



## Local Biodiversity Areas

### Annual Report 2017

April 2018

Annual report for the period from January to December 2017, for activities described in the Management Plans (2016) for all Local Warkworth Mining Limited offsets including:

- Southern Biodiversity Area (including the Putty Road Offset Area)
- Northern Biodiversity Area

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## 1 INTRODUCTION

This annual report is a requirement of the management plans for all Local Warkworth Mining Limited offsets for the 2017 reporting period from 1 January through to 31 December 2017.

The report provides a summary of the key management activities completed across the biodiversity offset located within the Southern (includes the Putty Road Offset Area) and Northern Biodiversity Areas (BAs).

The management plans describe the conservation management strategies and monitoring to achieve and measure improvement and protection of the offsets biodiversity values. It is a compliance requirement of the Commonwealth and NSW environmental approvals to implement the management plans.

The Local OMP (November 2014) was prepared to satisfy the consent requirements for the New South Wales (NSW) Warkworth Mine Development Approval (DA 300-9-2002i) and replaces the former *Flora and Fauna Management Plan* and *Warkworth Sands Woodland (WSW) Offset Area OMP*. In November 2015 the NSW Warkworth Continuation Project Approval (SSD-6464) was granted providing both NSW and Commonwealth approval for the same disturbance area. Phase 2 of the EPBC2009/5081 action also commenced on 16 February 2016. In response to the granting of these new approvals, new Management Plans for the Southern and Northern BA have been prepared to satisfy the Commonwealth approval EPBC2009/5081 and the NSW consent (SSD-6464), replacing both the Local and Putty Road OMPs.

The Biodiversity Offset Portal contains the supporting documentation for this report, including photo point monitoring. Access to the portal is restricted, relevant regulators have been provided with login details; please contact Yancoal Australia should you require assistance.

## 2 LOCATION AND LANDHOLDER DETAILS

The locations of the local BAs are shown in Figure 1, Figure 2 and Figure 3, details are provided in Table 1. The land is owned by Warkworth Mining Limited (WML).

**Table 1 Local Biodiversity Areas**

Biodiversity Area	Land Owner	Area (ha)	Offset Area (ha)	Location
Northern BA	Coal & Allied Operations Pty Ltd	344	341	Approximately 7km north of the Warkworth Mining Lease and in close proximity to the Hunter Valley Operations. Accessed via Comleroi Road.
Southern BA (including the Putty Road Offset)	Coal & Allied Operations Pty Ltd Miller Pohang Coal Company Pty Ltd Warkworth Mining Limited	1,023	986	Immediately west and north of Warkworth Mine. Intersected by Putty Road in the south, and Wallaby Scrub Road and the Golden Highway in the north.



Location of the Warkworth Mine Biodiversity Areas  
EPBC Annual Compliance Report

