

Hunter Valley Operations

2016 Annual Environmental Review - Addendum

In response to request for additional information by DPE

June 2017

The Hunter Valley Operations Annual Environmental Review was submitted on 31st March 2017. Department of Planning and Environment (DPE) have requested that additional information be included in the report (refer to Figures A and B).

The addendum has been prepared in response to DPE's request and should be read in conjunction with the main Annual Environment Review.

The addendum was accepted by DPE on 17th July 2017 (Figure C).

Andrew Speechly
Manager Environment and Community (HVO/MTW)
Rio Tinto
PO Box 315
Singleton NSW 2330

**Hunter Valley Coal Operations – DA 450-10-2003, PA 06_0261
Annual Review 2016**

Dear Andrew

Reference is made to the Annual Review for the period 1 January 2016 to 31 December 2016, submitted to the Department 27 March 2017 of Planning and Environment (the Department) as required under Schedule 6, Condition 9, of Project Approval DA 305-7-2003 and Schedule 5, Condition 4 of PA 06_021161.

The Department has reviewed the Annual Review and considers further information is required to satisfy the requirements of the Project Approvals. In accordance with Schedule 3, Condition 4 of DA 305-7-2003 and Schedule 2, Condition 4 of PA 06_021161, please amend the Annual Review and resubmit (preferably via email: compliance@planning.nsw.gov.au) to the Department with the following additional information by **2 June 2017**:

- a) **Production Figures for Pits** – Please provide coal production figures for the West Pit and Carrington Pit in accordance with Schedule 3 Conditions 7,8 and 9 DA 450-10-2003;
- b) **Map Showing Key Project Aspects** – Figure 1 in section 2.2 of the Annual Review includes a map showing the develop consent boundaries for the project but doesn't include all the detail required in Section 2 of *Annual Review Guideline – Post-approval requirements for State significant mining developments*, Department of Planning and Environment (DPE, 2015). Please amend the map to include:
 - o Regional context
 - o Mining lease boundaries.
 - o Current operational disturbance footprint; and
 - o Offset areas.
- c) **Rehabilitation Performance** – Figures 95 and 96 in section 8.5 of the Annual Review shows rehabilitation areas for HVO North and HVO south respectively, however does not show all the detail required by section 8, dot point 1 of DPE (2015). Please amend the figures to include:
 - o The extent of mining and rehabilitation activities
 - o Surface contours; and
 - o Rehabilitation vegetation types.

Please also identify planned post-mined land uses on the figures.

Figure A: Request Letter Page 1

Please include a discussion on key limiting factors to successful rehabilitation and a description of rehabilitation activities that will be undertaken in the next reporting period.

The Department notes the positive outcomes from the grazing trial undertaken on site. Animal stocking rates and weight gain are useful indicators of the agricultural potential of the rehabilitated land however it needs to be considered against what inputs are necessary to achieve that performance and the ability of the rehabilitated soils to sustain that rate of agricultural production.

Please provide a discussion on the inputs and management regimes that existed on both the unmined and rehabilitated areas prior to undertaking the grazing trials and the ability of the rehabilitation soils to sustain grazing at the suggested stocking rates without degradation.

- d) **Biodiversity** – Section 6, dot point 4 of DPE (2015) requires the Annual Review to include reporting of biodiversity aspects. Please include a section in the Annual Review to describe what biodiversity activities have been undertaken in accordance with Schedule 3, Condition 29 of PA 06_0261.
- e) **Independent Environmental Audits** – Schedule 3 Conditions 4c requires the Annual Review to include non-compliances identified, including key outcomes from the Independent Environmental Audit and reporting on progress of closing out actions. Please amend section 10 of the Annual Review to include progress with implementation of the Action Plan as at the 31 December 2016.
- f) **Activities for completion next reporting period** – Section 12 of the Annual Review describes what environmental and community performance improvements will be completed next reporting period but does not include a timeline for implementation. Please amend section 12 to include an implementation timeline.

Should you need to discuss the above, please contact Michael Frankcombe as per the details provided above.

Yours sincerely

 3/5/17

Leah Cook
Team Leader - Compliance
As Nominee of the Secretary

a) Production Figures for Pits

Please provide coal production figures for the West Pit and Carrington Pit in accordance with Schedule 3 Conditions 7, 8 and 9 DA 450-10-2003

Table 1: ROM Coal Extraction

Pit	Extraction Limit (Mtpa)	ROM Coal Produced (2016) (Mtpa)
West Pit	12	6.23
Carrington Pit	10	0.00

Table 2: Hunter Valley Coal Prep Plant

	Limit (Mtpa)	ROM coal received/ processed (2016) (Mtpa)
Coal from mining operations south of the Hunter River	16	10.91
Process more than 20 Mtpa of coal	20	15.08

Table 3: West Pit Coal Preparation Plant

	Limit (Mtpa)	ROM coal processed (2016) (Mtpa)
Process more than 6 Mtpa of coal	6	2.12

b) Map Showing Key Project Aspects

Figure 1 in section 2.2 of the Annual Review includes a map showing the development consent boundaries for the project but doesn't include all the detail required in Section 2 of Annual Review Guidelines – Post-approval requirements for State significant mining developments, Department of Planning and Environment (DPE, 2015) Please amend the map to include:

- Regional context
- Mining lease boundaries
- Current operational disturbance footprint; and
- Offset areas.

Figure 1 shows the development consent boundaries, mining tenement boundaries, the offset for HVO (Goulburn River), as well as where HVO sits relative to its near neighbours and neighbouring mine sites. Figure 2 shows the broader regional geographic context of HVO and the Goulburn River Offset. Figures 3 to 6 show the current operational disturbance footprint included as Appendix 4 in the submitted 2016 HVO AEMR.

