

ACADEMIC READING EXAMPLE

Read the free sample text below which is taken from **Academic Practice Test 1** and then answer the questions on page 3. The correct answers are on page 4.

Threats to the Great Barrier Reef

The Great Barrier Reef is well known as the world's largest system of coral reefs. Lying off the east coast of Australia, it covers an area larger than 300,000 square kilometres and is a unique habitat hosting billions of sea creatures. It also is a major source of income to people near the Reef, with tourism now being the key industry in the local towns.

Not all is well with the Great Barrier Reef; there are growing threats, the most serious being climate change. Organisations are working hard to impress upon the world's governments the need for urgent action to address climate change globally. To help boost the Reef's resilience to climate change, efforts are also being made to take action on the local effects of coastal development, such as from ports and agriculture.

Climate change threatens the Great Barrier Reef in different ways. Firstly, it can increase severe weather events, such as repeated cyclones and flooding. Cyclones can have devastating effects on the Great Barrier Reef, the immediate effect being the physical damage. Fast maturing coral is easily destroyed by storms, while slow maturing, more solid coral generally is spared. All coral though can be affected by the flooding caused by cyclones. Flooding on land can lead to large flood plumes from rivers being expelled into the sea that supports the Great Barrier Reef. Freshwater flood plumes can have a number of effects, including killing coral at shallow depths. Large scale flooding can carry various land-based pollutants, such as fertilisers, herbicides and the worst, pesticides, out to the Reef, which can have a devastating effect. A lesser-known problem is that earth or residue that is carried out to sea can affect coral growing in the deep water, as it can block out the light that coral needs to survive. In some locations, approximately 10 per cent of corals have bleached in shallow waters, indicating that the run-off is causing stress to reefs. Australian scientists have also observed sunken logs and terrestrial debris breaking up fragile corals in wave-exposed sections of the reefs. Although flood plumes are natural events, scientists predict that climate change worsens their impact. Expected increases in cyclone intensity will increase the size and frequency of flood events and thus the quantity of land-based runoff and pollutants making it to the Reef.

In the long-term, ocean acidification is likely to be the most significant impact of a changing climate on the Great Barrier Reef ecosystem. The oceans absorb carbon dioxide from the atmosphere and are estimated to have absorbed about half the excess carbon dioxide released by human activities in the past 200 years. This absorbed carbon dioxide is resulting in chemical changes in the ocean, which is referred to as ocean acidification. Although the chemistry is simple and well understood, its effect on marine life is much less well known, as the process has only been recognised for around a decade. Even relatively small increases in ocean acidity decrease the capacity of corals to build skeletons, which in turn decreases their capacity to create living environments for the Reef's marine life.

Climate change is also causing increases in sea surface temperatures and atmospheric temperatures. A lack of cloud cover and also freshwater run-off can all contribute to this. Temperature is a key environmental factor controlling the distribution and diversity of marine life; it is critical to reef building and controls the rate of coral reef growth more than anything. All animals and plants have temperature limits and when these are exceeded, natural processes break down. On coral reefs, surface temperature changes affect the relationship of mutual dependence between some animals and the algae that live within their tissues. The temperature gradient along the Great Barrier Reef has shifted markedly over the last century and is likely to continue to rise over the present century. Whatever climate scenario is used, it is predicted that by 2035, the average sea surface temperature will be warmer than any previously recorded.

Rising sea levels are another significant danger, because much of the Great Barrier Reef coastline is low-lying. Predictions of a future increase in sea levels are highly variable, but large changes in sea levels can mean land inundation, which will cause significant changes in tidal habitats, such as saltwater intrusion into low-lying freshwater habitats like mangroves. Sea levels on the Great Barrier Reef have already risen by approximately three millimetres per year since 1991, due to a combination of thermal expansion in the oceans and, most significantly, glaciers melting. Changes in sea levels from temperature increases are time-dependent and uncertain, because they are partly linked to the collapse of the Earth's great ice shelves. Reefs will probably be able to accommodate a sea level rise of three millimetres, however, as the rate of sea level rise increases, the Reef's coral will be more and more affected.

It seems that local people are motivated to change in order to protect the Great Barrier Reef, however, the worst threats to the Reef are because of climate change issues. As long as this continues, the Great Barrier Reef will continue to be in danger and with many countries in the world refusing to take action that might threaten their economies, it does not really matter how behaviours are changed in Australia.

Glossary

Flood plume	A body of water that spreads out in a feather shape
Inundation	Flooding

Questions 14 – 20

Look at the different results of climate change (questions 14 - 20) and match them to the effects they have (A - G).

Write your answers in boxes 14 - 20 on your answer sheet.

Results of Climate Change

- 14 Cyclones
 - 15 Fresh water plumes
 - 16 Sediment in the water
 - 17 Ocean acidification
 - 18 Rising ocean surface temperatures
 - 19 Significant changes in sea levels
 - 20 A sea level rise of only 3 millimetres
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- A** Ocean organisms have a smaller habitat, as coral growth can be hindered.
 - B** Few or no negative consequences will take place in reefs.
 - C** Coral growing in shallow water can be killed.
 - D** Freshwater ecosystems will be damaged by sea water.
 - E** Damage can occur to coral that grow quickly.
 - F** The reliance of certain organisms on each other can be affected.
 - G** Coral in deeper water die due to a lack of sunlight.

ANSWERS

1. E
2. C
3. G
4. A
5. F
6. D
7. B

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