

FINAL AND TEMPORARY REHABILITATION PRINCIPLES

2014 Reporting – Coal & Allied (Includes Hunter Valley Operations, Mt Thorley Warkworth and Bengalla)

Principle	Reporting
<p><i>Principle 1 – Include rehabilitation planning in mine planning</i></p> <p><i>Planning for rehabilitation should be integrated into the mine planning process and should include allocating adequate and dedicated resources to achieve the planned rehabilitation outcomes.</i></p>	<p>Planning for progressive rehabilitation is built into all phases of mine planning from Life of Mine Planning to Annual Operating Plans. The mine planning teams at each site are accountable for identifying sufficient areas of mine dumps that can be completed and released for rehabilitation each year to meet the rehabilitation commitments specified in the respective Mining Operations Plans (MOPs).</p> <p>Progress against the dump release schedule is tracked through the year by the site management teams to ensure that areas for rehabilitation are available early enough to allow rehabilitation to be completed before the end of the reporting period. Reporting of rehabilitation progress for each stage of rehabilitation i.e. dump released, bulk shaped, topsoil spread and sown is undertaken monthly to allow tracking against the schedule for each activity.</p> <p>Rehabilitation activities are undertaken by a combination of mine and contracted equipment across the various sites. Equipment requirements for rehabilitation activities are scheduled as part of developing the annual operating plans and are budgeted for accordingly.</p> <p>An initiative which helped HVO and MTW achieve their rehabilitation targets during 2014 was planning in the previous year to have additional dump areas released and bulk shaped for later-stage rehabilitation work to commence early in 2014. This carrying over of bulk shaped areas allows the rehabilitation workload to be spread throughout the year and means a relatively consistent equipment fleet can be utilized. The approach of planning for carryover areas was also incorporated in the HVO and MTW planning process for 2015.</p> <p>HVO and MTW engage the same principal contractor for rehabilitation works which, given their close proximity, allows rehabilitation equipment to move between the two sites as the workload fluctuates.</p> <p>Coal & Allied has engaged specialized agricultural and restoration contractors to perform work associated with the final stages of rehabilitation i.e. soil preparation, weed control, seed collecting/harvesting and sowing. The expertise and equipment provided by these contractors is helping to improve the quality of the rehabilitation.</p>

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<p>Principle 2 – Undertake progressive rehabilitation</p> <p><i>Companies should undertake rehabilitation progressively, with the objective of ensuring that rehabilitation is as close as possible to active mining.</i></p>	<p>During 2014, the combined amount of rehabilitation undertaken across the Coal & Allied sites exceeded the amount of disturbance by 61.1 hectares. This measure is a good indicator that progressive rehabilitation is being achieved.</p> <p>The layout of the Bengalla Mine is conducive to achieving progressive rehabilitation. Since the Run-of-Mine (ROM) coal hopper was moved to the highwall side of the mine (i.e. direction that the mine is moving towards) in 2009, there is now no requirement to maintain access for coal haulage back through the mine dumps. This combined with the design of dump roads in the advancing dump face means that the full width of the mine dumps are available for rehabilitation as the mine dumps progress.</p> <p>An accelerated rehabilitation plan for the southern end of Warkworth Mine was developed in mid-2014 and submitted to Planning & Environment. An important feature of this plan is that rehabilitation of the South Pit Centre Ramp has been brought forward by 12 months. This is possible as a result of the MTW Mine Planning department designing a new ramp system that allows coal and partings from Strip 22 to be transported out of the pit without the need for the South pit Centre Ramp. Construction of the new ramp system was completed in December 2014, which facilitated the commencement of dumping in the South Pit Centre Ramp.</p> <p>During 2013, Coal & Allied achieved a significant reduction in the disturbance footprint associated with Cheshunt and this improvement was continued in the current reporting period. A further 34 hectares of rehabilitation was completed in Cheshunt while only 5 hectares was disturbed in this pit during 2014.</p>

