

REHABILITATION INFORMATION RELEASE

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Rehabilitation of the East Pit at Ulan Coal Mine

Overview

The NSW Resources Regulator is a stand-alone regulator within Regional NSW and is responsible for compliance and enforcement activities across the mining and exploration industry. The Regulator undertakes risk-based compliance and enforcement activities in relation to obligations under the *Mining Act 1992*. This includes:

- conducting assessments and compliance activities to ensure the rehabilitation of mines is undertaken in accordance with the conditions of mining leases and the requirements of the *Mining Act 1992*
- ensuring that rehabilitation security deposits, held by the department, cover the full costs in undertaking rehabilitation in the event of default by the mining company.

This information release provides guidance about the successful completion of rehabilitation on part of the Ulan Coal Mine near Mudgee in NSW.

The mine

The Ulan Coal Mine is in the central west of NSW about 38 kilometres north east of Mudgee. The mine is primarily surrounded by rural landholdings, native bushland and primary industries including agriculture, state conservation areas, mining (including other coal mining operations) and extractive industries.

The Ulan Coal Mine complex includes both open cut and underground mining operations and operates pursuant to development consent PA08_0184 granted by the (then) Department of Planning, Industry and Environment. The mine has approval to operate until 2033.

Coal deposits at Ulan were first worked in the 1920s with the first underground mine producing coal in 1942 and the second underground mine producing coal in 1957. Mining operations expanded substantially in the 1980s, with more open cut operations and a coal preparation plant and rail loading

facilities. The open cut operations were placed on care and maintenance in 2016, however, the underground operations continue to operate at the time of writing.

The domain where rehabilitation has been completed comprises 50.4 hectares within the former open cut mining area known as East Pit Area 2 (EPA2). Rehabilitation has been undertaken progressively at EPA2 since the early 1980s.

Figure 1 Aerial photo of East Pit Area 2 in 1989 showing rehabilitation commencement in the southern area



Required rehabilitation outcomes

The required rehabilitation outcomes for the EPA2 area are detailed in the Ulan Coal Mining Operations Plan (MOP) approved by the Regulator. The MOP requires the title holder to achieve the approved rehabilitation objectives, rehabilitation completion criteria and final landform. This includes the following key obligations:

- Establish a safe, stable, self-sustaining and non-polluting landform that is free-draining.
- Establish and final land use that consists of grassland, shrubs and native trees similar to the pre-mining environment.

The final rehabilitation outcomes were developed in consultation with relevant stakeholders and government agencies, including the Regulator. The community was also involved in the consultation process.

Figure 2 Approved final land use domains



Rehabilitation progress

Rehabilitation has been undertaken progressively at EPA2 since the early 1980s in accordance with the obligations set out in the approved MOP. Figures 3 to 5 show the progress of rehabilitation between 1992 and 2019.

Figure 3 Status of rehabilitation works in 1992



Figure 4 Status of rehabilitation works in 1997



Figure 5 Rehabilitation status in 2019



The rehabilitation was the subject of ongoing monitoring and maintenance in accordance with the requirements of the approved MOP. The scope of the monitoring program, which was undertaken by a specialist ecological consultancy firm, was designed to evaluate performance against the rehabilitation objectives and completion criteria. The range of parameters evaluated as part of the monitoring program included vegetation structure, floristic composition, fauna habitat, native fauna presence, weed and pest animal presence, soil structure and function, and landform stability.

