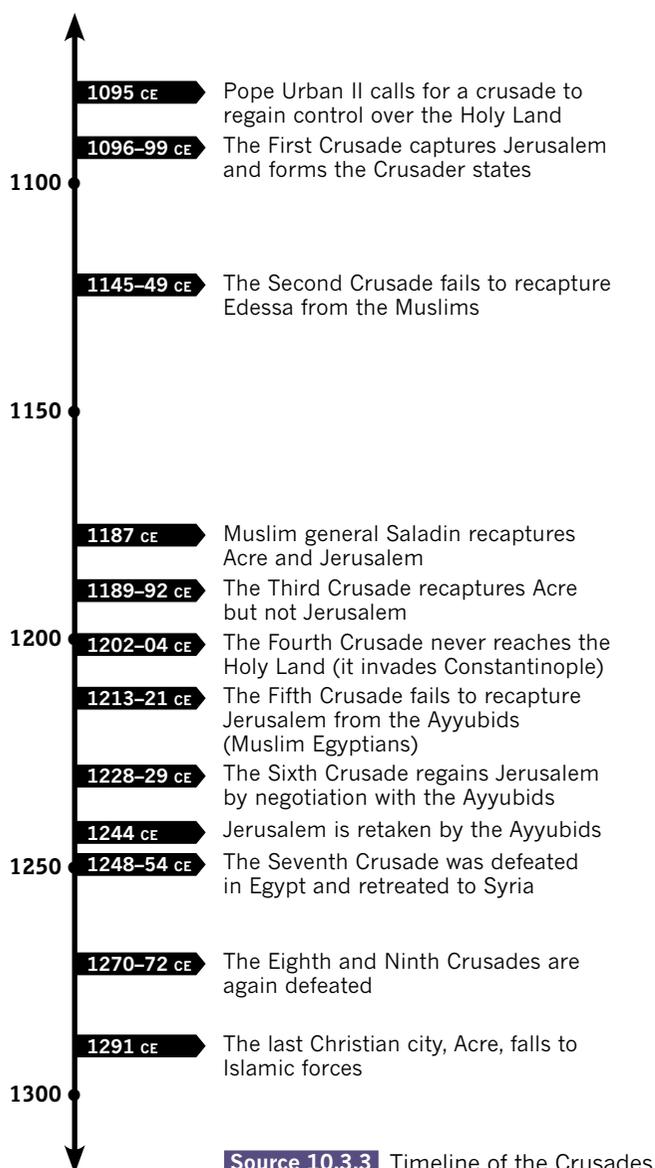
Reconquering Spain

For most of the Middle Ages, however, Christians and Muslims were engaged in bitter warfare. In Spain, the wars of reconquest from the tenth to the twelfth centuries brought about an end to the Moorish occupation and rule. Early in this period,

Muslims under Christian rule were tolerated and played an important role in commerce. However, by 1260, the whole of Spain was Christian except for Granada. The wars hardened Catholics against both Muslims and Jews; they were forbidden to practise their religion and were forced to choose between conversion to Christianity or exile.

Holy wars

The wars of reconquest in Spain were part of a Christian holy war against Islam that emerged during the High Middle Ages. The wars of conquest that were waged against Islam in the Holy Land are referred to as the Crusades. There was also a holy war against the **pagans** of the Baltic regions of Estonia and Finland in the twelfth century.



Causes of the Crusades

Religious conviction was a major cause of these holy wars. The Church argued that non-believers should not control the sacred sites of Christ's life and death. Jerusalem was considered to be the spiritual centre of Christendom and pilgrimage to Jerusalem was part of a growing system of penance. The Pope guaranteed that those who fought against Muslims would automatically go to heaven. The call from Pope Urban II for a holy war in 1095 resulted in a crusading frenzy to the Holy Land. Kings, nobles, their vassals and servants crossed the entire European continent and Asia Minor to endure desperate hardships and fight in bloody battles.

Other complex issues explain the movement of thousands of men from Western Europe. There was an urge in medieval society to conquer and settle new territories. Agricultural improvements and economic expansion led to intense competition for land among the nobility. The practice of inheritance by the eldest son meant that younger sons were looking for new lands. They were also looking for an opportunity to join the service of other noblemen and fight for advancement. These crusading knights swore homage or allegiance to wealthy barons and travelled towards Jerusalem to fight.

Consequences of the Crusades

Christian knights massacred pagans and Muslims as they travelled through many cities in Eastern Europe, in territories that are now modern Turkey, Syria and Israel. The survival rate was low, though some reached Jerusalem. Those who remained in the Holy Land set up the Crusader states, such as the Kingdom of Jerusalem (also called Acre), and imposed a feudal system with fiefs and castles. They ruled over a population of Muslims and Jews who were joined by waves of European knights, peasants and townspeople. Towns became culturally European and were dominated by nobles originally from France and by merchants from the Italian trading cities like Venice, Genoa and Pisa.

The First Crusade

In 1096, several large armies of Western knights and foot soldiers marched to the Holy Land in response to Pope Urban's call. The counts of Flanders, Boulogne and Toulouse and the dukes of Normandy and Lower Lorraine led them. It took three years to cross Europe,

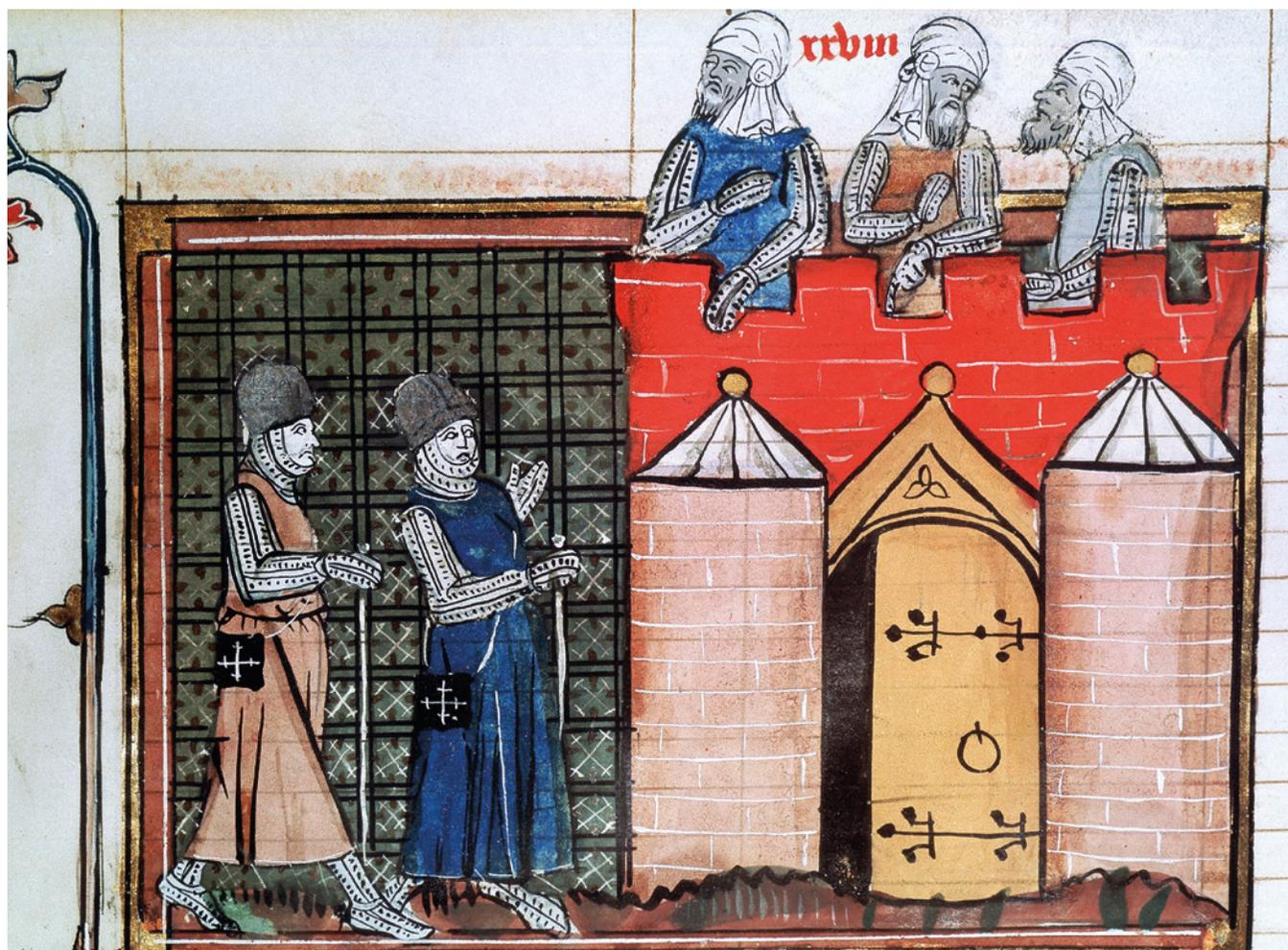
Constantinople (modern Istanbul) and Antioch in Syria to reach Jerusalem. Knights bore the sign of the cross on their surcoats and shields. The Crusaders suffered through times of famine, disease and warfare.

The First Crusade was a success. The Christian armies captured three major cities: Nicaea, Antioch and Jerusalem. Antioch fell only after an eight-month **siege**. The siege of Jerusalem was particularly terrible and ended in destruction and massacre. The Crusaders' hold over the region was always under threat and the renowned Muslim warrior and leader Salah al-Din, or Saladin, recaptured the city in 1187. The Kingdom of Jerusalem and its important trading port of Acre finally fell in 1291. Six further Crusades were led in person by kings from England, France and Germany, including Richard the Lionheart of England and Louis IX (Saint Louis) of France. They waged war in the Holy Land for years in an effort to consolidate Christian rule over the region.

The Knights Templar and Knights Hospitaller

The Crusades region was constantly at war and bandits often attacked unarmed pilgrims who flocked to the Holy Land. Two religious orders of knights were formed to defend pilgrims and the newly established Christian fiefdoms of Jerusalem, Antioch, Edessa and Tripoli. The Knights Templar (named after the temple of Jerusalem) were monks and knights. They lived monastic lives but were highly trained warriors, dedicated to protecting the Holy Land.

The Knights of the Hospital of St John, known as the Hospitallers, were the carers for the sick and dying pilgrims in the Holy Land. They founded a hospital during the First Crusade and later were given the job of protecting strategic castles such as the well-preserved Krak des Chevaliers in Syria. By the 1160s, they had also become a standing army of 300 knights.



Source 10.3.4 Knights Templar before Jerusalem, from *Le Roman de Godefroi de Bouillon*, fourteenth century, Bibliothèque Nationale de Paris

Islamic perspectives

The success of the First Crusade was partly due to the fact that Crusaders had invaded an Islamic world that was geographically vast and was fragmented by different rival dynastic rulers. This region was politically split and there was also religious division between the two branches of Islam, Sunni and Shi'ite. Seljuk warriors arrived and established a **sultanate** from the eleventh century. However, the emirs (princely military commanders) of the region still would not cooperate. Rulers such as Nur ad-Din campaigned to unify Syria and to annex Egypt from the rival Fatimid caliphs by 1171. He established the Ayyubid Sultanate and it was his successor, Saladin, who fought to control Aleppo, Mosul and eventually Jerusalem. To Saladin and the Islamic world, the Crusaders, or the Franks as they referred to them, were territorial competitors.

..

In that year, news began to trickle in about the appearance of the Frankish troops, coming down in an innumerable multitude. People took fright.

..

Source 10.3.5 Ibn al-Qalanisi, a chronicler from Damascus who described the arrival of the Franks, quoted in Amin Maalouf, *The Crusades through Arab Eyes*, Cairo, 1990

In order to build up a force large enough to capture the Kingdom of Jerusalem from the Franks, Saladin had to persuade the Islamic warriors that he was a legitimate leader. He gathered enough troops in order to invade Jerusalem in 1187. He captured the city in October but had to fight against forces of the Third Crusade who were determined to save the kingdom. It was Saladin's successor, the Mamluk sultan of Egypt, who waged an aggressive war and later captured the Kingdom of Jerusalem.

..

Regard the Frank! Behold with what obstinacy they fight for their religion, while we, the Muslims, show no enthusiasm for waging holy war.

..

Source 10.3.6 Saladin quoted in Amin Maalouf, *The Crusades through Arab Eyes*, Cairo, 1990

Did you know?

The word 'crusade' comes from the Middle French word *croisade*, which means 'marked by the cross'.

ACTIVITIES

Remembering and understanding

- 1 Which European country was under Muslim control in the medieval period?
- 2 What advances in knowledge did Muslim learning bring to Europe?
- 3 Identify three reasons to explain the Christian holy wars against Islam.
- 4 Who was Saladin?

Applying and analysing

- 5 Assess what the Europeans gained from the First Crusade.
- 6 Examine the reasons why the first crusading army found it relatively easy to capture so many cities in the Holy Land. Share your findings with a partner and compare your ideas.
- 7 Explain what the Muslims had to do to regain control of their lands.

Evaluating and creating

- 8 Write a news report that examines the role of the Knights Templar and Hospitaller. In your report, compare and contrast their roles.

Medieval achievements

The Middle Ages has left a rich legacy that can be seen in many aspects of modern Western culture. Cathedrals, castles and universities remind us that this was an innovative time. Other aspects of modern life have foundations in medieval ideas, innovations and culture including art, politics and law.

Manuscripts

Medieval manuscripts were books made up of multiple sheets of vellum. Made from calf- or lambskin, vellum was the best-quality parchment available. These books, also referred to as codices (singular: codex), were bound and had a spine. They gradually replaced the use of scrolls.

Illuminated manuscripts included decorative initials, borders and miniature illustrations that were handwritten and painted originally in gold and silver. Manuscripts were also created and used in a bureaucratic way to record property deeds and laws.

While many manuscripts were produced and preserved in monasteries, a rich landowner might commission a 'book of hours'. These books were exquisitely illuminated collections of prayers and psalms for each hour of the day, and were calendars of holy feast days. Many examples have survived because noblemen liked to collect them.

Did you know?

Dogs appear frequently in medieval manuscripts. They are often shown hunting, chasing hares or defending their masters. Lapdogs also appear in medieval texts. Like the dog on the lap of Mary of Burgundy in Source 10.4.1, these were small, pretty-looking animals owned by fashionable ladies. Dogs were a symbol of faith.

The printing press

The invention of movable metal type by the early 1450s improved the production of printed books. Johannes Gutenberg (1400–1468) in the German town of Mainz perfected the system of printing. Metal letters replaced wooden letters so they could be used repeatedly without affecting the print quality.

Texts of all kinds could be mass produced. Gutenberg's printing press revolutionised learning and the spread of information. It contributed to the publication of works of poetry, history, romantic fiction as well as works of religious or philosophical importance. Mass-produced books with illustrations and diagrams were available to medical students and to society on a wide scale.

Source 10.4.1 Maximilian I of Austria and Mary of Burgundy in front of the Virgin, a miniature from Mary of Burgundy's Book of Hours, fifteenth century, Austrian National Library, Vienna





Source 10.4.2 Johannes Gutenberg in his workshop

Music

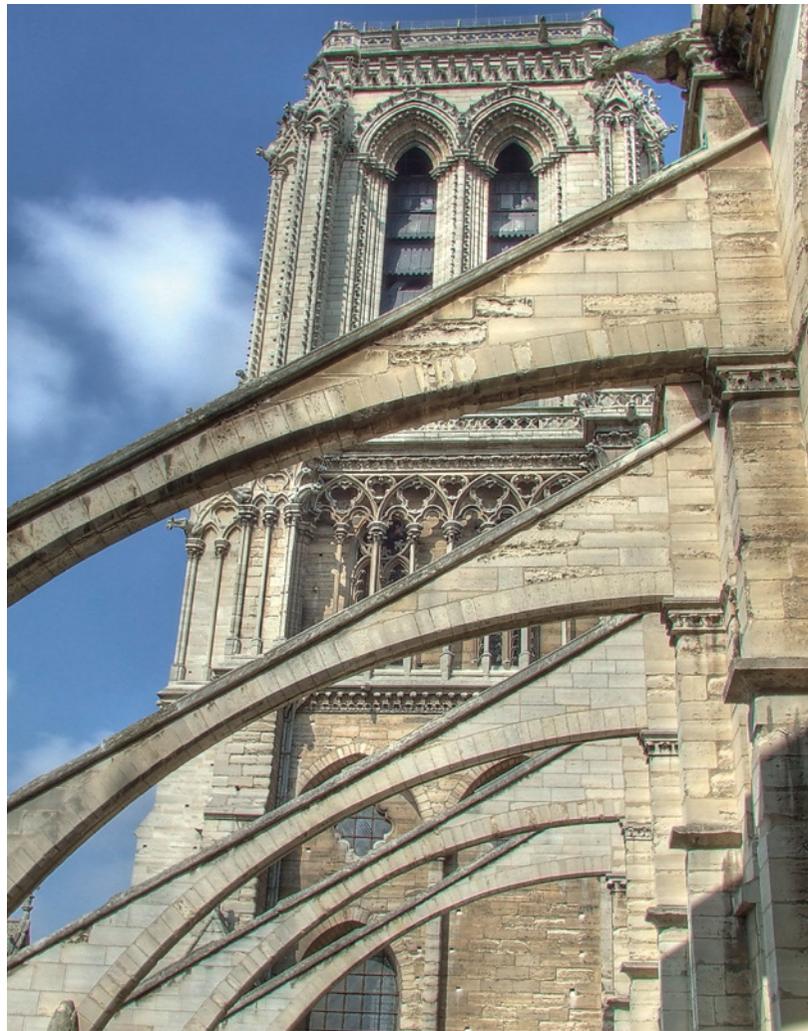
The invention of a standardised system for writing down music revolutionised this art form in Europe. It became possible to create highly sophisticated sounds with harmony. More complex music gradually included several voices or polyphony. Modern orchestras originate from this period, with an increase in the variety of instruments available including brass, wind and stringed instruments.

While music was largely in the control of the Church, there was a tradition of performers called minstrels singing poems accompanied by familiar tunes. In the Occitan region of southern France, **troubadours** sang their poems of love and **chivalry**.

Music was very popular and lords offered it as part of their hospitality in the great halls of their castles and manor houses. Musicians were highly valued and well paid. Singing and dancing accompanied music. By 1400, England had become famous for its musical talent. Even kings and queens wrote and performed music.

Architecture

The soaring towers and spires of the great churches and cathedrals of the Middle Ages provide evidence of the architectural styles and construction techniques of the period.



Source 10.4.3 Notre-Dame Cathedral in Paris was built between the twelfth and fourteenth centuries.

Gothic architecture

The **Gothic** style of the High and Late Middle Ages began in the Paris region in France in the twelfth century and spread throughout Europe. Flying buttresses were invented to support the great weight of a cathedral roof. The Gothic style was popular because it helped achieve great height and displayed large expanses of stained glass windows with minimal walls. These elements can be seen in Sources 10.4.1 and 10.4.1.

In the twelfth century, the Abbey of St Denis to the north of Paris was reconstructed in the Gothic style under the guidance of Abbot Suger, who recorded how he employed innovative master stonemasons for the task. His account is the most complete description available of a building project of this size and the first in the Gothic style.

..
... we began with the former main entrance,
dismantling a certain addition ... we exerted
ourselves, vehemently enlarging the body of
the church, tripling the entrance and doors,
and erecting tall, worthy towers ...
..

Source 10.4.4 Extract from *The Book of Suger, Abbot of St-Denis: on What Was Done during his Administration*, Book XXV, trans. D. Burr, in P. Halsall, *Internet Medieval Sourcebook*, Fordham University Centre for Medieval Studies, 1996

Suger's writings are valuable because they remind us of the hard and dangerous work of skilled men and of the funding problems that Suger faced. He mentions the crowds who watched in amazement as the abbey was rebuilt, and of the rich ornaments in silver and gold that were commissioned for the new abbey building.

The development of parliaments

An awareness of politics developed during this period. Many writers held views on how to rule and the nature of politics in society. To improve on government, the monarchies in France and England began to rely on a professional body of bureaucrats and lawyers trained in the universities. Gradually, assemblies of lords, bishops and commoners were granted limited rights in the making of laws. These assemblies were the origins of modern parliaments. The royal court also became permanent in cities such as London and Paris. Previously, the court travelled around with the king.

The Magna Carta

The **Magna Carta** is a document signed by King John of England in the summer of 1215. He was under pressure from nobles who rebelled against him because he had abused his customary feudal rights as lord of all England. King John had also alienated the Church and the rising class of merchants who were being taxed heavily in order to fund the king's wars and government bureaucracies. The Magna Carta meant that the king of England was subject to the law. Representative government and common law developed from this document.

Knowledge and universities

Educational studies in the Middle Ages were divided into seven liberal arts: arithmetic, geometry, astronomy, music, logic, rhetoric (or the art of public speaking and arguing) and grammar. The culture of scholarly work or scholasticism was based on the careful logical analysis of authoritative texts including the Bible and the philosophical works of Aristotle. Thomas Aquinas was the best known of the scholastic thinkers of the thirteenth century.

Universities overtook monasteries as places of learning in the twelfth century. The University of Paris had a reputation for excellence in philosophy and theology; Bologna became the centre of legal studies; and other smaller universities developed in France, Italy, Spain and England. Features of today's university life were developed by the thirteenth century: lectures, examinations, degrees, students and academic teachers and researchers. Kings and princes across Europe financed universities and colleges in order to produce graduates who would serve the Crown and help administrate. Many of these first universities still exist today.

Gothic Revival

The Romantic movement of the eighteenth and nineteenth centuries revived the Middle Ages. The Romantic poets, artists and architects found inspiration in medieval poetry, art and visible ruins.

Historical novels set in the Middle Ages were fashionable. The highly popular novel *Ivanhoe* (1819) by Sir Walter Scott recreated the Middle Ages but with a critical view of feudal tyranny, the futility of the Crusades and the shortcomings of chivalry.

Until the eighteenth century, people considered Gothic architecture old-fashioned and tasteless, and preferred Roman domes and curved arches. The Romantics' Gothic Revival celebrated pointed arches and flying buttresses. A German architect rediscovered the medieval plans of Cologne Cathedral and completed it in 1880. Work had originally begun in 1248. In France, the nineteenth-century architect Viollet-le-Duc worked to restore and preserve France's medieval heritage such as the walled city of Carcassonne, and the Notre-Dame

and the Sainte-Chapelle in Paris. In London, the Big Ben clock tower reflects a medieval fantasy of the nineteenth-century Victorian period.

Paintings depicting English abbeys, castles and cathedrals were popular. Fireplaces and furniture

were fashioned to look medieval. Victorian Gothic was imitated in colonies of the British Empire, including in New South Wales. Examples include St Patrick's Catholic Church and St Mary's Cathedral in Sydney, and buildings of the University of Sydney.

ACTIVITIES

Remembering and understanding

- 1 What was the impact of the invention of the printing press? How did the use of metal letters improve on this invention?
- 2 What was the impact of the Magna Carta on the power of the king of England?
- 3 Identify three architectural features of Gothic cathedrals.
- 4 Describe the kinds of manuscripts that were kept in monasteries and in the collections of wealthy lords.

Applying and analysing

- 5 Choose two legacies of medieval Europe that you think are the most important. Justify your ideas to a partner.

- 6 Use Source 10.4.5 and the information in the text to design your own Gothic castle or an item of furniture that has Gothic features.

Evaluating and creating

- 7 With a partner, devise a hypothesis to explain why musicians were valued and well paid.
- 8 Recreate a page of a medieval manuscript which includes your name, some information about you and an illustration. Conduct some research first, to observe the style and colours of medieval manuscripts.
- 9 Look carefully at Source 10.4.1. Make a list of the images and symbols that you find interesting in this scene. With a partner, interpret what is happening.



Source 10.4.5 Gothic Revival in southern Germany. The famous Neuschwanstein castle in Bavaria was built by King Ludwig II in the nineteenth century.

Crime and punishment

Customary laws

By modern standards, the legal systems in different parts of Europe seemed chaotic during the Middle Ages. Local judges had a lot of freedom in the administration of justice. While there were attempts to systematically collect and clarify laws, there was no single code of laws within the many different medieval kingdoms. Many local customary laws reflected age-old traditions. Customary laws guided social behaviours and provided precedents for legal



Source 10.5.1 The Court of King's Bench, Westminster Hall, c. 1460 (vellum), Inner Temple, London

judgements. In some kingdoms, princes and kings were above the law, whereas in England there was a jury system and the law served the interests of the people.

English law included aspects of Roman law and the laws of the Saxons, which had been rewritten by royal judges. It was referred to as the 'common law' because it was commonly applied to everyone in the kingdom. Over time, only the English parliament could make changes to laws or introduce new ones. In 1381, after the Peasants Revolt in England, an act of parliament made it treasonable to begin a riot. There were acts against high treason and acts forbidding men to attend parliament fully armed.

Criminal and civil law had separate courts. Ordinary people in the towns and villages could be tried in urban and manorial courts. There were also royal courts such as the Court of Common Pleas. Lords charged with high treason against the king faced trial in parliament, which was the highest court.

