

Cypress Extension of Stockton Opencast Mine



A view south down the Upper Waimangaroa Valley. To the left is the Mt William range.

Solid Energy's Stockton Opencast Mine in the Buller is an important contributor to the Buller community and the New Zealand economy. Stockton directly employs more than 500 people and is regularly the workplace of up to another 200 consultants and short-term contractors. Many other local and national businesses derive substantial income from work relating to the mine.

Each year, Stockton produces up to 2 million tonnes of high-value coal for export to the world's leading steel makers. Coal is a critical ingredient in steel making, an essential commodity in today's world.

The coal on the Stockton Plateau is highly variable and the mining operation and associated environmental systems are complex. To fill customer orders and ensure we can derive maximum value from the plateau's remaining stocks of very high-quality coal, we blend coal from a number of mining pits.

This integrated mining method will allow our Stockton reserves to produce at

around current levels for up to 20 years. To maintain this, however, we must continually prove up and bring forward new coal resources. New developments include the Cypress extension on the eastern boundary of Stockton Mine, mining the former Millerton Underground Mine in the north of the Stockton Coal Mining Licence and the new \$100 million coal handling and processing plant.

The Cypress Extension

Solid Energy began investigating the feasibility of mining in the Upper Waimangaroa Valley adjacent to our Stockton operation in the mid-1990s. The project was put on hold during the 1997-98 Asian financial crisis. In 2003, after three years of extensive study and consultation, we applied for resource consents to construct and operate two pits. Cypress was Solid Energy's first large-scale mining proposal to be considered solely under the Resource Management Act 1991 (RMA); our other Stockton resources

are administered under a Coal Mining Licence issued under the Coal Mines Act 1979, and resource consents issued under the RMA.

A joint hearing by the Buller District and West Coast Regional Councils granted consents in June 2004. Commissioners said in their decision that, "the development has the potential to maintain and create additional employment and economic benefits for the local community, the West Coast region and the country as a whole".

Five groups (Buller Conservation Group, Forest and Bird, Te Runanga O Ngati Waiwae, the Department of Conservation [DoC] and Ngakawau Riverwatch) appealed the decision to the Environment Court. Ngakawau Riverwatch and DoC settled their appeals following agreements reached with Solid Energy and the Councils about their concerns. The Environment Court considered the arguments in March 2005





The Cypress area is immediately to the east of the current Stockton operational area, some of which can be seen near the skyline of the top photograph. An extensive resource drilling programme, begun in late 2008, will run until early 2010. Coal from a number of mining pits at Stockton is blended to fill customer orders. The Cypress extension will result in another 3,000 hectares of native bush areas receiving extensive predator control for 30 years.

and released its decision in May. The Court upheld the councils' decision, subject to an extensive set of conditions that represented the outcomes of negotiations with a number of parties, including DoC and Ngakawau Riverwatch. A final appeal, by Forest and Bird on four points of law, was rejected by the High Court in December 2005.

The consented proposal for Cypress is expected to contribute approximately 5 million tonnes of high-quality coal to Stockton's production over about 10 years. At present, we expect to begin the large-scale development work on Cypress in 2010 with the aim of taking first coal in late 2011.

When the first pit is fully developed, coal from Cypress will be carried by large haul trucks approximately 4km west to the mine's processing area to be blended with coal from other Stockton pits. From there, Stockton's coal is loaded into even-larger haul trucks which carry it approximately 7km north, down to the head of an aerial ropeway system for delivery to the

Ngakawau loading facility at sea level. The coal is then loaded onto KiwiRail trains for the 400km run through the Southern Alps to Lyttelton Port of Christchurch for ship loading and export. Some Stockton coal is also used locally, for instance at Holcim's cement plant near Westport.

Environmental management

At Stockton and our other mining operations, Solid Energy has gained a great deal of experience and expertise in water quality and wildlife management, mine rehabilitation and pest control. These skills will be applied to the development, operation and rehabilitation of the Cypress pits to meet our internal standards and the extensive set of resource consent conditions which apply.

While the conditions and expectations for Cypress environmental management and rehabilitation are challenging, Solid Energy is confident we can meet them and has proven techniques and processes to do so.

Our mitigation undertakings include intensive and ongoing predator control in 3,000 hectares of native bush areas where this has not previously been undertaken. Introduced animal pests are a major threat to New Zealand's special native species, ecosystems and conservation lands, and control programmes to manage and remove animal pests are essential for their survival. This mitigation effort will assist DoC's goals on the West Coast.

The Cypress extension contains examples of two native animal species and two plant communities of particular conservation interest. The operational area is likely to include part of the territories of a small number of Roroa (Great Spotted Kiwi), and is part of the known range of a native land snail called *Powelliphanta* "patrickensis". The two plant communities are an area of red tussock land and a group of bryophytes growing alongside and within the upper reaches of St Patrick Stream in the north of the operational area.

From its inception, the Cypress project has been planned to meet best-practice



R Morris: Crown Copyright (DoC)

Hamish Dean

The headwaters of St Patrick Stream (top left) is home to a bryophyte plant community and will be isolated from mining activity. An extensive and long-running predator control programme will mitigate the impact on *Powelliphanta "patrickensis"* snails and *Rorua* (Great Spotted Kiwi). Stockton's high-quality steel coal is carried 400 km to Lyttelton Port of Christchurch for ship loading and export.

environmental standards. Rehabilitation of the site will be progressively carried out over the life of mining in the area and a variety of controls and protections will be implemented to ensure the development has the least possible impact on native wildlife, fauna and water quality.

