

## CONDUCT EROSION & SEDIMENT CONTROL ACTIVITIES



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## PUBLICATION NOTES

*BHP Billiton Iron Ore is proud to support Greening Australia to provide valuable conservation and land management training to communities throughout the Pilbara through the Indigenous Training Program.*

*This Learning Guide series has been developed as part of our partnership of the program.*

Gavin Price, Head of Environment, BHP Billiton Iron Ore

*Greening Australia is proud to produce and provide the comprehensive suite of new ALEP Learning Guides. The guides are compatible with the new horticulture and conservation industries training package and suited to developing skills in Indigenous communities within remote areas of the country where employment opportunities are limited. We would like to thank BHPBIO for their generous support in the development of the guides.*

Brendan Foran, National CEO Greening Australia

The second series of ALEP Guides is aligned with a number of units of competence from the *Training Package AHC10 – Agriculture, Horticulture and Conservation and Land Management* (Release 8.0). The units selected are frequently used within Certificates I to III in Horticulture and Conservation and Land Management. As such they cover, where possible, the elements, performance criteria and required skills and knowledge of each unit.

The principal goal of these resources is to support the learning process; the learning activities may complement a trainer's assessment plan. The intent is that they will be used in an interactive manner with learners rather than as self-paced study guides. The structure and sequence have been designed to follow the logical steps of the practical tasks wherever possible. Concepts are introduced and then consolidated with discussion and/or practical activities.

The writers consider that these guides can provide a sound technical foundation but also strongly encourage trainers to complement the guides with additional, authentic resources from relevant industry texts and websites. The guides can be used in part or in their entirety but should always be linked to practical activities to strengthen the teaching and learning.

Genuine consideration was given to the level of language used in the guides. The goal has been to find a balance between simplifying the language to an accessible level and ensuring that the vocational concepts are addressed. The writers contend that with appropriate support these texts can provide an opportunity for students to strengthen their language, literacy and numeracy skills, which may be required for pathway progression.

A number of Aboriginal people have been involved in developing this ALEP Guide, which is considered suitable for use within a program based on Aboriginal pedagogies.

# INTRODUCTION

Welcome to *Conduct erosion & sediment control activities*. This learning guide will support you to understand the basic causes of erosion, the problems that can happen as a result of it and the kinds of activities that can be used to prevent it.

This learner guide only presents the knowledge aspects of the unit. It is important that you are able to visit sites at risk of, or experiencing, erosion and become involved in implementing solutions to the issue.

This unit may be studied alone or holistically with other relevant units. Suggested relevant ALEP Guides that may support this delivery are:

- *Maintain cultural places*
- *Participate in environmentally sustainable work practices*
- *Carry out natural area restoration works*

## RESOURCES REQUIRED

To complete this training you will need the following:

1. Personal protective equipment (PPE), tools, machinery and equipment to implement erosion control activities relevant to the work area
2. Vehicle to travel to the work area



## LEARNING ACTIVITIES

There are three kinds of activities to complete. These activities may go toward your final assessment.

SECTION	ACTIVITY	SATISFACTORY (Y/N)	DATE
<b>DISCUSSION ACTIVITIES</b>			
1.1	Wind and water erosion		
1.1	Factors affecting erosion		
2.1–2.6	Legislation governing the land you are working on		
<b>RESEARCH ACTIVITIES</b>			
2.1–2.6	How to report an offence or breach of the legislation in your state or territory		
<b>PROJECT</b>			
3	Select the site		
4	Manage the site		



### SEDIMENT

*Sediment is the material that is moved in the process of erosion.*

*Sediment varies in size. It can be smaller than a grain of sand, the size of gravel or pebbles, or even as big as boulders.*

## 1.1 WHAT IS EROSION?

Erosion happens when soil particles are moved from one place to another by wind, water or both.

### WATER EROSION

When rain hits bare soil it can break up the soil and carry sediment away in the run-off. The sediment is carried away and deposited somewhere else in the landscape.



#### Five factors affect water erosion

1. **Erodibility of soil** – the likelihood that soil will erode. This can be determined by looking at the soil type (sand, silt, loam or clay), soil cohesion (loose, friable or compacted), amount of organic material, infiltration rate (how easily water enters the soil), soil moisture (dry, moist or saturated). For example, soil that is sandy, loose and dry is highly erodible.
2. **Vegetation cover** – plants reduce the impact of water on soil in a few ways. For example, foliage can break the force of the rain; water can flow over long grassy cover and root systems can hold the soil together. and help water to soak in.
3. **Slope** – the steeper the slope, the greater the chance erosion will occur.
4. **Rainfall patterns** – heavy rain that continues for a long time is more likely to cause erosion.
5. **Tracks and pathways** – water will generally find its way along a track or path, whether natural or constructed. Wheel ruts, animal tracks, walking paths and fence lines can all allow water to concentrate. This increases the likelihood of erosion.

These five factors often work together to increase the likelihood of erosion.

The likelihood of erosion is always higher in an area where the soil is disturbed and the land is cleared. Erosion will almost certainly happen if the area is sloped and heavy rain occurs.

Erosion is not as likely in a natural landscape where the land is not cultivated or cleared, even if it is sloping and there are heavy rains. If there are noticeable animal tracks down the slope, however, these will increase the likelihood of water erosion.

