LIVING IN HARSH CLIMATES

Many of Australia's animals live in harsh **environments**. They **cope** with these conditions in special ways. First, their bodies have **adapted** to suit the harsh **climate**. Second, they have developed patterns of **behaviour** that help them to cope.

The greater bilby is the only species of bilby left in Australia. The lesser bilby is now **extinct**.

Bilby
The bilby is a long-eared **marsupial** that lives in the Gibson, Tanami and Great Sandy **Deserts**. It copes with the heat by sleeping during the day and **foraging** for its food at night. It also digs a deep burrow up to 2 metres below the ground, where there is more **moisture** and where temperatures are much cooler than on the **surface**.

Plants

Australia has about 24 000 plant species of its own. The types of plants vary from area to area. In dry areas such as **central** Australia, plants are spread thinly across the land. These include grasslands, shrubs and river red gums. In **tropical** areas such as north Queensland, there are more **native** fruit trees. These include green plums and figs. Some of the most **common** tree species across Australia are eucalypts, grevilleas and melaleucas.

A river red gum ▶

▼ The bare-nosed or common wombat

Animals

Australia also has an incredible range of animal species. It has around 400 fish species and 828 bird species. It also has 300 lizard species and more than 378 species of **mammals**. Its most unusual and best-known animals are the **marsupials**. Australia has over 140 species of marsupials. These include wombats, wallabies, kangaroos and koalas.

Scan the code to learn more about river red gums.

QUESTIONS

1. Why are many of Australia's plants and animals unique to this continent?
2. What do you think the word 'species' means? What information in the text helps you work it out?
3. Watch the video *Water for life – Protecting River Red Gums* at http://bit.ly/1817Y45. Why is preserving Victoria's river red gum forests important?
4. Choose an Australian animal and research what it needs to survive. How well are those needs being met?
5. Write a brief plan of actions that could be taken to ensure the survival of your chosen animal. How have people affected the survival of your animal? What else can be done?

5

CHANGING STATES: LAVA

2.3

CHEMICAL SCIENCES

CHANGING STATES: LAVA

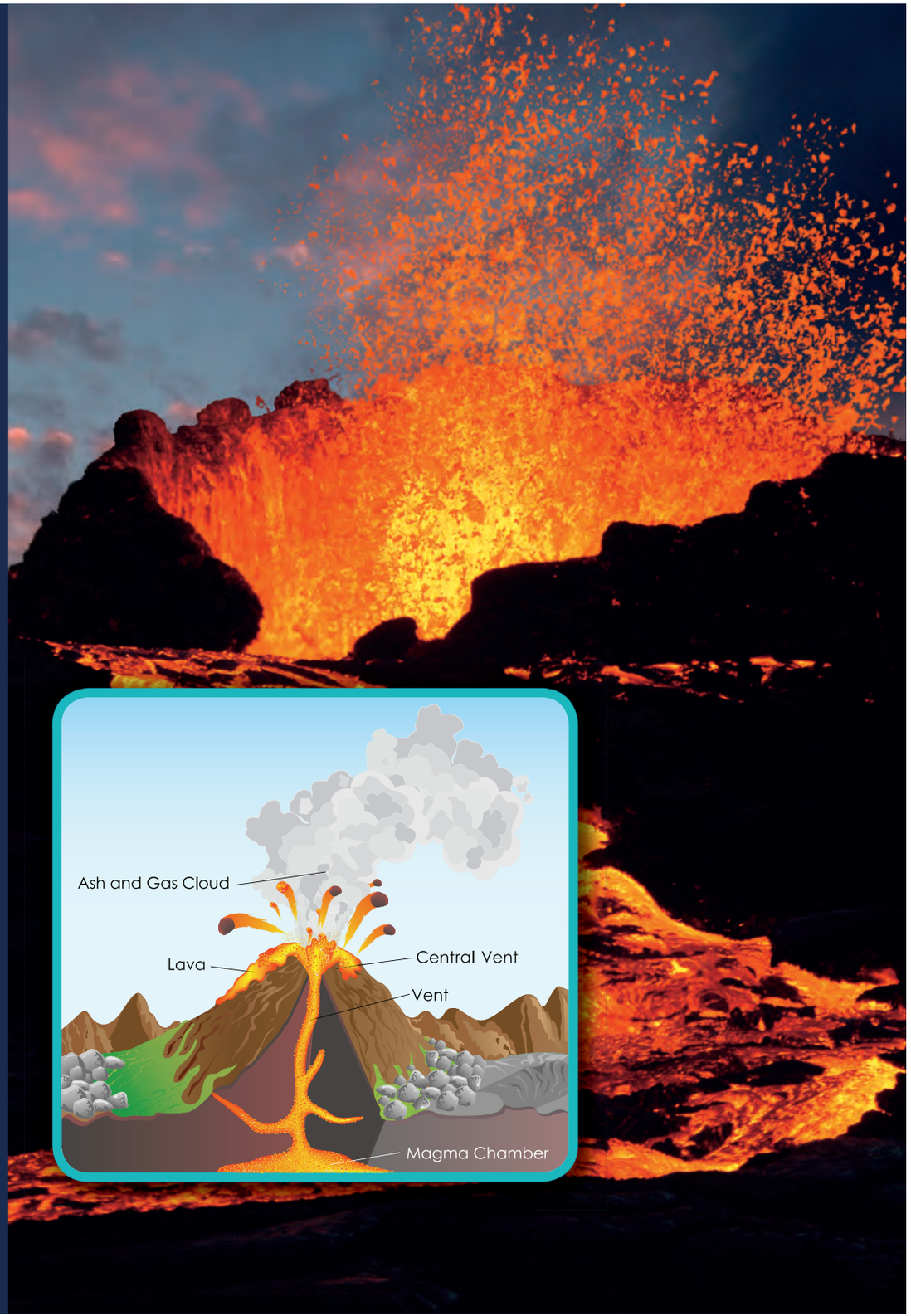
Substances change **state** when cooled or heated to different temperatures. A spectacular example of a change of state can be seen when the substance of lava pours from a volcano.

