**Summary of investigations: rehabilitation**

**Scope:**

* Lock the Gate conducted an analysis of recent Annual Reviews and environmental audits of the four mines nearest to Muswellbrook: Bengalla, Mount Pleasant, Muswellbrook mine and Mount Arthur, which is the largest mine operating in the Hunter Valley.
* In addition, we analysed the most recent Annual Reviews of the second and third largest mines in the Valley, Hunter Valley Operations and Mount Thorley Warkworth, to ascertain whether patterns revealed by the Muswellbrook mines were evident at those operations
* We also reviewed progress of rehabilitation at the Drayton mine site, which closed in 2016.

**Summary**

Across the total area of mining reviewed the area of active disturbance is 2.3 times the area of land under active rehabilitation.

Total mine footprint: 19,919.2 hectares

Total disturbed area: 12,613.8 hectares

Total active rehabilitation: 5,477.9 hectares

Active rehabilitation as a percentage of total footprint across the mines reviewed is 27.5% with considerable variation among them:

* Mount Arthur 22.1%
* Mount Pleasant 5.5%
* Bengalla 20.5%
* Muswellbrook 19.8%
* Mount Thorley-Warkworth 29.4%
* Hunter Valley Operations 37.4%

The Resources Regulator found problems and issued notices requiring action after inspections at five of the six mines over the last two years, including:

* Bengalla – three separate notices issued under s240 of the Mining Act 1992 in relation to management and rehabilitation of land after a 2019 inspection.
* Mt Pleasant – found mine rehabilitation assessment processes were flawed and mining operations plan had not been complied with.
* Drayton – given an official caution in April 2020 under the *Mining Act 1992* for failing to comply with its progressive rehabilitation schedule for 2017 and 2018, and another in October 2020 for failing to comply with rehabilitation schedule for 2019.
* Hunter Valley Operations – issued a direction after unsatisfactory establishment of vegetation species and weed presence across rehabilitation areas.
* Mount Thorley-Warkworth – found ongoing delays in progression of rehabilitation areas and issued two s240 notices to undertake corrective actions.

**Findings**

It is a condition of consent for coal mines in the Hunter Valley that they undertake “progressive rehabilitation,” that is, that rehabilitation take place “as soon as practicable following disturbance.”

It is difficult to argue that the four mines nearest to Muswellbrook are complying with this requirement, and there is evidence that Warkworth and Hunter Valley Operations are also struggling to keep up with their rehabilitation. None of the mines have any “completed” rehabilitation, even the longest-running and those that are quite close to their expected closure dates, like Muswellbrook and Mount Arthur. The most recent Independent Environmental Audits for the four Muswellbrook mines describe rehabilitation efforts compromised by inadequate human resources and systems. Poor results from drone seeding, erosion and weed infestation were cited as evidence of a lack of personnel dedicated to rehabilitation management. Effective rehabilitation requires careful management and preservation of topsoils, and several mines have been directed by the Resources Regulator to improve topsoil management systems.

The mines considered are at different stages of their life. Mount Pleasant only began construction in 2017. Muswellbrook's mine consent sees mining cease next year, Mount Arthur's in 2026, Mount Thorley-Warkworth's in 2037 and Bengalla’s in 2039. Hunter Valley Operations would see the cessation of mining in 2025 at HVO North and 2030 at HVO South, but Yancoal has an expansion proposal to extend these operations to 2050 and 2045 respectively. With the exception of Mount Pleasant, all the mines considered have been operating for at least twenty years, some for far longer, so the absence of *any* completed rehabilitation on these sites is cause for concern.

**Bengalla**

On 29 August 2019, Environmental Inspectors from the Resources Regulator conducted an inspection of Bengalla Mine. From this inspection three separate notices under Section 240 of the Mining Act 1992, were issued in November 2019 in relation to the management and rehabilitation of lands.[[1]](#footnote-1) Just 20.5% of the total mine footprint at Bengalla is under active rehabilitation, according to the mine’s most recent Annual Review and during the current 2020 reporting period, the mine was proposing to go further backwards, disturbing more than twice the area of land (80 hectares) it was proposing to add to active rehabilitation (38 hectares).[[2]](#footnote-2)

**Mount Arthur**

Active rehabilitation is underway on just 22.1% of Mount Arthur’s total mine footprint. Mount Arthur undertook just 66 ha of new rehabilitation in the last four years, while over the same period actively disturbed an additional 885 ha. This is a rehabilitation to disturbance ratio of just seven percent. It must also be noted that Mount Arthur was responsible for almost 70 percent of the mine disturbed land surrounding Muswellbrook in 2019. Given that Mount Arthur’s mine consent anticipates mining being completed in five years’ time, lack of progress on rehabilitation at this site is a concern.