The gallows

Public punishments were carried out as deterrents in the Middle Ages. By providing harsh punishments, it was hoped that others would be discouraged from committing similar crimes. There was no sense of the modern concept of rehabilitation. Jails existed but overcrowding encouraged judges to sentence men and women to be executed. Gallows for hanging people found guilty of crimes were deliberately built at town crossroads. Bodies were left swinging as they rotted. Commoners were hanged whereas members of the nobility were beheaded. Tyburn (in central London today) was the location of the gallows for convicted criminals and traitors. Parliamentary sources record traitors being taken from prison in the Tower of London to the gallows at Tyburn where they would be first disembowelled, then hanged, beheaded and quartered (each of their four limbs was tied to a horse, which would then be guided to pull in different directions). The traitor was unfortunately still alive while being disembowelled and just

conscious enough to see his entrails being burnt. Heads of traitors were displayed on spikes for years and were a grisly reminder of the punishment for treason against the king.

Other punishments demanded by customary laws included life imprisonment, but this was rare. Sometimes criminals evading arrest could be executed on the spot and women caught evading arrest could be forcibly drowned without a trial. Instances of burning at the stake are actually rarer than imagined. Women accused of witchcraft and heresy (or dissent) against the Church were more likely to receive hanging as a punishment. Parliament did not introduce burning alive for heresy until 1401.

The town watch

There were no police forces in the Middle Ages. Most communities relied on people raising a 'hue and cry', which meant making lots of noise if a theft or murder was being committed. Criminals were usually pursued from town to town and faced difficulties in escaping justice when the town gates were closed at sundown and only reopened at sunrise. Town gates were guarded by watchmen. In London, which had six gates, there were about 200 watchmen. People lurking in the dark streets were simply arrested.



Source 10.5.2 Execution of the Despensers, from the *St Alban's Chronicle*. Hugh Despenser was sentenced to be hanged, drawn and quartered in 1326. Fifteenth-century (vellum), Lambeth Palace Library, London.

Trial by ordeal

Trial by ordeal reflected the importance that the Church played in the process of enforcing laws issued by kings. The belief was that God would intervene on the side of truth. Trial by hot water, where the accused had to plunge their hand into a cauldron of hot water, was first documented in the sixth century in the kingdom of the Franks. Other ordeals included being thrown into a pool or being made to grasp a red-hot iron. The Normans introduced trial by combat in England. By 1215, trial by ordeal was condemned as being irrational by the Church, and King Henry II of England encouraged the system of trial by judge and jurors or sworn men to reach a verdict.

Did you know?

In medieval England, punishment of a loss of a limb could be carried out on an animal instead of the guilty person. Stranger still, in France, donkeys, pigs and cows were tried and hanged for murder if they killed a human. In 1349, a cow was burnt at the stake for killing a child.

ACTIVITIES

Remembering and understanding

- 1 Identify three key ways in which justice was carried out in England.
- 2 Make a list of the different types of punishment that were applied in the Middle Ages.

Applying and analysing

- 3 Why do you think that the punishment for traitors was so violent and why was it carried out in public?
- 4 Look closely at Source 10.5.1 and consider the similarities and differences with a courtroom scene today.

Evaluating and creating

- 5 Imagine you were King Henry II. Write a short speech in which you argue against trials by ordeal.

Military and defence systems

Castles

Europe in the Middle Ages was a dangerous place to live. Competition between landowners for territory was fierce and the desire for wealth drove many feudal lords to launch attacks on each other. Landless knights also posed a threat as they travelled the countryside in search of opportunity and wealth. Whole communities suffered when land and crops were ravaged and destroyed.

Fortified structures therefore played an important role in the defence and protection of a lord's land and portable wealth. Castles grew out of the Roman idea of a military stronghold or *castrum*. The Romans had built *castra* to defend frontiers and important trade and communication points. Likewise, medieval kings and lords built castles to control roads, river crossings, mountain passes and villages.

From timber to stone fortifications

There were many different kinds of castles and it is possible to trace their development over time. The earliest castles were built in the Loire River Valley in France during the tenth century. Castle building spread throughout Europe and was also introduced in the Holy Land by the knights of the First Crusade. The only building material there was stone, and as the benefits of building stone castles were obvious, the idea was taken back to Europe. Stone castles quickly replaced earlier structures that had been built of locally available timber. Timber castles could be built relatively quickly but could be burnt down in an attack.

Motte and bailey

The earliest castles in Europe were built on a high mound of earth called a motte. This gave landowners added protection but also allowed them to see over far distances. The lord and his family lived in a tower built on the mound.

The soldiers, horses, cattle, kitchen and stores were kept in the bailey, which was the large circular enclosure near the tower. Over time, a large square tower replaced the bailey. The first floor or donjon



Source 10.6.1 Detail of a miniature of the *Castle of Love*, with the lover addressing three women. From a prayer book, c. 1500, The British Library, London

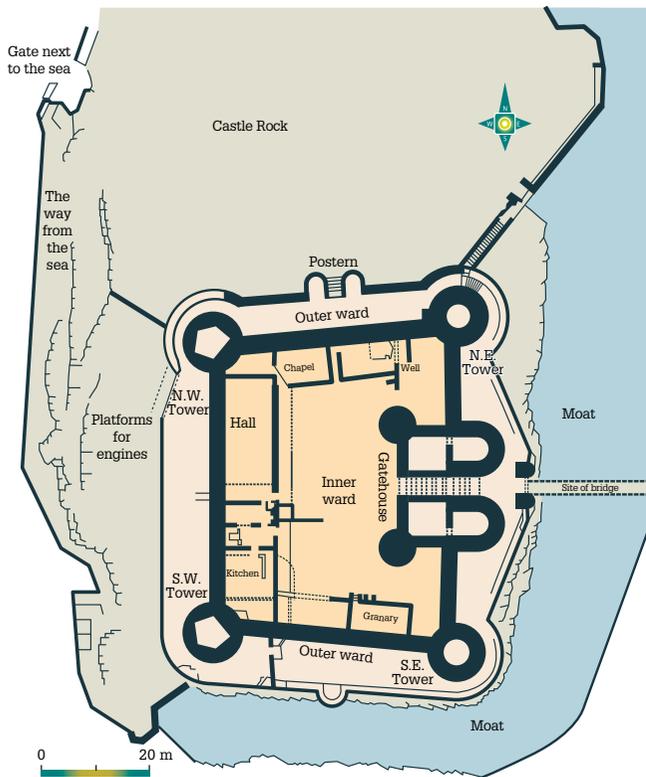
was used to keep prisoners and to protect the water supply in the well, weapons and general stores. This tower was called the keep. The Normans introduced castles in England following their invasion in 1066. Despite their military strategic function, illuminated manuscripts such as the *Castle of Love* (see Source 10.6.1) show how poets and painters gave castles a romantic and fairytale glamour.

Castles of Edward I (1272–1307)

Eight castles were built in Wales during the reign of Edward I of England in order to subdue the Welsh. They illustrate how castles developed over time in reaction to changing methods of assault or siege warfare used by the enemy.

Improved design

Round towers, which were harder to climb, replaced square towers. The castles of Caerphilly, Harlech and Beaumaris in Wales included a new design of concentric rings of ditches and walls to protect the central compound. The defensive system of the castles also included a drawbridge that



Source 10.6.2 A floorplan of thirteenth-century Harlech Castle, Wales

could be raised against invaders. Harlech Castle featured a gateway with four mighty towers and three portcullises. Notches made at the top of the castle walls, called crenellations, offered protection to men armed with crossbows. Caerphilly and Beaumaris each made large-scale use of water as defence, notably with their **moats**. These elaborate defensive systems only became redundant with the invention of gunpowder in the sixteenth century.

Sieges

The defence systems of castles were so effective that attempts to assault or lay siege were both expensive and long. Siege towers originated during the Crusader wars and could be wheeled up to a castle in order to help soldiers breach the castle walls. The enemy could try to mine or tunnel under the stone walls but this also took time. Giant throwing machines such as the mangonel and **trebuchet** allowed armies to bombard the walls with large rocks or terracotta pots filled with Greek fire. Greek fire was another weapon brought back from the Crusades. It was a flammable mixture that could not be extinguished with water.



Source 10.6.3 A fifteenth-century miniature showing the Siege of Mortagne, near Bordeaux, France, in 1377, held in the British Library

ACTIVITIES

Remembering and understanding

- 1 Identify four ways in which castle defences changed over time.
- 2 Explain the importance of castles in the Middle Ages.

Applying and analysing

- 3 Look carefully at Source 10.6.3 and interpret what the soldiers are doing in this scene. Compare this with the activities shown in Source 10.6.1.
- 4 Use your answer from Question 1 to help you create a flow chart of the key events in the development of castles in the Middle Ages.

Evaluating and creating

- 5 Imagine you are designing the defence features for a castle but are only able to include five such features. Which would you choose to include and why?
- 6 Conduct some research into Harlech Castle in Wales. If you were a medieval invader, wanting to attack the castle, what would your strategy be and why?

Towns, cities and commerce

During the Early Middle Ages there were few towns, and those that did exist were small. Most of the population was involved in agriculture. People lived in small villages scattered across Europe where the soils and the availability of water favoured farming. Towns grew slowly during the Middle Ages as trade gradually developed. Some of the busiest and most important towns grew into cities.

Towns and cities

Towns tended to develop around busy crossroads that were trade routes and where there was an attraction that drew people to the site, like a cathedral. In England, for example, the six largest towns—Bath, Hereford, York, Canterbury, Lincoln and Chichester—were all cathedral towns, with many pilgrims and traders flocking to them.

Towns became important centres for trade and manufacturing. Craftsmen produced everyday goods such as shoes, clothing, furniture and pottery

for exchange at weekly markets. Peasants came into towns to exchange their produce.

Ownership and security

Lords owned many of the towns. Lords encouraged merchants into their town as merchants paid them taxes. Some towns paid for a charter. This allowed the election of local administrators who collected taxes and reduced the lord's authority.

With so many people coming in and out of towns, safety was a concern. Many towns had fences or walls around them, with gates that were locked at night. Towns had curfews, and curfew bells were rung at 8 or 9 o'clock, after which time everyone had to remain indoors.

Guilds

Guilds were formed as towns and cities grew.

A guild was an organisation of people who joined together because they made or sold the same types of goods. Two types of guilds developed: merchant guilds and craft guilds.



Source 10.7.1 The walled medieval town of Avila in Spain

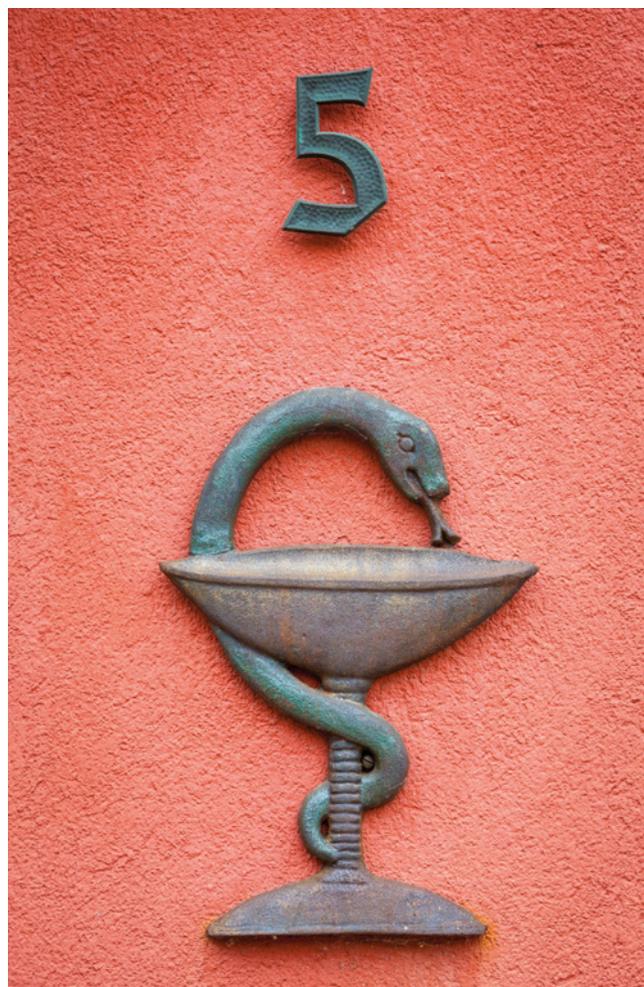
Merchant guilds controlled all trade in the town by controlling prices, the quality of goods, weights and measures. They were very powerful and it was impossible to trade in a town if you were not a member.

Craft guilds oversaw the working conditions of craftsmen and the quality of their products. Masters were the most experienced craftsmen, followed by journeymen, then apprentices. Non-guild members were banned from making and selling goods.

Medieval craftsmen included stonemasons, tailors, carpenters, painters, tanners, bakers, candle makers, shoemakers and apothecaries (chemists). As few people could read and write, craftsmen advertised their wares with large guild signs hanging outside their shops. In Source 10.7.2, the sign with a snake coiled around a cup informed people where they could buy medicine. Craftsmen with the same trade often set up shops in the same street.

Houses and streets

Houses were generally made of wood, and were built with narrower ground floors than second floors. With houses crammed together and narrow streets, fire was always a danger. Medieval towns



Source 10.7.2 The apothecary was like a modern chemist, providing medicines to doctors and the townspeople. Apothecaries were members of the guild protecting and controlling their trade.

were dirty and unhygienic places, with toilet waste and rubbish thrown into the street and open drains running down the street centre. Rats were common and led to the spread of the Black Death in the 14th century. Local rivers were putrid as waste washed into them, but the rivers also provided drinking water for towns. Livestock, like pigs, roamed the streets. People kept pigs for food but allowed them to forage for scraps in the streets as they did not have gardens to keep them in.

Town criers

A crier made town announcements. The town crier rang a bell as he walked through the town telling the news and making town declarations. He also rang the bell to tell people the time, to give warning of a fire and to call people to town meetings.



Of one of the former 12 Companies is the Lo. Mayor of the Cytie contrary chosen

a. Bulbys gate street.	q. Barbican	n. Holburn	t. Cheap hyde	2. Colmansstreete	8. Fanshurebe	14. Fetter lane	20. Winchester house
b. Peppes	r. Aldgate streete	o. Grayes inn lane	u. Bucklers burye	3. Basing hall	9. Marks lane	15. S. Dunstons	21. Battle bridge
c. Alshottens in the wall.	s. Chertsey streete	p. S. Andrews	w. Breadstreete	4. Housditch	10. Amshyn lane	16. Themes streete	22. Bermondsey streete
d. S. Taphons	k. Holborne Conduitt	q. Newgate	x. The Stockes	5. Leaden hall	11. Pauls	17. Lidon streete	Ioannes Norden Anglus descriptores
e. Sylars streete	l. Chancery lane	r. S. Jones	y. The Exchange	6. Grathons streete	12. Eastchape	18. Old Baylye	
f. Aldernamburye	m. Temple barr	s. S. Nic. Shambels	z. Cornhill	7. Fincage house	13. Elthwells	19. Clerkenwell	

A guide for Country men In the famous Citty of LONDON. by the helpe of wich plot. they shall be able to know. how farr it is to any street. As also to go unto the same. without forder trouble. Anno 1653.

7 Long lane	30 The Poslerne	40 Fadder Lane	50 The Powltry	60 Crutchar friars	70 S. Swithens lane	80 Garlick hill	90 Lambeth hill
8 S. Johnsstreete	31 Little More feild	41 Gutter Lanes	51 Lumbarde streete	61 Tower streete	71 S. Clements lane	81 Boo lane	91 Old Chaunge
9 Turnboule streete	32 Showe lane	42 Wood streete	52 Burching lane	62 Rood lane	72 Dowgate	82 Trynitie lane	92 Distaff lane
23 Goulding lane	33 Flote lane	43 Milke streete	53 Finch lane	63 Philpott lane	73 Walbrooke	83 Soper lane	93 Carter lane
24 Red crossstreete	34 Swanwick lane	44 Cateaten streete	54 Thredneedle street	64 S. Mary hill	74 Cloake lane	84 Bredstreete	94 Pie Corner
25 Beech lane	35 Pater nosler Roc	45 S. Laurence lane	55 Fanchurch streete	65 Puddin lane	75 Budge Roc	85 Watling streete	95 Cow lane
26 white crasse streete	36 Petecannons	46 Iremonger lane	56 Leaden hall streete	66 Bridge foote	76 S. Sythes lane	86 Friday streete	
27 Chisil streete	37 Pauls Crosse	47 Old Jury	57 Lime streete	67 S. Laurence Powltry	77 S. Tanlins	87 Old fish streete	
28 Grub streete	38 Blacke Fryers	48 Loathbury	58 S. Mary Axe	68 Canning streete	78 Whittington Colledge	88 Fishstreete hill	
29 More Lane	39 S. Martens	49 Bartlomew lane	59 Billeter lane	69 Abchurch lane	79 S. Thomas Apostles	89 Nightfynday streete	

Source 10.7.3 Map of London in 1593, drawn by John Norden. Note the emblems of guilds around the left and right borders of the city map.

London: From town to city

London grew from a town to become the largest and richest city in medieval England. In the 800s London's population was about 8000 people. By the mid-1500s London's population was 120 000 and had grown beyond the city walls.

London grew due to political, religious and economic reasons. It was where the invading Normans established their seat of government in 1066, building fortresses like the Tower of London, and it remains a politically important city to this day. London was the main port through which goods passed between Europe and the rest of England. Merchants and craftsmen concentrated there in large numbers to take advantage of markets locally and in Europe. Westminster Abbey, one of England's largest cathedrals, is in London. It was the site of the coronations of English kings and queens.



Source 10.7.4 A medieval guild sign outside a tailor shop

ACTIVITIES

Remembering and understanding

- 1 What was a guild?
- 2 Explain why London grew to be the largest city in England.
- 3 Why did many medieval towns and cities have walls built around them?
- 4 What was the role of the town crier?

Applying and analysing

- 5 Draw a Venn diagram and use it to show the differences and similarities between a medieval city and a modern city.
- 6 Carefully examine Source 10.7.2. Describe the symbol on the sign and research what it means. How does it represent an apothecary?
- 7 The map of London in Source 10.7.3 has guild emblems decorating two sides. Why do you think these were included as part of the map?

Evaluating and creating

- 8 Look carefully at the four sources.
 - a Which one do you find the most useful for learning about medieval towns and cities? Explain why.
 - b Which one do you find least useful, and why?
- 9 Select one medieval craft. Draw the guild emblem that could hang outside the craftsman's shop, to advertise his wares.

Significant people

Charlemagne (742–814 CE)

Charlemagne (Charles the Great) and his brother, Carloman, inherited vast domains (comprising France and western Germany) on the death of their father, Pepin the Short, in 768. Charlemagne outlived his brother and spent the rest of his military career creating a single centralised state. He extended his rule into Italy, northern Spain, northern Europe and as far east as the Danube River in central Europe.



Source 10.8.1 The Carolingian Empire c. 800

The Vita Karoli Magni

Charlemagne was considered to be a wise and capable ruler. His biographer, Einhard, wrote the *Vita Karoli Magni* ('Life of Charles the Great') in the ninth century. He describes Charlemagne as tall and fair.

Einhard also wrote that he was fluent in foreign languages and an eloquent speaker, and that he was pious and generous to the poor.

Charlemagne's achievements and legacy

Charlemagne introduced administrative reforms such as establishing key representatives in each region and holding a yearly general assembly at his court in Aachen, Germany. He standardised weights,



Source 10.8.2 Charlemagne and Roland eating with the poor, a miniature from *The Great Chronicles of France*, fourteenth century, Bibliothèque municipale de Castres, France

measures and customs dues, which improved commerce and also initiated important legal reforms.

During his reign, Charlemagne encouraged the reintroduction of classical art and education for all. He contributed to the spread of Christianity throughout Western Europe. The Pope crowned him emperor on Christmas Day, 800. After he died in 814, his empire fell apart under his successors.

This King, who showed himself so great in extending his empire and subduing foreign nations, and was constantly occupied with plans to that end, undertook also very many works calculated to adorn and benefit his kingdom, and brought several of them to completion.

Source 10.8.3 Extract from *Einhard: The Life of Charlemagne*, Book 17, quoted in P. Halsall, *Internet Medieval Sourcebook*, Fordham University Center for Medieval Studies

Did you know?

X-rays and computer tomography show that Charlemagne was 6 feet tall when the average European man was 5 feet 5 inches.

Eleanor of Aquitaine (1122–1204 CE)

Eleanor of Aquitaine lived an extraordinary life. She was highly intelligent, literate, charismatic and beautiful.

..
*[Eleanor was] an incomparable woman;
beautiful yet gracious, strong-willed yet kind,
unassuming yet sagacious [wise] even now
[at 75 years old] unwearied of any task and
provoking wonder at her stamina.*
..

Source 10.8.4 Extract from the *Chronicle of the Deeds of Richard I*, by Richard Devizes, quoted in A.Crawford (ed.), *Letters of the Queens of England, 1100–1547*, Alan Sutton, 1997

At the age of fifteen, Eleanor inherited her father's lands and feudal relationships, becoming the immensely wealthy and powerful Countess of Poitou and Duchess of Aquitaine. She was first married to King Louis VII of France and then to King Henry II of England.

Courtly love and politics

As a young woman in Aquitaine, Eleanor patronised troubadours who performed music, recited poetry and promoted the ideals of courtly love. She pursued her love of culture throughout her life. Later, her court in Poitiers was renowned for its artistic and intellectual achievements.

She actively participated in the political developments of the twelfth century. As Louis's queen, she was involved in a brutal war over territory with the Count of Toulouse. She held power in her ancestral lands and kept control of her rebellious vassals in Aquitaine. She accompanied Louis VII on the Second Crusade to Jerusalem. In her fifties, she encouraged her sons to rebel against their father, Henry II, in a war for the English crown and was imprisoned for years. Following Henry's death, she claimed the throne for her son Richard the Lionheart and governed for many years while he was on Crusade. On his death in 1199, she secured the throne for her youngest son, John. Eleanor lived very long for the Middle Ages, dying at the age of eighty-two in France.



Source 10.8.5 Eleanor of Aquitaine marrying Louis VII in 1137 (left scene) and Louis VII departing on the Second Crusade in 1147, from *Les Chroniques de Saint-Denis*, late fourteenth century (vellum)

ACTIVITIES

Remembering and understanding

- 1 Explain who Charlemagne was and identify his achievements.
- 2 Explain why Eleanor of Aquitaine stands out as an exceptional woman for her times.

Applying and analysing

- 3 Examine Sources 10.8.2 and 10.8.3. Create a one- or two-sentence summary of Charlemagne's character in your own words.
- 4 Use Sources 10.8.4 and 10.8.5 to enable you to draw an annotated portrait of Eleanor of Aquitaine.

Evaluating and creating

- 5 Select either Charlemagne or Eleanor of Aquitaine. Create a storyboard of 3–4 frames that highlights his/her life and achievements.

Inquiry tasks

A day in the life of a knight

Imagine you are a knight living in medieval Europe. Read about knights and feudal society again in this chapter. Use the internet or your school library to continue to research the life of a knight during this period.

Create a mind map to record the key ideas and historical details that you discover. Then write a one-page diary entry on a day in your life. Choose an important day such as a tournament day to provide focus for your ideas.

A medieval doctor

Imagine you are a medieval physician who is recording his observations about diseases. Use the internet or your school library to research diseases in the medieval period. Use Source 10.9.1 to help you record observations about leprosy. Describe other types of diseases as well.

Present your findings in an illuminated manuscript, complete with drawings and text.



Source 10.9.1 Lepers were required to ring a bell to warn people of their approach. From *Pontifical; Tabula*, fifteenth century (vellum), The British Library, London.

A Moorish garden

You are to design and present a Moorish garden.

- 1 Using the internet or your school library, research information about one of the famous Moorish gardens in southern Spain. Discover why your chosen garden was designed the way it was and focus on why water features were so important.
- 2 Using software or an app, create a model of the garden. Alternatively, create a model using a wooden or a plastic tray, with gravel, sand, plastic trees and so on.
- 3 Present your Moorish garden to the class and explain what each part represents.

Presenting a personality from the Middle Ages

There are many interesting personalities from the medieval period. Choose one of the following and conduct some research using the internet or your school library.

- William the Conqueror
- Frederick Barbarossa
- Alexander Nevsky
- The Black Prince
- Joan of Arc
- Christine de Pisan
- Sultan Mehmed II

First record key facts in dot-point form. Identify the key reasons why in your judgement this person made a significant contribution to their times. Then choose a creative IT format to present your ideas. You might choose to use a social medium or an app if you prefer to rely on a visual presentation. Finally, present your work to the class.