Hunter Valley Operations
Key Projects Aspects

Date: 170529
Plan By: DS
Version: 1.0

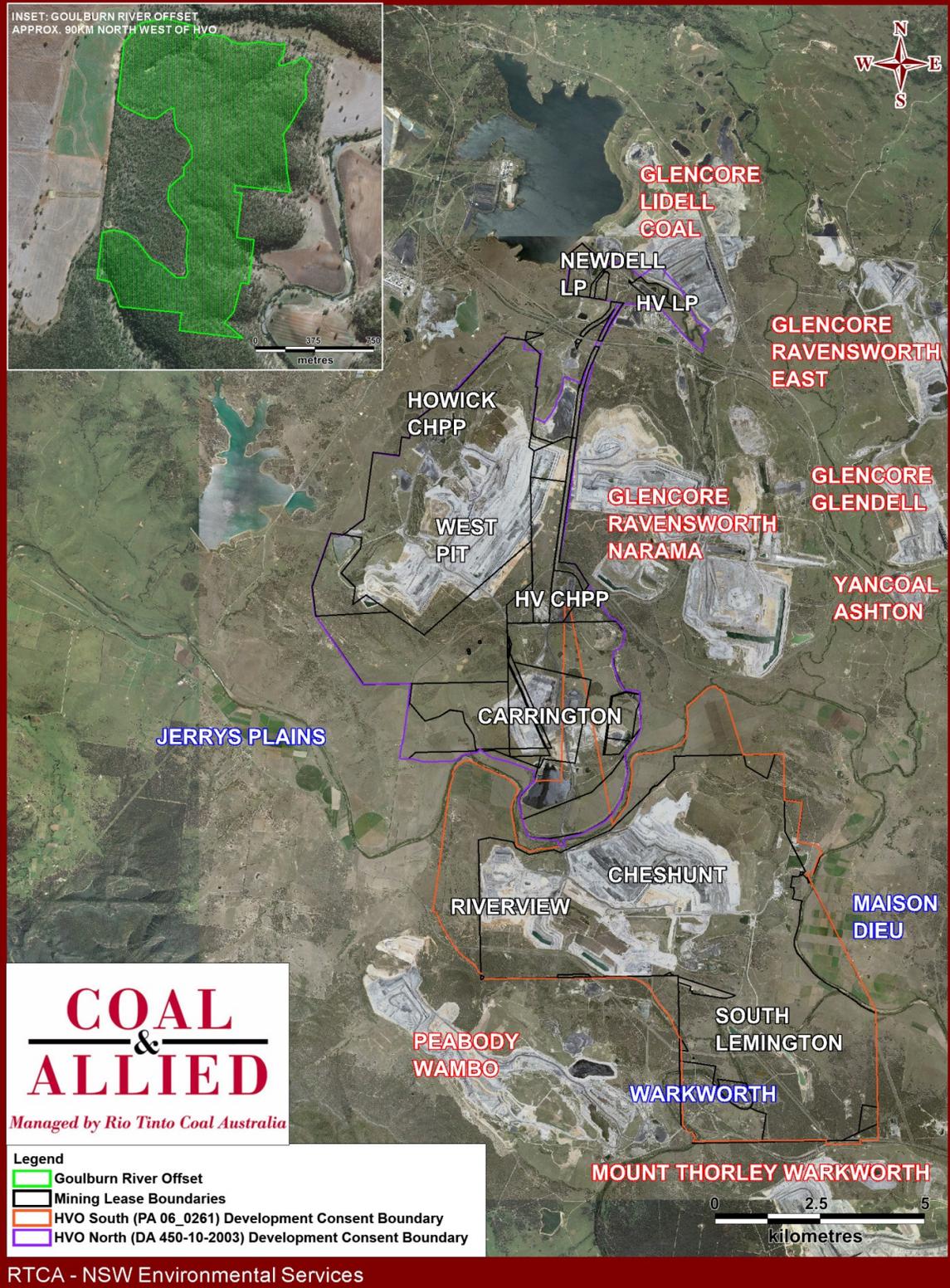
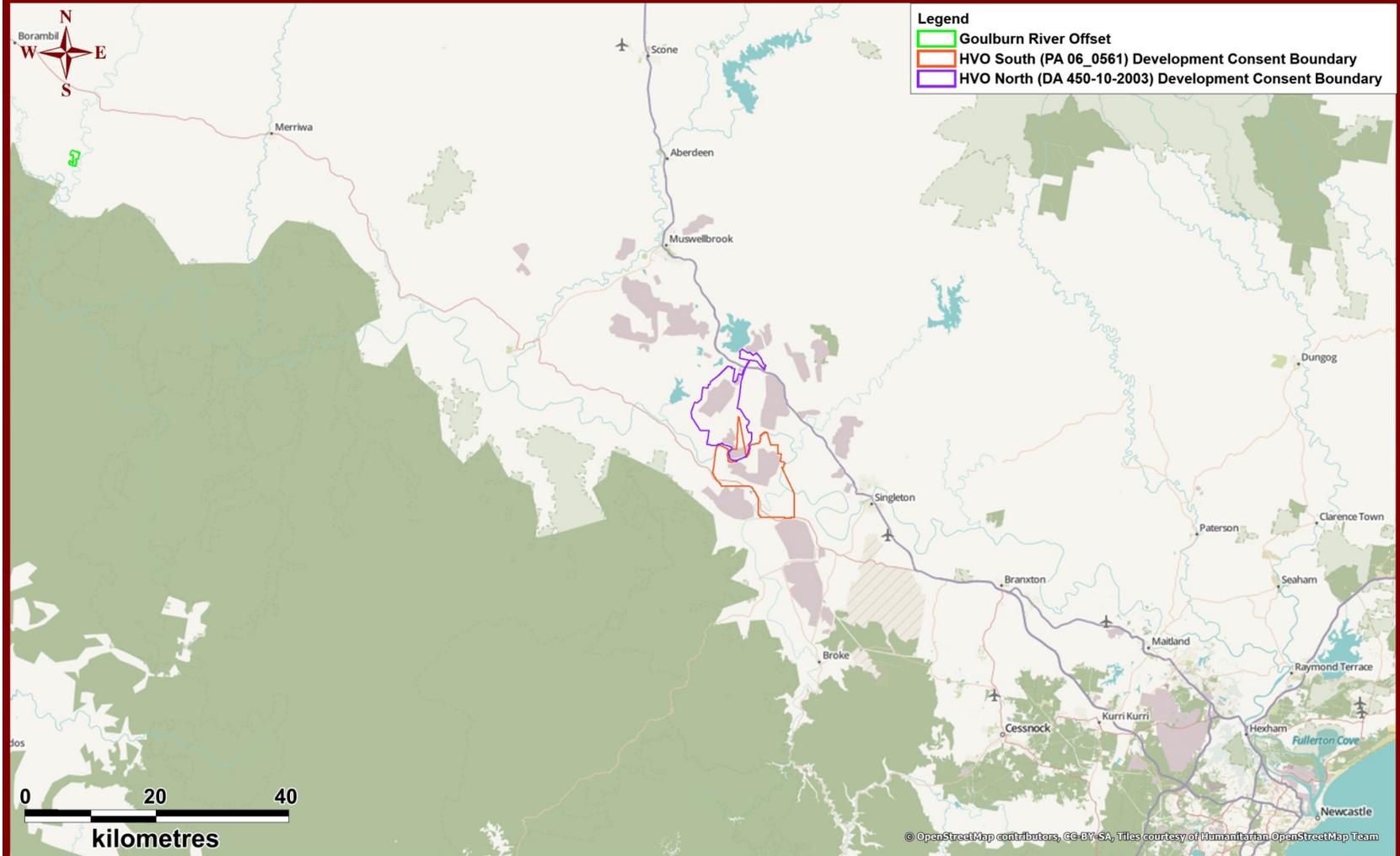