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<p>Principle 3 – Minimise time that disturbed areas are left without vegetation</p> <p><i>Companies should actively seek to minimise the time that land is left without cover during mining. This should include:</i></p> <ul style="list-style-type: none"> ▪ <i>Taking steps to ensure that rehabilitation is commenced within 12 months of land becoming available for rehabilitation</i> ▪ <i>Utilising methods of temporary rehabilitation¹, such as aerial seeding of overburden and other disturbed areas where permanent rehabilitation has not commenced.</i> 	<p>Rehabilitation targets have been set such that rehabilitation is required to commence soon after the dump areas are completed in order to meet the annual rehabilitation targets. The delay between areas becoming available for rehabilitation and commencement of rehabilitation activities is typically less than 2 months.</p> <p>Coal & Allied undertook aerial seeding across 785ha of disturbed land during 2014 to establish temporary vegetative cover on overburden dumps that are not yet available for final rehabilitation.</p> <p>Since 2012, Coal & Allied has been sowing vigorous cover crops as the first stage of rehabilitation to provide quick stability and protection from wind and water erosion. The cover crop stubble is utilized as a mulch layer to stabilize the soil surface in readiness for sowing the long term seed mixes.</p>
<p>Principle 4 – Prioritise areas of rehabilitation and temporary cover to reduce impacts</p> <p><i>Companies should prioritise rehabilitation and temporary cover in those areas where leaving land exposed will have the most impact. The following areas should be considered to have priority:</i></p> <ul style="list-style-type: none"> ▪ <i>Areas that have the greatest impact on visual amenity, such as areas that face townships, residences, or the highway</i> ▪ <i>Areas that have the potential to generate dust leaving the site</i> ▪ <i>Areas that are important for biodiversity, such as rehabilitation adjoining or providing connectivity to remnant vegetation.</i> 	<p>Coal & Allied aims to rehabilitate disturbed areas as soon as practically possible to assist in improving the visual amenity and reduce dust impacts. Measures undertaken during 2014 to reduce impacts in priority areas included:</p> <p>HVO</p> <ul style="list-style-type: none"> - 11ha of rehabilitation completed on outer slopes of Cheshunt which are adjacent to Maison Dieu and visible from Golden Highway and Comleroi Road. - 55ha of rehabilitation completed on areas above Riverview Void which is adjacent to Golden Highway. <p>MTW</p> <ul style="list-style-type: none"> - 38ha of rehabilitation completed on outer slopes of South Pit North which are visible from the Golden Highway and residences to the east of Warkworth mine (see Figure 1). - 15ha of rehabilitation completed on Woodlands spoil dumps which are adjacent to Putty Road. - 6ha of rehabilitation completed on outer slopes of South Pit South which are visible from Putty road. - Stage 1 capping completed on Tailings Dam 1 which is adjacent to Golden Highway. Rehabilitation of Tailings Dam 1 to be completed during 2015. <p>Bengalla</p> <ul style="list-style-type: none"> - 20ha of rehabilitation completed on outer slopes of Bengalla dumps which are visible from Muswellbrook, various residences and surrounding roads (see Figure 2).

¹ Temporary rehabilitation describes reshaping, revegetation and other rehabilitation techniques that are used for purposes other than final rehabilitation. This includes such initiatives as seeding overburden emplacement areas to reduce erosion, which are only temporary.

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<p>Principle 5 – Meet target for rehabilitation progress identified in the Mining Operations Plan</p> <p><i>Each company should meet the annual target for rehabilitation quantity (area) set in the Mining Operations Plans for each of its mines.</i></p>	<p>2014 rehabilitation performance against MOP targets: HVO – Actual rehabilitation 192.5ha versus a MOP target of 188ha MTW - Actual rehabilitation 104.1ha versus a MOP target of 102.1ha Bengalla - Actual rehabilitation 22ha versus a MOP target of 20ha</p> <p>All Coal & Allied sites exceeded their MOP rehabilitation targets during 2014.</p>
<p>Principle 6 – Set quality targets for rehabilitation in the Mining Operations Plan and implement a monitoring program to measure performance</p> <p><i>Each company should include quality targets for the various types of rehabilitation in the Mining Operations Plan for each of its mines. A monitoring program to measure the performance of rehabilitation areas against the quality targets should be implemented at each of its mines.</i></p>	<p>The Mining Operations Plans for HVO, MTW and Bengalla all include performance criteria which will serve as quality targets for rehabilitation. Performance criteria have been developed for each stage of rehabilitation (i.e. Decommissioning, Landform Establishment, Growth Medium Development, Ecosystem and Land Use Establishment and Ecosystem and Land Use Development); and for the various types of rehabilitation that are being undertaken (i.e. grazing land, cropping land, native woodland etc). Rehabilitation monitoring programs have been implemented at all Coal & Allied sites to monitor performance of rehabilitation against the MOP criteria.</p>



Figure 1. View of 2013 and 2014 rehabilitation in MTW South Pit North. Photos taken from Hambledon Hill, Singleton.



Figure 2. View of rehabilitation at Bengalla Southern Out-of-Pit Emplacement. Photo taken from Skelletar Stock Route, Muswellbrook.