GLOSSARY

barter system a system of trade (of goods and services), without the use of money

Black Death a devastating plague that killed millions in Europe in 1348–1353 CE

chivalry a set of behaviours for knights, including bravery, honour and courtesy

Christendom the countries in Europe where Christianity was the main religion

clergy men and women who take vows to devote their lives to God and religious duties

excommunication spiritual punishment through banishment by the Catholic Church

Gothic a style of medieval architecture that featured pointed arches and flying buttresses

guild an organisation of craftsmen and merchants that set standards of work and protected its members

knight a noble who provided military service to a lord or a king

Levant the eastern Mediterranean region that consists today of Lebanon, Syria, Jordan, Israel, Palestine, Cyprus and parts of southern Turkey

Magna Carta a charter of rights and feudal laws issued by King John of England in June 1215, under compulsion by his nobles

mercenary army a group of knights who were hired by lords in exchange for money

moat a deep ditch filled with water that was built to surround and protect a castle

pagan a believer in many gods; non-Christian

pilgrimage a journey to a religious shrine

siege (warfare) a military blockade of a fortress or castle with the intention of capture

subsistence farming when most of the farmed produce is used by the farmer and his or her family

sultanate territory ruled by a sultan (a Muslim king)

trebuchet a type of catapult used to throw heavy projectiles

troubadour a court poet and musician, especially in southern France

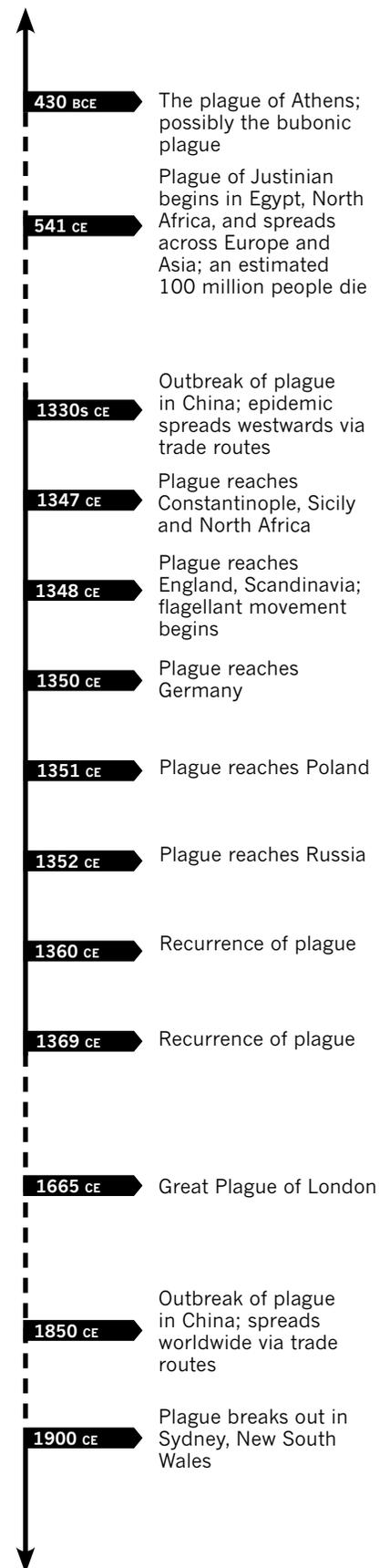


Investigating the Black Death

In the mid-fourteenth century CE a terrible disease, the Black Death, swept across Asia, Europe and regions of Africa. Historians conservatively estimate the death toll to have been around 75 million people. In Europe, it is believed that about 60 per cent of the population perished from the disease. In some regions across Asia and Africa, that figure was much higher, while other regions were barely affected.

It was not the first or last time this dreaded plague spread across the populated world, but the fourteenth-century outbreak, referred to as the Black Death, will always be recognised as one of the deadliest outbreaks.

Source 11.0.1 Dance of Death, a detail from a fifteenth-century rood screen at the Church of St Mary, Sparham, Norfolk, United Kingdom



Source 11.0.2 Timeline of major outbreaks of the plague

Living conditions in the fourteenth century

Extent of human settlements

In the fourteenth century, European knowledge of the world was limited. Overland travel to distant places took many months and was often dangerous. The dangers of sea travel were often great and most voyages took place along the coast and known trade routes. Maps of that time represented the known world as consisting of Europe, northern Africa and parts of Asia. Knowledge of northern Africa dated back to the ancient world. The travels of Italian Marco Polo (1254–1324) into China, in the late thirteenth century, expanded European knowledge of the known world into far eastern Asia.

Everyday life

Life in the fourteenth century varied a lot and the way of life of most people depended on the social class they were born into. Most people were members of one of three groups: the nobility, the Church or the peasantry. The largest but least

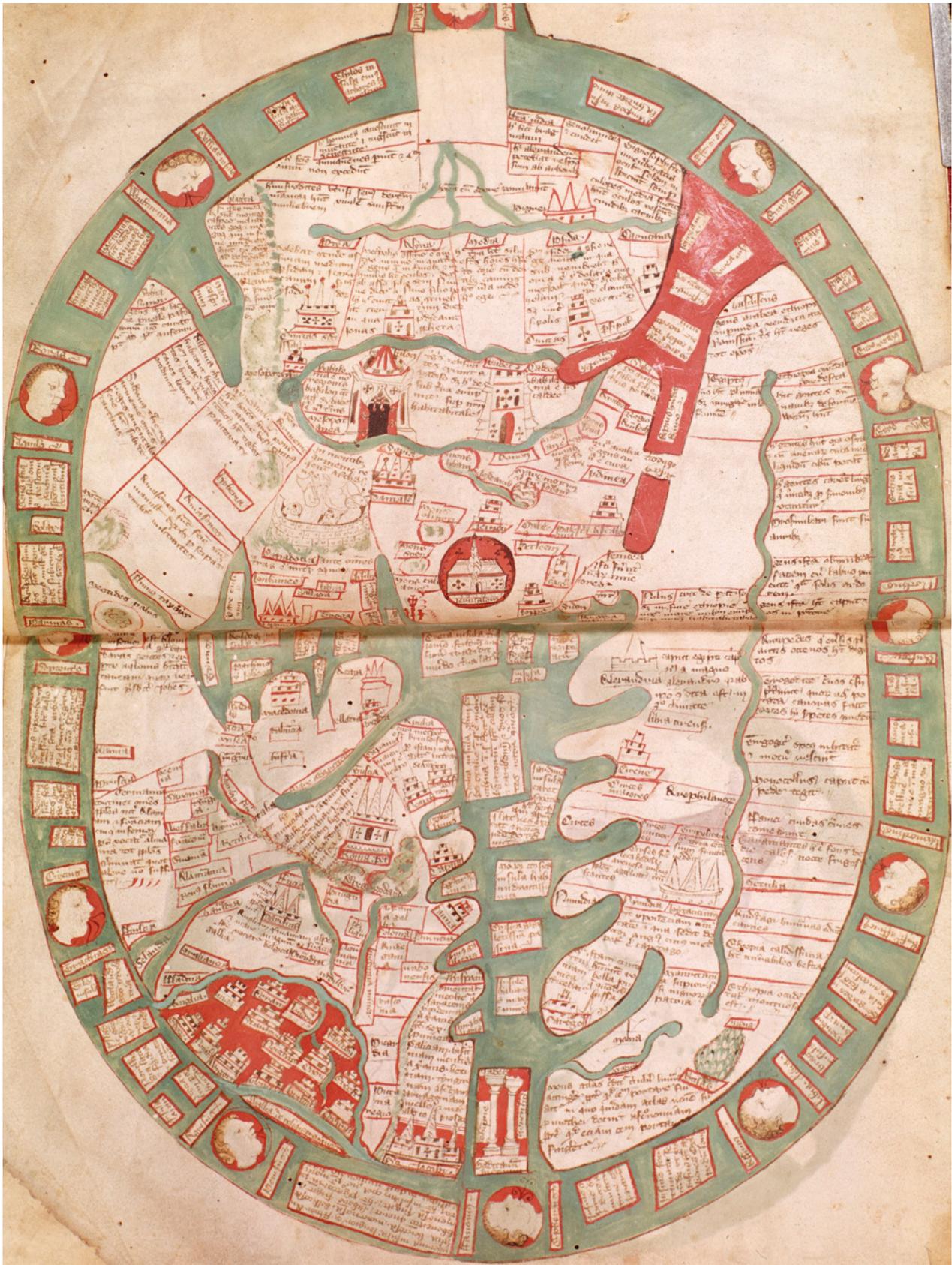
important social class was the peasantry. People in this group were referred to as villeins or yeomen. Villeins made up about 85 to 90 per cent of the population and had to work for a lord who owned the land and controlled their lives. Indeed, land valuation for tax and trade included the number of **peasants** the manor had. Yeomen were also farmers, but were free and owned their own land.

Villages and towns

The majority of the population lived in the countryside in villages of about 110 to 300 people. Their houses were small and, during winter, animals were often brought inside the house to keep them warm. A smaller percentage of the population lived in towns and cities. Generally these towns were much smaller than today. London had a population of approximately 80 000 compared with over eight million today.



Source 11.1.1 A peasant gathering acorns. An illustration on vellum, thirteenth to fourteenth century, Biblioteca Monasterio del Escorial, Madrid, Spain



Source 11.1.2 The late fourteenth-century world map of Ranulf Higden. It depicts the world known to Europeans. Jerusalem is in the centre. Europe is on the lower left, north Africa on the lower right and the Mediterranean Sea separates these continents. Asia covers the upper half of the map.

Living conditions

Castles, towns and villages were very dirty. Rubbish, filthy water and the contents of chamber pots were thrown onto the streets. Animals were often allowed to roam freely about the streets. Most of the buildings were wooden and placed closely together, making them dangerous in case of fire. Drinking water was drawn from the same river where local industries, such as brewers and tanners, and the townspeople dumped their waste.

Population

Life expectancy

Most people in the fourteenth century had much shorter lives than today. Their life span did depend, to a certain extent, on the social class into which they were born, but generally the average person lived for about 30 to 35 years. Boys could marry at fourteen and serve as soldiers at fifteen. Girls could marry at twelve, although most married at



Source 11.1.3 Wood harvesting at Buonconsiglio Castle. A detail from the Month of December, a panel from *Cycle of the Months*, a fourteenth- to fifteenth-century fresco by Master Venceslao, Buonconsiglio Castle, Trento, Italy

about sixteen. By their mid twenties, most women had given birth to five or six children, but two to three of these would likely have died. Many women died during childbirth—it is estimated that up to 20 per cent of women may have died this way.

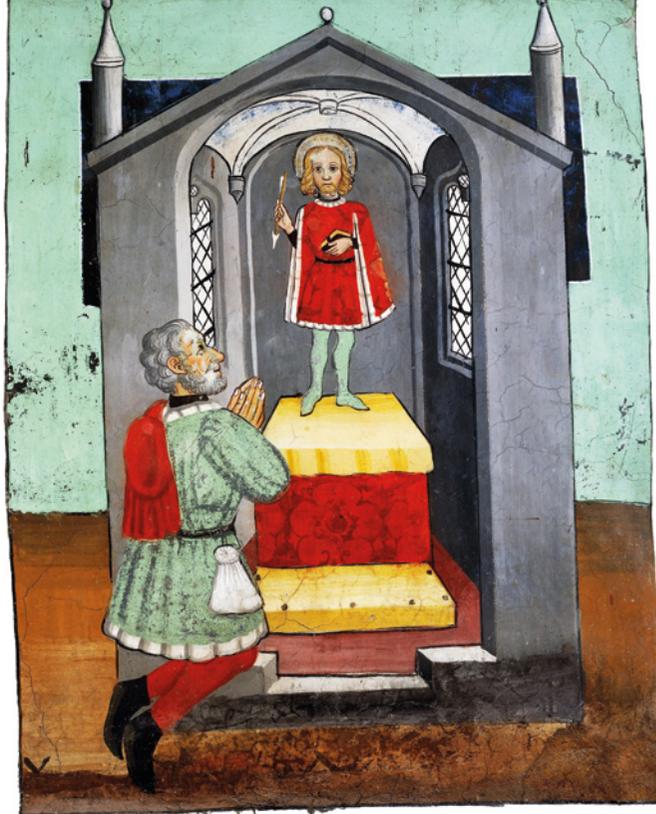
Population growth

During the thirteenth century, changes had begun to occur within the European population. Some people had begun to move from established farming areas and cleared other land in more remote areas. This increase in the amount of farmed land led to greater food production. In turn this led to an increase in the population during the thirteenth century.

However, by about 1300, the situation began to deteriorate. Poor weather had caused crop failures and this had led to famine. In 1309, a major famine struck much of Europe, followed by another in 1316. As well as these problems, many areas of northern France were already in very poor condition due to the Hundred Years War with England. Vast areas of the countryside were devastated and agricultural production decreased. The European population was already in a weakened state by the time the **plague** broke out in 1347. It is not known how great an impact this circumstance had on the rapid spread of the plague.

The importance of religion

People in fourteenth-century Europe were deeply religious. Many went to church every day and many went on several pilgrimages or journeys to holy places each year. Peoples' lives revolved around religious days and festivals throughout the year. The Catholic Church was very powerful and had a huge influence on how countries and towns were ruled. The leader of the Roman Catholic Church was the Pope. His papal seat was in Rome. He was seen as God's representative and therefore had great influence over kings and commoners alike. People believed that God made all things happen. God was thought to be responsible for inflicting diseases on the people if they disobeyed Church teachings. If people recovered, it was due to divine grace and if doctors were able to cure disease, it was through God's will.



Source 11.1.4 Praying to St Sebastian for protection from the plague. A fifteenth-century fresco, Chapel of St Sebastian, Villard-de-Lans, Rhône-Alpes, France

ACTIVITIES

Remembering and understanding

- 1 Outline why European knowledge of the world in the fourteenth century was limited.
 - a What were the three main groups in medieval society?
 - b What was the role of the villein in society?
- 2 What kinds of work do you see the peasants doing in Sources 11.1.1 and 11.1.3?
- 3 Outline the reasons for population growth and decline in the thirteenth and early fourteenth centuries.

Applying and analysing

- 4 Copy or draw Source 11.1.4 onto the centre of a large piece of paper or Word document and use it as the basis to create a concept map about religion and the power of God in medieval times.

Evaluating and creating

- 5 Discuss with a partner reasons why people generally had shorter life spans in the fourteenth century than today. Formulate at least two theories and share these with the class. Use Sources 11.1.1 and 11.1.3 to help you.

Medicine in the fourteenth century

Medical knowledge and training

In the fourteenth century, medical knowledge was very limited. There was little formal training available to doctors and few even attended university. Doctors did not understand how diseases were spread, nor did they know about germs or **bacteria**. Even those who trained as doctors never studied corpses to further their understanding of the human body, as the Church forbade this. The majority of people were unable to afford treatment from doctors. They relied on medical attention from monks and nuns or from people in their communities who practised herbal and popular treatments.



Source 11.2.2 A woodcut illustration showing a medieval doctor examining urine

If they were out of balance, a person became ill. The four humours were closely associated with not only a person's health but also their personality and medieval beliefs in astrology and astronomy (see Source 11.2.1).

Doctors would examine a patient's urine or faeces to try and decide if the humours were out of balance. A common treatment used to restore balance to the humours involved bloodletting. This might be done by placing leeches over the body or by cutting a vein.

The four humours

Based on the theories of the ancient Greek 'Father of Medicine', Hippocrates, medieval doctors believed that there were four basic elements in the body, called the **humours**. It was thought that these humours had to remain 'balanced' for good health.

Humour	Choler	Melancholy	Sanguine	Phlegmatic
Body substance	Yellow bile	Black bile	Blood	Phlegm
Produced by	Spleen	Gall bladder	Liver	Lungs
Element	Fire	Earth	Air	Water
Qualities	Hot and dry	Cold and dry	Hot and moist	Cold and moist
Physical qualities	Red-haired, thin	Sallow, thin	Red-cheeked, plump	Plump
Personality	Passionate, short-tempered, ambitious	Sullen, melancholic, bad-tempered	Amorous, generous, cheerful, irresponsible	Cold, dull, calm, lazy, cowardly
Animal	Lion	Pig	Ape	Sheep
Zodiac signs	Aries, Leo, Sagittarius	Taurus, Virgo, Capricorn	Gemini, Libra, Aquarius	Cancer, Scorpio, Pisces
Planetary influence	Mars (the lesser evil)	Saturn (the greater evil)	Jupiter (the greater fortune)	Venus (the lesser fortune)

Source 11.2.1 The theory of the four humours and their effect on people. Partly adapted from R.W. Ackerman, *Backgrounds to Medieval Literature*, Random House, New York, 1966

Astronomy

Another popular ‘medical’ explanation was that the movement of three planets, Saturn, Jupiter and Mars, had caused a disruption of the air, which was sometimes referred to as a **miasma**. This was bad air or vapour that was blown by the wind and could enter human bodies through the skin or by breathing it in. It was commonly believed that if people breathed in this miasma, their humours would go out of balance, making them ill.

..
For we wish it to be understood that air, which is pure and clear by nature, does not putrefy or become corrupt unless it is mixed up with something else, that is, with evil vapours.

Source 11.2.3 Extract from the ‘Treatise of the Paris Consilium’, 1348, in J. Aberth, *The Black Death: A Brief History with Documents*, Bedford-St. Martin’s, 2005, p. 43

Beliefs about the causes of the Black Death

The ‘Treatise of the Paris Consilium’ was a paper about the Black Death written in 1348 by forty-nine medical experts from the University of Paris. Although it stated the cause of the Black Death could not be known for certain, it identified poisonous gases released from the earth’s core during earthquakes as one explanation. Indeed, Europe had experienced a series of earthquakes from 1345 to 1347. Another explanation was the alignment of Saturn, Jupiter and Mars, which created the hot and wet conditions that led to rotting of plant matter and then to plague.

Many prominent people had different ideas about the cause of the plague, as shown in the following three sources.

..
... when mice and animals living under the earth fled to the surface and were disturbed, as if they were drunk ...

Source 11.2.4 Avicenna (980–1037 CE), a Muslim physician, on the origins of an earlier outbreak of plague, in R.S. Gottfried, *The Black Death: Natural and Human Disaster in Medieval Europe*, Free Press, 1985, p. 110

..
...filth, ‘fleys’ and vermin brought the plague.

Source 11.2.5 Swedish bishop Bengt Knutsson, 1461, in R.S. Gottfried, *The Black Death: Natural and Human Disaster in Medieval Europe*, Free Press, 1985, p. 110

..
The second [outbreak of the plague] was caused by a very strong earthquake which many can recall, and that pestilence was naturally located in regions of Italy and in parts overseas, in the other triangle opposite the house of Europe [i.e. in an indefinite region to the east].

Source 11.2.6 Extract from a letter by Alfonso de Cordoba c. 1348 on how the plague spread, in J. Aberth, *The Black Death: A Brief History with Documents*, Bedford-St. Martin’s, 2005, p. 46

ACTIVITIES

Remembering and understanding

- 1 Outline why medical knowledge was limited in the fourteenth century.
 - a What were the four humours?
 - b What relationship did they have to a person’s:
 - i physical appearance?
 - ii personality?
- 2 What was a miasma and what was it thought to do?

Applying and analysing

- 3 Examine Source 11.2.1 and use it as a basis to write a fourteenth-century doctor’s report on your health. You may either write a written report or present your report as an annotated drawing of yourself.

Evaluating and creating

- 4 How effective do you think doctors would have been in curing diseases during the Middle Ages? Explain the reasons for your answer.

Origins and spread of the Black Death

Expanding trade routes

Trade between the East and the West increased in the twelfth and thirteenth centuries. There was a network of interconnecting routes that traders used. Some were overland routes, others were sea routes. Sometimes goods were transported first by land and then by sea from Asia to Europe. Merchants trading in Asia were mainly Italians. From European seaports, goods were distributed throughout Europe and northern Africa. Silk, spices and other goods were not the only items to move along the Silk Road between Asia and Europe. Rats hid among the trade goods or climbed mooring ropes to get on board merchant ships. Merchants unintentionally transported rats and the fleas they carried from Asia into Europe and Africa. These fleas were the carriers of the Black Death.

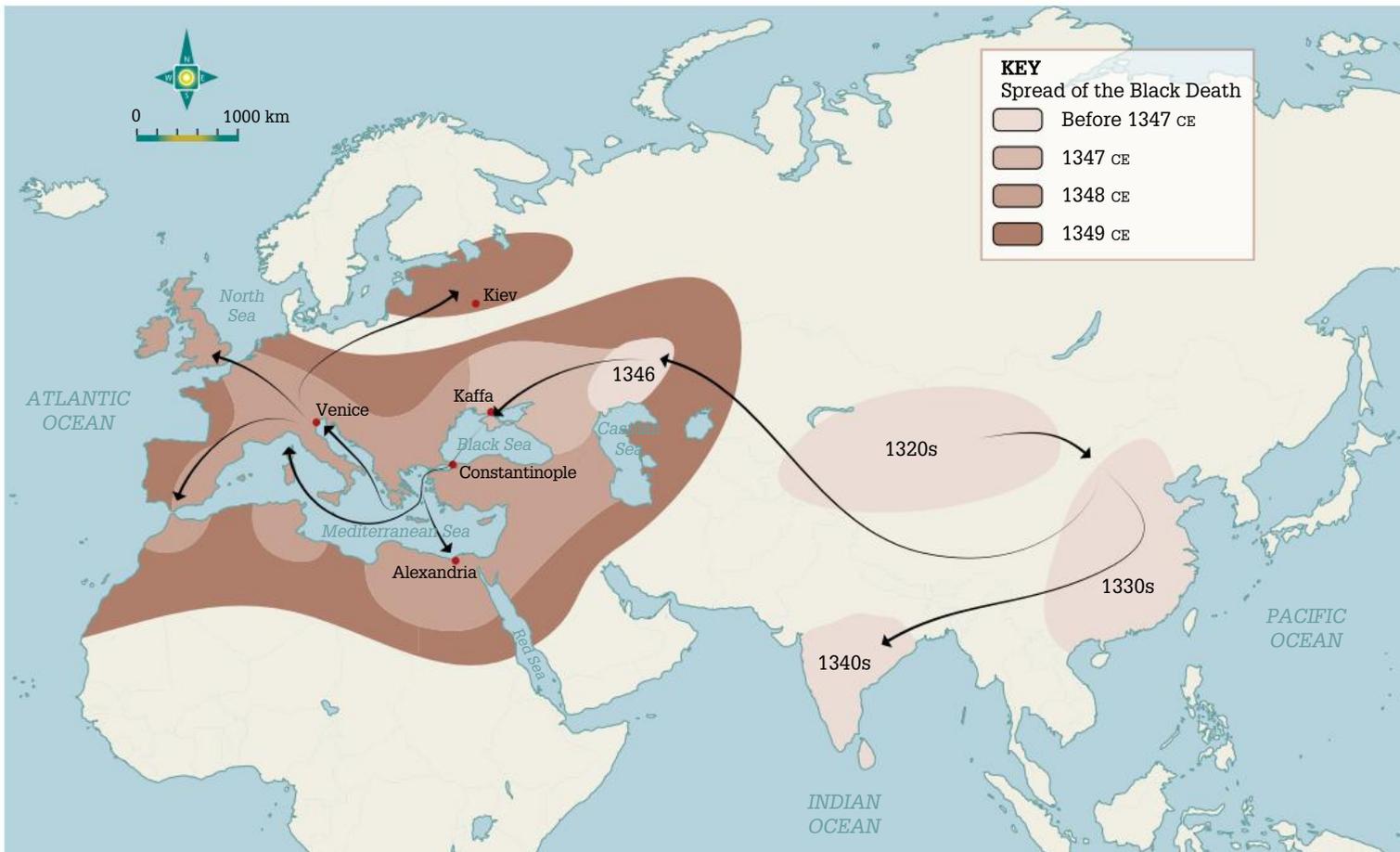
Origins of the Black Death

The Black Death is believed to have originated in the Gobi Desert of central Asia in the 1320s. From there it spread westwards to China where it emerged in the 1330s. The records of this are poor, but some sources do reveal a decline in the Chinese population. From there, the plague slowly moved westwards.

Outbreak and spread of the Black Death

Theories as to how it spread

Historians have different explanations as to how and why the Black Death reached Europe and Africa. The reasons for the spread of the Black Death are unclear and we will never really know the exact route it took.



Source 11.3.1 Origins of the Black Death in Asia and its spread to Africa and Europe

Some historians believe it was spread throughout the east by Mongol nomadic horsemen, who covered a vast area from China to India and the Middle East. Other historians believe it was environmental conditions that led to infected rats moving from their usual areas towards Western Europe. However, all historians agree that trade between Asia and Europe had a major impact on the spread of the Black Death in the fourteenth century.

Spread by trade

Historical records show that a group of Italian traders arrived in Sicily from China in October 1347. Among the goods they carried were rats with fleas carrying *Yersinia pestis* bacteria. This was one of the first outbreaks in Europe. It was recorded in Sicily that when a merchant fleet arrived in the Sicilian port of Messina in October 1347, its crew were nearly all dying or already dead and were described as having ‘sickness clinging to their very bones.’ Although the ship was not allowed to stay, infected rats managed to get to land when the ropes were first tied to the docks. The disease spread quickly. By early November 1347, nearly all of Sicily was stricken with the disease.

.. .. .
.. in the month of October, in the year of our Lord, 1347 ... twelve Genoese ships, flying from the divine vengeance ... put into the port of Messina, bringing with them such a sickness clinging to their very bones that, did anyone speak to them, he was directly struck with a mortal sickness from which there was no escape ...

Source 11.3.2 A description of the Black Death arriving in Sicily, in F A Gasquet, *The great pestilence*, S Marshall, Hamilton, Kent & co., limited, 1893, pp. 12–13

Other evidence points to Kaffa as the place of one of the early outbreaks of the Black Death. Kaffa, located on the Black Sea, was the last trading post on the Silk Road. Mongols attacked Kaffa in 1346. Italian merchants were held under siege in the town. When the Black Death broke out among the Mongols, they hurled diseased corpses over the city walls into the town. The Italians fled to Constantinople, arriving in May 1347. Plague soon broke out.

.. .. .
The epidemic which then (1347) raged in northern Scythia, traversed almost the entire sea-coasts, whence it was carried over the world. For it invaded not only Pontus [in modern Turkey], Thrace [south-east Europe], and Macedonia, but Greece, Italy, the Islands, Egypt, Lybia, Judea, Syria, and almost the entire universe ... Neither regularity of life nor bodily strength was any preservation against it. The strong and the weak were equally struck down.

