2.8 Weathering and erosion can be prevented

Humans are very good at changing their environment to suit their needs. However, this has changed the rate of rock weathering and erosion. This has resulted in flooding and poor food production. Soil erosion engineers are helping to solve this problem.

Preventing erosion

The population of Australia has been steadily increasing for many years and as a result we have needed to build more houses and grow more food. Building houses means building roads and footpaths around the houses. Instead of trees and grasses lining a riverbank, footpaths and roads can be built right up to the edge of the water flow.

The roots of plants interlace the soil, helping it resist the movement of wind and rain. If plants are removed, then the topsoil will erode.

Rain falling on concrete paths and roads is not absorbed into the soil. Instead, it flows off the road and carries away further soil layers. This can slowly remove the support beneath the built structures, causing them to collapse. The loose soil and rocks can trigger damaging mudslides. Engineers are responsible for developing ways to solve this problem.

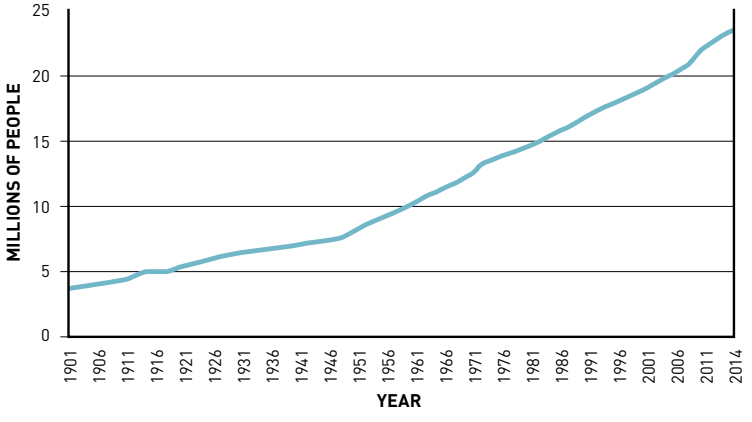

Figure 2.34 Australia's population has increased dramatically since the beginning of the 20th century.

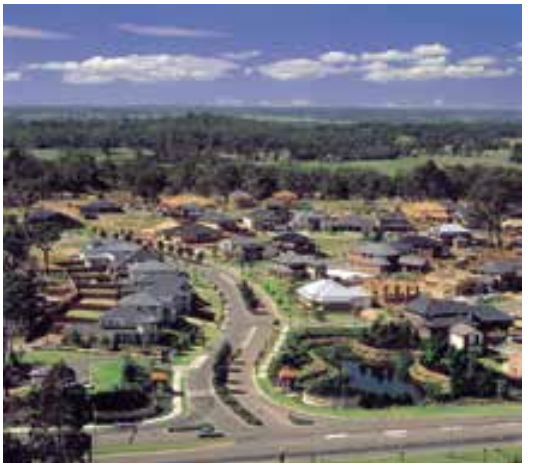

Figure 2.35 Footpaths, roads and roofs affect how water moves around the land.

Figure 2.36 Soil erosion can lead to many problems.

CHALLENGE 2.8: PREVENTING SOIL EROSION
GO TO PAGE 166.

Engineering solutions

Figure 2.37 Engineers try to minimise erosion by controlling the flow of water with dams and levees.

Figure 2.38 Groynes are built on beaches to remove some of the energy of the waves. They protrude from the beach and trap the sand, preventing its erosion.

Figure 2.39 Terraces may be built to allow water to follow a set path that is protected from erosion by man-made structures such as drains, or by plants. This reduces the force of the water, making it less likely to cause damage.

Figure 2.40 New products have been developed that allow water to move through instead of contributing to run-off. This allows the water to be absorbed into the soil and join the groundwater.

Figure 2.41 Temperature erosion causes materials such as concrete to crack. Footpaths have grooves in them to allow for their expansion during hot weather.

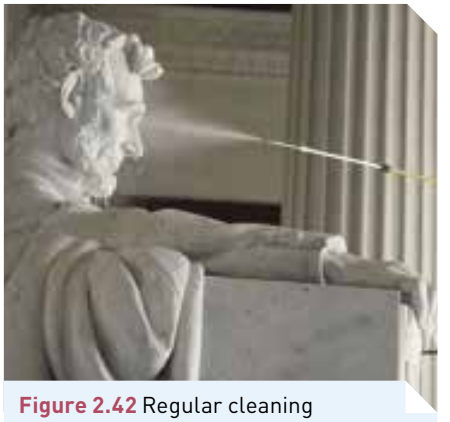

Figure 2.42 Regular cleaning prevents the build-up of moss and pollution that might contribute to biological or chemical erosion.

Extend your understanding 2.8

1 What is the difference between weathering and erosion?
2 Name two ways erosion can affect food production.
3 What does a soil engineer do?
4 How could an engineer prevent erosion of soil by water?
5 Find an area near your school that has been affected by erosion. Suggest a way that you could prevent further erosion.