**Mount Pleasant**

Mount Pleasant is a new mining operation and so has increased its active disturbance from 27ha in 2017 to 618ha in 2018[[3]](#footnote-3) and to 834ha in 2019.[[4]](#footnote-4) This is an increase in active mine area of 35%. Active mine rehabilitation, however, fell from 8 ha to 7.5ha over the same period. Active rehabilitation is taking place on just 5.5% of the total mine footprint. Inspections by the Resources Regulator in May, 2018 found MACH Energy had failed to comply with its mining operations plan, an offence under the *Mining Act,* andthe mine’s rehabilitation assessment processes were flawed.[[5]](#footnote-5)The audit showed there were “several areas of significant erosion” across the mine site and no erosion controls on a topsoil stockpile. Where rehabilitation issues were identified by the mine during inspections, there was “no process to capture these issues, allocate corrective action tasks, track progress and close out those issues.”

**Drayton mine**

The Drayton mine closed in 2016. Its most recent Annual Review notes that in April 2020, the company was given an official caution under the *Mining Act* for failing to comply with its progressive rehabilitation schedule for 2017 and 2018 as contained within the approved Mine Operations Plan. Its most recent Independent Environmental Audit found that one area of rehabilitation had failed and recommended remedial action on the area which has since been undertaken. The company was issued another caution in October 2020 for failing to submit an updated rehabilitation cost estimate by the due date and for failing to comply with the progressive rehabilitation schedule for 2019 as contained within the approved Mine Operations Plan. The Resources Regulator had directed the company to submit a revised rehabilitation cost estimate, which was finally submitted in January 2021. As of its last Annual Review, 853 hectares (68.9%) of a total 1,238 hectare footprint is under active rehabilitation, but the owner Maxwell is not expecting to increase the area of the site that is under active rehabilitation this year. No rehabilitation has been completed.

**Hunter Valley Operations**

In October 2018, the Resources Regulator issued a direction of Hunter Valley Operations relating to the “unsatisfactory establishment of target vegetation species and the unsatisfactory weed presence at rehabilitation areas across the operations including HVO South.”[[6]](#footnote-6) An audit of topsoil management in April 2019 which found that top soils on the site were not being separately stockpiled based on topsoil quality. This creates a rehabilitation risk because topsoil needs to be maintained and managed to support propagation of vegetation on rehabilitated mine landscapes.

**Mount Thorley-Warkworth**

Land under active rehabilitation at Mount Thorley-Warkworth (MTW) reduced by 93.4 hectares in the last annual report period (2019). Active rehabilitation is underway on 29.4% of total mine footprint. The NSW Resources Regulator undertook an inspection of rehabilitation areas at MTW which identified there were ongoing delays in the progression of rehabilitation areas. As a result of the observation, MTW was directed via two section 240 notices to undertake corrective actions.

According to its most recent Independent Environmental Audit (2020), Warkworth mine did not meet its rehabilitation target in its last four year Mining Operations Plan (2015-2019), being roughly 9% below the target of 383.4 hectares of rehabilitation. An inspection identified ongoing delays in the progression of rehabilitation areas, limited documented records to address the risks to rehabilitation and limited documented measures or actions to improve progressive rehabilitation performance.