Lava is rock in **liquid** form. As lava cools, it hardens into solid rock. Molten rock below the Earth's surface is called **magma**. Lava is what we call it after it has reached the surface.

Where magma forms

Magma comes from the Earth's **mantle**, which is the **layer** 50 to 100 kilometres below the Earth's **surface**. The temperature of lava in an **eruption** can range from 700°C to 1200°C.

The heat in the rocks that make up magma and lava has been trapped inside the Earth since it was formed about 4.6 billion years ago. The Earth also **generates** its own heat, which keeps the magma hot.



Different properties of lava

The mineral properties of lava affect its process of changing from a liquid state to a solid state. Lava contains silica, which is a glass-like material that is also found in sand and quartz. The more silica in lava, the more slowly it flows.

◀ Lava with silica in it flows slowly.

Cooled lava hardens into rock. Rock from different volcanoes is composed of different minerals. The types of minerals in lava depend upon the types of gases and **elements** in the magma, as well as the temperature it has heated to before it cools.

Cooling down

Lava can take months – or even years – to cool down and harden completely. Its surface cools and dries quickly, forming a crust that is thick enough to support the weight of a human after 10 to 15 minutes. But don't try this yourself!

▼ Lava cools quickly – but not that quickly!

Scan the code to watch a video of a lava flow.

FACT!

The most common volcanic rock is called basalt. Basalt is a dark-coloured rock that forms **vast** areas of ocean floor.

QUESTIONS

1. What is the difference between magma and lava?
2. What information about lava would you like to know that the author hasn't provided?
3. Find the adjective in the second sentence on the front of the card. What is it describing? Can you think of another adjective the author could have used?
4. Go to http://bit.ly/1qxP8Gs to watch the video of an erupting volcano. Draw a diagram of what you see, labelling the solids, liquids and gases.
5. Read about volcanic gases at http://on.doi.gov/1IGSUmF and follow the links to find out how living near these gases influences the way that people live.
6. Make a multimedia presentation to showcase your understanding of how rock changes states in the course of a volcanic eruption, including diagrams, maps or graphs as appropriate.

AUSTRALIA'S LIVING THINGS

Australia is home to about one million different **species** of plants and animals. This is about 8 per cent of the world's animals and plants. More than 80 per cent of the plants and animals found in Australia are only found here. This is because Australia has been **separated** from other **continents** for a very long time. It has been an island for about 50 million years.

The lyrebird gets its name from its spectacular tail, which is in the shape of a **lyre**.

FACT!

One of Australia's most **unique** animals is the **lyrebird**. Lyrebirds are **experts** at imitating sounds. They **imitate** the sounds of other birds. They can also imitate the sounds of machinery, such as trains and chainsaws!

▲ The red kangaroo is the largest of all kangaroos, and the largest living marsupial.

Red kangaroo

The red kangaroo lives in Australia's central deserts. The central deserts are the driest areas in Australia. The kangaroo copes with the desert heat by lying around in the shade and doing as little as possible. When a red kangaroo needs to move, it hops. This is a quick way to travel – a red kangaroo can hop as fast as 56 kilometres per hour. Hopping is also a very **energy-efficient** way for the kangaroo to travel long distances. A kangaroo needs to travel a long way in the desert, as the plants it eats are often spread across a **vast** area.

Scan the code to learn more about the red kangaroo.

Whistling kite

The whistling kite is a large bird of prey that lives in different **habitats** around Australia, including deserts. It copes with the hot weather by being **nomadic** and constantly moving to new areas to find food. The whistling kite eats insects, plus small **mammals** and lizards. When food is hard to find during droughts, the whistling kite will eat animals that are already dead.

FACT!

The whistling kite gets its name from the sound of its call – a loud whistle!

QUESTIONS

1. What makes Australia's deserts harsh environments to live in?
2. In your own words, describe what 'nomadic' means. What else is nomadic?
3. Watch the video *Red Kangaroo* at http://bit.ly/1A6BZpI. Who do you think the audience for the video is? Why was it made?
4. Watch *Red Kangaroo* again, recording the kangaroo's height and weight measurements. Use an online tool to convert these imperial measurements to metric measurements. Research the height and weight of other animals that live in Australian deserts. What do you notice?
5. Find out more about one of the animals you researched in Question 4. Write a description of the climate it lives in and explain how it survives there.