Figure 1

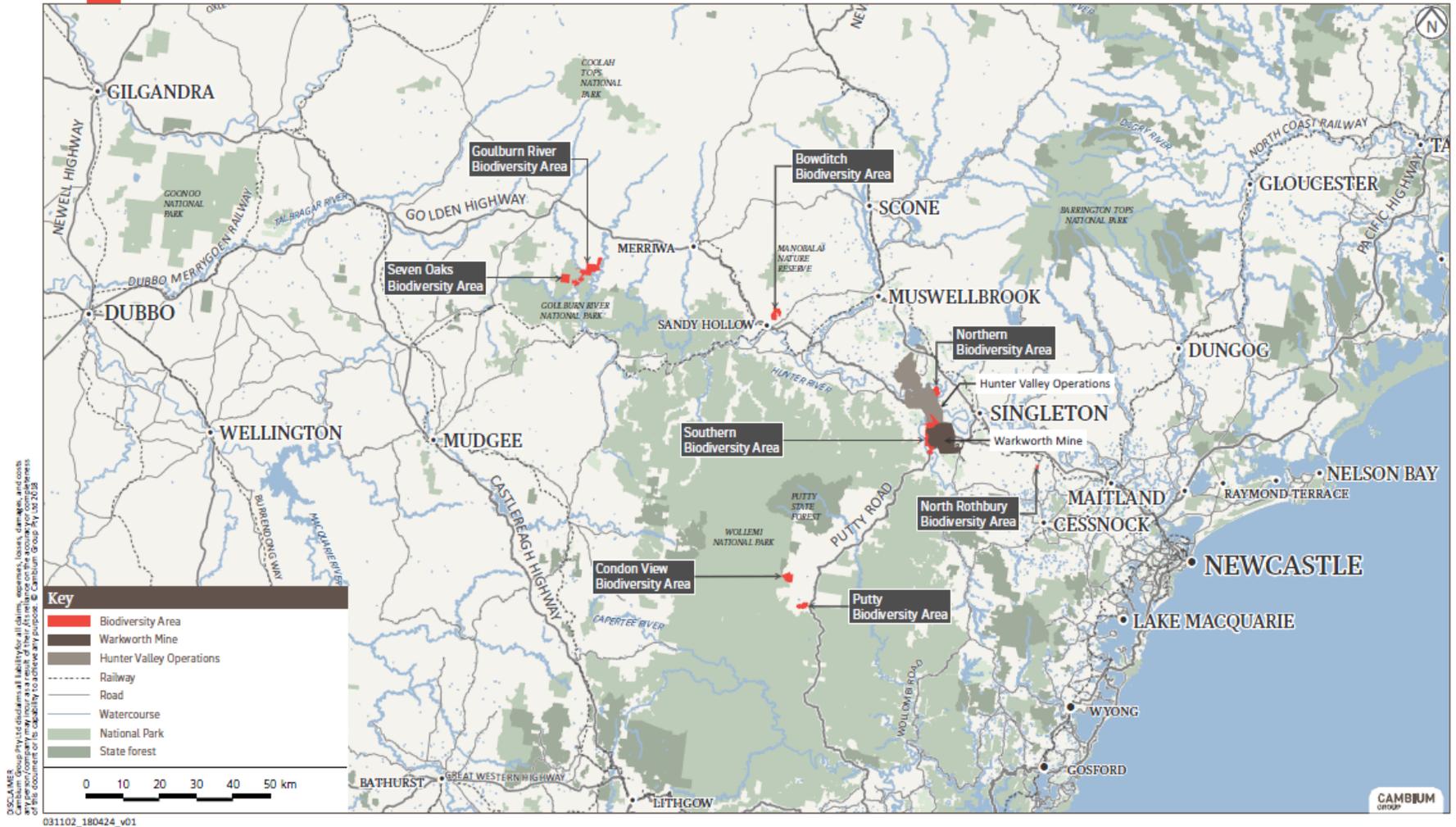


FIGURE 1 LOCATION OF WARKWORTH MINING LIMITED BIODIVERSITY AREAS

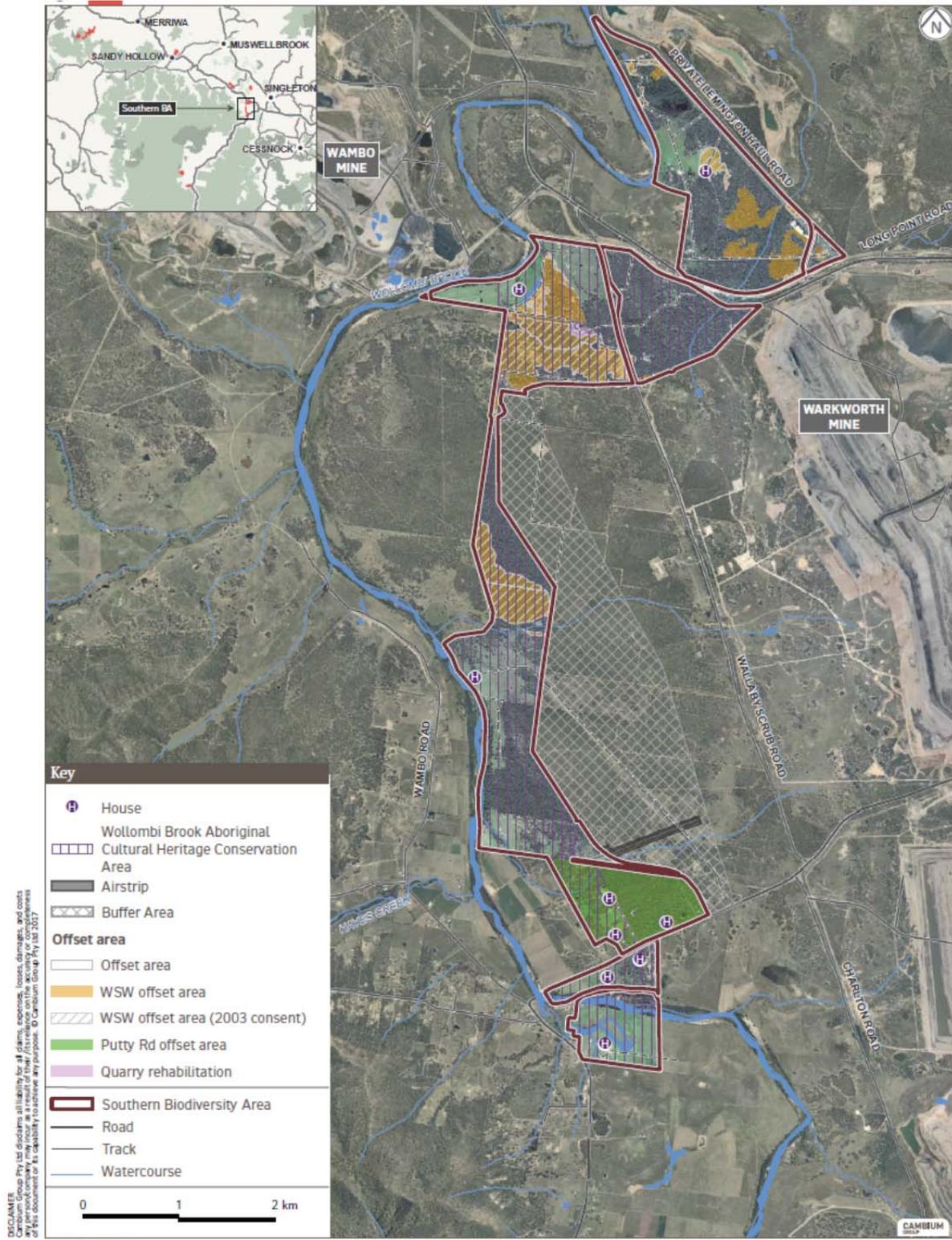


FIGURE 2 SOUTHERN BIODIVERSITY AREA – PUTTY ROAD OFFSET AREA

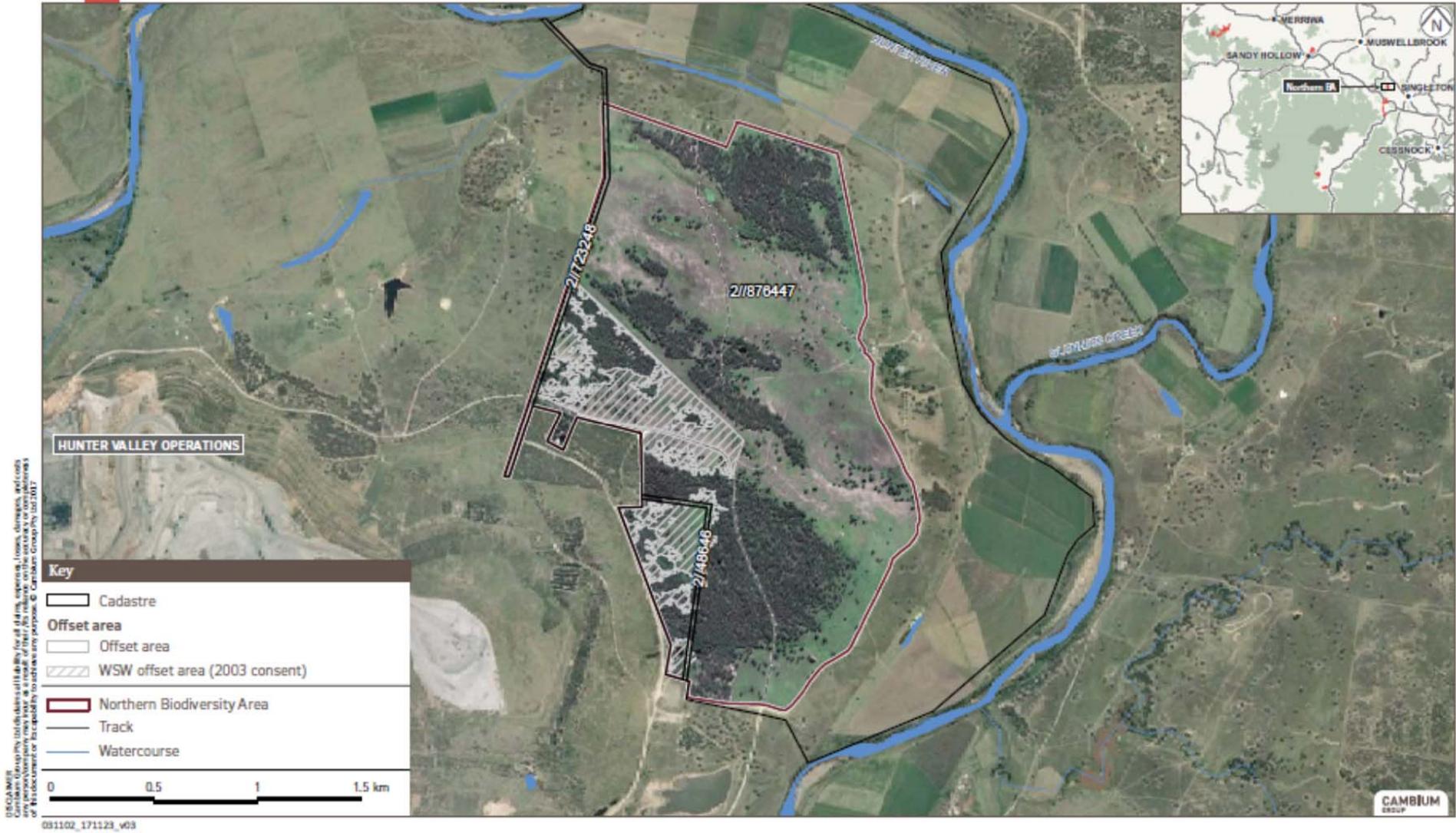


FIGURE 3 NORTHERN BIODIVERSITY AREA

### 3 SUMMARY OF ACTIVITIES – 2017

Table 2 provides a summary of the activities undertaken during the reporting period (year 1) and the progress in attaining the Performance Criteria for the key Conservation Management Strategies in the management plans.

#### 3.1 Summary of climatic conditions

The following figures show the monthly actual rainfall compared to the long term mean for the Northern BA and Southern BA for the reporting period. In 2017, rainfall was below the long term mean during most months with the exception of well above rainfall in March and October. The low rainfall was a significant factor in the survival of tubestock planted in 2017.