Figure 1: HVO Overview

Hunter Valley Operations Regional Context

Date: 170530
Plan By: 1.0
Version: DS



RTCA - NSW Environmental Services

Figure 2: Regional Context

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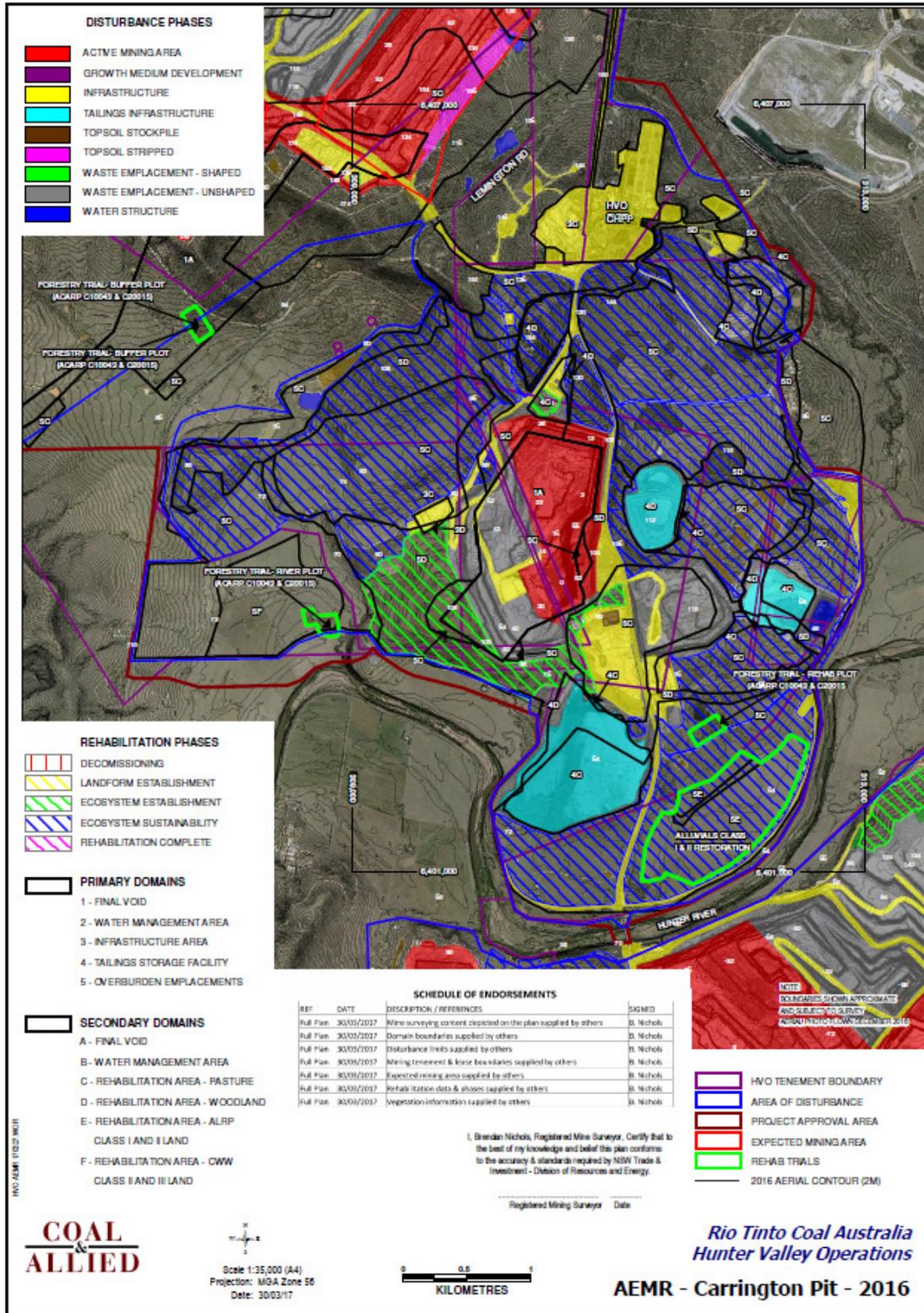
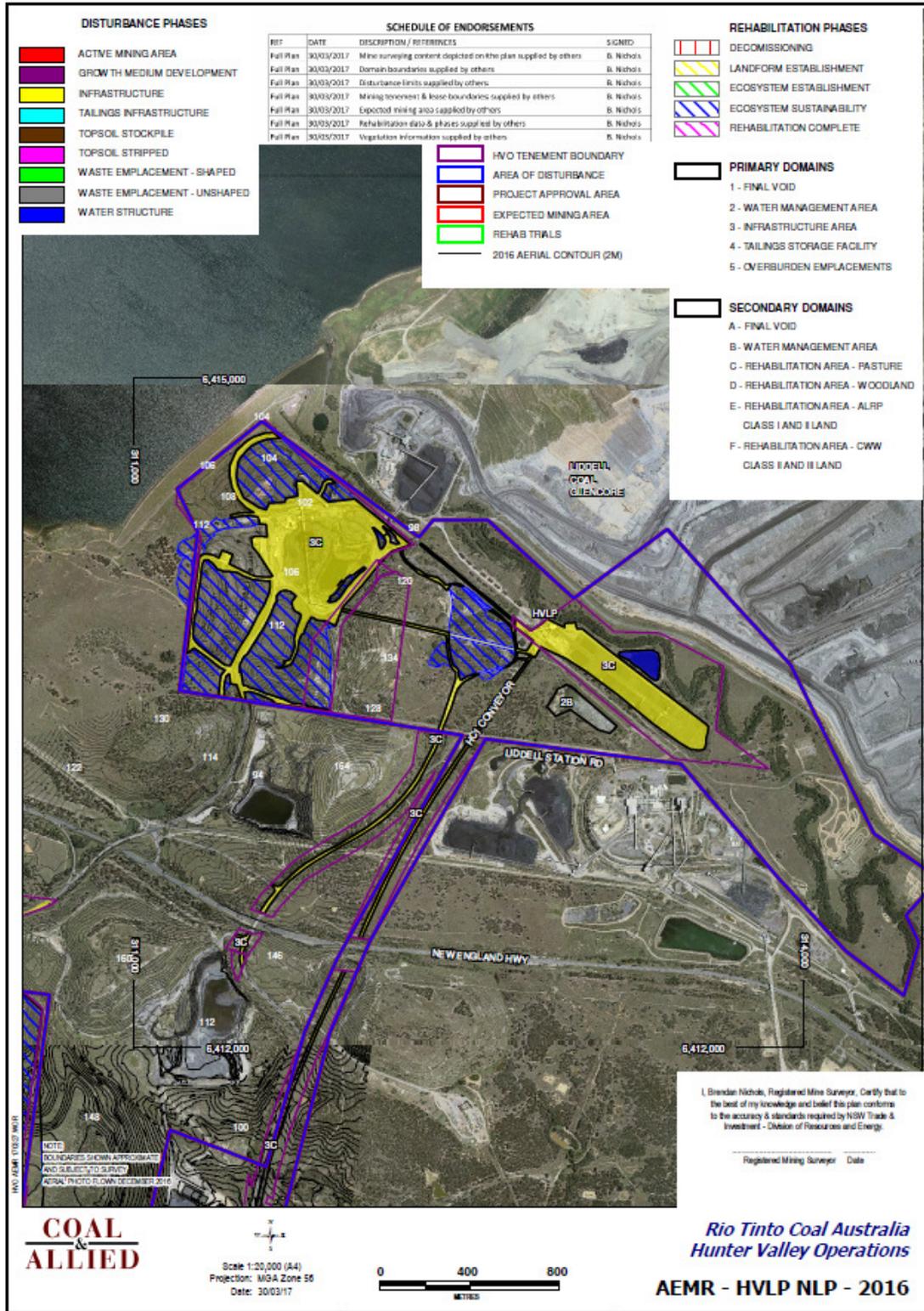