Table 1: Recent rehabilitation summaries for selected Hunter Valley mines

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Mount Arthur | 2016/17 | 2017/18 | 2018/19 | 2019/20 |  |
| Mine footprint (ha) | 4454.8 | 4700 | 5171 | 5333 |  |
| Active disturbance (ha) | 3266.5 | 3502 | 3871 | 4152 |  |
| Active rehabilitation (ha) | 1114.5 | 1198 | 1211 | 1181 |  |
| Completed Rehabilitation (ha) | 0 | 0 | 0 | 0 |  |
| Rehab % of footprint | **25%** | **25.4%** | **23.4%** | **22.1%** |  |
| Mount Pleasant |  | **2017** | **2018** | **2019** | **2020** |
| Mine footprint (ha) |  | 292 | 701 | 895 | 980 |
| Active disturbance (ha) |  | 292 | 618 | 834 | 916 |
| Active rehabilitation (ha) |  | 0 | 8 | 7.5 | 53.7 |
| Completed Rehabilitation (ha) |  | 0 | 0 | 0 | 0 |
| Rehab % of footprint |  | **0** | **0** | **0.8%** | **5.5%** |
| Bengalla | **2016** | **2017** | **2018** | **2019** | **2020** |
| Mine footprint (ha) | 986 | 1122 | 1168 | 1202 |  |
| Active disturbance (ha) | 779 | 893 | 935 | 955 |  |
| Active rehabilitation (ha) | 207 | 229 | 233 | 247 |  |
| Completed Rehabilitation (ha) | 0 | 0 | 0 | 0 |  |
| Rehab % of footprint | **20.9%** | **20.4%** | **19.9%** | **20.5%** |  |
| Muswellbrook mine | **2016** | **2017** | **2018** | **2019** | **2020** |
| Mine footprint (ha) | 1788 | 1788 | 1788 | 1858 | 1858 |
| Active disturbance (ha) | 235.2 | 278.7 | 278.7 | 267.2 | 257.2 |
| Active rehabilitation (ha) | 377.5 | 339.5 | 339.5 | 351 | 361 |
| Completed Rehabilitation (ha) | 0 | 0 | 0 | 0 | 0 |
| Rehab % of footprint | **21.6%** | **21.2%** | **19.2%** | **19.2%** | **19.8%** |
| Mount Thorley Warkworth | **2016** | **2017** | **2018** | **2019** |  |
| Mine footprint (ha) | 3,608.7 | 3,659.7 | 3,879.6 | 3,881.2 |  |
| Active disturbance (ha) | 2,499.5 | 2,468 | 2,546.5 | 2,579.8 |  |
| Active rehabilitation (ha) | 1,067.3 | 1,156 | 1,235.7 | 1,142.3 |  |
| Completed Rehabilitation (ha) | 0 | 0 | 0 | 0 |  |
| Rehab % of footprint | **29.6%** | **31.6%** | **31.9%** | **29.4%** |  |
| Hunter Valley Operation | **2016** | **2017** | **2018** | **2019** | **2020** |
| Mine footprint (ha) |  | 6,443.4 | 6,539 | 6,567.8 | 6,665 |
| Active disturbance (ha) |  | 3,527.5 | 3,599.2 | 3,639.1 | 3,753.8 |
| Active rehabilitation (ha) |  | 2,876.3 | 2,727.5 | 2,392.5 | 2,492.9 |
| Completed Rehabilitation (ha) |  | 0 | 0 | 0 | 0 |
| Rehab % of footprint |  | **44.6%** | **41.7%** | **36.4%** | **37.4%** |
|  |  |  |  |  |  |

Notes: The numbers in this table are drawn from Annual Reviews submitted by the mines to the NSW Department of Planning and Environment. Mount Arthur submits Annual Reviews on a financial year basis. Some mines are yet to publish their 2020 Annual reviews. The category “land being prepared for rehabilitation” is not shown here or aggregated in the proportion of land under rehabilitation as a proportion of the mine footprint.

1. Independent Environmental Audit, Bengalla, 2019. [↑](#footnote-ref-1)
2. Bengalla mine 2019 Annual Review [↑](#footnote-ref-2)
3. Mach Energy, 2019. Mount Pleasant Operations DA 92/97 Annual Review 2018. [↑](#footnote-ref-3)
4. Mach Energy, 2019. Mount Pleasant Operations DA 92/97 Annual Review 2018. [↑](#footnote-ref-4)
5. Joanne McCarthy, 2019, “Mount Pleasant coal mine inspection left regulator doubting if mine had 'good understanding' of rehabilitation.” *Newcastle Herald* 2 October, 2019, 8:00AM. [↑](#footnote-ref-5)
6. Resources Regulator Topsoil management audit, Hunter Valley Operations, 2019. [↑](#footnote-ref-6)