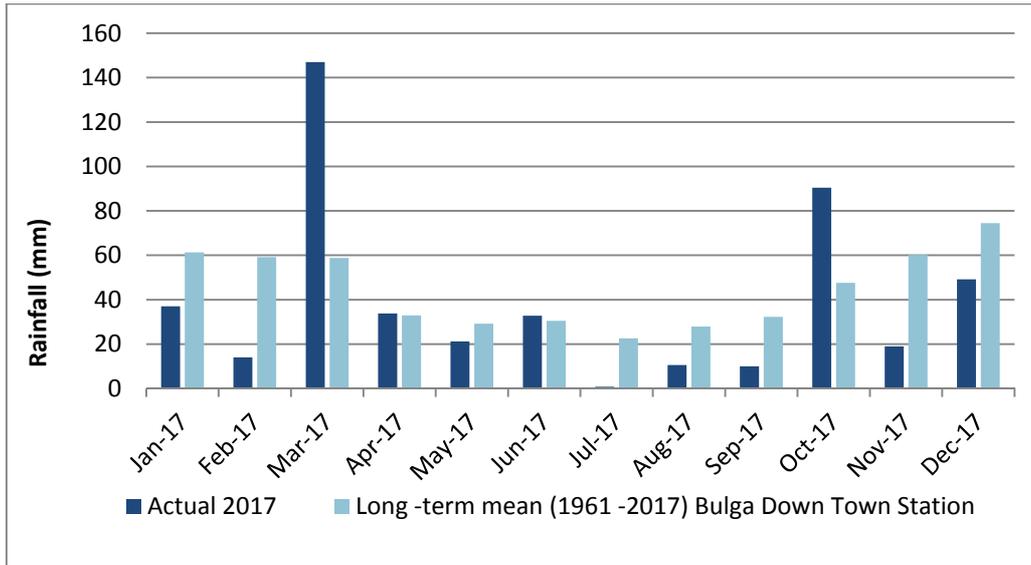


FIGURE 4 MONTHLY RAINFALL – NORTHERN BA

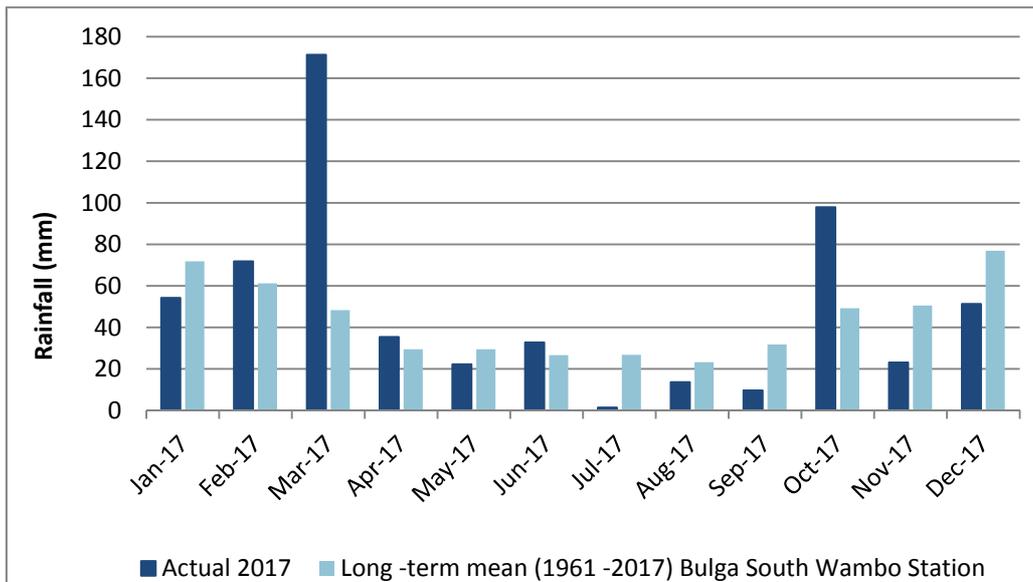


FIGURE 5 MONTHLY RAINFALL –SOUTHERN BA

**Table 2 Summary of progress against Performance Criteria (PC)**

Conservation Actions	Year 1 to Year 5 (2017 is Year 1)	Year 6 to Year 10	Completion Criteria	Actions 2018
<b>ACTIVE RESTORATION</b>				
Southern BA WSW planting (40ha)				
PC	<i>Collection of seed. Plant propagation. Tubestock planted.</i>  <i>Completed survival assessment.</i>	<i>Ecological monitoring completed</i>	<i>Ecological monitoring demonstrates a trajectory toward the reference site or the benchmark values for HU872 for all attributes measured over the three consecutive assessments (the average of all plots).</i>	In 2018, planting works to restore Warkworth Sands Woodland will continue in the Southern BA, with 14ha to be planted.
Activity / Progress	Seed collection undertaken.  1 ha of WSW Tubestock planted in the Southern BA.			Collection of seed and plant propagation  Ecological monitoring completed
Southern BA CHGBIW planting (240ha)				
PC	<i>Collection of seed. Plant propagation. Tubestock planted.</i>  <i>Completed survival assessment.</i>	<i>Ecological monitoring completed.</i>	<i>Ecological monitoring demonstrates a trajectory toward the reference site or the NSW Biometric HU817 for all attributes measured over three consecutive assessments (the average of all plots).</i>	In 2018, restoration activities will include planting 118ha of Central Hunter Grey Box – Ironbark Woodland in the Southern BA.
Activity / Progress	Restoration activities also included planting Central Hunter Grey Box – Ironbark Woodland in 89 ha of the Southern BA with over 13,000 seedlings planted into rip lines. The site preparation for these sites included ripping by dozer and weed control. To mimic nature the tree species were planted at a spacing of 5 -10m and shrubs species planted in clumps as commonly found with understory species within this vegetation type. All plants were watered, fertilised and protected with a tree guard.			Collection of seed and plant propagation  Ecological monitoring completed
Southern BA ROF planting (26ha)				
PC	<i>Collection of seed. Plant propagation. Tubestock planted.</i>  <i>Completed survival assessment.</i>		<i>Survival assessment greater than 70%</i>	In 2018, restoration activities will include planting 11ha of River Oak Forest in the Southern BA
Activity / Progress	Seed collection was undertaken by contractors in the Southern BAs during 2017, focussing on the WSW and Ironbark vegetation community. Tube stock for future plantings is currently being propagated from the seed collected.			Collection of seed and plant propagation  Ecological monitoring completed
Northern BA WSW planting (195ha)				

