

**Bathurst Resources** is a modern New Zealand coal mining company with operations on the West Coast and Southland.



## MODERN MINING AT BULLER

**Coal mining has made huge advances since it first began on the Denniston Plateau more than 100 years ago. Modern mining is efficient and contributes significant benefits to the economy and environment.**

### Easy to find, but hard to extract

Coal is located in horizontal seams in the ground in sediment packages of sandstones and mudstones. Because it is part of a sedimentary sequence, coal is predictable and relatively easy to find.

But it's not always easy to get to and to extract.

The coal seams Bathurst is mining on the Buller Coalfield near Westport were identified as early as the 1840s.

Since then, an estimated 12 million tonnes of coal has been pulled from the Buller Coalfield. But there is still a large coal resource remaining in the field, because old underground mines left large tracts of coal untouched. Seams are criss-crossed with old mining tunnels, which in some places have caused the surface to collapse.

Bathurst is employing new ways to get to the coal to maximise efficiency and minimise impact on the environment. This includes the "cut and cover" mining technique – removing the top layer of earth to get to the coal seam, extracting the coal, then carefully replacing the earth together with new trees and native plants. Rehabilitation is an integral part of the mining process.

In other areas Bathurst may use different methods of extraction, such as underground mining or mechanised boring techniques, allowing the surface to be largely unaffected.

### Cut and cover mining

Planning for any mine begins many years before the first tractor-load of earth is moved.

First, drillers take core samples to find and measure the coal seams. Geologists and geophysicists analyse the data and use mine modelling to accurately map the coal seam.

Diggers carefully excavate the surface vegetation, soil and rock – known as "overburden". This is either stored in a holding area, or placed into another area of the mine that is ready to be rehabilitated. Today, we recognise that this overburden must be treated with care to ensure it retains the correct acidity (or pH) levels of the earth, that the seed content in the soils remains viable, and the different layers are not contaminated.

Coal is then extracted from the seams below the surface.

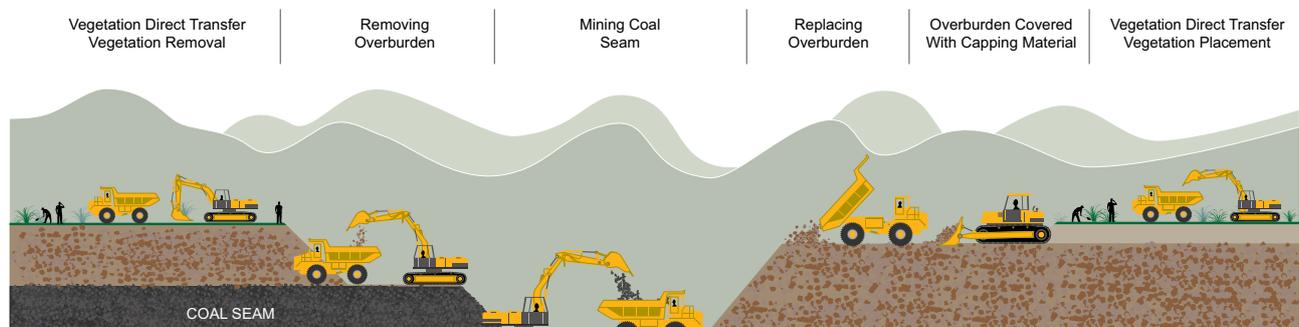
Finally, the overburden is replaced, together with topsoil and new plants generated in nurseries from seeds and cuttings collected before mining begins.

### Mining the Denniston Plateau

Bathurst's proposed Escarpment Mine on the Denniston Plateau will cover 171.5 hectares, but only about 40 hectares will be exposed at any one time.

The coal will be transported off the Plateau and working stockpiles stored under cover to minimise impact on people and property in the nearby area.

A train will haul the coal to the port of Westport for shipping to Port Taranaki for export to overseas customers or to the coal handling port at Lyttleton, near Christchurch.



"Cut and Cover" mining operators & mine rehabilitation.

Through a commercial agreement with the Port of Westport, Bathurst will invest millions of dollars to upgrade the port's facilities and restore it to its former status as a first class coal handling port.

#### Safety first

The health and safety of Bathurst staff, contractors and communities is the top priority, over all other business objectives.

The company believes all injuries are preventable and fosters a workplace culture of trust, respect and safety awareness.

The company also monitors safety performance to promote continuous improvement through the use of Positive Performance Indicators, and provides training to ensure the principles of risk management, duty of care, fitness for work and safe working practices are understood and followed.

#### Minimising impact

There is no question mining impacts the environment. But the area affected is small and the impact is temporary. Often the areas of disturbance are undetectable once they are properly rehabilitated.

In New Zealand, less than 0.1 per cent of land is used for mining, while 33 per cent is protected for conserving biodiversity.

Bathurst is also committed to reducing impacts by putting significant effort into rehabilitation and nurturing areas of environmental significance.

#### Net gain for the conservation estate

Bathurst also invests significantly in other projects to enhance and protect the environment, including initiatives to protect the great spotted kiwi in the Heaphy River area and funding the protection of plants and animals on the Denniston Plateau. Through these initiatives and the careful rehabilitation of the areas Bathurst mines, the company will be providing net benefits to the environment.

Computer simulation of Denniston Mine site over six years