Figure 3: Disturbance Footprint - Carrington Pit



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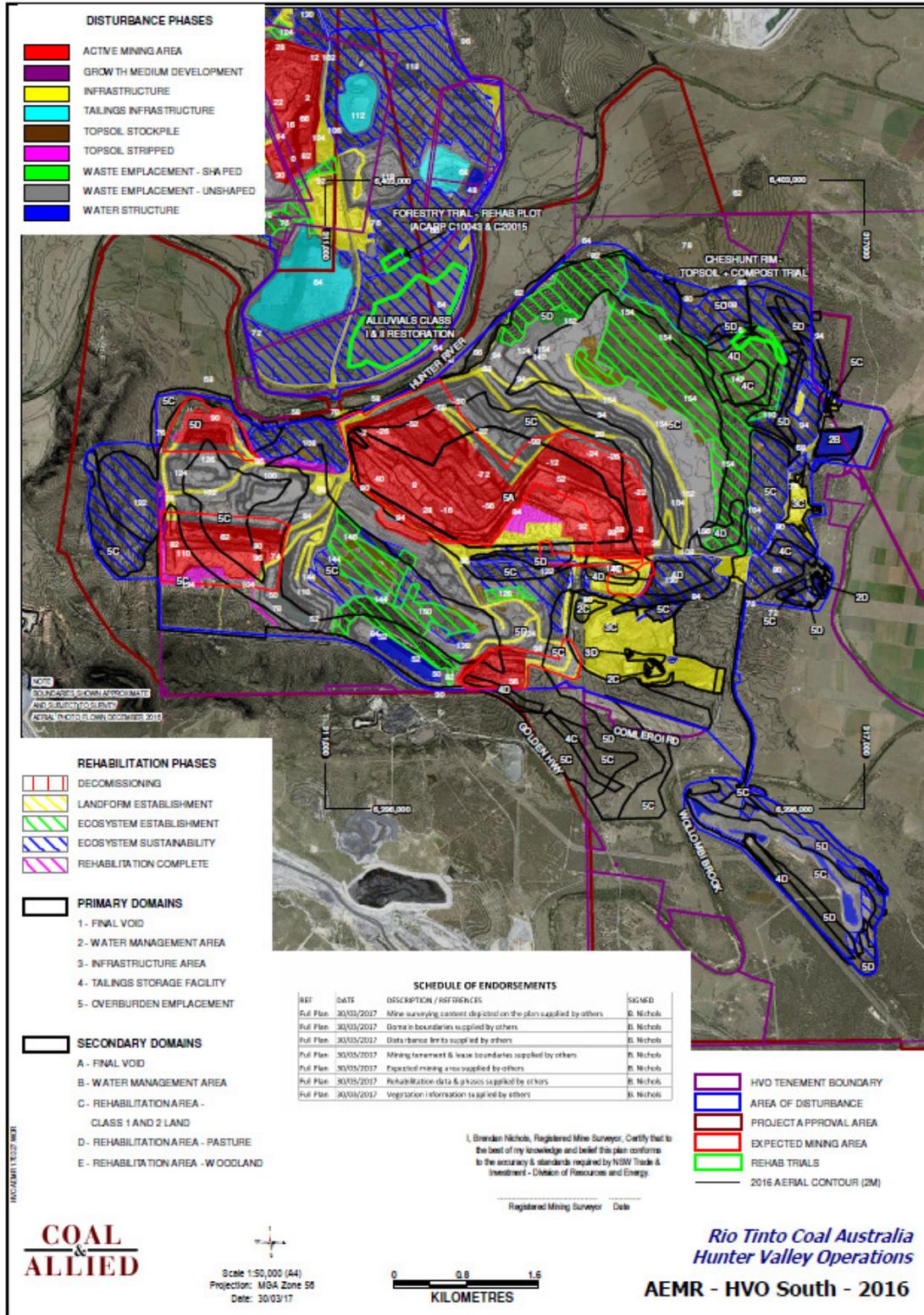