Source 11.3.3 An account of the spread of the Black Death in other regions, in F A Gasquet, *The great pestilence*, S Marshall, Hamilton, Kent & co., limited, 1893, p. 10



Source 11.3.4 *The Merchant*, a woodcut after Hans Holbein the Younger, depicting how the plague was spread by trade ships

The Black Death spreads further into Europe and Africa

Italy

By December 1347, the Black Death had reached southern Italy. At about the same time, reports began to arrive from the major trading ports of Pisa and Genoa of outbreaks of the disease with about 40 per cent of the population dying. From there

it moved to the more heavily urbanised areas of central Italy. It also had devastating effects on the commercial cities of Florence, Sienna and Venice. Although ships were quarantined (kept separate for a period of forty days), this measure was too late to stop the spread of the disease into Venice. It is estimated that 60 per cent of the population of Venice died.

France

By January 1348, the Black Death was reported in Marseilles, a major port in the south of France, where the mortality rate was also thought to be about 60 per cent. It quickly spread throughout France, including Avignon where the Pope lived and Paris. Many areas of northern France were already in very poor condition due to the Hundred Years War with England and the plague spread very rapidly in these areas. It then spread to Belgium, the Netherlands, Scandinavia and even Iceland and Greenland. Historians believe that a combination of plague and poor climatic conditions wiped out the whole population of Greenland.

..
... more than one-half of the people at Avignon are already dead. Within the walls of the city there are now more than 7000 houses shut up; in these no one is living, and all who have inhabited them are departed; the suburbs hardly contain any people at all ... at Marseilles all the gates of the city, with the exception of two small ones, are now closed, for there four-fifths of the inhabitants are dead. The like account I can give of all the cities and towns of Provence. Already the sickness has crossed the Rhone, and ravaged many cities and villages as far as Toulouse ...

Source 11.3.5 A description of the Black Death in France by an unknown cleric, in F A Gasquet, *The great pestilence*, S Marshall, Hamilton, Kent & co., limited, 1893, p. 40

England

England was also severely affected. Historians believe that the plague was brought to England aboard French and Italian ships in September 1348. Like Italy, it was reported that in London, England's largest town and major trading centre,

there were outbreaks by late 1348. Despite the fact that most people lived in the countryside, regular travel between town and country helped spread the disease throughout most of England.

.
Here in Bristol in 1348, the plague raged to such a degree that the living were scarce able to bury the dead ... At last it reached Gloucester, Oxford, and London; scarce the tenth person was left alive, male or female ... There was no city, nor town, nor hamlet ... in which this plague did not carry off the whole, or the greater portion, of the inhabitants.

Source 11.3.6 Contemporary account of the spread of the plague in England, in F A Gasquet, *The great pestilence*, S Marshall, Hamilton, Kent & co., limited, 1893, pp. 86–91

North Africa

Seaports on Africa's Mediterranean coast were also affected. Alexandria, in Egypt, was one of the first to become infected in 1347. By 1348, the Black Death had spread to other port cities and it then moved southwards so that the whole of northern Africa experienced outbreaks.

Reasons for the Black Death's rapid spread

For the Black Death to break out in such a major fashion, a series of events and circumstances had to coincide.

- Fleas are only active at temperatures of 15 to 20 degrees Celsius, with 90 to 95 per cent humidity, which is why most outbreaks only occurred in late summer and early autumn.
- The population of Europe was not in a healthy state, as poor harvests and bad weather had led to crop failures in many parts of Europe at the time.
- A booming European population had led to overcrowding in some areas and greater numbers of people living in towns and cities.
- The speed of land transport along main roads was about 2 kilometres per day; however, ships could travel 40 kilometres in a day. Sea travel moved rats and fleas quickly over vast distances.



Source 11.3.7 The Black Death reaches Tournai in Belgium in 1349. Illustration on vellum by Gilles Le Muisit (1272–1352), Royal Belgian Library, Brussels

Did you know?

Black Death researchers have extracted DNA from the remains of fourteenth-century plague victims to learn more about the plague. These experts have found that the fourteenth-century plague strain was no more virulent than the plague virus that is still around today. The quick spread of the fourteenth-century plague has led them to hypothesise that the plague was not in fact bubonic (spread by fleas on rats), but was pneumonic and spread from human to human by coughs and sneezes.

ACTIVITIES

Remembering and understanding

- 1 Outline how trade helped facilitate the spread of the Black Death.
- 2 What do Sources 11.3.1 to 11.3.4 tell us about how the plague arrived in Europe?

Analysing and applying

- 3
 - a What do the sources in this unit tell us about the effect of the plague on the towns and cities it reached?
 - b Why do you think the Black Death would have affected urban areas more than rural areas?

- 4 Once the Black Death arrived in a certain location, why would it have been difficult to limit its spread to other places?
- 5 Examine Source 11.3.7.
 - a Describe what you see.
 - b What does this image tell us about the impact of the plague on a town?

Evaluating and creating

- 6 Why do you think historians cannot provide a clear explanation as to how and why the Black Death reached Europe and Africa?

The causes of the Black Death

Bacteria, fleas and rats

The Black Death was caused by a type of bacteria called *Yersinia pestis*. These bacteria live in the digestive tract of fleas, particularly the fleas that inhabit the fur of rats. These bacteria can multiply rapidly in the flea's stomach and when the flea feeds or bites, these bacteria are regurgitated into its victims. The fleas live on **rodents**, especially rats, and in Europe the *Rattus rattus* or black rat was the most important carrier.

Black rats tend to live close to humans and where food waste is found. They are good climbers and very adept at climbing into the rafters of houses. The thatched roofs of peasants' homes were ideal living quarters for them. As well, they could easily run down anchoring ropes from ships when they came into dock at seaports. However, it was not only rats that carried the fleas. Other rodents such as marmots, squirrels and prairie dogs could also carry the infected fleas. Although it was not their preferred place to live, if desperate the fleas could also live on most other animals, including humans.

Black Death types and symptoms

There are three forms of the Black Death. The most common and least deadly is the bubonic plague, which is transmitted by fleas. Bubonic plague is not **contagious** between humans. It had a 60 per cent death rate and killed victims in five to seven days. If the infection reached the lungs, another form of the Black Death came about, known as the **pneumonic** plague. This form usually occurred if the disease was caught in winter. It had a 90 to 100 per cent death rate and killed victims in about a week. The most lethal form, with a 100 per cent death rate, was septicaemic plague.



Source 11.4.1 A woodcut illustration of the black rat, *Rattus rattus*, from Conrad Gessner's 1551 *Historiae Animalium*. Gessner was a sixteenth-century naturalist who died from the plague.

Bubonic plague

When a flea bit a human for food, it deposited the bacteria into the human's bloodstream. The bacteria could multiply very rapidly and within three to six days the first symptoms began to appear. The first symptom was generally a **pustule** at the place where the bite happened. This was quickly followed by swellings in the armpits, groin or neck, depending on where the flea had bitten. If it bit higher on the body, swelling would usually start near the armpits, if the bite was lower, swelling would often begin in the groin.

These swellings were known as **buboes**, and this is where the bubonic plague gets its name. Buboes were swollen lymph nodes around the armpits or groin, usually full of pus and sometimes the size of an apple. After this, the sufferer began to bleed under the skin causing large purplish blotches to appear. Sometimes this bleeding affected the nervous system, leading to uncontrollable movements and psychological disorders.

..

... it first betrayed itself by the emergence of certain tumours in the groin or the armpits, some of which grew as large as a common apple, others as an egg, some more, some less, which the common folk called gavoccioli. From the two said parts of the body this deadly gavocciolo soon began to ... spread itself in all directions ...; after which the form of the malady began to change, black spots ... making their appearance in many cases on the arm or the thigh or elsewhere ... [T]he gavocciolo ... was an infallible token of approaching death.

..

Source 11.4.2 A description of the plague in *The Decameron* by Giovanni Boccaccio, a collection of 100 stories, begun c. 1350, completed 1351–53



Source 11.4.3 Death strangling a victim of the Black Death, from the codex called the *Clementinum Collection of Tracts* by Thomas of Stitny, 1376, National Museum, Prague, Czech Republic

Pneumonic plague

This type of plague had an **incubation** period of two to three days and a much higher mortality rate. After the incubation period, the victim experienced a rapid drop in body temperature followed by a severe cough. Unfortunately, the deadly bacteria were carried in the tiny droplets produced by a coughing victim, which were then breathed in by anyone nearby. This made the pneumonic plague very contagious.

Septicaemic plague

Septicaemic plague occurred when the *Yersinia pestis* bacteria entered the bloodstream and attacked the immune system. It caused high fever, exhaustion and stomach pain. It led to multiple organ failure and death was inevitable.

ACTIVITIES

Remembering and understanding

- 1 List the three types of plague.
- 2 Examine Source 11.4.2. What type of plague does Boccaccio describe?

Analysing and applying

- 3 Use the information and sources in this unit to create an AVD that explains:
 - a how the Black Death spread to humans
 - b the symptoms and details of each form of the Black Death.
- 4 Examine Source 11.4.3. Why do you think the plague victim is depicted in this way?

Evaluating and creating

- 5 Using the information in this unit, prepare a pamphlet advising on actions to take to avoid the spread of the Black Death.

Treatments for, and responses to, the Black Death

Attempts to prevent the Black Death

It is evident from the sources available that medieval doctors had no idea about the scientific causes of the Black Death or how to treat it. Without proper knowledge about its actual causes, it was thought that the best hope was to prevent it from occurring. The belief that the plague was carried on foul air or miasma meant the people of the time went to great lengths to keep this foul air at bay. It was considered unhealthy to be near the sea or marshes as it was believed the miasma came from there. A lot of time and effort were put into keeping these poisonous airs away. People would:

- burn dry and richly scented woods to sweeten the air
- place sweet-smelling herbs like rosemary and flowers around the house
- sprinkle rosewater over floors
- avoid physical activity so as not to breathe in more air
- avoid hot baths as the pores of the skin open and let in poisoned air.

... *it is recommended that fires be lit in homes and in places where people are living, and that men rest quietly. Also, fires of any kind of fragrant plant be set up, and the house and the city be cleansed of foul matter [i.e. excrement], and to counteract the foulness, fruits and spices ... should be at one's disposal.*

Source 11.5.1 One suggested method of prevention, in J. Aberth, *The Black Death: A Brief History with Documents*, Bedford-St. Martin's, 2005, p. 49

... *In such times one must avoid violent exercise because such exercise causes much air which is foul and poisoned to be drawn to the heart. The heart is corrupted and also the blood and its spirits, by air ...*

Source 11.5.2 Another suggested method of prevention, in J. Aberth, *The Black Death: A Brief History with Documents*, Bedford-St. Martin's, 2005, p. 52

Other preventative measures involved what was eaten. A fig with breakfast was recommended, and pills of aloe, myrrh and saffron were popular. Another favourite suggestion was 10-year-old treacle blended with chopped-up snakes and wine! Other ideas included not eating fish or meat unless it was roasted. It was also suggested that a person should avoid regular bathing.

... *And also I say that in such times habitual bathing is also very dangerous, because the bath opens the pores of the body and through these pores corrupt air enters and has a powerful influence on our body and our humours.*

Source 11.5.3 The dangers of bathing, in J. Aberth, *The Black Death: A Brief History with Documents*, Bedford-St. Martin's, 2005, p. 54

Treatments for the Black Death

Bleeding

Victims of the plague were treated with a range of **remedies**, none of which were particularly effective. The main treatment was bloodletting to rid the body of evil vapours that had entered the body and were affecting the balance of the body's humours. This treatment only weakened the patient further.

.....

The desired evacuation having taken place, one can shortly after bleed the median vein ... in order to withdraw blood, 3 or 4 ounces, more or less according to the condition of the person ... And if one asks me in which quarter of the moon it is best to let blood, I say in the third quarter. And also I say it is better to do it in the middle of this quarter, provided that the moon in such times is not seen in a sign unfavourable for bloodletting such as Gemini, Leo, Virgo, Capricorn and some others.

.....

Source 11.5.4 A contemporary description of bleeding a patient, in J. Aberth, *The Black Death: A Brief History with Documents*, Bedford-St. Martin's, 2005, p. 53

.....

Bleeding. Here one shouldn't be too fearful or hesitant. It is the best way to maintain one's health during this calamity! ... But it has to be done, even in the middle of the month when the moon is full or in the second or third hour of the day. If one's power and age permit, it should be done two or three times [a day], if the person was with a diseased person or took care of one. Disregard the season, even though normally it has to be observed, but not in this one. The disease changes all seasons into one season, all diseases into one.

.....

Source 11.5.5 Another contemporary description of bleeding a patient, in J. Aberth, *The Black Death: A Brief History with Documents*, Bedford-St. Martin's, 2005, p. 53

Other remedies

Other remedies included giving the patient soothing potions to drink. One of the most popular was a blend of apple syrup, rosewater, lemon and peppermint. Buboes were often cut open to let the poison escape; this usually only succeeded in spreading the disease further.



Source 11.5.6 Doctors using leeches to heal a patient, from *The Decameron* by Giovanni Boccaccio (1313–75), vellum, National Library, Paris, France

Responses to the Black Death

The flagellants

Many people considered the Black Death to be a punishment from God. People believed that if they showed regret for their sins, God's anger could be placated. One group thought that flagellation would achieve this. Flagellation was the whipping or scourging of oneself with a stick with several pieces of rope or strips of leather attached to the end. Sometimes these leather thongs also had metal studs attached to the ends. **Flagellants** would rhythmically beat their backs or breasts with these scourges to show God that they were atoning for their sins. They hoped that God would take away the plague.

Some flagellants went on pilgrimages from town to town. Pilgrimages could involve 300 to 400 flagellants. They would perform their scourging ceremony in the town square, beating themselves into a frenzy. Townspeople watched and encouraged them to even greater excesses. It is quite possible that the flagellants had the effect of spreading the disease as walking from town to town often helped to spread the plague.

.....

The penitents would come to town ... now three hundred [members]. For their habit they wore a tunic over their ordinary clothes. On the front of this tunic they wore a red cross over the breast and another behind on the back, and the tunic was cut away in one place and there hung their whips, which we commonly call scorgies [scourges], each having three knots. And in each knot there were four piercing points or needles of iron ...

.....

Source 11.5.7 A contemporary description of flagellants, in J. Aberth, *The Black Death: A Brief History with Documents*, Bedford-St. Martin's, 2005, p. 135

Scapegoats

Many people looked for a scapegoat, someone to blame for the onset of the Black Death. As a non-Christian group in a Christian Europe the Jews were an easy target. Jews began to be blamed for the disease, with people claiming that the Jews had poisoned the water supplies of towns. As the Black Death spread through Europe in 1348, massacres of Jews began. In April 1348, in France, forty Jews were killed in Toulon. Nine hundred Jews in Strasbourg were burnt alive in February 1349, even before the plague arrived. In Erfurt, Germany, in March 1349, an estimated 1000 to 3000 Jews were massacred. Some Jews burnt their homes and themselves before the lynching groups arrived. As the plague diminished across Europe after 1350, so too did the attacks on Jewish communities.



Source 11.5.8 Flagellants in Doornik (Tournai), Belgium, in 1349. A copy of a miniature from the *Chronicle of Aegidius Li Muisus*, private collection



Source 11.5.9 The burning of Jews in the Nuremberg Massacre, Germany, in 1349

... ..
... the Jews were accused of having created ... this pestilence by throwing poison down springs and wells. And they were burnt from the Mediterranean Sea to Germany, except for Avignon, where Pope Clement VI protected them ... some Jews were tortured in Bern ... and poison was discovered in Zofingen. And the Jews were destroyed in many places ... And the alderman and even some nobles in Basel strove to protect the Jews from a long-term banishment. ... the people ... mobbed the councillors' palace. The councillors were terrified and the burghermeister asked them, 'What do you want?' They responded, 'We won't go away until you change your mind about banishing the Jews!'

Source 11.5.10 A contemporary account of the treatment of Jews during the Black Death, in J. Aberth, *The Black Death: A Brief History with Documents*, Bedford-St. Martin's, 2005, p. 151

Did you know?

One recommended cure for the Black Death was powdered emerald. It was believed that this remedy was so powerful that if a toad looked at you after you had taken it, its eyes would crack!

ACTIVITIES

Remembering and understanding

- Using Sources 11.5.1 to 11.5.3, list the methods that were used by medieval people to avoid catching the plague.
- What was the flagellant movement?
 - Who did flagellants blame for the outbreak of the Black Death?

Analysing and applying

- Examine Sources 11.5.4 and 11.5.5.
 - When did doctors believe was the best time to let blood?
 - Why do you think it is recommended in Source 11.5.5 to bleed a plague victim at any time?
- Why do you think people would have initially supported the flagellants?
- Read Source 11.5.10.
 - What was happening to the Jews?
 - Why do you think the alderman and the nobles tried to help them?
 - Why do you think the mob wanted to banish them?

Evaluating and creating

- Using your list of methods from Question 1, rank each method from most to least helpful. Give reasons for your rankings. Compare your results with a partner or small group; has your ranking changed? Work with your class to create a final ranking.

The impact of the plague

Impact on society

A **pandemic** or **epidemic** that spread across continents and affected many countries, such as the Black Death, was bound to have both long-term and short-term impacts on societies in Europe, Asia and Africa. Some impacts were immediate, such as the disruption to daily life through the great loss of life. Other impacts emerged gradually over a longer period, permanently transforming societies.

Immediate effects of the Black Death

Population decrease

One of the most obvious impacts was the decrease in population. Historians estimate population losses of 35 to 50 per cent in Europe, with some even putting the figure as high as 60 per cent. It took 150 years for the population of Europe to reach pre-plague levels. Asian and African regions experienced similar death tolls. China's population of 120 million in 1200 had fallen to 65 million in 1393, although famine and Mongol invasions



Source 11.6.1 A fourteenth-century Venetian miniature depicting victims of the Black Death

also contributed to this depopulation. Towns in central Asia along the Silk Road all experienced population decreases, estimated to range between 30 to 70 per cent. The death rate was equally high in many regions of northern Africa. Worst affected were the seaports in regular contact through trade, with Europe and Asia. In total, the world population decreased by an estimated 75 to 100 million.

•• •• •• •• •• ••

After the pestilence, many buildings ... in all cities, towns and villages had collapsed ... in the absence of inhabitants. Likewise, many small villages were completely deserted ... all those who lived in them were dead. ... and the land everywhere remain[s] completely uncultivated ... before the pestilence, when there were plenty of priests, one could hire [one] for five marks, [now] ... there was scarcely anyone who wanted a position for twenty marks.

•• •• •• •• •• ••

Source 11.6.2 A contemporary account of England after the Black Death by historian and chronicler Henry Knighton, 1350

Labour shortages

Compared with pre-plague days, the worst affected areas looked very different. Many towns and villages were deserted or had few survivors. In London, streets were filthy, despite an order from King Edward III of England to clean them up, as few street cleaners survived the plague. Many shops and businesses remained closed. Farms were generally untended, which meant crop and livestock produce was very small and food was scarce. The severe shortage of workers resulting from the millions of deaths hindered economic recovery after the Black Death.

Burial pits

Large pits were dug to bury the large number of dead after cemeteries were filled. The dead were put out in the street and collected in carts every morning. Recent excavations in central London for a new railway link revealed plague skeletons in a mass pit. Historical records from 1348 refer to a mass grave of about 50 000 plague victims somewhere near this excavation site. The skeletons were in a shallow pit seven metres below the ground surface.



Source 11.6.3 Archaeologists work on the site of London's Crossrail Project in March 2013, after project workers discovered a mass burial site dating back to the Black Death in the fourteenth century.

Religion and the clergy

The large numbers of clergy, monks and nuns who died of the Black Death led some people to question the behaviour of religious people. Since it was believed that the Black Death was a punishment from God, many people concluded that religious people must have sinned. There was disappointment that the Church had failed to stop the plague. The loss of faith in the Church led to a decline in its power and status in society.

Long-term effects of the Black Death

Weakening of the feudal system

The feudal system was a system of social, political and economic organisation across Europe in medieval times. The king allotted land to lords in return for their military support when needed. In turn, peasants were allowed to farm the lord's land in return for services to the lord. These might include giving the lord one-third of their produce and working on the lord's land for a set number of days a year. These agricultural workers, called serfs or villeins, were bound to the lord who controlled all aspects of their lives. The word 'serf' came from the Latin word *servus* meaning 'slave'. Serfs could only farm the plot allocated to them. They were forbidden to move away from the manor, change occupations or even marry without permission from the lord.

The Black Death weakened the feudal system in Western Europe. The acute shortage of agricultural workers meant they were in demand. Workers went to manors where they would be offered better conditions. In order to retain workers, landlords were forced to pay improved wages. This often involved the agricultural worker simply paying the lord rent, instead of having to fulfil labour duties. Many peasants became prosperous during this time, earning up to five times more than before the Black Death. For lords, there was a doubling in the costs of operating the manor, compared with the period before the Black Death.

To keep costs down, lords sometimes switched to less labour-intensive forms of farming, such as raising animals, rather than growing crops such as wheat.

Peasant uprisings

The shortages of labour disrupted the feudal system, which threatened political and economic organisation. The English parliament passed the 'Statute of Labourers' in 1351, with measures such as not allowing labourers to move from one place of work to another for better wages and employers not being allowed to offer higher wages to entice workers. Similar laws were passed in Germany, Italy and France. These measures greatly affected the poorer classes and it is not surprising that they quickly became very unpopular. In 1381, a revolt broke out among the peasants, known as the Peasants' Revolt. This was in protest against the legislation, taxes and the fact that serfs, who were still tied to the land, were not free to work where they wished. Led by Wat Tyler, peasants marched to London with demands for reduced taxes and an end to the serf system. While the revolt was quickly suppressed, it did make the government reluctant to increase taxes any more and demonstrated that peasants had the will and power to challenge the longstanding feudal system.

Social mobility

The severe labour shortages, the peasant uprisings and the weakening of the feudal system broke down the social structure. Peasants became upwardly mobile. Where they had been at the lowest level of society before the Black Death, their improved pay enabled their status to improve as they gained wealth. On the other hand, many wealthy people suffered financially because the cost of running their estates greatly increased with high labour costs as the feudal system disintegrated. New job opportunities arose. Due to the large number of deaths across all levels of society, survivors could move into positions in the Church, crafts and government.



Source 11.6.4 The Peasants' Revolt of 1381 at Smithfield, London. King Richard II met the rebels and agreed to their demands. Violence broke out and their leader, Wat Tyler, was killed.

Medical knowledge

There was a much greater awareness of the importance of public health and of the need to keep cities cleaner and provide hospitals. Changes in the study of medicine also took place, leading to a greater expansion of medical knowledge. Medical textbooks were written in the common language rather than in Latin, which meant many more people gained access to medical knowledge.

BETTER HEALTH

Recent studies by anthropologists of post-Black Death skeletal remains suggest that the standard of living, especially diet, improved in the period after the plague. Mortality rates dropped and people were generally healthier.

ACTIVITIES

Remembering and understanding

- 1 Why do you think historians cannot agree on the numbers who died during the Black Death outbreak in 1347–1348?
- 2 What was the feudal system?
- 3 How was the feudal system weakened by the Black Death?

Analysing and applying

- 4 Read Source 11.6.2. What effect did the Black Death have on the countryside?

Evaluating and creating

- 5 Create a list of the positive and negative effects of the Black Death. With a partner, rank them in order of the most to least important and justify your ranking.
- 6 Draw a social pyramid of England before the Black Death occurred. Explain how this social pyramid changed after the Black Death.

Inquiry tasks

Recruitment speech

The year is 1349. The city of London is in the grip of the Black Death. You have decided to take action to deal with the situation and joined the Brotherhood of Flagellants. So convinced are you that this is the way to deal with the Black Death that you decide more recruits are needed into the Brotherhood. As part of the campaign to gain recruits, you write a speech to be delivered outside St Paul's Cathedral. Present the speech either in written form or deliver it as an oral presentation to the class.

Write the recruitment speech, making sure you include:

- a brief outline of the disease, its symptoms and consequences
- the cause of the Black Death
- why you believe this is the cause of the disease
- how you believe the Black Death can be stopped
- who the flagellants are
- reasons why others should join the Brotherhood of Flagellants.

Private diary

Imagine you are a Jewish person living in a European Jewish community during the period of the Black Death in the fourteenth century. You may choose to live in a Jewish community in a town like Nuremberg, Worms, Brussels or Cologne. Recount your experiences by writing down your observations and experiences in a personal diary. Entries should cover about six months and should be written in the first person. Include a minimum of five entries.

Conduct some research to find out more about the treatment of the Jews during the time of the Black Death to help you.

Information that may be included in the diary entries:

- your personal details such as name, family situation, where you live

- what life was like before the outbreak of plague
- a description of life after the plague broke out
- attitudes towards Jews during the plague
- treatment of your community during the plague
- what became of you and your community.

Changing circumstances

Work in pairs to conduct research into the changes in people's social and economic situations as a result of the Black Death. Focus on the changes experienced by lords of large manors and by peasant workers. One partner could investigate the lord of the manor and the other partner could investigate peasant workers. Use the information to compare the changes in the social and economic circumstances of these two groups in medieval society.

Information to be researched for each group in society could be written in a table, with one column labelled 'Before the Black Death' and the other labelled 'After the Black Death.' Notes may include:

- daily life
- social position
- work
- wealth
- marriage
- clothes.

Use the information to create a poster that clearly displays the social and economic positions of lords and peasants before and after the Black Death. Include clear headings and pictures.