Conservation Actions	Year 1 to Year 5 (2017 is Year 1)	Year 6 to Year 10	Completion Criteria	Actions 2018
PC	<p>Collection of seed. Plant propagation. Tubestock planted.</p> <p>Completed survival assessment.</p>	Ecological monitoring completed.	Ecological monitoring demonstrates a trajectory toward the reference site or the benchmark values for HU872 for all attributes measured over three consecutive assessments (the average of all plots).	<p>Collection of seed and plant propagation</p> <p>Ecological monitoring completed</p> <p>Maintenance of planting areas.</p>
Activity / Progress	<p>Work commenced in 2014 to restore over 80 hectares of Warkworth Sands Woodland, this involved the planting of seedlings and the relocation of sand salvaged ahead of mining activities.</p> <p>In 2017, planting works continued in the Northern Biodiversity Area, with over 10,800 seedlings planted. Topsoil from ahead of mining operations at MTW was salvaged and hauled to the Biodiversity Area prior to planting commencing. In total there were 44 patches established, ten received 50mm of topsoil over the patch, two received 50mm of topsoil over half the patch, 12 received 25mm of topsoil over the patch and ten received no topsoil. The team dug holes for each seedling, either by hand or auger, into 50x50m patches. All plants were watered, fertilised and protected with a tree guard.</p>			
Northern BA CHGBIW planting (23ha)				
PC	<p>Collection of seed. Plant propagation. Tubestock planted.</p> <p>Completed survival assessment.</p>	Ecological monitoring completed.	Ecological monitoring demonstrates a trajectory toward the reference site or the NSW Biometric HU817 for all three attributes measured over three consecutive assessments (the average of all plots).	<p>Collection of seed and plant propagation</p> <p>Ecological monitoring completed</p> <p>Maintenance of planting areas.</p>
Activity / Progress	<p>Restoration activities in 2017 included planting CHGBIW into a small area of the Northern BA.</p>			
<b>PASSIVE RESTORATION</b>				
Weed control and monitoring				

Conservation Actions	Year 1 to Year 5 (2017 is Year 1)	Year 6 to Year 10	Completion Criteria	Actions 2018
PC	<p>At least two weed control events each year for species listed in Table 14 of Management Plans and other weeds recorded from monitoring activities.</p> <p>All actions recorded in Annual Report.</p> <p>Complete Rapid Condition Assessment and Property Inspections.</p>	<p>At least one weed control event each year for species listed in Table 14 of Management Plans and other weeds recorded from monitoring activities.</p> <p>All actions recorded in Annual Report.</p> <p>Complete Rapid Condition Assessment and Property Inspections.</p>	<p>Ecological monitoring data indicates a trajectory for reduction in exotic plant cover over three consecutive assessments.</p>	<p>Control noxious species and stop weeds spreading into previously uninfested areas.</p>
Activity / Progress	Weed control programme completed by Toolijooa Environmental Restoration Pty Ltd throughout the year. Annual Weed Control Plan completed.			
Pest control and monitoring				
PC	<p>At least two control events each year for species listed in Table 20 of Management Plans, and any other species recorded from monitoring activities.</p> <p>Active participation in programme coordinated by HLLS, this may include local control actions.</p> <p>Complete biannual inspection and report all works completed and actions for next year.</p>	<p>At least one control events each year for species listed in Table 17 of Management Plans, and any other species recorded from monitoring activities.</p> <p>Active participation in programme coordinated by HLLS, this may include local control actions.</p> <p>Complete biannual inspection and report all works completed and actions for next year.</p>	<p>No observed vertebrate pest or damage.</p> <p>Ecological monitoring demonstrates a trajectory to benchmark values for all attributes measured over three consecutive assessments (the average of all plots).</p>	<p>Vertebrate pest management including 1080 ground baiting programmes scheduled for autumn and spring to target wild dogs and foxes.</p>
Activity / Progress	<p>Vertebrate Pest programme undertaken by Rural and Environmental Management Pty Ltd across the Southern and Norther BA.</p> <p>Three 1080 ground baiting programmes were undertaken targeting wild dogs and foxes. Rabbit poisoning undertaken in planting areas. Shooting of vertebrate pests undertaken throughout the year.</p>			
Grazing				
PC	<p>Grazing is conducted in accordance with the Management Plan.</p> <p>Boundary fences maintained.</p> <p>Complete Rapid Condition Assessment and Property Inspections.</p>			<p>Undertake Property Inspections.</p> <p>Maintain boundary fences.</p> <p>Rapid Condition Assessment</p>
Activity / Progress	<p>Boundary fence installation in SBA5 to exclude cattle.</p> <p>No strategic grazing was undertaken in the BAs in 2017.</p>			
Bushfire Management Plan (BFMP), Ecological burn and monitoring				