Figure 5: Disturbance Footprint - HVO South Pit

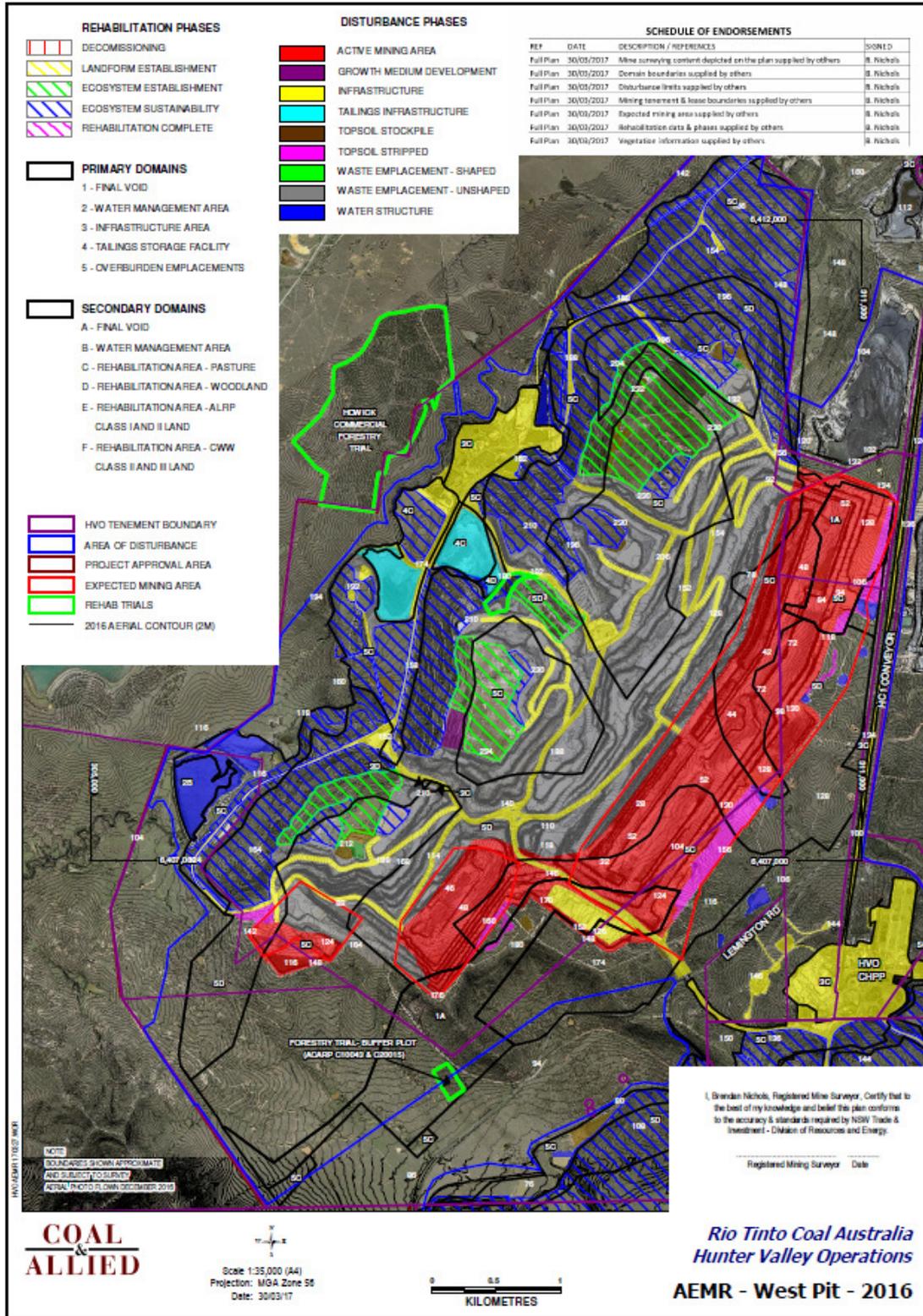


Figure 6: Disturbance Footprint – West Pit

c) Rehabilitation Performance

Figures 95 and 96 in section 8.5 of the Annual Review shows rehabilitation areas for HVO North and HVO South respectively, however does not show all the detail required by section 8, dot point 1 of DPE (2015). Please amend the figures to include:

- The extent of mining and rehabilitation activities
- Surface contours; and
- Rehabilitation vegetation types

Please also identify planned post-mined land uses on the figures.