The plague returns

The Black Death of the mid fourteenth century was not the only time the plague spread through parts of Europe, Africa and Asia. There were many other plague epidemics. The Great Plague of London in 1665–1666 was one of the more devastating of these.

Research the Great Plague of London of 1665–1666. Prepare a report that describes conditions in London during the plague and discusses its impact on the city. The report should include:

- a timeline of at least 10 plague epidemics from ancient times to the present, including the Great Plague of London
- a description of London before the epidemic
- why the plague occurred
- how people responded to the plague
- a description of London during the epidemic
- the impact of the plague
- a minimum of one relevant primary source image and one primary source document to support the information about the epidemic.



GLOSSARY

bacteria tiny microbes that repeatedly multiply and spread

buboe a plague sore; typically a swelling that appeared under the armpits, on the neck or near the groin

contagious easily transmitted from one person to the next

epidemic a rapid outbreak of a disease, infecting a much higher number of people than usual

flagellants people from an extremist religious group in the Christian Church who whipped themselves to atone for their sins

humours four substances (black bile, yellow bile, blood and phlegm) whose balance was thought to affect a person's health

incubation the period between catching a disease and showing symptoms

miasma a supposedly poisonous gas or vapour that some medieval doctors believed caused diseases

pandemic a very widespread epidemic (often across continents)

peasants the lower class in a medieval feudal society who worked for their lord as either farmers or labourers

plague an infection caused by the bacteria *Yersinia pestis*

pneumonic relating to the lungs

pustule a swelling on the skin that contains pus or fluid carrying dead cells

remedies methods of treating a disease

rodents a class of small mammal including rats, mice, squirrels and hamsters

Source 11.7.1 An allegorical representation of the Demon of the Plague, from Hans von Gersdorff's *Feldtbuch der Wundarznei*, printed by Johann Schott, Strasbourg, 1540



Alpine landforms

The world's alpine landscapes are not defined by their landforms. Rather, it is the distinctive climate found at high altitudes that determines their location and extent. Many alpine areas are, however, home to landforms shaped by the processes of glaciation, in either the past or the present. These harsh but spectacular places, and the related landforms, plant and animal life, are among the most culturally important of all environments. In addition, they are increasingly important as an economic resource. Tourists are attracted to alpine areas in all seasons and winter-based snow sports are becoming increasingly popular.

Alpine landscapes

Alpine climates

The earth's highest mountains and plateaus are home to its alpine landscapes. The extent of such landscapes is determined by the distribution of alpine climates. An alpine climate is defined by the conditions that exist above the **treeline**—the elevation at which it is too cold for trees to grow.

The climate is the average weather conditions experienced over a long period of time. One of the most important elements of weather is temperature. Alpine temperatures range from -18°C to 10°C . Precipitation is low and often falls as snow. Night temperatures are almost always below 0°C . The growing season of plants in alpine climates is usually less than 180 days per year.

The treeline in an alpine environment appears well-defined from a distance. On closer inspection it is actually a zone of slow change. The growing season of trees becomes shorter with increased altitude and more extreme climate conditions, and eventually there is a point where trees stop growing. In Australia's Snowy Mountains the treeline is approximately 1800 metres above sea level. In the Swiss Alps the treeline is approximately 2200 metres above sea level and in the Canadian Rockies it is 2400 metres.

Temperatures decline with elevation

Due to air expanding as it rises, temperatures drop as elevation increases. It is important to remember that the atmosphere is heated by the earth's surface, not from above. As a dry mass of air rises, it cools at a rate of -10°C per 1000 metres.

Shaping alpine landforms

When mountains are formed, weathering and erosion begin to wear them away. Exposed rock surfaces are broken down by physical and chemical weathering. The material is then removed by wind and water, and deposited (by rivers and glaciers) at lower elevations as sediment.

Work of rivers

Running water is the most powerful form of erosion in alpine landscapes that are not permanently covered with snow and ice, transporting and depositing rock and soil. In mountainous areas, rivers erode downwards, creating narrow, **V-shaped valleys**. Away from the mountains, valleys become wider and some of the river's load of sediment is deposited. Eventually, this material finds its way to the sea, where it is deposited in layers.

Glaciers: Rivers of ice

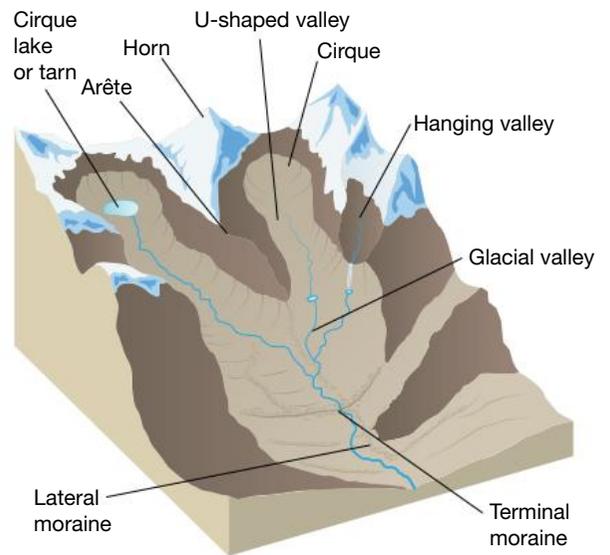
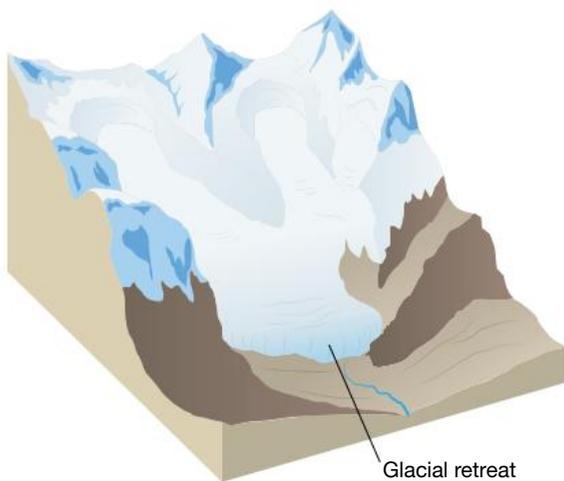
At elevations where it is cold enough for snow and ice to accumulate over a long period of time, glaciers are the main type of erosion. **Glaciers** are slow-moving rivers of compacted snow and ice. Source 12.1.1 shows a river of ice at the Gorner Glacier in Switzerland. Glaciers form when compacted snow, which has accumulated over many years, gradually moves downhill under the force of gravity.

Source 12.1.2 shows the formation of a glacier. As the glacier moves, the surface of the land is scratched and worn down by rock fragments that have been picked up from the ground and frozen into the base of the glacier. This process is known as **abrasion**. The most spectacular landform features of glacial landscapes are **U-shaped valleys**. During periods of glacial activity, glaciers cause the valleys once occupied by rivers to deepen and widen. **Hanging valleys** form where smaller (tributary) glaciers join larger glaciers. Other erosional features include **cirques**, **arêtes** and **horns (pyramidal peaks)**. **Fjords** are formed when rising sea levels flood the valleys once occupied by glaciers.

The rocks that are picked up and transported by the ice can be carried long distances before they are deposited, forming features known as **moraines**.



Source 12.1.1 A U-shaped valley at Gorner Glacier, Switzerland



Source 12.1.2 Glacial landforms during and after glaciation

ACTIVITIES

Remembering and understanding

- 1 Explain how the extent of an alpine landscape is defined.
- 2 State what the term 'treeline' refers to.
- 3 Explain in your own words why the weather gets colder with altitude.
- 4 Identify the main types of erosion that shape alpine landscapes.
- 5 Explain what a glacier is.
- 6 Outline how glaciers shape the land.
- 7 List the landform features associated with the movement of glaciers (glaciation).

Glacial landforms and processes

Glacier formation

A glacier is a slow-moving river of ice. Glaciers are found in alpine landscapes where temperatures are below zero for most or all of the year. Glaciers create a range of distinctive landform features that give alpine landscapes their spectacular appearance.

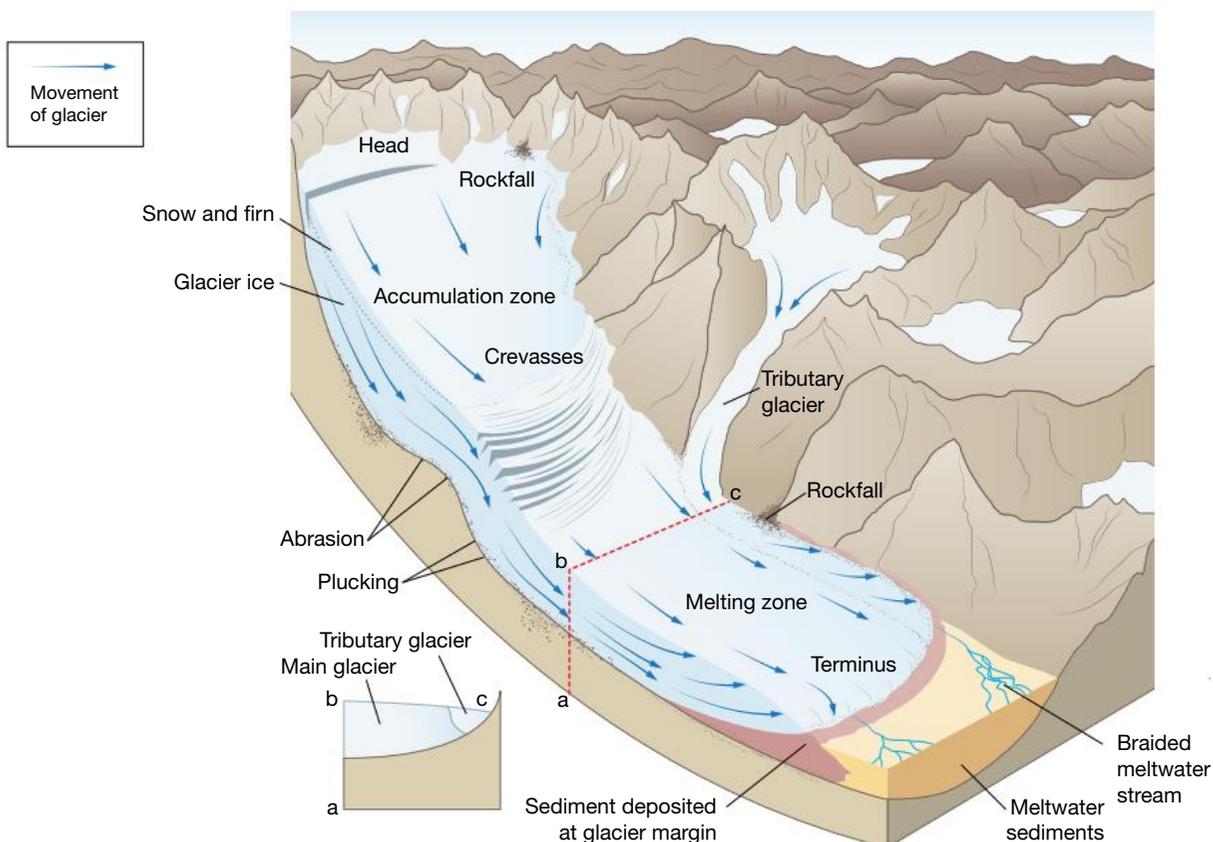
When snow falls to the ground it forms a light, feathery layer that traps a lot of air. Where snow collects in a low area of land, or depression, it becomes compressed by more snowfalls and gradually develops into a more compact, thicker layer of snow. When this compacted layer of snow experiences one winter's freezing and survives a summer's melting it is called **firn**. Air is progressively squeezed out of the firn and after 20 to 40 years it becomes solid ice. In parts of Antarctica and Greenland where there is no summer melting, the same process can take more than 200 years.

Large masses of this ice may begin to 'flow' downhill, under the force of gravity, as a glacier. Source 12.2.1 shows the main features of a glacier.

Glacier types

Glaciers are classified according to their size and shape. The five main types are:

- **niche glaciers**—very small accumulations of glacial ice that are found in depressions and gullies
- **cirque glaciers**—relatively small glaciers found in 'armchair-shaped' depressions in mountains
- **valley glaciers**—larger masses of ice that move down former river courses and are bounded by steep (almost vertical) valley sides
- **piedmont glaciers**—glaciers that form when valley glaciers extend onto lowland areas, spread out and merge



Source 12.2.1 Main features of a valley glacier



Source 12.2.2 A U-shaped, former glacial valley with hanging valley and associated waterfall, Yosemite National Park, United States of America

- **ice caps and ice sheets**—huge areas of ice covering more than 50 000 square kilometres. Ice sheets once covered much of northern Europe and North America, but they are now found only in Antarctica and Greenland.

Glacial inputs and outputs

Water enters the glacial system mostly as snow and leaves as meltwater. At higher elevations, inputs (snow accumulation) exceed outputs (evaporation and meltwater). This area is called the **accumulation zone**. At lower elevations, outputs exceed inputs. This area is called the **melting zone**. It is shown in Source 12.2.1.

Glacial erosion

Nearly all the glacial processes of erosion are physical, as the climate is too cold for chemical reactions to occur. Frost shattering is common and produces large amounts of loose rock. This rock material falls from valley walls to form a **lateral**

moraine along the edge of the glacier. Glacial abrasion, which is the scraping and grinding effect of rock material in the glacier, smooths and widens the U-shaped valley—a distinctive characteristic of areas shaped by glaciation.

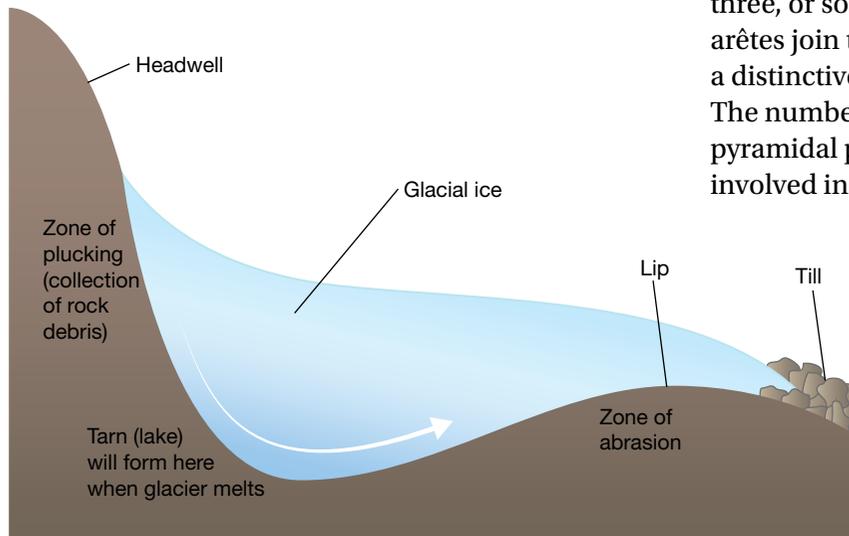
At the top of glacial valleys large, steep-walled bowls called cirques are located. When glaciers carve out valleys next to each other, a sharp-sided ridge, or *arête*, will separate them. If several of these valleys begin near the top of a mountain, a sharp peak, or horn, is formed. A glacial hanging valley forms where a smaller tributary glacier joins a larger valley glacier. After the glacial ice melts, the valley formed by the smaller glacier is left ‘hanging’ high above the valley floor. Hanging valleys often have spectacular waterfalls, as shown in Source 12.2.2.

Did you know?

Ten per cent of the earth’s land area is covered with glacial ice, which includes glaciers, ice caps and ice sheets.

Formation of cirques

A cirque is a bowl-shaped landform feature often found at the beginning, or head, of a valley glacier. Carved by ice, this distinctive feature is usually surrounded on three sides by steep cliffs. The highest cliff is often called a headwall. The fourth



Source 12.2.3 Formation of a cirque

side, known as the lip or sill, is the point at which the glacier flowed away from the cirque. Many glacial cirques are now occupied by **tarns**—lake-like features that form behind the till (rock debris) that collects at the lip (see Sources 12.2.3. and 12.2.4). The ridge between two adjacent cirques is called an *arête*.

A glacial horn, or pyramidal peak, is formed when three, or sometimes four, cirque headwalls and their *arêtes* join together to form a single peak that has a distinctive pyramid shape with very steep walls. The number of faces that make up the sides of a pyramidal peak depends on the number of cirques involved in its formation.



Source 12.2.4 Blue Lake in Kosciuszko National Park, New South Wales, is an example of a tarn.



Source 12.2.5 Aletsch Glacier, the largest glacier in Switzerland. The glacier's terminal, medial and lateral moraines are clearly visible.

- 1 Terminal moraine 2 Medial moraine 3 Lateral moraine

Glacial transportation

Glaciers are able to move large amounts of rock material, known as moraines. There are three main ways this material is moved downhill: on the surface of the glacier as a **lateral** or **medial moraine**; as debris carried within the body of the glacier; or as material embedded in the base of the glacier, a **ground moraine**.

Glacial deposition

The rock debris carried by glaciers is deposited at the point at which the glacier melts. When glaciers retreat (melt), these materials are deposited across the exposed landscape. A **terminal moraine** consists of a mound of material across the face of the glacier. The terminal moraine can be used to determine the maximum advance of a glacier. A **ground** moraine is deposited as rock debris across a valley floor as a glacier retreats (see Source 12.2.5). A **lateral** moraine is rock debris deposited as an embankment along the valley sides as the glacier retreats. A medial moraine is found in the centre of a valley and results from the merging of two lateral moraines when two glaciers merge.

ACTIVITIES

Remembering and understanding

- 1 Explain the process of glacier formation.
- 2 State the difference between valley and piedmont glaciers.
- 3 Explain why physical rather than chemical weathering processes dominate in alpine areas.
- 4 Outline what is meant by the term 'abrasion'.
- 5 State the conditions under which arêtes and horns develop.

Applying and analysing

- 6 Study Source 12.2.1. Sketch a glacier and label the main glacial landform features.
- 7 Study Source 12.2.2. Construct an annotated photo sketch of Yosemite National Park highlighting the key elements of the U-shaped and hanging valley.

Evaluating and creating

- 8 Create a photo board showing five cirques from around the world. Use a world map at the centre of your display and link each image with its location. Label the similarities and differences between the cirques.

Alpine ecosystems

Altitude

The factors that help to shape the alpine ecosystems are altitude, slope and aspect.

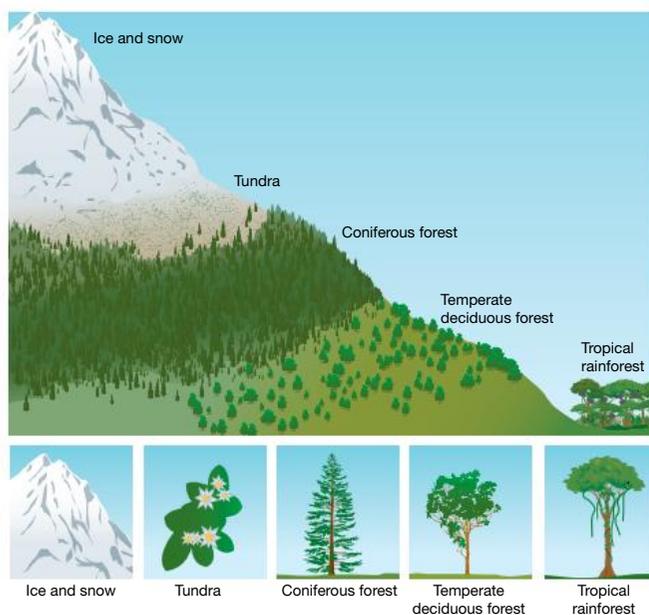
With increasing elevation (or altitude), air temperatures decrease and wind speeds increase. These changes have a major impact on plant growth. As you go up a mountain, very distinct zones of vegetation can be seen. These zones are shown in Source 12.3.1. At the highest zone there is no plant life, only ice and snow. Below this zone is the tundra. Source 12.3.2 shows the flowering plants of the Rocky Mountains that grow in the tundra. Below the tundra is the coniferous forests zone. Source 12.3.3 shows the forests on the slopes of Canada's Whistler Mountain. Beneath the forest is the temperate or deciduous forests zone.



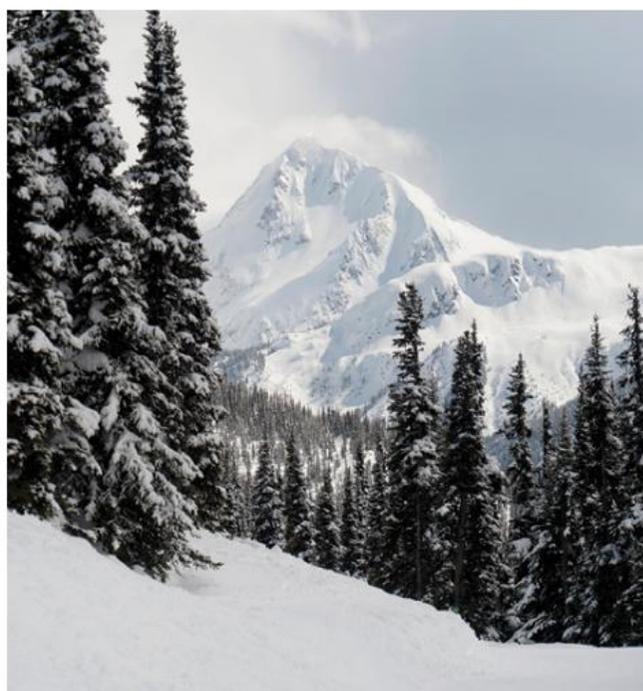
Source 12.3.2 The tundra above the treeline, Rocky Mountains, United States of America. Flowering plants have a brief and intense life, with a growing season as short as thirty days. During this time, the plants must race through the processes of germination, growth and reproduction.

Slope

The degree of slope is important in alpine regions because it influences soil depth and moisture content. Rates of erosion are higher on steep slopes and moisture drains away quickly. This makes it difficult for steep slopes to support plant life.



Source 12.3.1 Ecosystems change with altitude.



Source 12.3.3 Coniferous forest on the slopes of Canada's Whistler Mountain

Aspect

The aspect of a slope affects both light and temperature conditions. South-facing slopes in the Northern Hemisphere are more favourable for plant growth than those facing north (especially in winter). This is because north-facing slopes receive less direct sunlight, as illustrated in Source 12.3.4. In the Southern Hemisphere, north-facing slopes receive more direct sunlight.

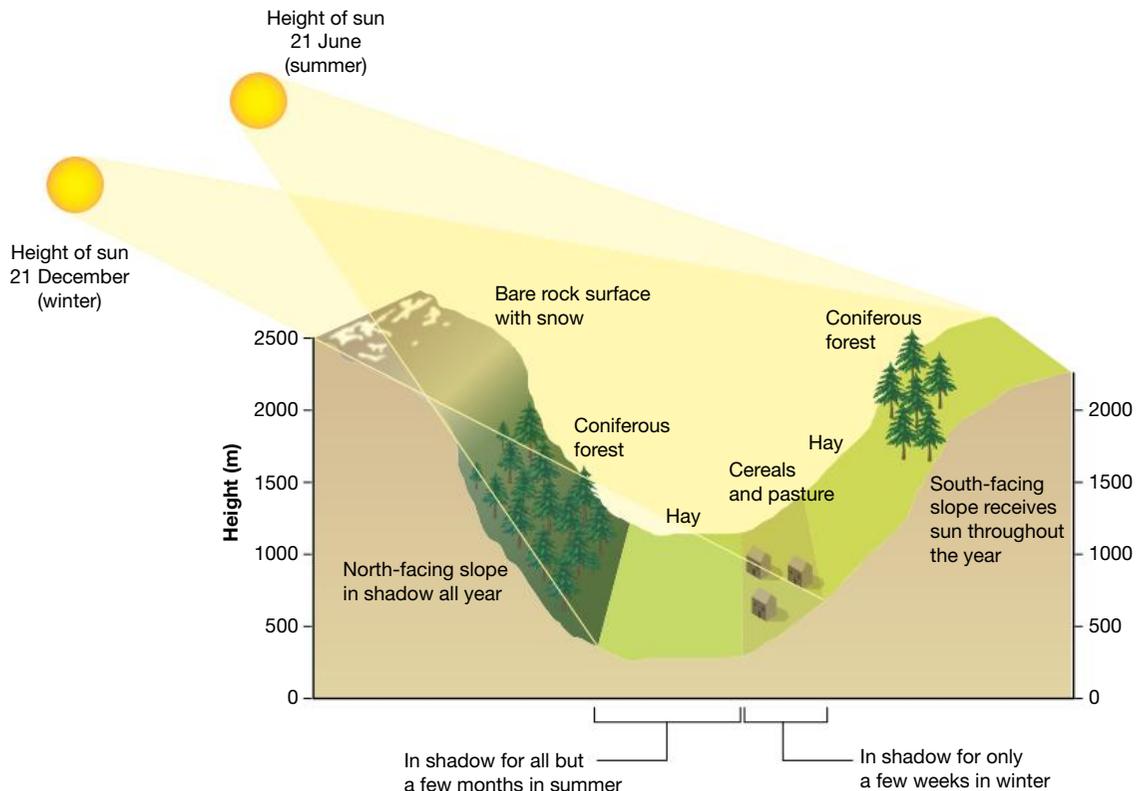
Alpine climates

Latitude, altitude and aspect interact to produce alpine climates. In general, the climate becomes colder with elevation—this characteristic is

described by the **lapse rate** of air: air tends to get colder as it rises, because it expands. The rate at which dry air cools as it rises is 10°C per kilometre of altitude. Therefore, the temperature at the summit of a 4000-metre high mountain will be up to 40°C cooler than the sea-level temperature. This vertical variation in temperature determines which flora and fauna can survive at different altitudes.