To support the application for rehabilitation sign-off of this area, the mining company submitted a report prepared by the ecological consultancy firm, which compiled years of monitoring data collected for the area. Key observations to support the sign-off for the area included:

- The final landform is safe, stable, non-polluting and free draining. Slopes are compatible with the proposed final land use.
- There are no gully or erosion features, or rills greater than 20 millimetres deep that are active or pose a risk to the final land use. The soils are stable, non-polluting and the data presented in sampling reports shows evidence of key structural formation and function.
- There is no spontaneous combustion present.
- The final landform design has surface contours blended to the surrounding landscape with no slumping.
- The final landform consists of dense vegetation covering a consistent slope that falls to the south east.
- Surrounding landscape features and vegetation communities are present within the rehabilitated areas and evidenced in the form of faunal composition, habitat features such as shelter, foraging areas, breeding habitat and general biodiversity of the site.
- The species composition represent the seed mix from the 1980s and 1990s and monitoring data also shows that seed movement from surrounding native woodland is regenerating naturally within the rehabilitated area. The site comprises a mix of Acacia woodland (10.3 hectares), Mixed-Eucalypt woodland/open forest (9.7 hectares), Spotted Gum woodland/open forest (21.2 hectares) and grassland/shrubland (9.2 hectares).
- The 0.5 hectares dam is fed from a small local catchment that is dependent on rainfall events, consequently being dry during drought conditions. The dam augments habitat when surface runoff is sufficient to replenish it.
- The area exhibits all the key attributes of an area that is functioning as a self-sustaining native ecosystem which has reached a state of high resilience and requires minimal maintenance.
- The area satisfies all the required ecological, soil and landform rehabilitation completion criteria with no significant weed infestations.

With regard to native fauna, the monitoring program recorded five amphibians, 100 birds, 23 mammals and six reptiles species within EPA2. Twelve of these species are listed as threatened under the *NSW Biodiversity Conservation Act 2016*, four are also listed under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*.

Rehabilitation completion

The title holder lodged an application with the Regulator in January 2020 (using *Form ESF2 Rehabilitation completion and/or review of rehabilitation cost estimate*) to obtain formal sign off on completed rehabilitation works.

A detailed assessment was completed by the Regulator, which included consultation with Ulan Coal Mine and site inspections.

This assessment determined that rehabilitation obligations were fulfilled to a satisfactory level, in accordance with the approved rehabilitation objectives and completion criteria included in the MOP. Figures 6, 7, 8 and 9 depict the status of rehabilitation across different parts of the site in 2019.

Figure 6 Typical vegetation throughout the rehabilitated area



Figure 7 View of vegetation around the dam area



Figure 8 View along the natural drainage line



Figure 9 Vegetated rill with no signs of active erosion



Obligations

The completion of rehabilitation at East Pit Area 2, and subsequent sign-off from the Regulator, demonstrates that there is a strong regulatory framework in relation to mine rehabilitation and that beneficial post-mining land use can be established after the closure of a mine.

The Regulator requires lease holders to comply with their rehabilitation obligations under the *Mining Act 1992*. This includes:

- undertaking rehabilitation progressively in a timely manner
- developing and implementing rehabilitation techniques, in consideration of detailed risk assessments and sound scientific principles, to overcome barriers/constraints to achieving successful rehabilitation
- undertaking monitoring to assess whether rehabilitation is trending towards meeting the approved rehabilitation objectives and completion criteria in a timely manner
- developing and implementing a maintenance program for rehabilitation areas to rectify potential issues identified from the monitoring program
- maintaining records of the methods used to establish rehabilitation, as well as monitoring data, to demonstrate success and facilitate continual improvement

- submitting a security bond that is held by Government to cover the full cost of rehabilitation should a company default on its obligations.

Further information

- [Exploration and mining rehabilitation fact sheet](#)
- [Form ESF2: Rehabilitation completion](#)
- [NSW Resources Regulator mining operations plan guidelines](#)
- [Rehabilitation compliance and reporting reforms](#)
- [Australian Government, Department of Industry, Innovation and Science 2016: Leading Practice Sustainable Development Program in the Mining Industry – Mine Rehabilitation](#)
- [Australian Government, Department of Industry, Innovation and Science 2016: Leading Practice Sustainable Development Program for the Mining Industry – Risk Management](#)

About this information release

The information contained in this publication is based on knowledge and understanding at the time of writing. However, because advances in knowledge, users are reminded of the need to ensure that the information upon which they rely is up to date and to check the currency of the information with the appropriate officer of the NSW Resources Regulator or the user's independent advisor.

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