Conservation Actions	Year 1 to Year 5 (2017 is Year 1)	Year 6 to Year 10	Completion Criteria	Actions 2018
PC	<p><i>Actions implemented.</i></p> <p><i>Review and revise if required.</i></p> <p><i>Complete Rapid Condition Assessment and Property Inspections.</i></p>	<p><i>Actions implemented.</i></p> <p><i>Review and revise if required.</i></p> <p><i>Complete Rapid Condition Assessment and Property Inspections.</i></p> <p><i>Completed ecological fire management plan for MZ1, MZ3, MZ5, MZ7, MZ8 and MZ9.</i></p>	<p><i>All required actions of BFMP have been implemented.</i></p> <p><i>BFMP has been reviewed annually and revised if required.</i></p>	<p><i>Review BFMP.</i></p>
Activity / Progress	<p>BFMP reviewed and updated.</p> <p>Slashing of fire breaks was undertaken on the Southern BA.</p>			
Infrastructure Improvements and monitoring				
PC	<p>Completed GDP for all infrastructure improvement actions.</p> <p>Maintenance of tracks and fences completed at least every 3 years.</p> <p>Property Inspections undertaken.</p>			<p>Maintain boundary fences.</p> <p>Undertake Property Inspections.</p>
Activity / Progress	<p>GDP completed for new boundary fence at Southern and Northern BAs in 2017.</p> <p>Boundary fences maintained and Property Inspections undertaken.</p>			
Erosion monitoring inspections and reports				
PC	<p><i>Complete Rapid Condition Assessment and Property Inspections</i></p>			<p>Rapid Condition Assessment</p> <p>Property Inspections</p>
Activity / Progress	<p><i>Rapid Condition Assessment and Property Inspections undertaken</i></p> <p>No significant erosion issues identified at either BA</p>			
Dam conversion and rehabilitation and monitoring				
PC	<p>Prepare dam conversion plan.</p> <p>Dam conversion complete and rehabilitation has stabilised the site.</p> <p>Property inspections.</p>	<p>Observed natural flow regime and no erosion.</p> <p>Property inspections.</p>	<p>All works completed.</p>	<p>Dam conversion plan.</p>
Activity / Progress	<p>Property inspections undertaken.</p>			
Natural Regeneration and monitoring				

Conservation Actions	Year 1 to Year 5 (2017 is Year 1)	Year 6 to Year 10	Completion Criteria	Actions 2018
PC	Annual weed control, vertebrate pest and fire management actions implemented as per management plans. <i>Complete Rapid Condition Assessment and Property Inspections.</i>		<i>Ecological monitoring demonstrates a trajectory to benchmark values for all attributes measured over three consecutive assessments (the average of all plots).</i>	Undertake Property Inspections. Rapid Condition Assessment
Activity / Progress	All actions implemented in 2017 as per management plans. Rapid Condition Assessment and Property Inspections undertaken.			
<b>Controlled Activities</b>				
PC	<i>No reported incidents of prohibited actions undertaken Yancoal, contractors, consultants or other agents of Yancoal.</i> <i>Any clearing of vegetation reported in Annual Report.</i> <i>Signage and locks (where required) maintained.</i> <i>Complete risk assessment for any recreation activities.</i> <i>All occupants of residents compliant with requirements of the MP.</i> <i>No Cultural Heritage sites knowingly disturbed and any protective barricading maintained.</i> <i>Damaged and unwanted fences removed.</i> <i>All Property Inspections completed.</i>			
Activity / Progress	Trespassing and illegal tree clearing and timber getting within the Southern Biodiversity Area resulted in felling approximately 40 full sized trees and 100 small trees. This unauthorised activity was reported to both Department of Environment and Energy and Department of Planning and Environment in October 2017. Internal fences and waste were removed from the Southern BA areas to be planted in 2018 and sections of boundary fence at the Northern BA were repaired and replaced where needed. New Biodiversity Area signs were installed and monthly property inspections were undertaken			Undertake Property Inspections.

## 4 MONITORING ACTIVITIES

The following table provides a summary of the monitoring activities undertaken as detailed in the MP. Monitoring reports and results are available on the Biodiversity Offset Portal.

