xstrata coal

Mine Rehabilitation, Mt Owen Mine

Mt Owen Mine (Mt Owen) is an open-cut coal mine located in the Hunter Valley of New South Wales. Mt Owen is owned by Xstrata Mt Owen (XMO), a 100% owned subsidiary of Xstrata Coal. The mine is operated by Thiess Pty Limited under a partnering agreement with XMO and is approved to produce up to ten million tonnes of run of mine coal per annum for the export market until December 2025.

Mt Owen is mining through an area of the Ravensworth State Forest (RSF). The RSF is considered to be a highly significant remnant on a local and regional scale and is one of the largest remaining areas of remnant woodland on the central Hunter Valley floor. Since 1995, 145 bird species, 24 non-flying mammals, 18 bat species, 20 reptile and 15 amphibian species have been recorded in the RSF or adjacent land. Nineteen threatened fauna species listed on the NSW *Threatened Species Conservation Act 1995* have been recorded at Mt Owen, including the Green and Golden Bell Frog, Squirrel Glider, Spotted Tailed Quoll, and a number of bat and woodland bird species. This presents Mt Owen with a unique challenge in terms of offsetting the impacts of mining activities on native flora and fauna communities and rehabilitating mined areas back to a native forest and woodland community.

In recognition of the significance of flora and fauna communities within the project area, Mt Owen has implemented innovative practices to offset the impacts of mining on native flora and fauna and to provide for a substantial improvement in the ecological values of the project area in the medium to long-term.

Mt Owen's flora and fauna management programme incorporates both mine site rehabilitation and adjacent native vegetation communities within mine buffer areas. The programme is guided by a comprehensive Flora and Fauna Management Plan, which was developed by an Advisory Group consisting of representatives from State government departments, the Hunter Environment Lobby and Mt Owen. The principal objective of the Plan is to guide flora and fauna management and rehabilitation and revegetation practices at Mt Owen. Implementation of the Plan is overseen by the Advisory Group.

Flora and fauna monitoring is undertaken in both rehabilitation areas and surrounding mine buffer land.

The key components of the Mt Owen flora and fauna management programme include:

- Establishment and management of biodiversity conservation areas to offset mining impacts.
- Progressive rehabilitation of disturbed areas to native woodland.
- Implementation of specialised flora and fauna management techniques.

- Comprehensive flora and fauna monitoring programme.
- On-going programme of native forest restoration research in conjunction with the University of Newcastle's Centre for Sustainable Ecosystem Restoration.

Specialised management measures are used at Mt Owen to minimise impacts on native fauna during the clearing process and to provide a resource to enhance the regeneration of native indigenous vegetation within designated rehabilitation and conservation areas:

- Clearing is staged to occur as close as practicable to the mining of the cleared area.
- Clearing is timed to avoid the breeding cycles of relevant threatened fauna species, where practicable.
- Fauna surveys are conducted prior to issuing a clearing permit.
- Habitat trees are identified and marked prior to clearing. Identified habitat trees are only cleared following the removal of surrounding vegetation and inspection by an experienced fauna consultant to determine whether any native fauna species are present.
- To augment the clearing of nesting and diurnal roosting habitat for a range of fauna, nest/roost boxes designed for specific target species are placed at heights, aspects and on structures appropriate to the target species in rehabilitation and conservation areas.
- Large ground debris and standing dead timber is collected for redistribution in rehabilitation and surrounding conservation areas, where practicable. Any remaining material is mulched for use in rehabilitation.
- To maximise the use of seed and propagation material from existing indigenous native grasses, herbs, shrubs and trees, recoverable viable seed is collected prior to clearing for use in revegetation programmes at Mt Owen.
- Topsoil is removed following vegetation and mixed with mulched vegetation for subsequent use in rehabilitation and planting projects.
- Where possible, the timing of forest topsoil removal is co-ordinated with open cut operations to ensure minimal handling and storage. Forest topsoil contains an important reserve of indigenous plant seeds and soil microflora, which will assist with the preservation of local genetic material and the re-establishment of a similar range and mix of species to that of the original vegetation in rehabilitation areas.
- Rehabilitation of disturbed areas is undertaken using endemic species.
- Domestic stock is excluded from rehabilitation and conservation areas.

Unique rehabilitation techniques are being developed by Mt Owen through its on-going monitoring and research program. Areas of remnant vegetation surrounding mining areas are used as control sites for comparison with rehabilitation areas. Information obtained from this monitoring is used to guide and continuously improve rehabilitation efforts at the mine. Monitoring and research is also being undertaken in adjacent buffer lands to assist with restoration of the RSF remnants and other biodiversity conservation areas. These conservation areas are contiguous with rehabilitation areas and will provide an important source of recruitment for native plants and animals.

The most significant strategy proposed to mitigate the loss of regionally significant vegetation communities as a result of mining at Mt Owen is the formal conservation of woodland communities through a Biodiversity Offset Strategy (BOS). The BOS involves the rehabilitation and remediation of pasture and isolated woodland remnants adjacent to currently vegetated areas, which will enhance the long term viability of the RSF and surrounds. Combined with existing conservation areas at Mt Owen and the life of mine rehabilitation program, the BOS will deliver an area of native woodland approximately five times larger than the original woodland community that existed prior to mining.

Mt Owen's flora and fauna management programme provides protection for establishing woodland communities in rehabilitation areas and in adjoining mine owned buffer land. Conservation areas adjoining mine rehabilitation areas are also being expanded and enhanced through proactive intervention and the restoration of scattered woodland remnants and pasture areas to provide similar vegetation communities and opportunities for movement of flora and fauna into rehabilitation areas. The short term aim is to conserve existing flora and fauna in conservation areas through effective management, while establishing new areas that will provide a self sustaining system in the long term. The long term aim is to provide a self-sustaining flora and fauna conservation reserve with sufficient size to provide the necessary diversity, while providing corridor linkages to the larger vision for integrated landscapes in the Hunter Valley. This reserve will establish a core area that can be connected by corridors to other remnant vegetation on the floor of the Valley and adjacent footslopes.