Did you know?

Alpine plants and animals are restricted to an area between the treeline and the mountain summit. In Australia, more than 250 species of alpine plants grow only in this restricted habitat.



Source 12.3.4 Impact of climate in a Northern Hemisphere valley

ACTIVITIES

Remembering and understanding

- 1 Explain how altitude affects plant growth.
- 2 Outline how slope affects the potential for plant life in mountain environments.
- 3 Outline how aspect affects the pattern of vegetation in mountain environments.

Applying and analysing

- 4 Study Sources 12.3.2 and 12.3.3. Write down the vegetation differences you observe in the different alpine environments.

Evaluating and creating

- 5 Study Source 12.3.4. Explain the impact that aspect has on the valley shown in the diagram. If you were going to build a house, where would you build it? Justify your answer.

Managing Australia's alpine environments

Alpine environments

Australia's alpine areas are found on both sides of the mountains and plateaus of the highest part of the Great Dividing Range. This is the only region on the mainland where snow accumulates on the ground, forming a snowpack that remains throughout winter. Australian alpine environments are unique and vulnerable.

The word 'alpine' is used to describe all snow-covered areas. In the strictest sense it refers to the higher country where it is too cold for trees to survive, such as the Main Range of Kosciuszko National Park shown in Source 12.4.1. On mainland Australia this occurs at 1800 metres (shown in the cross-section of Kosciuszko National Park in Source 12.4.2) and in Tasmania at 1200 metres.

Environmentally significant features

Australia's alpine regions are an important part of Australia's natural and cultural heritage.

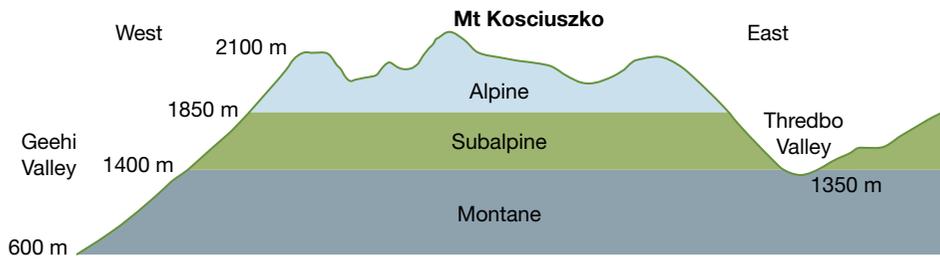
Natural values

Australia's alpine region includes:

- landforms such as cirque lakes (tarns) resulting from glacial activity during the last Ice Age
- unique flora and fauna communities adapted to the harsh conditions of low temperatures, frequent frosts and strong, cold winds. The alpine marsh marigold actually flowers under the snow in icy meltwater, enabling it to have enough time to flower and set seed in the brief summer



Source 12.4.1 The Main Range of Kosciuszko National Park, where it is too cold for trees to grow at the highest elevations



Source 12.4.2 Cross-section of the Kosciuszko National Park alpine landscape

- rare cold-climate animal species such as the mountain pygmy possum (see Source 12.4.3) and the corroboree frog. Many of these species are **endemic**, as they are found naturally only in the alpine region. Several species are restricted in their distribution to within 5 or 6 kilometres of Mount Kosciuszko
- the only mountains in the world with such a substantial covering of soil. The humus soils are globally significant.



Source 12.4.3 The mountain pygmy possum is endemic to the alpine regions of southern Australia.

Cultural values

The following aspects of the alpine region are an important part of Australia's cultural heritage.

- Aboriginal people have a living spiritual connection with the mountains. Researchers believe their summer visitation started 9000 years ago. Tribes travelled long distances to hold celebrations in the mountains and, while there, they feasted on the Bogong moths.
- There is a cultural history associated with European grazing of the alpine area that dates back to

the 1830s. Legends of the high-country horsemen and relics such as stockyards and huts are valuable elements of Australia's colonial heritage.

- The mountains are significant water catchments and the Snowy Mountains Hydro-electric Scheme is one of the world's most complex engineering feats. The scheme enables water to be collected and diverted through the mountains to inland New South Wales and Victoria, where it is used for irrigation.
- People have long visited the mountains for recreation, to enjoy the spectacular scenery in the summer, and to ski or snowboard in the winter.

A fragile environment

While the species that survive in the climatic extremes of the alpine area are hardy, their survival is dependent on their environment remaining the same. Historically, considerable damage has resulted from human land-use practices in the mountains. Today, there are still a number of risk factors.

Damage from grazing

Records show that graziers started bringing large numbers of sheep and cattle up into Australia's alpine environments in the early 1820s in the search for pastures and water. The heavy, hard-hoofed animals caused considerable damage to the native alpine vegetation, resulting in severe soil erosion. Grazing continued for over 120 years.

The pressure of tourism

As numbers of tourists grow, increasing pressures are placed on the environment. Vegetation is trampled, rubbish and human waste are left behind, and damage is caused by people camping in the wrong areas. Victoria's five alpine resorts attract up to 900 000 people each winter and an increasing number visit outside the snow season. The New South Wales ski resorts, including Thredbo

(see Source 12.4.4) and Perisher Blue, attract 1.2 million visitors a year and are important sources of employment for those living in the region.

The threat of climate change

Climate change has the potential to lead to a reduction in snow cover, as milder temperatures will result in fewer snow days and a reduced depth of snow. If the change is too rapid, species will not have a chance to adapt. Australian alpine areas are particularly vulnerable, as they occupy only 0.00001 per cent of the continent; the impact of global warming would significantly reduce the size of this already small area. Source 12.4.5 shows current snow cover and projected reduction in snow cover up until the year 2050. The two projected scenarios are:

- low scenario: the lowest projected level of global warming combined with the highest levels of precipitation

- high scenario: the highest projected level of global warming combined with the lowest levels of precipitation.

Environmental management

Australia's alpine national parks are featured on the Australian National Heritage List. With this recognition comes the responsibility to manage and protect them for the benefit of future generations.

The management plans for the alpine national parks aim to:

- protect the unique mountain landscapes
- protect the region's natural and cultural values
- provide an appropriate range of outdoor recreation and tourism opportunities that encourage the enjoyment, education, understanding and conservation of the natural and cultural values and protect mountain catchments.

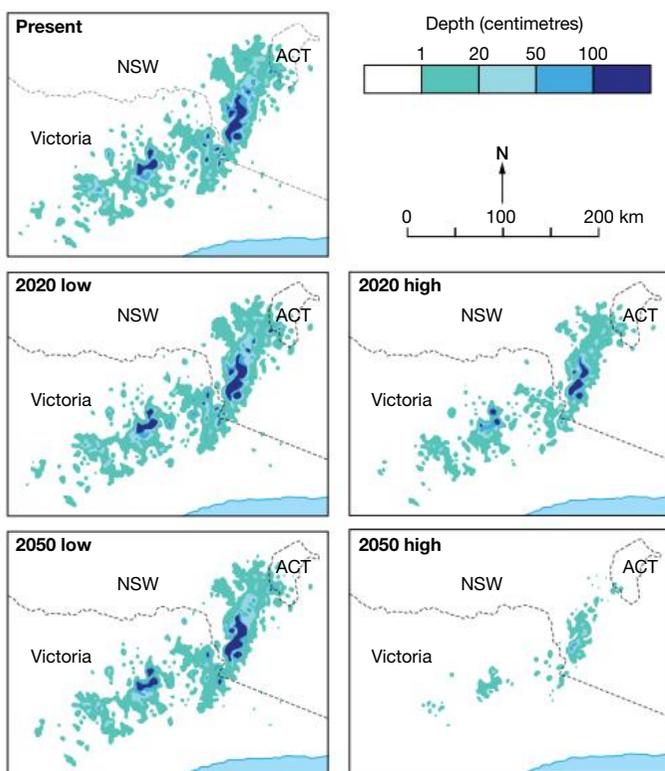


Source 12.4.4 Thredbo, Kosciuszko National Park. A range of sustainable practices have been implemented to minimise environmental impacts.

Management also includes safeguarding against the impacts of:

- introduced plants and feral animals
- soil erosion
- fragmentation or division of habitats
- pollution of waterways
- incompatible human activities.

Minimal Impact is one strategy used to protect the alpine environment. Under this strategy, all users of the parks are asked to reduce their environmental impact. Educational and information brochures on minimal impact are distributed to visitors. People are asked to take all rubbish out of the park, stay on tracks as shown in Source 12.4.6, camp well away from water courses and fragile landscapes, use fuel stoves instead of wood fires for cooking, leave all Aboriginal and historic sites undisturbed, and avoid disturbing any plants, rocks, logs or animal nesting sites.



Source 12.4.5 Current and projected decline in Australia's snow cover. The two predictions show the impact of 'high' and 'low' temperature rises due to climate change.



Source 12.4.6 Paths and boardwalks are used to protect fragile landscapes at Mt Kosciuszko.

ACTIVITIES

Remembering and understanding

- 1 Justify the protection of Australian alpine environments.
- 2 Define the term 'endemic species'.
- 3 Explain how the Australian Alps differ from mountainous areas elsewhere in the world.
- 4 Outline the threats to Australian alpine environments.

Applying and analysing

- 5 Use the 'think, pair, share' strategy to analyse why the treeline that marks the beginning of the alpine area is at a lower elevation in Tasmania than on the mainland.

Evaluating and creating

- 6 Assess the impact of grazing on soil formation in the alpine environment of Australia.
- 7 Develop a poster designed to educate visitors to the Australian alpine parks on how to minimise their environmental impact.

Inquiry tasks

Fun with fjords

In small groups, research and collect photographs of six different fjords from six different locations. On poster paper, draw a Venn diagram and describe the similarities and differences between two of the fjords you have found. Present your poster to the rest of your class.

Vegetation and fauna in the Australian Alps

In pairs, use the internet to research the vegetation and fauna in the Australian Alps and create a digital presentation illustrating the following:

- the relationship between temperature and altitude in the alpine region
- how vegetation varies within a zone
- how vegetation varies according to aspect
- how plants adapt to the challenges of a harsh alpine environment
- photographs of examples of plants found in each altitude zone
- photographs and descriptions of plants that grow in alpine herb fields and alpine bogs
- a summary which describes the fragility and vulnerability of alpine plants
- the diversity of mammals, birds, fish, reptiles and invertebrates (including photographs)
- the relationship between animals and vegetation in the Alps
- how animals survive the cold conditions
- the impact of introduced animal species in alpine areas
- the impact of human use of the alpine areas
- how animals and their habitats can be protected.

Present your findings to the class and provide a response to the question 'Are Australian alpine regions worth preserving?'

The use and management of an alpine park

Australia's alpine regions are an important part of the country's natural and cultural heritage. Building on the information in this chapter, your task is to conduct a deeper inquiry into the conflicting and complementary uses of Australian alpine parks. Choose one alpine park and describe:

- the present economic, social and environmental uses of the alpine park
- present threats to the natural and cultural values of the alpine park
- the future economic, social and environmental challenges for the park managers
- a personal stance describing how the park should be managed.

You can choose the method in which you would like to present the information you have found. In your presentation you should provide a location map of the area and a map showing the uses and management of the park. For example, a section of an alpine park might be zoned for ski use during winter, while other zones might be closed to human use due to the need for a clean water catchment. Human use might be seasonal or restricted in order to save fragile soils.

Being Bear Grylls

Imagine you are the adventurer Bear Grylls and are about to embark on a trek across a glacier. To help you prepare for safe walking in glacial areas, complete the following tasks.

- Trace the diagram in Source 12.2.1 and track a safe route from the head of the glacier to the streams below.
- Draw your track on the diagram.
- Label why you have chosen particular parts of your route.

Research safe walking in glacial areas for further hints (for example, why walking over crevasses is dangerous).



Source 12.5.1 Kosciuszko National Park, New South Wales

GLOSSARY

abrasion the wearing down or wearing away of rock by friction

accumulation zone an area where snow and ice accumulate at a faster rate than they melt

arête the sharp-sided ridge separating two cirques

cirque a small valley that is shaped like an amphitheatre

endemic unique to a defined geographic location

firn a compacted layer of new snow that survives the summer melt

fjord a long, narrow, flooded valley with steep sides, carved by glaciation

glacier a slow-moving river of compacted snow and ice

ground moraine rock debris deposited across a valley floor as a glacier retreats

hanging valley a valley formed at the point where a smaller (tributary) glacier once joined a larger, deeper glacier

horn (pyramidal peak) the pyramid-shaped peak of a mountain formed by three or more cirques

lapse rate the rate at which the temperature of a body of air declines with elevation

lateral moraine rock debris that accumulates along the edge of a glacier

medial moraine rock debris found in the centre of a valley, resulting from the merging of two lateral moraines when two glaciers merge

melting zone an area where snow and ice melt at a rate faster than they accumulate—the end of a glacier

moraine rock material deposited by a glacier

tarn a lake at the base of a cirque

terminal moraine rock material exposed as a glacier melts and retreats

treeline the edge of the habitat in which trees are able to grow

U-shaped valley a valley with a flat floor and steep sides, formed by the abrasive power of material embedded in a glacier

V-shaped valley a valley eroded by a river



Riverine landforms

Water has travelled across landscapes for millions of years. As it has done so, it has sculpted the surface of the land. It has carved deep valleys and deposited sediments to form the rich alluvial plains that support our most productive agricultural systems.

The landforms produced by rivers are among the most spectacular on earth. The Colorado River, over a period of at least 17 million years, carved a deep path through layer after layer of sedimentary rock to produce the Grand Canyon, one of the natural wonders of the world. The Mekong River in South-East Asia flows 4350 kilometres from its headwaters on the Tibetan Plateau, through China, Burma, Laos, Thailand, Cambodia and Vietnam, where it enters the sea. The delta of the Mekong is so vast that it makes up a large portion of south-western Vietnam. The great rivers of Europe, the Danube and Rhine, are now popular holiday destinations.

In this chapter we examine the processes shaping riverine landscapes and landforms. We also look at how the activities of people impact on riverine landscapes. In particular, we look at the catchment of the Bow River in Canada to examine the landforms shaped by rivers and the ways in which people affect such landscapes and landforms.

Source 13.0.1 Horseshoe Bend, Colorado River, United States of America

Rivers

Rivers are responsible for shaping most of the landforms covering the earth's surface. They are powerful agents of erosion and they transport vast amounts of **sediment** that is eventually deposited to form a range of depositional landform features.

Source 13.1.1 The Uvac canyon meander, Serbia



River erosion

Rivers erode the land over which they flow through the processes of:

- **abrasion**—sediment in the river grinds against the beds and banks of the river channel. This action dislodges material and carries it away
- **attrition**—dislodged materials collide with the river sides and bed, and each other. Over time, they become smaller and are eventually reduced to fine particles called silt
- **corrosion**—the solvent action of water dissolves soluble materials and carries them away in solution
- **hydraulic action**—the rocks are broken down by water, usually along lines of weakness in the rock lining the river channel.

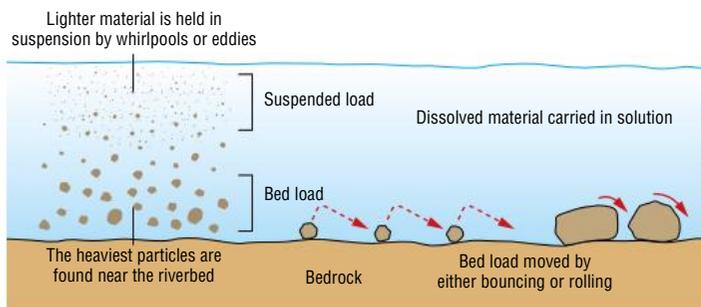
Transporting sediment

The eroded sediment in a river is transported as either **bed load** (the larger fragments that move along the riverbed) or **suspended load** (the finer fragments carried in the water). This process is illustrated in Source 13.1.2. Transported sediment is then deposited.

Transforming the land

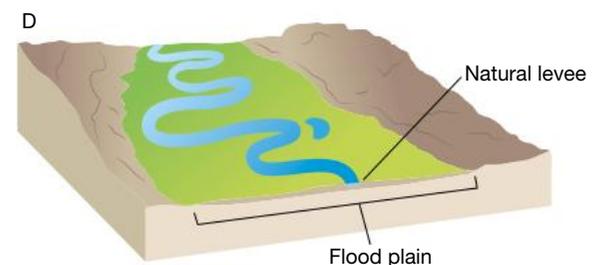
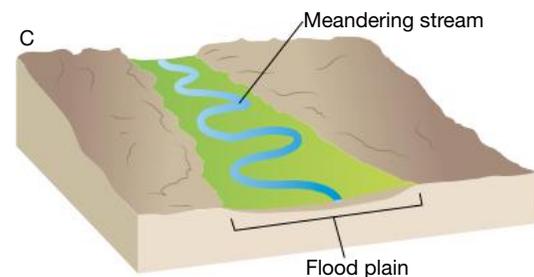
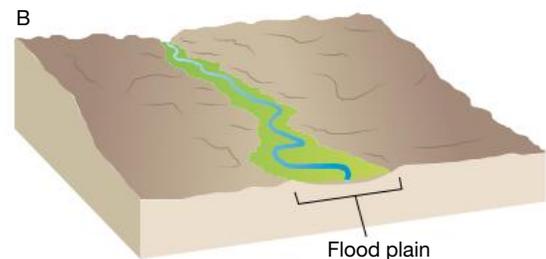
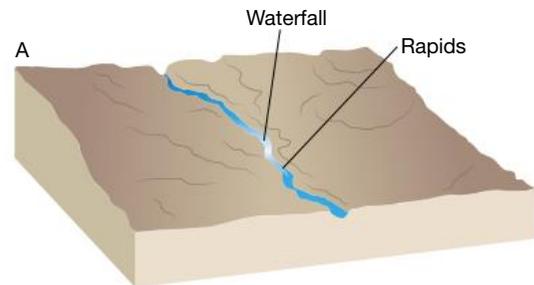
As a river flows from its source towards where it empties into the sea or lake, it changes the land.

Source 13.1.3 illustrates how the riverine landscape changes from a narrow V-shaped valley in the upper reaches of the river to a broad, meander-dominated river valley in its lower reaches. In the upper reaches (A in Source 13.1.3) the river is narrower and usually has a rapid, tumbling flow that cuts a narrow channel through rocky hills or mountains. Over time, a small flood plain develops and the first signs of



Source 13.1.2 The process of sediment transport in a river

river meandering appear (B). In the middle reaches of a river the flood plain develops further and a series of **meanders** form in the sediment deposits that have accumulated on the valley floor (C). In the lower reaches of a river the flood plain is broad and the meandering river channel is well developed (D). The presence of oxbow lakes suggests that the course of the river has changed over time.



Source 13.1.3 Riverine landscapes change over the course of the river.

Catchments

When rain or snow falls, some water soaks into the ground, while the rest runs over the surface of the land. The high point in the landscape that determines which river system the water flows into is called a **watershed**, or divide. The watershed forms the boundary between river **catchments**, or drainage basins, as seen in Source 13.1.4.

Drainage patterns

Rivers are fed by a network of smaller rivers or streams called **tributaries**. These tributaries form different patterns depending on the nature of the geology and topography. For example, hard rock such as basalt is hard to erode, so rivers or streams flow around this rock, influencing the course of the river.

Rivers as systems

A catchment is an open system, and is part of the water cycle. When a catchment is viewed as a system the terms 'inputs' (precipitation) and 'outputs' (evaporation, transpiration and human use) can be used. Within the system some of the water is stored, at least temporarily, in lakes or the soil.

Impacts on rivers

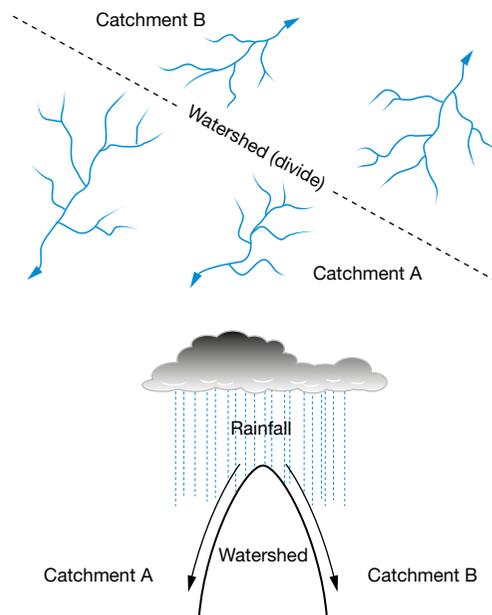
There are many factors that determine the nature of a river and its associated landforms.

Climate

Precipitation and temperature have a major influence on the amount of water flowing through the river catchment. High temperatures increase the rate of evaporation during and after rainfall, and so reduce water run-off. Under cold conditions, precipitation in the form of snow often accumulates at higher altitudes and does not provide much run-off until it melts in warmer temperatures. Therefore, rivers that have their source in cold alpine regions often have a seasonal flow of water.

Geology

The geology of a catchment affects the nature of the river in at least two important ways. The rate of **infiltration** (the movement of water soaking into the soil) and the type and amount of sediment washing into rivers are affected by the geology of



Source 13.1.4 A watershed, or divide

the catchment. Sandstone landscapes produce very porous, sandy soils. Erosion of sandstone creates a sandy river system. The geology also influences the river channel pattern. A river will flow through an area of weaker rock types or along fault lines.

River basin topography

The size, shape and gradient (slope) of the catchment basin has a major impact on the **discharge** (the amount of water that flows from the river catchment) rate of the river. Large catchments tend to discharge more water, over a longer period than smaller ones. Also, a steeper gradient causes water to drain more quickly.

Soils and vegetation

A catchment's soils and vegetation affect the amount and rate of water run-off. If soils are sandy, much of the water soaks into the soils. Thick groundcover vegetation also increases water absorption. Clay soils are heavy and water is not easily absorbed. When clay soils with little vegetation cover have been saturated from previous rainfall, there is much greater water run-off and sometimes flooding.

River channels

As water passes over land, friction slows down its movement. Source 13.1.5 shows the cross-section of a river. The fastest flowing water is found in the part of the river least affected by frictional drag.

Source 13.1.6 illustrates why water velocity increases towards the mouth of a river. Frictional drag slows the velocity of water in the upper reaches of a river.

Velocity, capacity and discharge

Velocity

The velocity, or speed, of water within river channels is influenced by:

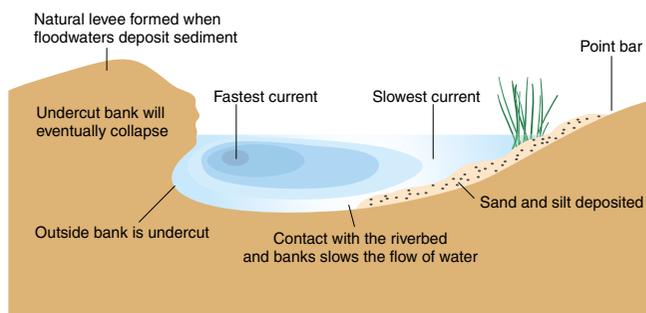
- the shape of the channel—the rate of flow is faster in channels that are as deep as they are wide than it is in channels that are wide but very shallow, or very deep and narrow
- the roughness of the channel bed and banks—water flowing through a channel full of large rocks is more turbulent, but slower, than water flowing through a channel lined with fine silt
- the gradient or slope of the river—as a river approaches the sea its gradient decreases, but because more water is added to the channel, the velocity of the river actually increases.

Capacity

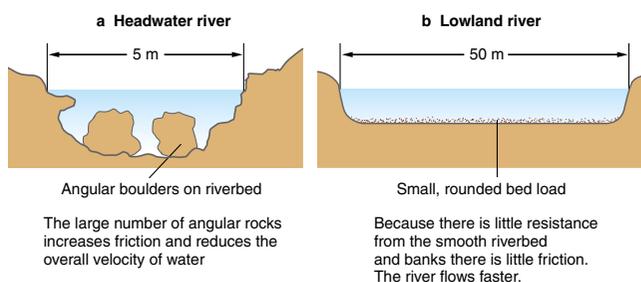
Stream capacity is the ability of a river to transport its load of sediment. It is expressed as the amount of sediment that can be moved past a particular point over a specified period of time. Stream capacity increases as sediment size within the channel decreases, and as stream discharge increases.

Discharge

The amount of water that flows from the catchment into another river system, the sea or a lake is called discharge. Discharge is expressed in cubic metres per second.



Source 13.1.5 Water velocity in the cross-section of a river



Source 13.1.6 Why the water velocity of a river increases towards its mouth

ACTIVITIES

Remembering and understanding

- 1 Distinguish between abrasion and attrition.
- 2 Explain what corrosion and hydraulic action are.
- 3 Distinguish between bed load and suspended load.
- 4 State what a catchment is and outline the role of the watershed.
- 5 Outline the ways in which a river can be thought of as a 'system'.
- 6 Outline the factors that influence the velocity of water in a river channel.
- 7 State what is meant by the term 'stream capacity'.
- 8 Define the term 'discharge'.

Applying and analysing

- 9 Study Source 13.1.3. Outline how and why the nature of riverine landscapes and landforms changes along the course of the river, beginning at its headwaters or source.
- 10 Construct a mind map illustrating the factors that determine the nature of rivers.
- 11 Study Source 13.1.5. Explain why water velocity is fastest at the point identified in the illustration.
- 12 Study Source 13.1.6. Explain why average river velocity is greater in the lowland stretches of a river.