Please include a discussion on key limiting factors to successful rehabilitation and a description of rehabilitation activities that will be undertaken in the next reporting period.

The Department notes the positive outcomes from the grazing trial undertaken on site. Animal stocking rates and weight gain are useful indicators of the agricultural potential of the rehabilitated land however it needs to be considered against what inputs are necessary to achieve that performance and the ability of the rehabilitated soils to sustain the rate of agricultural production.

Please provide a discussion on the inputs and management regimes that existed on both the unmined and rehabilitated areas prior to undertaking the grazing trials and the ability of the rehabilitation soils to sustain grazing at the suggested stocking rates without degradation.

Figures 3 to 6 show the extent of mining and rehabilitation activities, surface contours and rehabilitation types. The figures also identify planned post mined land uses.

Key Limiting Factors to Successful Rehabilitation

The key limiting factors to successful rehabilitation will be discussed separately below for the two main types of rehabilitation being undertaken at HVO.

Native Vegetation Rehabilitation

Since 2011, Coal & Allied has increased its focus at both HVO and MTW on re-establishing a diverse native understorey within native vegetation rehabilitation. Experience over this period has shown that weed competition, which includes exotic grasses in the context of native vegetation establishment, is the main limiting factor to the successful establishment of a native understorey. The weed seed source is coming from both historically disturbed areas that are being stripped ahead of mining; and from the cover species on topsoil stockpiles.

Coal & Allied has implemented a range of programs to minimise the impact of weeds in rehabilitation, including:

- Prioritising the use of topsoils from good quality native vegetation areas on rehabilitation that is being returned to native vegetation;
- Managing new and old topsoil stockpiles to clean up exotic grass/weed cover and establish a cover of native vegetation;
- Use of spoils and subsoils ameliorated with compost and gypsum as the growth medium for areas being returned to native vegetation. This method avoids the use of “weedy” topsoils and allows native vegetation to become established in the absence of competitive weed species;
- Use of a staged approach to rehabilitation where early sowing of sacrificial cover crops provide opportunities for weed control prior to sowing the native seed mixes;
- Use of a weed wiper and spot spraying to target exotic grasses and weeds in areas that have already been sown with native seed mixes.

Pasture Rehabilitation

Coal & Allied has been trialling the use of native grass species in pasture rehabilitation. Where native grass species are being used the limiting factor is weed competition; this is discussed in the section above. In pasture rehabilitation, where exotic pasture species are being used, the desired pasture species are less susceptible to weed competition. The main limiting factor for rehabilitation success in exotic pastures is a lack of diversity which can lead to declining feed quality during the winter periods.

The diversity of exotic pastures in rehabilitation are initially high due to the range of grass and legume species in the seed mixes. However, in the absence of the introduction and management of grazing these sites can become dominated by competitive summer growing species (i.e. Rhodes Grass and Green Panic). During winter these long rank grasses have poor feed quality and tend to shade out the winter growing legumes that would provide good quality feed over this period.

Therefore, to maintain pasture diversity and quality, implementation of grazing management to pasture rehabilitation areas in a timely manner is necessary. Where operational restrictions prevent the introduction of grazing other techniques, such as slashing, can be used to replicate the effect of grazing. Coal & Allied has been expanding the areas of pasture rehabilitation at HVO that are exposed to grazing through licence agreements over the last couple of years and this is planned to continue.

Rehabilitation activities that will be undertaken in the next reporting period

There is 100ha of new rehabilitation planned to be completed during 2017 at HVO. Coal & Allied have had success in recent years in achieving large rehabilitation targets by planning to carry over areas of dump release and bulk shaping into the following year. This makes areas available for rehabilitation early in the year and tends to smooth out the workload for the specialised rehabilitation contractors. At the end of 2017, HVO plans to have approximately 50 ha of dump areas released (30ha of which is planned to be bulk shaped) for rehabilitation in 2018.

Rehabilitation areas that will be completed during 2017 include:

- Cheshunt Barrys areas that are visible from Lemington Road;
- Riverview Glider Pit areas adjacent to Golden Highway;
- Southeast Tailings Storage Facility; and
- West Pit areas.

In addition to the new rehabilitation areas, Stage 2 rehabilitation will be conducted across areas of HVO as detailed in *Section 12.7.2 Rehabilitation Maintenance* of the HVO Annual Environmental Review.

Grazing trial discussion

Local graziers had maintained livestock grazing enterprises on the HVO analogue site under licence agreements until the grazing trial commenced in September 2014. The HVO rehabilitation site has also been used for grazing under licence agreement since 1999. Both the rehabilitation and analogue sites would have had similar grazing management practices, in the form of long rotation grazing.

Information about historical fertiliser application is not available for the HVO Analogue site prior to commencement of the grazing trial. The HVO Rehabilitation site was last fertilised by Coal & Allied in 2011; 125kg/ha of Di-ammonium Phosphate (DAP) was applied. In comparison to fertiliser regimes that would be recommended through nutrient budgeting, both sites have therefore been subject to low rates of fertiliser application in the years prior to the trial period.

Results of soil testing undertaken at the start of the grazing trial are shown in Table 4. the results indicate that the rehabilitation site had higher phosphorous and sulphur levels to the analogue site. These two nutrients are typically lacking in Hunter Valley agricultural soils without a regular fertiliser application

regime. It was decided by the DPI researchers that no fertiliser would be added to either of the sites during the trial period. This decision was taken to avoid confounding factors associated with the varying response to fertiliser application of different pasture types.