**Table 3 Monitoring Activity Summary**

<b>Monitoring</b>	<b>2017</b>	<b>Date/s</b>	<b>Completed by</b>
Bird Assemblage	N/A	August 2016, next due July – August 2018	Niche Environment and Heritage
Habitat Restoration	N/A	November 2016, next due September – November 2018	Niche Environment and Heritage
Rapid Condition Assessment	X	November 2017, next due September – November 2018	Advisor – Land Management
Property Inspection	X	April/November 2017, next due April/November 2018	Advisor – Land Management

### 4.1 Bird assemblages monitoring

Bird Assemblage monitoring was not required to be undertaken during 2017. The results from the 2016 Bird Assemblage monitoring were presented in the 2016 Annual Report for Local Offsets.

### 4.2 Habitat restoration monitoring

Habitat Restoration monitoring was not required to be undertaken during 2017. The results from the last round of Habitat Restoration monitoring conducted in 2016 were presented in the 2016 Annual Report for Local Offsets.

## 5 PROGRESS IN ATTAINING CONSERVATION OBJECTIVES AGAINST KEY PERFORMANCE INDICATORS

The primary conservation objectives for the local offset areas (including the Putty Road Offset) are to:

- enhance biodiversity values across the BAs;
- protect the WSW Offset Area and Putty Road Offset Area under a legally binding conservation covenant;
- increase the condition of WSW and Ironbark EECs and observe a transition from grassland to woodland;
- enhance habitat and foraging opportunities for the woodland birds; and
- contribute to and enhance the existing network of protected vegetation within the Hunter Valley.

Table 4 indicates the progress in attainment of the long-term conservation objectives, the ecological monitoring data supports the continued implementation of the conservation management strategies.

## **6 ADAPTIVE MANAGEMENT**

Environmental risks that have been identified during the reporting period include trespassing and illegal tree clearing and timber getting within the Southern Biodiversity Area. Yancoal has undertaken the following actions to prevent a continuation of this activity:

- Security has been increased in these areas including installation of security cameras to attempt to identify trespassers;
- Unknown locks have been removed from access gates; and
- Access gates have had higher strength chain installed to make cutting more difficult.

**Table 4 Local Offset Areas Biodiversity Values and Key Performance Indicators**

<b>Area</b>	<b>Biodiversity Value</b>	<b>Description and baseline metric</b>	<b>KPI</b>	<b>Progress comment</b>
Southern BA	Ironbark Woodland	Total area: 446.7ha RCA Average Health rating 18.1/20 (MZ1)	Extent and condition of woodland over 10 years.	RCA results: 2014 – 18/20 2015 – 18/20 2016 – 18/20 2017 – 18.5/20 Area and health maintained.
	Ironbark Grassland	Total area: 258.4ha	Transition of grassland to woodland.	2016 monitoring supports continued implementation of the conservation management strategies.
	WSW	Total area: 137ha RCA Average Health rating 17.2 /20 (MZ3)	Extent and condition of woodland over 10 years.	RCA results: 2014 – 16/20 2015 – 18/20 2016 – 17/20 2017 – 18/20 Area and health maintained.
	WS Grassland	Total area:40.3ha	Transition of grassland to woodland.	
	Hunter Lowland Red Gum Forest	Total area: 32.4ha RCA Average Health rating 18.5/20 (MZ5)	Extent and condition over 10 years.	RCA results: 2014 – 17/20 2015 – 19/20 2016 – 19/20 2017 – 19/20 Area and health maintained.
Fauna Habitat	Low potential habitat	Observe maintenance or increase habitat condition rating over 10 years	2016 monitoring supports continued implementation of the conservation management strategies.	
Northern BA	Ironbark Woodland	Total area: 103.6ha RCA Average Health rating 18.8/20 (MZ1)	Extent and condition of woodland over 10 years.	RCA results: 2014 – 18/20 2015 – 18.5/20 2016 – 19.5/20 2017 – 19.5/20 Area and health maintained.

Ironbark Grassland	Total area: 23.1ha	Transition of grassland to woodland.	
WSW	Total area: 19.5ha RCA Average Health rating 18.3/20 (MZ3)	Maintain woodland extent over 10 years.	RCA results: 2014 – 17.5/20 2015 – 18/20 2016 – 19/20 2017 – 19/20 Area and health maintained.
WS Grassland	Total area: 194.5	Transition of grassland to woodland	2016 monitoring supports continued implementation of the conservation management strategies.
Fauna Habitat		Observe maintenance or increase habitat condition rating over 10 years	2016 monitoring supports continued implementation of the conservation management strategies.

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