Riverine landforms

There is a wide variety of riverine, sometimes referred to as 'fluvial', landform features. This diversity results from the ways the river interacts with the geology and topography of the land. The nature of the vegetation and the activities of people also play a role.

Upstream landforms

In the upper reaches near the river's source, the channel is often narrow and deep, and the **gradient** is steeper than further downstream. This results in the development of a number of distinctive landform features, including V-shaped valleys, rapids and waterfalls.

V-shaped valleys

The turbulent fast-flowing waters of the upper reaches of a river generate a great deal of corrasion as rocks crash against each other and the riverbed. In this part of the river, erosion cuts downwards more than it does sideways. The development of a V-shaped cross-sectional profile is the result (see Source 13.2.1).



Source 13.2.1 V-shaped valleys develop in sections of the river where erosion cuts downwards more than it does sideways.

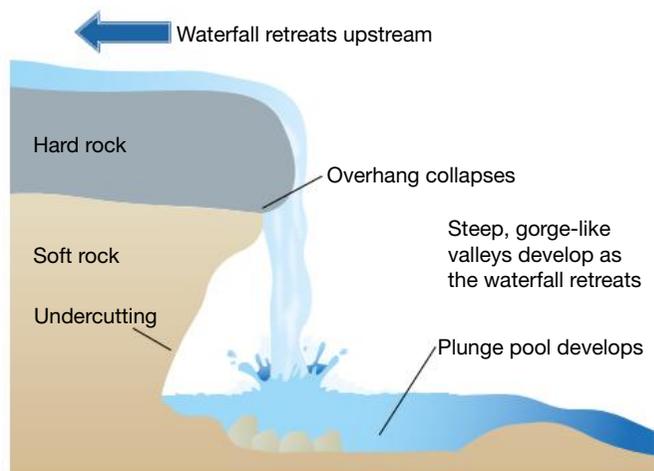
Rapids and waterfalls

A **rapid** is a section of a river with a relatively steep gradient that causes the velocity and turbulence of water to increase. In a rapid, the river becomes shallower and large rocks are exposed above the surface.

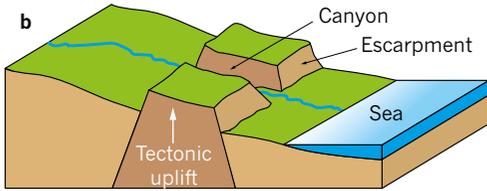
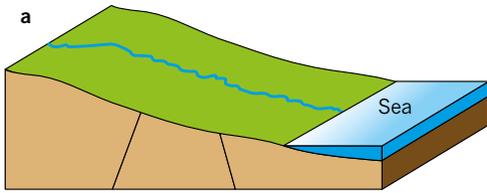
Waterfalls occur where water plunges over a vertical drop in the course of a river. They are most commonly found where the river channel is narrow and deep (that is, V-shaped). Source 13.2.2 illustrates the formation of a waterfall. When a river comes into contact with a harder layer of rock, the rate of erosion slows. As the water plunges over the edge of the harder rock it creates turbulence, which erodes any underlying softer rock.

Tectonic influences

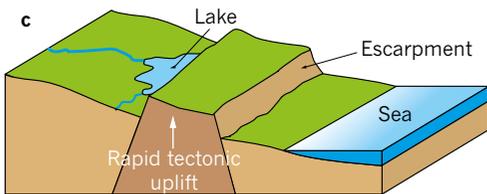
Tectonic forces can also impact on riverine landform features. Source 13.2.3 shows what can happen when a section of land is uplifted slowly and rapidly. If the rate of uplift is slower than the downward rate of erosion, a canyon will form. If the rate of uplift is faster than the downward rate of erosion, the path of a river can be blocked or a lake formed.



Source 13.2.2 Waterfalls develop when a harder layer of rock slows the downward rate of erosion. Gradually, the waterfall retreats upstream.



Slow tectonic uplifts may allow the river to maintain its existing path but result in the formation of canyons or valleys.



Rapid tectonic uplifts can result in changes to drainage patterns and the formation of lakes.

Source 13.2.3 The impact of geological processes on river systems

Source 13.2.4 Typical riverine landform features along a river flood plain

Downstream landforms

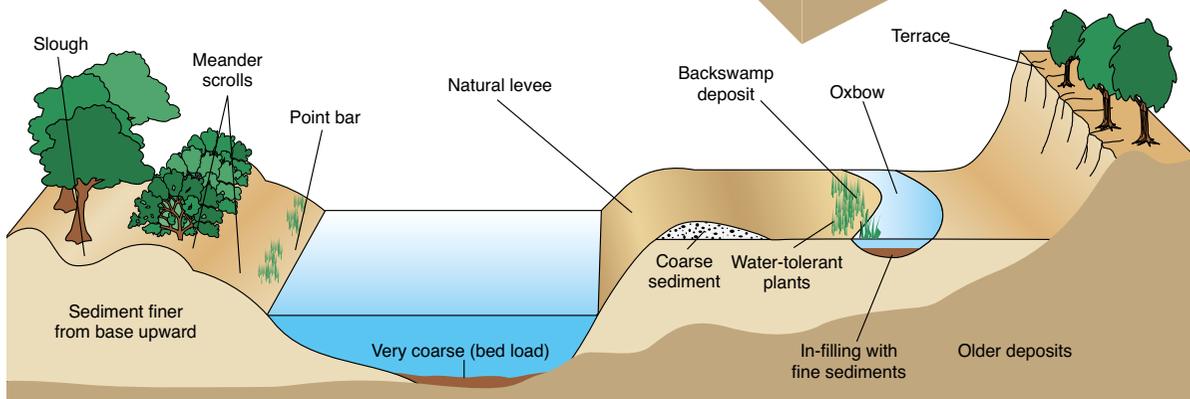
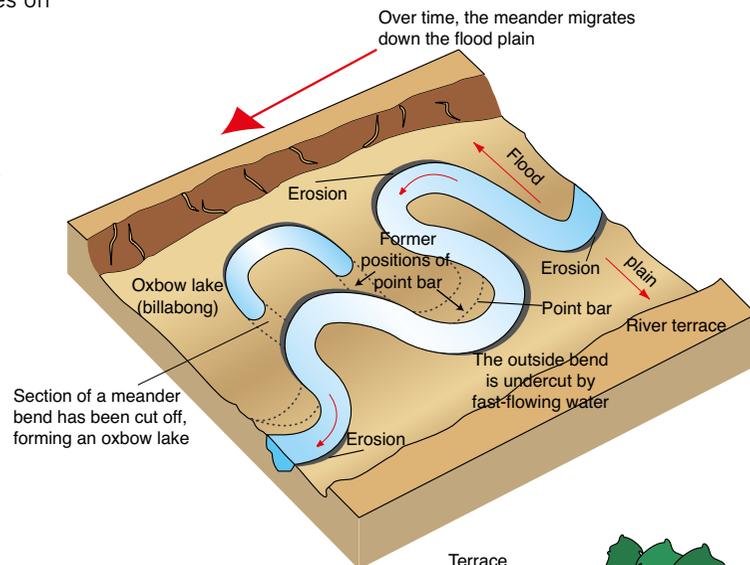
In the lower reaches of a river that is characterised by depositional landforms, the water speed slows.

Flood plains

A **flood plain** is the flat or nearly flat land on either side of a river. It stretches from the banks of the river channel over the area inundated (flooded) when the river is at its peak. The landform features of the flood plain change over time. During floods, the waters of a river are capable of eroding, transporting and depositing vast amounts of sediment. The landform features of the flood plain are shown in Source 13.2.4.

Natural levees

As sediment-full floodwaters spread out across the flood plain they quickly lose speed. Much of the suspended silt and sand settles on the ground. The greatest amount of **deposition** occurs close to the channel. This causes a **natural levee** of elevated ground to develop on either side of the main channel (see Source 13.2.4).



Braiding

When a river becomes choked with sediments it divides into a series of **braided channels**. The sediment 'islands' are a feature of braided channels. Braided channels are common in regions with seasonally heavy precipitation (for example in alpine and semi-arid areas) and heavy loads of sediment (see Source 13.2.5).

Meanders

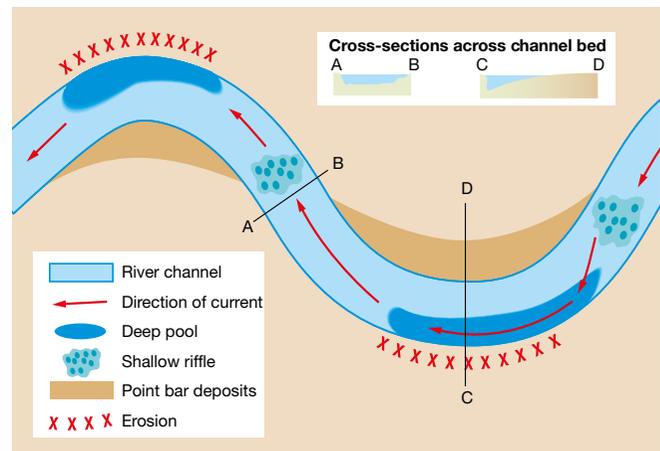
Meanders are the repeated curves of the river channel. They are formed when the moving water in a river erodes the outer banks and widens its valley. Meanders are more common in areas where rivers flow through flat land. Meanders are formed from deep pools and shallow riffles (shallow gravel bars) in the river channel. As water travels past a riffle it is deflected towards the outside bank. As the river undercuts the outside bank, the meander migrates outwards. **Point bar** deposits build up on the inside of the loop. This process is illustrated in Source 13.2.6.

Oxbow lakes

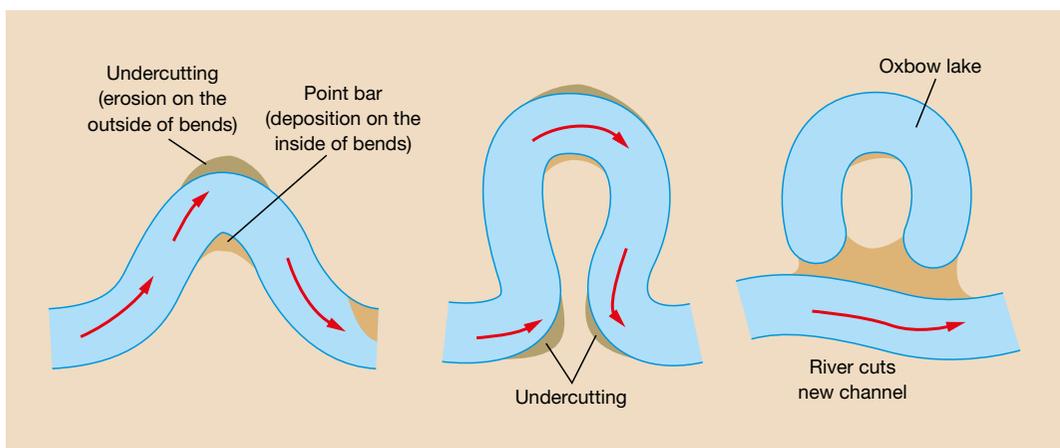
Over time, meander loops grow larger and larger until the channels almost meet. During floods, there is an increase in the amount and speed of water. This may cause the river to cut straight across the narrow neck of land separating two meander loops. The old sections of the former channel are called cut-offs or oxbow lakes. An oxbow lake, in time, fills with sediment, becoming a waterhole or, in Australia, a billabong, an Aboriginal word meaning 'dead river'. Source 13.2.7 illustrates this process. Meanders and oxbow lakes can be observed in Source 13.2.8, which compares a map extract and an aerial photograph.



Source 13.2.5 Braided river channel, Murray River, Australia



Source 13.2.6 Features of a meandering river



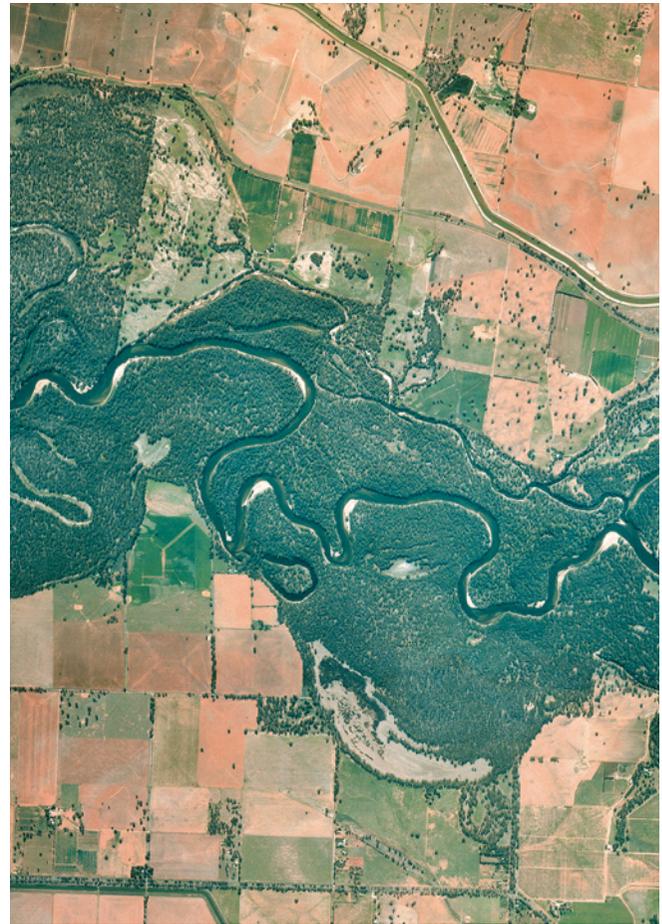
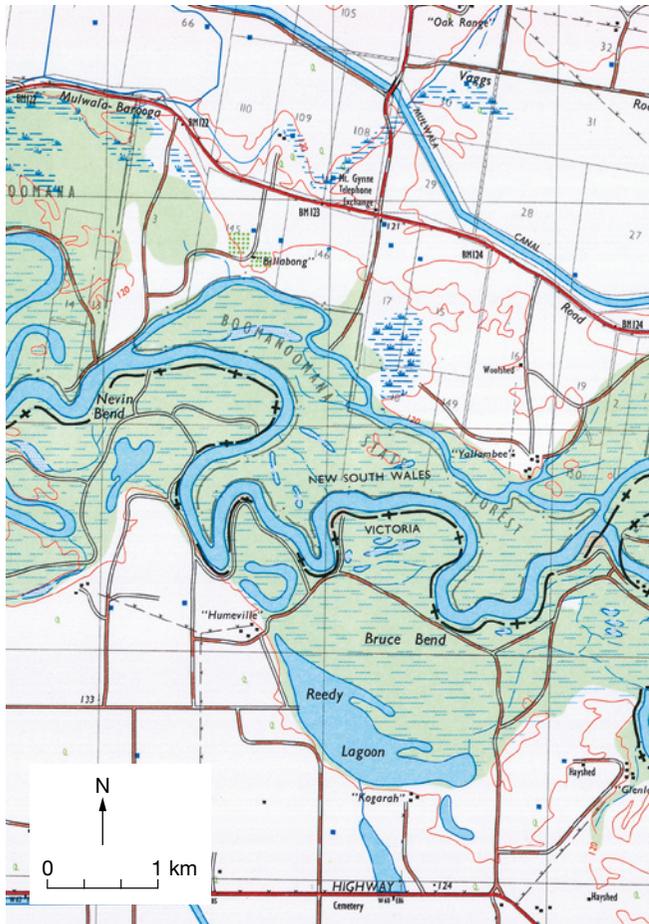
Source 13.2.7 Formation of an oxbow lake

Deltas

Deltas are the landform features that develop at the mouth of a river. As the waters of a river reach the sea (or lake), there is a drop in its speed and the river's ability to support its suspended load declines. As a result, much of the sediment load is deposited near or at the mouth of the river. Over

time, a delta develops. Depending on factors such as wave action, currents and tides, different types of deltas develop.

Other rivers, particularly those located on coasts with a significant tidal range, do not form deltas. Rather, they enter the sea through an estuary—a partly enclosed coastal body of water.



Source 13.2.8 Topographic map extract (left) and aerial photograph (right) showing the landform features associated with meandering. © Department of Finance, Services and Innovation 2016

ACTIVITIES

Remembering and understanding

- List the landform features associated with the upper and lower reaches of a river.
 - Identify and describe the main process responsible for their formation (that is, whether they are erosional or depositional landform features).

Applying and analysing

- Study Source 13.2.8. Construct an annotated sketch map to identify the various meander-related landform features of the topographic map extract and the aerial photograph.

Investigating rivers

The aim of this fieldwork activity is to investigate a river. A fieldwork investigation of a length of river provides an opportunity to learn more about these important features of the physical environment. It also allows you to practise a range of geographical skills.

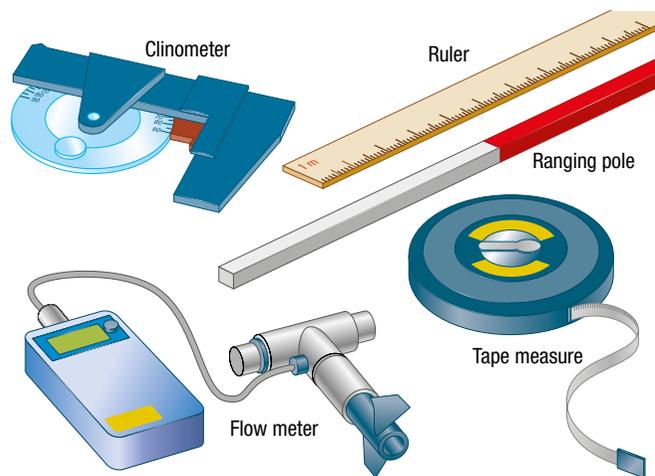
How to investigate a river

A variety of instruments will be required to investigate a river (see Source 13.3.1):

- ruler
- tape measure
- ranging pole
- stopwatch
- clinometer
- flow meter.

You will need to select a river or stream location that has the following features:

- a bridge to cross
- easy access to riverbanks at a variety of locations.



Source 13.3.1 Tools used to collect data in the field

Calculating water velocity

The most accurate way to measure water velocity is to use a flow meter. If you don't have a flow meter you can use the following procedure.

- 1 Select a straight section of the river that is free of pools and/or shallow, fast-flowing sections. Measure out a distance of 50 metres.
- 2 Find an object that will float on the surface of the river. The object should be brightly coloured and it is best if it is heavy enough to be partly submerged in the water. With the aid of a stopwatch, measure how long it takes for the floating object to cover the 50 metres. Ensure that you select an area of riverbank you can easily and safely access.
- 3 Take at least three readings. For greater accuracy take readings on both sides of the river and in the middle. Record your readings on your data record sheet. Average the readings to determine the water velocity.

Calculating the cross-section

To calculate the cross-section of an area of river, carry out the following steps.

- 1 Use a long tape measure to determine the average width of the river.
- 2 Measure the depth of the water at regular intervals across the width of the river (for example every 100 centimetres). A 2-metre pole marked with 10-centimetre intervals will assist you in this task. If there is a low bridge over the river, stand on it to measure the depth of the river. Record your measurements on your data record sheet.
- 3 Calculate the average depth by adding all the depth readings and dividing by the number of readings. Using the data shown in Source 13.3.2, the average would be $(1.2 \text{ m} + 1.4 \text{ m} + 1.5 \text{ m} + 1.3 \text{ m} + 1.0 \text{ m}) \div 5 = 1.28 \text{ m}$.

- 4 Multiply the average depth by the average width of the river to give the area. Using the data shown in Source 13.3.2, the area would be $1.28 \text{ m} \times 16 = 20.48 \text{ m}^2$.

Width of channel (bank to bank): 18 metres						
Average width of river: 16 metres						
Height of bank above the river:		<ul style="list-style-type: none"> • Left side: 50 centimetres • Right side: 75 centimetres 				
Depth of river:		Left bank		Right bank		
	Reading	1	2	3	4	5
	Depth	1.2 m	1.4 m	1.5 m	1.3 m	1.0 m

Source 13.3.2 Data sample for a cross-section

Calculating river discharge

Discharge is the amount of water that flows from a river catchment and into another river system, the sea or a lake. The discharge can be calculated by using the following formula:

$$\text{Discharge} = \text{velocity} \times \text{cross-sectional area}$$

Measuring turbidity

Turbidity refers to the cloudiness of water, which is caused by suspended sediment. To measure the turbidity of a river, carry out the following steps.

- 1 Collect a 1-litre sample of water at a number of sites along the course of a river.
- 2 Transfer the samples into separate glass containers. Allow the water to stand for at least 24 hours so the sediment will settle.
- 3 Using a ruler, measure the depth of sediment at the bottom of each container. Record your data in a spreadsheet file and present your data as a graph.

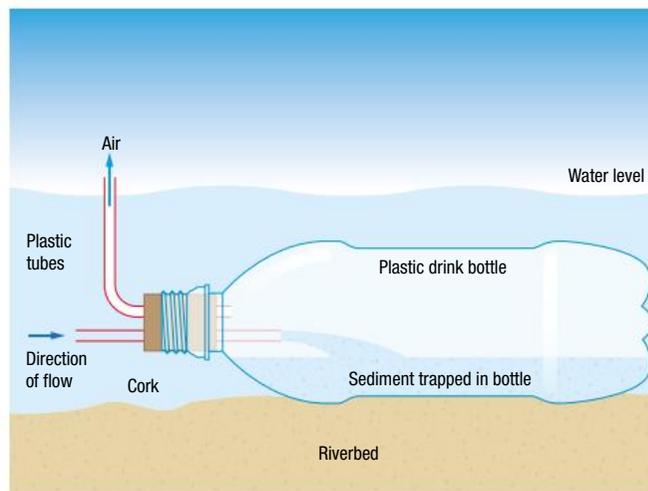
Measuring suspended load

The suspended load of a river comprises fine sand particles, silt and clay. The amount of suspended material in water is closely linked to the level of discharge. To measure the amount of suspended load in a river, carry out the following steps.

- 1 Use four 1-litre plastic bottles to collect water samples at four sampling sites along the course of a river. When preparing each plastic bottle, block the opening with a cork and then drill two

holes through the cork. Push two flexible plastic tubes through the holes, as in Source 13.3.3.

- 2 Anchor the bottle to the riverbed with two or three stones. When doing so, make sure that you stand downstream, so that you do not stir up too much sand and sediment.
- 3 When the bottle is full, remove it from the river and remove the cork and plastic tubes. Seal the bottle with its original screw cap. Repeat the exercise at your other sampling sites. Allow the bottles to stand overnight.
- 4 Observe the layer of sediment that has collected at the base of the bottle. Make note of the sediment's colour, the water's clarity (turbidity) and, if possible, the amount of time it takes for the sediment to settle.
- 5 Shake the bottle so that the sediment is again redistributed through the water sample and then very slowly pour the contents of the bottle through a previously weighed piece of dry filter paper. You could use a filter suction pump to assist in this process.
- 6 Allow the sediment-encrusted filter paper to dry for at least 48 hours, or dry it in an oven for 1–2 hours at 100°C . Subtract the weight of the dry filter paper to find the weight of the suspended sediment. Express your answer in grams per litre of water.



Source 13.3.3 Sediment sampler

Drawing a cross-section

To draw a cross-section of a river, you need measurements of the:

- depth of the river
- width of the channel
- width of the river from bank to bank
- height of the bank above the river.

Using these measurements, construct your cross-section by carrying out the following steps.

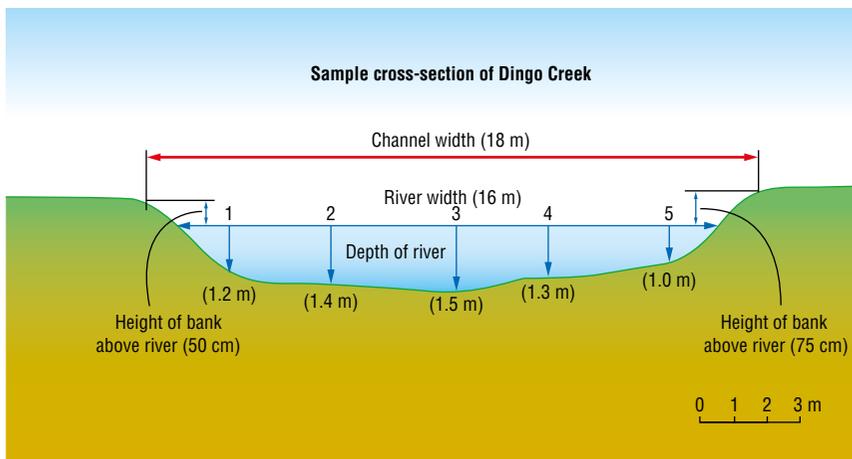
1 Study the measurements you have collected and select a scale that will fit on your paper. Start your cross-section by drawing a line representing the width of the river. Make sure you leave enough space to draw in the river channel below it.

2 Look at the measurements for the height of the bank above the river level on both sides and mark the position of both banks. Measure the width of the channel from bank to bank. Now draw in the banks.

3 Mark in the riverbed by using your measurements of the depth of the river from the surface. Join the points together to show the shape of the riverbed. Add a scale and a heading, as shown in Source 13.3.4.

