Rehabilitated land – Glencore

Glencore Coal Assets Australia’s land rehabilitation initiatives show a firm commitment to operating responsibly. They are as integral to the mining process as the excavation of coal itself.

- Rigorous planning, quality control and a scientific approach are key to achieving high-quality rehabilitation.
- Innovative techniques can increase ecological diversity.
- Rehabilitation programmes should be reviewed regularly and updated as appropriate.

Preparing mining land for future use requires early planning, robust processes and a scientific approach. With this in mind, Glencore’s rehabilitation activities focus on minimising the company’s active mining footprint to the smallest possible area and returning land to self-sustaining native ecosystems, agricultural use or other suitable purposes.

Glencore’s rehabilitation and restoration plans go beyond the mandatory requirements. Each site develops and implements an Annual Rehabilitation Plan. This plan is incorporated into day-to-day operations, as far as practicable. Among other aims, the annual rehabilitation planning process seeks to closely integrate rehabilitation with both short and long-term (life of mine) mine planning and operations, and assist with quality implementation of rehabilitation works as planned and designed.

“*The business risk associated with rehabilitation planning has been reduced by integrating science into decision-making.*”

Dave O’Brien, General Manager, Environment & Community, Glencore

At the Liddell site, 60 Charbray steers were split between adjoining paddocks, with those on rehabilitated land seeing a greater weight gain than those on natural pasture.

**Diversity from natural landform**

The company is developing natural landform as part of its Mangoola opencast mine’s overburden rehabilitation programme. Working with external specialists, Glencore developed a plan for the New South Wales site using software based on computer design program GeoFluv™. This produces landforms that complement surrounding undisturbed areas and convey run-off water in a similar way as a natural landform would.

Locally occurring vegetation types are selected based on topography, slope and topsoil type. Forming natural drainage lines avoids the need to create contour banks and rock-lined structures for water management, which may not offer long-term durability. With these savings, lower maintenance costs and a reduced risk of failure, natural landform can be more cost-effective than traditional techniques. GeoFluv™ modelling assessments also help reduce the risk of erosion and post-closure liability.

This approach has been so successful that natural landform design is now considered in all planning decisions for overburden dumps at Mangoola. Local communities also prefer natural landform because of its appearance and the ecological benefit of landform diversity.

**Quality land for cattle grazing**

At its Liddell opencast coal mine in the Upper Hunter Valley, Glencore is studying whether rehabilitated land can support cattle grazing on a sustainable basis and on a scale comparable with unmined grazing land. Over three trials to date, dozens of Charbray steers – each weighed and tagged – were left to graze at the rehabilitated site and on a similar-size adjoining unmined plot. Baseline and periodic measurements examined the cattle’s growth, health and condition, and a range of soil, water quality and vegetation parameters.

Initial results from the rehabilitated paddocks are encouraging. Tests have confirmed that stock water is of ...
suitable quality for grazing cattle and soil is satisfactory for pasture growth and persistence. Rehabilitated areas had a higher feed quality and pastures were more readily grazed by cattle than unmined pasture areas, which had a lower plant content and fewer responsive species in winter and spring.

After 18 months of the initial trial, the cattle were weighed. The gain of those from the rehabilitated land was, on average, 79 kilogrammes greater per cattle than those on unmined pasture, resulting in a higher average price per head when sold at market.

**Robust monitoring of wildlife**

At other sites, Glencore has shown that having rigorous quality controls at every stage is key to projects that focus on restoring native vegetation.

At its **Westside opencast mine**, New South Wales, carefully planned rehabilitation started while the mine was in full production. This included the introduction of erosion-control measures to minimise soil loss, and work to gradually fill the void associated with opencast mining with rain and groundwater.

Post mining, the land has been returned to high-quality native vegetation and is home to a large variety of locally occurring flora and fauna, including second-generation tree seedlings and several threatened animal species. Strict monitoring processes include a habitat assessment by qualified fauna ecologists at least every three years and ongoing reviews of the groundcover, which supports the majority of species.

In partnership with Australia’s University of Newcastle, Glencore’s **Mt Owen opencast mine** formed the Ravensworth State Forest Vegetation Complex Research Program. Its aim is to reconstruct native forest and woodlands in areas disturbed by mining and adjoining former marginal grazing areas. An area five times larger than the original woodland is being developed with natural vegetation, breeding areas and corridors to help animals search for food.

Findings from innovative research and monitoring are integrated into the scheme. For example, a spotted-tail quoll was caught and fitted with a radio collar so that researchers could use the GPS data to better understand this species’ movements and preferences. The results informed the design and placement of habitat structures on site. Since 1995, 78 bird species, 25 non-flying mammals, 13 bat species, 9 reptile and 8 amphibian species and many threatened fauna, including the squirrel glider and grey-crowned babbler, have been recorded.

These examples of land rehabilitation highlight the value of an integrated approach, combining mine planning, production and rehabilitation. Glencore has found progressive quality rehabilitation not only has a positive impact on ecology and community relations – it also makes strategic business sense.

Mt Owen was recognised as a highly commended restoration site by the International Society for Ecological Restoriation as part of its Global Forest Restoration Project.