

Upper Hunter Mining Dialogue

Final and Temporary Rehabilitation Principles and Commitments

**2015 REPORT BY COAL & ALLIED (HUNTER VALLEY
OPERATIONS, MT THORLEY WARWORTH & BENGALLA)
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**Upper Hunter
Mining Dialogue**

FINAL AND TEMPORARY REHABILITATION PRINCIPLES

2015 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 continues to help HVO and MTW achieve their rehabilitation targets is planning in to have additional dump areas released and bulk shaped for later-stage rehabilitation work to commence early in the following year. 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. At the start of 2015, 30ha and 19ha of bulk shaped area was carried over at HVO and MTW respectively.</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>Coal & Allied aims, where possible, to have the amount of rehabilitation exceed disturbance. During 2015, this was achieved at MTW but was not possible at HVO and Bengalla due to staging of stripping for pit progression and dump completion for rehabilitation. The combined amount of rehabilitation undertaken across the Coal & Allied sites was 226ha, which was 40ha less than the total disturbance undertaken during 2015 of 266ha.</p> <p>An accelerated rehabilitation plan for the southern end of Warkworth Mine was developed in mid-2014 and submitted to Planning & Environment. The Plan details how rehabilitation in this area will progress between 2014 and 2018. For the period 2014 to 2015 the Plan committed to 78.4 ha of rehabilitation being completed. The actual rehabilitation amounts to 99.7 ha, which is 21.4 ha ahead of the planned progress.</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>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> 	<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 337ha of disturbed land during 2015 to establish temporary vegetative cover on overburden dumps that are not yet available for final rehabilitation.</p>

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<ul style="list-style-type: none"> ▪ <i>Utilising methods of temporary rehabilitation¹, such as aerial seeding of over burden and other disturbed areas where permanent rehabilitation has not commenced.</i> 	<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 2015 to reduce impacts in priority areas included:</p> <p>HVO</p> <ul style="list-style-type: none"> - 24ha of rehabilitation completed on outer slopes of Cheshunt which are adjacent to Maison Dieu and visible from New England Highway and Lemington Road (see Figure 1). - 8ha of rehabilitation completed on areas above Riverview Void which is adjacent to Golden Highway. <p>MTW</p> <ul style="list-style-type: none"> - 47ha of rehabilitation completed on and below Tailings Dam 1 which is adjacent to Golden Highway. - 13ha 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 2). <p>Bengalla</p> <ul style="list-style-type: none"> - 21ha of rehabilitation completed on outer slopes of Bengalla dumps which are visible from Muswellbrook, various residences and surrounding roads (see Figure 3).
<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>2015 rehabilitation performance against MOP targets:</p> <p>HVO – Actual rehabilitation 129.6ha versus a MOP target of 130ha MTW - Actual rehabilitation 75.7ha versus a MOP target of 73.8ha Bengalla - Actual rehabilitation 21ha versus a MOP target of 20ha</p> <p>All Coal & Allied sites met or exceeded their MOP rehabilitation targets during 2015.</p>
<p>Principle 6 – Set quality targets for rehabilitation in the Mining Operations Plan and implement a monitoring program to measure performance</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,</p>

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><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>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 rehabilitation on outer slopes of dumps at HVO Cheshunt. Note topsoil heaps dumped on rehabilitation area that will be completed during 2016. Photograph taken from Lemington Road, Ravensworth.



Figure 2. View of rehabilitation in MTW South Pit North undertaken between 2013 and 2015. Photograph taken from Hambledon Hill, Singleton.



Figure 3. View of rehabilitation at Bengalla Southern Out-of-Pit Emplacement. Photograph taken from Skelletar Stock Route, Muswellbrook.