HEAVY MACHINES

Debbie Croft



PM

For teachers' inspection ONLY

Heavy Machines

Level 24 **Curriculum Area** Science

Running Words 1276 **Text Types** Information Report (Informative) pages 2–13
Explanation (Informative) pages 14–22

Retelling to encourage critical thinking about the content

Ask each student to retell the information report and explanation in his or her own words. Record the retellings for further discussion and reflection.

Think and Talk About ...

Fact boxes in the book encourage each student to explore the statements further and to share the information with others.

Questions to reinforce meaning and stimulate discussion

Literal

1 Why do bulldozers have metal tracks?

2 How is a grader used to make a gravel road?

Inferential

3 Why would bulldozers and excavators need to be transported on a trailer?

4 Why would some blocks of land need to be levelled?

5 Why are fixed cranes used on building sites?

Applied Knowledge

6 Why are new trees planted at mines and quarries?

How a House Site Is Prepared

Literal

1 Which heavy machines are used to clear a house site?

Inferential

2 Why are pegs used to mark the area where the house will be built?

3 Why does the house site need to be level?

4 Why is the special soil called 'fill' soil?

Applied Knowledge

5 Why do the foundations for the house need to be strong?

6 Why is an excavator used to dig out tree roots?

Links with other PM Guided Reading Books and Cards

Level 24	Card	Description	*A Combine Harvester*
Level 24	Book	Information Report	*Aeroplanes*

For teachers' inspection ONLY

HEAVY MACHINES

Debbie Croft

Contents

What Are Heavy Machines? 2
Keeping Safe near Heavy Machines 12
How a House Site Is Prepared 14
Glossary 23
Index 24

For teachers' inspection ONLY

What Are Heavy Machines?

Bulldozers, graders, cranes and excavators are large, heavy machines. These machines are used for making roads, clearing areas of bushland and preparing building sites. At **quarries**, some of these machines move large amounts of rock and soil.



a crane at a building site

For teacher's inspection ONLY



Graders and cranes are carried on trailers when they need to move long distances.

Some graders and cranes can be driven short distances on roads, but they can only travel very slowly. Bulldozers and excavators are moved from place to place on a long trailer pulled by a large truck.

For teachers' inspection ONLY

Bulldozers

Bulldozers are special types of tractors. They are very powerful, and usually have metal tracks instead of rubber tyres. Metal tracks allow these machines to be driven across rough or uneven ground more easily.

A bulldozer has a huge metal **blade** at the front of the machine. This blade can be used to move large amounts of soil, sand or rubbish to clear an area of land.

Think and Talk About ...

Metal tracks help to stop bulldozers from sinking into soft or muddy ground.



a bulldozer



The ripper on the back of a bulldozer helps to break up rocks on the ground.

For teachers' inspection ONLY

There is a long claw at the back of the bulldozer, called a "ripper". The ripper is used to loosen rocks and large pieces of concrete near the surface of the ground. This waste material can be pushed out of the way with the blade of the bulldozer. Then, the waste is loaded onto trucks and taken to recycling centres.

Bulldozers are very useful at quarries or mines. After sand, rock or **minerals** have been removed from the ground, a bulldozer **levels** the area again so new trees can be planted. Bulldozers are also used in road building and for clearing land on building sites.

Graders

Graders are heavy machines that are used to make a flat surface on a road or block of land. Most graders have three **axles**. The engine and driver's cab are at the back of the machine, above the two rear axles. A third axle is at the front of the grader. There is a long, narrow blade between the front and back axles.

Graders are often used to make or repair gravel roads. First, the area has to be cleared. The driver lowers the blade until it touches the ground. As the grader moves forward, the blade pushes grass, small rocks and loose soil off the roadway.

For teachers' inspection ONLY



A grader is used to make uneven ground smooth.

Then, the road is graded again. Dirt gets pushed along by the blade. It falls into hollows in the road, making the surface smooth and even.

Next, trucks are used to bring loads of fine gravel to the site. This gravel is tipped in piles along the road so it can be spread by the grader in an even layer. Then, a roller is driven along the road several times to make the surface hard. Now the road is safer for traffic to use.

For teachers' inspection ONLY

Think and Talk About ...

The blade on a grader can be set higher on one side than the other, so the graded area is not completely level.