Table 4: Grazing Trial Soil Analysis

Trial Site	2014		2016	
	Phosphorous Colwell (ppm)	Sulphur KCL40 (ppm)	Phosphorous Colwell (ppm)	Sulphur KCL40 (ppm)
HVO Analogue	6	4.8	5	3.6
HVO Rehab	31.5	6.2	27	6.1

Stocking rates for the first lot of steers on the grazing trial were the same on both the rehabilitation and analogue sites, at one steer per four hectares. Based on observations of higher feed availability in the rehabilitation paddocks the stocking rates were increased to one steer per 2.7 hectares on the rehabilitation site when the second lot of steers were brought onto the trial. The stocking rates on the analogue site were maintained at one steer per four hectares as this appeared to be an appropriate stocking level for the analogue paddocks. The second phase of the trial will therefore allow the rehabilitation paddocks to be tested at higher stocking rates while still ensuring that adequate ground cover is present.

The NSW DPI publication titled Beef Stocking Rates and Farm Size – Hunter Region (June 2005) indicates that stocking rates for 350kg yearlings gaining 1kg/day on pastures with some clover would average one steer per 2.6 to 3.5 hectares. It also states that a regular (annual) fertiliser program could increase this stocking rate to approximately one steer per 1.3 hectare. The stocking rates being used in the second phase of the trial on the rehabilitation site are therefore consistent with the DPI guidelines for a site that is not receiving a regular application of fertiliser.

The results to date from the grazing trial have shown that steers on the rehabilitation site have been able to achieve healthy weight gains over the period of the trial, with low rates of fertiliser application prior to and no fertiliser application during the trial period. Stocking rates on the rehabilitation site are consistent with district averages for the type of pasture and grazing operation being used.

A fertiliser application regime is considered an important part of a grazing enterprise, to return nutrients to the soil that are being removed via the produce i.e. beef cattle. It is anticipated that the tropical pastures and legumes that make up the rehabilitation site would respond well to regular fertiliser applications and allow for stocking rates to be increased from the rates currently being used on the grazing trial, while still maintaining suitable vegetative cover levels. The testing of sustainable stocking rates on rehabilitation sites using a fertiliser application regime that is typical for the district could be the subject of future grazing trials.

The current ACARP funded grazing trial (*C23053 Study of Sustainability and Profitability of Grazing on Mine Rehabilitated Land in the Upper Hunter*) will be concluded during June 2017. The final report, to be produced by the DPI researchers, will be available for review by DP&E during 2017.

d) Biodiversity

Section 6, dot point 4 of DPE (2015) requires the Annual Review to include reporting of biodiversity aspects. Please include a section in the Annual Review to describe what biodiversity activities have been undertaken in accordance with Schedule 3, Condition 29 of PA 06_0261

Biodiversity Offsets

Management

The Hunter Valley Operation Mine's impacts on biodiversity values are offset through the protection and management of Biodiversity Areas (BAs) which are managed in accordance with the Regional Offset Management Plan (OMP). This Offset Management Plan will be superseded with new site specific plans in 2017.

The OMP provides the management framework for the entire BAs and their Offset Areas (in some cases the entire BA is not an Offset Area), to enhance the biodiversity values through the implementation of conservation management strategies. All of the OMPs are available on the Rio Tinto website.

Approvals

Coal & Allied was granted Project Approval by the NSW Minister for Planning for the Hunter Valley Operations (HVO) South Coal Project on 24 March 2009 and last modified on 31 October 2012. The approval was granted under the provisions of the Environmental Planning and Assessment Act 1979 (EP&A Act), reference NSW PA 06_0261. The approval granted permission to clear 48 ha of remnant native vegetation and 92ha of regrowth. To offset this impact 140ha of Narrow-leaved Ironbark Woodland is to be protected in perpetuity. The offset area to satisfy this condition is located within the Goulburn River BA.

Coal & Allied was granted approval for the continuation of open cut coal mining in areas that were previously approved by the State after the commencement of the under the Environmental Protection and Biodiversity Conservation Act 1999 within the HVO mine complex. The approval issued on the 10 October 2016, granted permission to clear 61ha of the Central Hunter Valley Eucalypt Forest and woodland. To offset this impact 405.8ha at the Wandewoi BA offsets is to be protected in perpetuity. The condition of the EPBC Act approval requires the grassland area within the Wandewoi BA to attain the key characteristic of the CHEVF within three years of the approval. To compensate for other residual significant impacts additional offsets must be secured within 12 months from the date of the approval.

Biodiversity Area Management Activities

The OMP describes the Conservation Management Strategies. The following are the key actions completed throughout 2016 across all the BAs:

Weed Control

Regional BA weed control targeted Willows, Blackberry, St John's Wort, Varigated Thistle, Prickly Pear, Tree of Heaven and Nagoora Burr.

Infrastructure Management and Improvement

Track, fence and waste audits were undertaken within the Regional BAs. Fence repairs were undertaken on the Goulburn River BA and monthly property inspections were undertaken at all Regional BAs.

Fire Management

The Regional Offset Bushfire Management Plan and the HVO Bushfire Management Plan were reviewed. Track upgrade work was undertaken and involved the reopening of the fire track between Seven Oaks at the Goulburn River BA.

Strategic Grazing

No strategic grazing was undertaken in the BAs in 2016.

Vertebrate Pest Management

Two 1080 ground baiting programmes were undertaken on the Goulburn River BA in autumn and spring targeting wild dogs and foxes. Opportunistic shooting was also undertaken targeting feral pigs. Vertebrate

pest management programmes will continue to be carried out during 2017 to limit feral pest impacts on landholdings and surrounding neighbours.

e) Independent Environmental Audits

Schedule 3 Conditions 4C requires the Annual Review to include non-compliance identified, including key outcomes from the Independent Environmental Audit and reporting on progress of closing out actions. Please amend section 10 of the Annual Review to include progress with implementation of the action Plan as at the 31 December 2016.