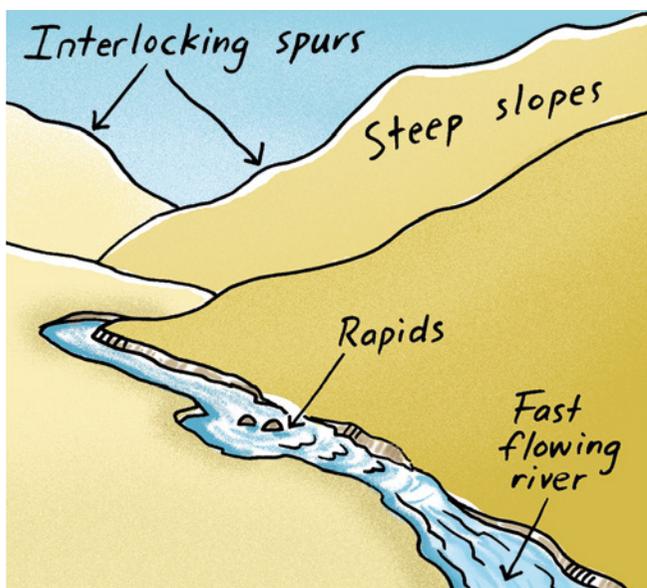
Drawing a field sketch

To draw a field sketch of the river being studied, use Sources 13.3.5 and 13.3.6 as a guide.

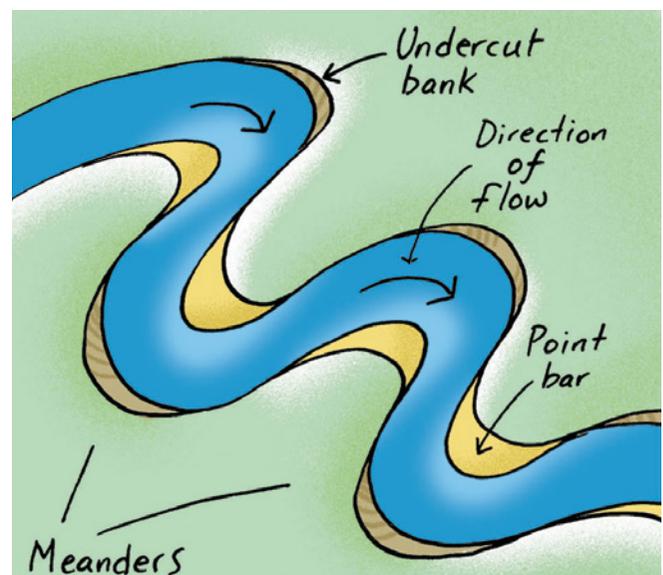


Source 13.3.4

Sample cross-section of a river



Source 13.3.5 Annotated field sketch of the upper reach of the river being studied



Source 13.3.6 Sketch plan of the mid-reach of the river being studied

ACTIVITIES

Aim

To investigate the physical features of a river.

Instructions

- 1 Select a suitable river to investigate and include a map of the area investigated.
- 2 Calculate water velocity.
 - a Collect data and record it in a data record sheet similar to the sample below.
 - b Select data from two different locations, and follow the steps above.

River:	Location:	Date:
<i>Sandy Creek</i>	<i>Site 1</i>	<i>23 May 2016</i>
A. Water velocity		
Length of river section: <i>50 metres</i>		
Measurement 1:	<i>75 seconds</i>	
Measurement 2:	<i>90 seconds</i>	
Measurement 3:	<i>85 seconds</i>	
Average:	<i>83.3 seconds</i>	
Average velocity:	<i>50/83.3 = 0.6 metres per second (i)</i>	

- 3 Calculate the cross-section of the river. Collect data and record it in a data record sheet similar to the sample below.

River:	Location:	Date:
<i>Sandy Creek</i>	<i>Site 1</i>	<i>23 May 2016</i>
B. Cross-sectional area		
Average width of the river <i>15 metres</i>		
Channel depth at various points (in centimetres)		
Point 1:	<i>20</i>	
Point 2:	<i>25</i>	
Point 3:	<i>35</i>	
Point 4:	<i>45</i>	
Point 5:	<i>30</i>	
Point 6:	<i>20</i>	
Average depth:	<i>175/6 = 29 centimetres</i>	
Cross-sectional area: average river width × average depth <i>15 × 0.29 = 4.35 square metres (ii)</i>		

- 4 Calculate river discharge.

River:	Location:	Date:
<i>Sandy Creek</i>	<i>Site 1</i>	<i>23 May 2016</i>
C. Discharge		
Velocity (i) × cross-sectional area (ii) <i>0.6 metres per second × 4.35 square metres</i> <i>= 2.61 cubic metres per second</i>		

- 5 Measure turbidity. Collect data and record it in a data record sheet similar to the sample provided.
- 6 Measure suspended load.
- 7 Draw a cross-section of the river.
- 8 Draw a field sketch of the river area being studied.

OPTION 1

Create an annotated visual display of the area investigated.

- a Take images of the river channel, upstream, downstream and land on either side of the river channel.
- b Explain how each has or might influence the river channel.
- c Annotate the photos and explanations around the map of the area of river investigated.

OPTION 2

Investigate the river from its source to the mouth of the river. Include the following information:

- topography, vegetation and land use
- how the river water is being used (agriculture, irrigation, recreational, household use, etc.)
- problems associated with the river (pollution, reduced water flow, etc.).

Evaluation

- 9 Once you have collected enough data, display the results and comment on your findings. Include the following in your commentary:
 - a a description of the features of the section of the river that you investigated
 - b information about changes in speed flow along the river
 - c information about levels of turbidity and suspended load—was there a correlation between the two?

Conclusion

- 10 Describe what you have learnt about river profiles.

Case study: Bow River catchment

The Bow River is located in the Canadian province of Alberta. Over the length of the river can be seen the full range of riverine landforms. The river is an important source of drinking water and water for irrigation and hydro-electric power. It also provides habitat for wildlife and opportunities for recreational activities such as fishing and boating.

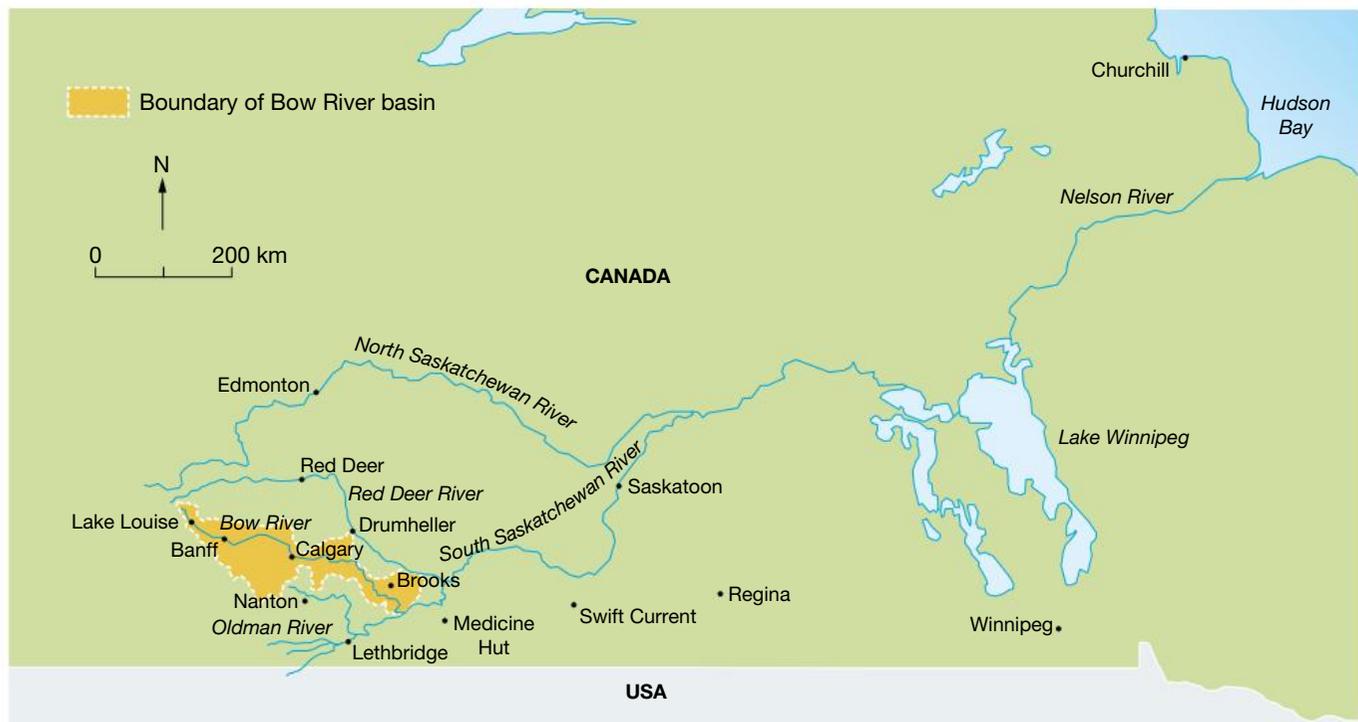
Riverine landforms

The Bow River's source is the meltwater of the Bow Glacier high in the Wapta Icefield of the Canadian Rockies. Source 13.4.1 shows the location of the Bow River. The meltwater first finds its way into Bow Lake, shown in Source 13.4.2, before it flows to the south through the rocky moraine debris on the floor of a former glacial (U-shaped) valley. It then flows through the village of Lake Louise and town of Banff to Ghost Lake reservoir. It then flows onto the prairies to the city of Calgary, which has a population of 1.1 million. Downstream from Calgary are a range of depositional river landform features including meanders, cut-offs and oxbow lakes.

Further downstream the Bow River flows into the South Saskatchewan River, which continues to wind its way across the Canadian prairies before flowing into Lake Winnipeg and then into Hudson Bay via the Nelson River.



Source 13.4.2 The Bow River has its source in the meltwater of the Bow Glacier high in the Canadian Rocky Mountains. Bow Lake is in the foreground.



Source 13.4.1 Bow River catchment



Source 13.4.3

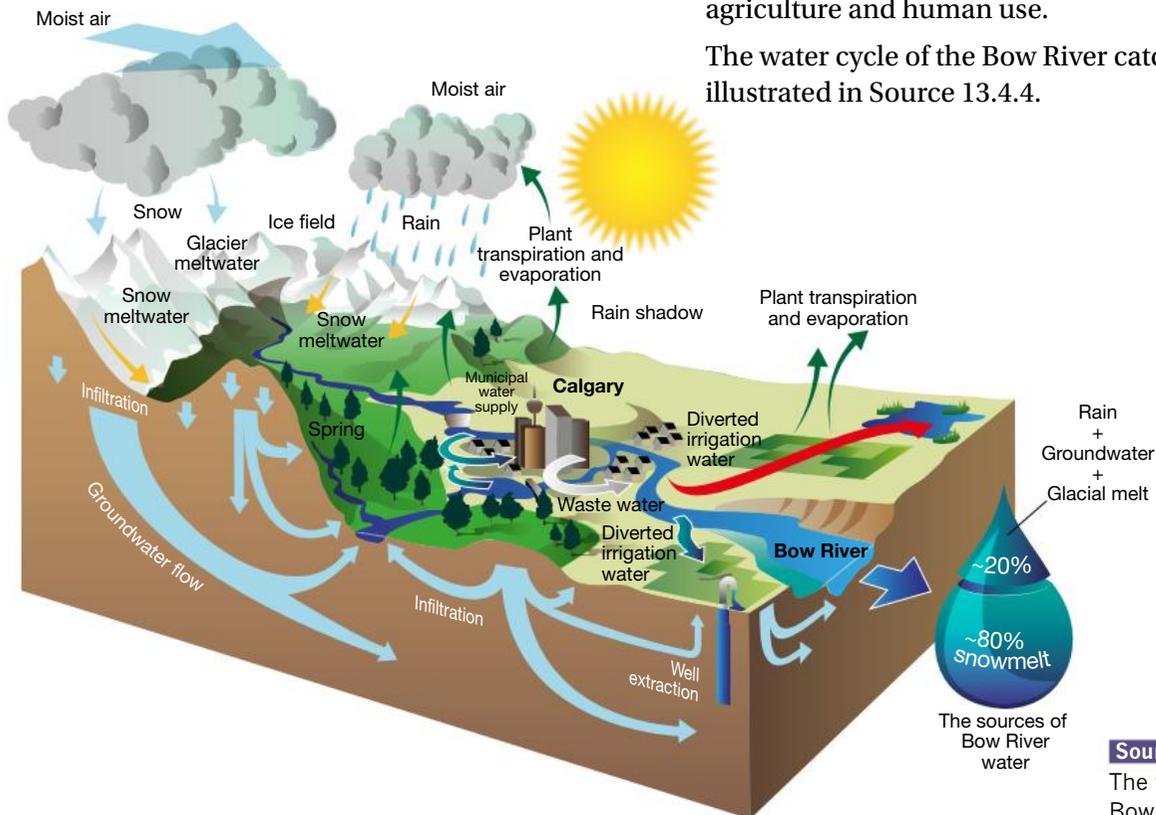
The Bow River in its upper reaches

The water cycle

The Rocky Mountains force air to rise and cool, causing moisture to condense and fall as rain or snow. This precipitation, together with the meltwaters from glaciers, feeds the Bow River through its many mountain tributaries. Source 13.4.3 shows the upper reaches of the river.

The grasslands, or prairies, of Canada's interior have a relatively dry climate. Due to their height, the Rocky Mountains strip moisture from eastward-moving air masses in what is referred to as a 'rain shadow' effect. As a result, little of the moisture from the eastward-moving air masses reaches the prairies of Alberta. The region therefore relies on the Bow River and groundwater for irrigation in agriculture and human use.

The water cycle of the Bow River catchment is illustrated in Source 13.4.4.



Source 13.4.4

The water cycle of the Bow River catchment

Human modifications

In their efforts to use the water resources of the Bow River for irrigation, people have significantly changed, or modified, the river. Water is used for agriculture (irrigation), urban water supplies, hydro-electric power, industry and recreation.

Irrigation

Early in the last century, European settlers developed irrigation systems to move the waters of the Bow River out onto the prairie. Water was supplied to farmers through a system of canals and storage reservoirs. Over time, communities and industries developed across Alberta's prairies.

Source 13.4.5 shows the extent of the modifications made to the river. Irrigation is used during the growing season, which begins in May and continues through to October. Improved irrigation techniques have greatly reduced the water required to grow crops. The canals and reservoirs provide important wetland habitat for waterfowl and fish.

Urban water use

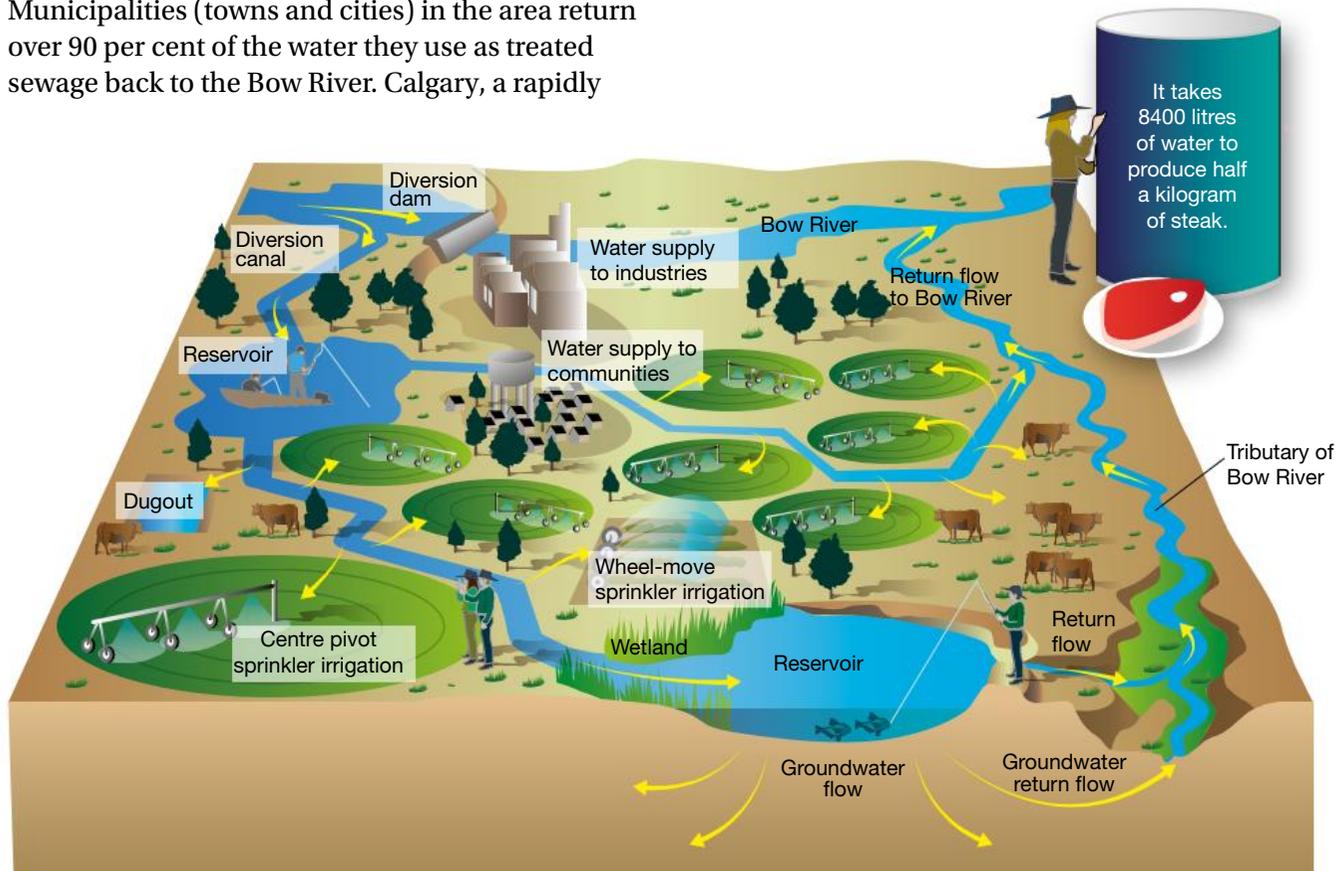
Municipalities (towns and cities) in the area return over 90 per cent of the water they use as treated sewage back to the Bow River. Calgary, a rapidly

growing city on a relatively small river, is by far the largest urban centre in the Bow River catchment. As a result, it has limited capacity to absorb wastewater without reducing water quality. Because of this, Calgary's wastewater treatment standards are among the highest in Canada. During summer, Calgary's residential water use rises by 50 per cent, largely due to garden and lawn watering.

Protecting the Bow River

There are a variety of ways in which the riverine landscape of the Bow River can be protected.

Of particular importance is the health of the riparian zone—the area bordering streams and wetlands where moist soils and shallow water tables allow water-loving plant communities to establish. These zones are important ecosystems. They stabilise stream banks and protect water quality. They also provide habitat for wildlife. Cattle grazing in riparian areas must be managed carefully so that river-related landforms are not degraded.



Source 13.4.5 The waters of the Bow River have been diverted, dammed and used for irrigation.

Calgary's municipal water use	
Residential	52%
Industrial commercial infrastructure	34%
Non-revenue (e.g. leakage)	12%
Other communities	2%
Calgary's residential water use	
Toilet	29%
Clothes washer	20%
Taps	16%
Shower	13%
Leaks	10%
Water softener	9%
Baths	2%
Dishwasher	1%

Source 13.4.6 Municipal and residential water use

Impacts of climate change on the Bow River catchment

The potential impacts of climate change on the Bow River catchment include:

- reduced snowfall and shrinking glaciers, causing a decline in the amount of river flow, which in turn will:
 - affect water supply, water quality and both the extent and type of recreational activities that people can do
 - lead to decreased hydro-electric power generation
- warmer, drier summers and earlier springs, resulting in an increase in the frequency and intensity of forest fires
- an increase in the incidence of extreme weather events such as tornadoes, hailstorms, heatwaves, droughts, dust storms, floods and blizzards
- increased demand for irrigation water and a change in crop types due to a longer growing season
- warmer river temperatures, resulting in increased stress for cold-water fish species such as trout
- reduced groundwater recharge, resulting in lower water tables and the drying up of shallow wells.

Many people are concerned about the rate at which the glaciers high in the Rocky Mountains are retreating. While this is a serious problem and one of the major impacts of climate change, the contribution of meltwater to the annual flow of the Bow River is relatively small (less than 1 per cent). However, the portion of Bow River water that comes from glaciers rises during the summer as snowmelt declines. During a drought year, the relative contribution of glacier meltwater to the discharge of the Bow River is higher. Without glaciers in the Bow River basin, water supply during drought years would be less secure. However, as long as it snows and rains every year, we can expect the river to keep moving.

ACTIVITIES

Remembering and understanding

- 1 With the aid of Source 13.4.4, describe the geography of the Bow River catchment.
- 2 Explain why it is important to protect the catchment's riparian zone.
- 3 Outline the strategies used to manage land use in the Bow River catchment.
- 4 Describe the potential impacts of climate change on the Bow River catchment.

Applying and analysing

- 5 Study Source 13.4.5.
 - a Describe the extent to which people have modified the flow of water in the Bow River catchment.
 - b Reflect on how this might impact on the river itself and list the ways the riverine landscape can be managed better.
- 6 Study Source 13.4.1.
 - a List the rivers that flow into the Saskatchewan River and the cities on each river.
 - b Name the lake into which the Saskatchewan River flows.
 - c True or false: All rivers that flow into the Nelson River originate in Canada. Explain your answer.
- 7 Study Source 13.4.6. Construct two proportional pie graphs—one showing Calgary's municipal water use and the other showing Calgary's residential water use.

Inquiry tasks

Great Australian rivers

Rivers are responsible for shaping most of the landforms covering the earth's surface. They are powerful agents of erosion and they transport vast amounts of sediment that is eventually deposited to form a range of depositional landform features. Using the internet to research, complete the following tasks.

- 1 Create a table to display a photograph, the source, the mouth and the length of the following rivers:
 - Darling River
 - Murray River
 - Yarra River
 - Parramatta River
 - Swan River
 - Torrens River
 - Brisbane River
 - Ord River
 - Katherine River.
- 2 Divide the rivers into three groups:
 - rivers that have their source in mountains
 - rivers that have their source at a lake
 - rivers that are located near major cities.
- 3 Research the Dreaming story for the river listed that is closest to where you live.
- 4 Use the information you have gathered to write a summary statement about the Australian river closest to where you live.

A catchment in Asia

Using the internet and other resources, investigate a catchment in Asia (some examples include the catchments of these rivers: Mekong, Huang-He, Yangtze, Kapuas, Cagayan, Ganges, Brahmaputra, Salween) and answer the questions below.

- In which part of the world is this river catchment?
- How large is the catchment?

- What regions does it flow from, through and to?
- What is the climate of the catchment and how does it vary over the catchment area?
- How is land used along the river—near the source, in the middle reaches, at the mouth?
- How is the river used by humans?
- How have human activities impacted on the river?
- What plants and animals exist in or near the river?
- Why should humans look after this river catchment?

Use maps, photographs and diagrams as appropriate to support the information. Present your information in a way that displays your geographical knowledge and skills.

Saving the Franklin River

In 1979, the Tasmanian government proposed to build a dam on the Franklin River to generate hydro-electricity. However, thousands of people successfully protested against the dam because it was located in a national park and the flooding created by the dam would have led to the loss of unique flora, fauna and river habitat.

Research to find out more about this controversy. As a class or in a smaller group, participate in a meeting about this issue, with a moderator to chair the meeting. List the positive and negative impacts of the proposed dam under the following headings:

- Indigenous/cultural impacts
- economic impacts
- social impacts
- political impacts
- environmental impacts.

At the completion of the class discussion, vote on the question: 'Should the Franklin River Dam have gone ahead?'

The catchment where I live

In small groups, investigate the river catchment that is nearest to where you live. Using Unit 13.4 as a model of inquiry, consider all aspects of the catchment as a region where people and the environment co-exist.

Present your findings to the class using a PowerPoint presentation. Be sure to include the following information:

- facts and figures about the catchment (including climate, population and land-use data)
- maps, graphs and photographs
- landforms in the catchment
- Aboriginal cultural heritage
- natural resources (flora and fauna)
- current impacts (housing, industry, recreation)
- future challenges.



Source 13.5.1 Aerial view of the Swan River, Western Australia

GLOSSARY

abrasion the wearing down or wearing away of rock by friction

attrition the breaking down of dislodged material due to the friction caused by particles rubbing against each other

bed load material transported along the bed of a river

braided channel a river channel featuring a network of small channels separated by small and often temporary islands of sediment

catchment the area drained by a river and its tributaries; an alternative term for 'river basin' or 'drainage basin'

delta extensive deposit of alluvial material (sediment) at the mouth of a river

deposition accumulation of sediment by the action of erosional agents, such as water and wind

discharge the amount of water that flows from a river catchment and into another river system, the sea or a lake

flood plain a nearly flat plain along the course of a river that is subject to flooding

gradient a measure of the steepness of a slope

infiltration the movement of water from the land surface into the soil

meander a bend or curve in the course of a river

natural levee the build-up of sand along, and sloping away from, either side of a river

point bar the accumulation of sediment on the inside of a river bend

rapid a section of a river with a relatively steep gradient that causes the velocity and turbulence of water to increase

sediment rock-based material that has been broken down by weathering and erosion and then transported by the action of wind, water or ice, and the force of gravity

suspended load fine particles of silt and clay carried in river water

turbidity muddiness; high turbidity occurs when there are high levels of suspended sediment in water

watershed the boundary between catchments

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