## WIND EROSION

Wind erosion happens when sediment is moved to another place by the wind. Particles can be picked up and carried or rolled along the ground. Fine sediment can be moved hundreds of kilometres in a dust storm. Larger particles might move only a few metres.

### 3

#### Three factors affect wind erosion

1. **Erodibility of soil** – the likelihood that soil will erode. This can be determined by looking at the soil texture (sand, silt, loam or clay), soil structure (loose, friable or compacted), amount of organic material and soil moisture (dry, moist or saturated). For example, soil that is sandy, loose and dry is highly erodible.
2. **Vegetation cover** – plants reduce the impact of wind on soil in a few ways. For example, foliage protects the soil from the wind, and root systems can hold the soil together.
3. **Wind speed** – the wind speed needs to be great enough to move the sediment. High wind speed is more likely to contribute to erosion.

These three factors often work together to increase the likelihood of erosion.

The likelihood of erosion is always higher in an area where the soil is disturbed and the land is cleared. Erosion will almost certainly happen if the area has little vegetation and is subject to very high-speed winds.

Wind erosion is not as likely in a natural landscape where the land is not cultivated or cleared. However, stock might break up dry soil and change the soil structure. If there are high-speed winds, this will increase the likelihood of wind erosion.





## DISCUSSION ACTIVITY



Think of some areas where you have seen evidence of erosion. Do you think the erosion was caused by water or wind?

You will have the chance to go and look at these places in the next section.

NAME OF AREA	WATER OR WIND?



## DISCUSSION ACTIVITY



Can you think of any other places where there is a risk of erosion happening?

What are the main factors that increase the risk of erosion at that site?

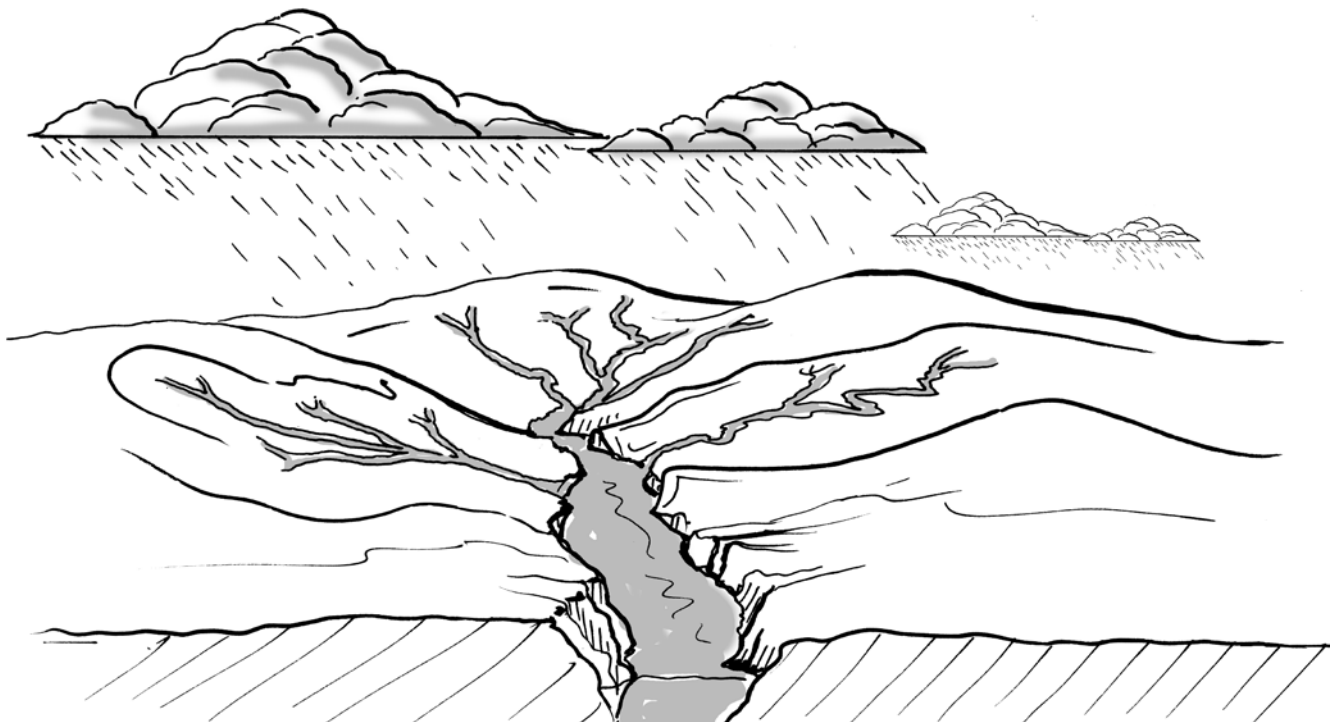
What might happen if erosion becomes a problem at this site?

You will have the chance to go and look at these places in the next section.

NAME OF AREA	FACTORS LEADING TO EROSION	WHAT MIGHT HAPPEN

## 1.2 WHY IS EROSION A PROBLEM?

Water erosion is more likely to cause problems in a sloping catchment area. A catchment area extends from the highest points that water flows from after rain, to the lowest point where the water settles or moves away.



Wind erosion is more likely to cause problems in open areas that are not sheltered from the wind.