Implementation of the Action Plan, associated with the response to recommendations, had not occurred as at 31 December 2016. This is because the timing of all applicable actions extended into 2017 and so no actions were due for completion as at the end of the reporting period.

f) Activities for completion next reporting period

Section 12 of the annual Review describes what environmental and community performance improvements will be completed next reporting period but does not include a timeline for implementation. Please amend section 12 to include an implementation timeline.

An implementation timeline has been prepared to illustrate completion schedule of activities outlined in section 12, see Figure 7 below. Activities which are scheduled to occur for the entirety of the year or are scheduled to be completed in the following year have been given an end date of 31st December 2017 for illustration purposes.

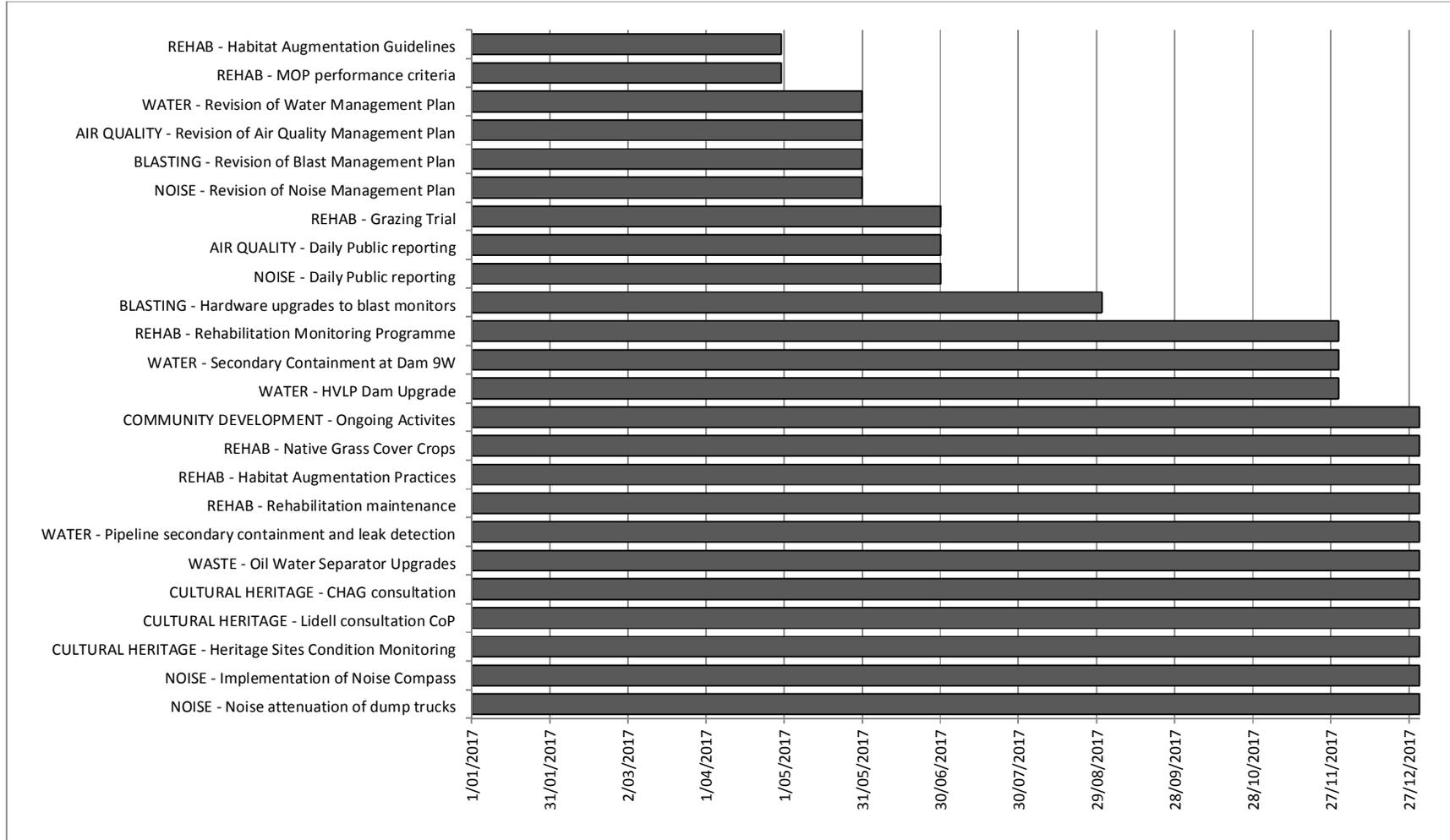


Figure 7: Implementation Timeline



Andrew Speechly
Manager Environment & Community (HVO/MTW)
Rio Tinto
PO Box 315
Singleton NSW 2330

Contact: Michael Frankcombe
Phone: 02 85753413
Email: michael.frankcombe@planning.nsw.gov.au
compliance@planning.nsw.gov.au
Our ref: DA 450-10-2003, as modified, PA
06_021161, as modified

Hunter Valley Coal Operations – DA 450-10-2003, PA 06_0261 Annual Review 2016 Addendum

Dear Andrew,

Reference is made to the Annual Review addendum submitted 2 June 2017 in response to the Department of Planning and Environment (the Department) review of the Annual Review for the period 1 January 2016 to 31 December 2016.

The Department has reviewed the additional information provided and considers the Annual Review to now generally meet the requirements of Schedule 5, Condition 4 of SSD-6464 and Schedule 5, Condition 4 of SSD-6465 and the Department's Annual Review Guideline (October 2015).

Please note that the Departments review of this Annual Review is not endorsement of the compliance status of the project. Non-compliances identified in the Annual Review will be assessed in accordance with the Department's Compliance Policy. Further correspondence may be sent in relation to non-compliances.

Please ensure that progress on implementation of management and mitigation measures described in the addendum are reported in future Annual Reviews.

Should you need to discuss the above, please contact Michael Frankcombe as per the details provided above.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Leah', followed by the date '17/07/17'.

Leah Cook
Team Leader - Compliance
As Nominee of the Secretary

Figure C: Letter approving Annual Review Addendum