Kiwi: The Cypress operational area is likely to include part of the territories of up to six *Rorua* (Great Spotted Kiwi). In the lead-up to development, any kiwi living in the area will be identified and fitted with transponders so that their movements may be studied to better determine their territories.

If necessary, prior to mining, we will catch and move them. It is likely that any chicks or eggs discovered during the mining phase would be transferred to an existing hatchery/nursery operation for rearing and later resettlement.

Solid Energy's kiwi predator control programme will cover 1,000 hectares on the eastern side of the Mt William range.

This is likely to involve trap lines and

ground baiting and, in post-mast years when introduced predators are particularly harmful to native birdlife, the collection of young birds to be raised in captivity until they are large enough to fight off most predators.

A mast year is one of particularly abundant native tree seeding. The sudden abundance of seed triggers an explosion in mice and rat numbers and a consequent increase in their predators, especially stoats. Native birds are at greater risk in the year following a mast year because the stoat numbers remain high but their food source – mice – has all but disappeared and so they turn their predatory attention to native birds.

Introduced animal pests are a major threat to New Zealand's special native species, ecosystems and conservation lands. Control programmes to manage and remove animal pests are essential for their survival.

In the most recent threat listings, *Rorua (Apteryx haastii)* is considered to be in "gradual decline". The large sweep of West

Coast country from northwest Nelson down to the Buller River is the largest of three remaining strongholds for *Rorua*.

The *Powelliphanta "patrickensis"* land snail has a distinctive blue mucous and a relatively thin shell in comparison to some of its cousins. It is therefore particularly susceptible to attack from natural predators such as weka, and from introduced species such as rats, possums and thrushes.

It is not the same as the "augustus" snail found on the western boundary of Stockton Mine. In the latest threat lists, the "patrickensis" snail is classified as endangered, the second-highest level of threat. This indicates it is not considered to be at as much risk as its "augustus" relative.

At the time the Cypress resource consents were granted, the snail's range was believed to be confined to certain areas of the Stockton-Denniston Coal Plateau, but recent investigations (looking for relocation sites for "augustus" land snails) have found it also living further



Trials have shown that Red Tussock Land plant communities such as this one in the Cypress area (left) tolerate relocation. The relocated tussock land (right) is near Mt Frederick. Solid Energy has a great deal of experience in minesite rehabilitation at Stockton, completing approximately 30 hectares a year. The development of techniques such as vegetation direct transfer have been shown to speed up and improve the process of rehabilitation.

east and north of what had been thought to be its range.

The Cypress resource consents task Solid Energy with maintaining a population of at least 1,000 “patrickensis” snails. The principal “patrickensis” mitigation will be widespread predator control, with Solid Energy establishing and maintaining a 2,000 hectare predator control area which will run from Burnetts Face in the south of the Mining Permit up onto the plateau and east as far as the Mt William range ridgeline.

One of the objectives in the DoC’s 2003-13 Powelliphanta recovery plan is for greater possum control.

Red Tussock Land: One of the plant communities of conservation interest in the area of the planned Cypress pits is described as red tussock land. As well as red tussock, this area includes wire rush, small carex sedges and caprosma shrubs, flax and other shrub species which grow along stream margins. The Cypress tussock land community is on sloping ground, drier at the top and wetter and pondy at the bottom. In the wetter parts, there are also cushion plants and species of small herbs, scattered with lower-growing red tussock and other small sedges and rushes. Collectively, they are known as red tussock land.

About 25 hectares of the tussock land area in question is within the operational footprint but a substantial part of it is also outside to the west and will not be disturbed. Solid Energy is tasked with replacing at least 12 hectares of the displaced red tussock land and there are specific conditions about what that should contain once it is completed.

The site itself shows that red tussock land plants do well in relatively well-drained areas so long as the general environmental conditions are wet. At Stockton this is not difficult; the area receives some 5 metres of rain a year.

Trial work shows that red tussock and its associated plants survive relocation well. Before mining, the tussock land plants will be removed using specialist machinery and stored in an area next to the mining site. From about Year 5, once mining is sufficiently advanced and site rehabilitation is under way, this material will be moved again to its final location on the restored land.

We have proven this technique nearby in the Mt Frederick area. Our experience has shown material of this type is able to maintain itself and is tolerant of a shift. Because of the area’s substantial rainfall, we are confident about the plants’ survival, both during storage and in their final restoration site.

A herb field in the headwaters of the Cypress Stream (a tributary of the Waimangaroa River) that is similar to areas within the pit footprint, will be protected by excluding all mining activities in the surrounding area.

St Patrick Bryophytes: This is a bryophyte (mosses and liverworts) community living in or directly beside the headwaters of St Patrick Stream, to the south of St Pat’s Dam. Because it is of a type not widely found elsewhere it is of particular conservation interest. Water quality is a major determinant of this community’s ability to thrive, so maintaining the water quality in that stretch of stream is particularly important.

The stream’s headwaters come in from the west, almost touch the footprint of the Cypress operation and flow into the dam, a structure created in 1952 which will be expanded to form part of the wider Cypress water management programme.

The stream’s upper reaches and surrounding area will be isolated from mine activity. Roadside water systems, the coal mining pits, and any other operational activity in the area will be carefully planned and developed to minimise the risk of sediment entering that reach of the stream.