

Pike River Coal – Modern Mining

Pike River is an underground coal mine, operating at depths of 100 to 200 metres below the surface. The mine lies under Department of Conservation administered land on the eastern slopes of the Paparoa Ranges, 50 kilometres north-east of Greymouth. Pike River has striven to minimise the effects of developing the mine on the land, native vegetation, fauna and waterways, and to blend its surface operations in with the natural environment. There was extensive consultation with Department of Conservation (DOC) through this design and consenting process.



Mine buildings blended into native bush

Pike River was granted an access agreement by the Labour Government in 2004 and mine development commenced in 2005. The mine is now producing from New Zealand's largest known deposit of low-ash, premium hard coking coal. Hard coking coal and iron ore are the main ingredients used to make steel.

Substantial financial commitments were made by Pike River before development started to ensure funds were in place to meet all environmental conditions during the mine operating life and subsequent restoration activities. This included cash bonds of \$2.3 million lodged with DOC and local councils and environmental insurances of \$10 million.

The mine has a relatively small surface footprint on DOC land of only thirteen hectares (compared to the large area - 22,000 hectares - of conservation estate surrounding it). Eight hectares had previously been logged so only five hectares of unlogged vegetation had to be cleared, primarily for the access road and the mine administration buildings.

This extremely small footprint was achieved by slurrying coal from the mine in a pipeline reducing road width and locating infrastructure outside of the DOC estate on land owned by Pike River.

To preserve 800 year native old rimu and miro trees in the unlogged area, we zig zagged the mine access road around the trees instead of felling them. To reduce vegetation clearance in this area, an expensive insulated power line (called Hendrix cabling) was used instead of cheaper standard power lines.



Coal slurry pipeline winding through trees



Narrow access road to mine entrance

Pike River spent two years tunnelling laterally 2.3 kilometres under the Paparoa Ranges to reach the coal resulting in a low impact mine development.



Mine portal entrance into the Paparoa ranges



Access tunnel under construction

Pike River is making a significant contribution to the local environment. Pest and predator control programmes, environmental health monitoring, ecological and biodiversity studies have been implemented at an estimated cost of \$200,000 per year and a further \$80,000



per year is contributed to a DOC administered Blue Duck (whio) enhancement programme. These measures can be expected to have a substantial positive impact on the environment, particularly pest and predator control in the Pike Stream catchment area which has been heavily infested by pests including rats, stoats and possums. The removal of these pests will allow the populations of native birds including Blue Duck and Great Spotted Kiwi (roroa) to expand in the area.



Stoat traps being installed



Blue duck (whio)

Pike River has minimised water take from the nearby Pike stream by recycling the majority of the water from the coal preparation plant located outside DOC land, back up to the mine for reuse. All water use and discharge is required to meet detailed resource consent conditions. Solids are removed from the water prior to discharge and after treatment and the water is tested for compliance with stringent resource consent conditions before discharge.

One of the significant protections is a conservative approach on the amount of coal mined to protect the surface effects related to subsidence. Pike River is mining just over 30% of the coal deposit to ensure subsidence does not have an adverse effect on the surface.

This means that the majority of the coal is actually left in the ground to protect the surface. Maximum subsidence levels have been set at the low end of a conservative range recommended by independent experts during the resource consents process.

Modern mining techniques are employed throughout the Pike River mine. Long range in-seam drilling (horizontal directional drilling conducted underground) is used to maximise data recovery and reduce the impact on the surface through eliminating vegetation clearance for drill sites. Laser surveys are conducted to map the surface and determine what subsidence, if any, is occurring, again without having to clear access tracks on the surface for ground surveys. Where limited surface drilling is conducted, it is by helicopter mounted drill rigs which impact a tiny area of land, no greater than 10 metres by 20 metres and usually smaller.

The Pike River mine now employs more than 150 staff. More than \$20 million per year is spent locally on the West Coast. The annual corporate tax payment by Pike River for 2012 is forecast at more than \$50 million, based on an assumed conservative production rate of 850,000 tonnes*. In addition \$5 million of royalties to the government are forecast in that year.



Small drill site with rig installed by helicopter

Pike River has undertaken to restore the site to its natural state after mine closure. The mine has a closure plan that is updated annually and restoration of the mine site will involve the removal of all structures, bridges and buildings. All entrances to the mine site will be sealed and the water draining from the tunnel entrance will be treated if required. Disturbed areas will be re-contoured where possible and the retaining walls and road will be broken up. Topsoil and logs will then be spread over any disturbed areas and seeded with native seeds.

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*Source – McDouall Stuart Securities research report, 5 May 2010