



# Tarrawonga Independent Biodiversity Audit

## Audit Summary Report

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## Signature Page

16 October 2020

# Tarrawonga Independent Biodiversity Audit

## Audit Summary Report



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## Acronyms and Abbreviations

Name	Description
BMP	Biodiversity Management Plan
BVT	Biometric Vegetation Type
CoA	Condition of Approval
DAWE	Department of Agriculture, Water and the Environment
DPIE	Department of Planning, Industry and Environment
EES	Department of Environment, Energy and Science
EPC	Exotic Plant Cover
IBA	Independent Biodiversity Audit
MOP	Mining Operations Plan
NGCG	Native Groundcover (Grasses)
NGCO	Native Groundcover (Other)
NGCS	Native Groundcover (Shrubs)
NMS	Native Mid-storey Cover
NOS	Native Overstorey Cover
NPS	Native Species Richness
OEH	Office of Environment and Heritage
PCT	Plant Community Type
RBS	Regional Biodiversity Strategy
RMP	Rehabilitation Management Plan
TCM	Tarrawonga Coal Mine
WHC	Whitehaven Coal Limited

## 1. INTRODUCTION

Environmental Resources Management Australia Pty Ltd (ERM) was commissioned to perform the second Independent Biodiversity Audit (IBA) of the Tarrawonga Coal Mine (TCM), on behalf of Whitehaven Coal Limited (WHC). The mine is located approximately 16 km north east of Boggabri, New South Wales (NSW). The primary purpose of the audit was to satisfy Project Approval PA 11\_0047 (Modification 8), specifically the Department of Planning, Industry and Environment (DPIE) Ministers' Condition of Approval (CoA) Schedule 3 CoA 50, which requires the commissioning of an independent biodiversity audit by the end of June 2014 and every 3 years thereafter, unless the secretary directs otherwise. The CoA states that the audit must cover the following aspects:

- a) include consultation with BCD (now the Environment, Energy and Science (EES) Group within the DPIE), LLS, DPIE Water, DoEE (now the Department of Agriculture, Water and the Environment (DAWE)), CCC and MEG;
- b) assess the performance of the revegetation in the rehabilitation area completed to date (and the Goonbri Creek Diversion, once commenced) against the completion criteria in the Rehabilitation Management Plan;
- c) assess the performance of management and restoration in the off-site Biodiversity Offset Strategy areas completed to date against the completion criteria in the Biodiversity Management Plan;
- d) identify any measures that should be implemented to improve the performance of rehabilitation, management and restoration within the rehabilitation and biodiversity offset areas;
- (d) identify any additional measures that should be applied in the establishment of native vegetation, including riparian vegetation around the realigned Goonbri Creek, both before and after the realignment is undertaken; and
- (e) if the completion criteria have not been met, or are not adequately trending towards being met, determine the likely ecological value of the rehabilitation and restoration once completed, and recommend additional measures to augment the Biodiversity Offset Strategy to ensure that it adequately offsets the project's impacts on biodiversity.

If the audit recommends the implementation of additional measures to augment the Biodiversity Offset Strategy in accordance with (e) above, then within 6 months of the completion of the audit the Proponent shall revise the Biodiversity Offset Strategy, in consultation with DPIE, EES and DAWE, and to the satisfaction of the Secretary.

The Goonbri Creek realignment has not yet commenced, and the audit of the relevant CoA have not yet been triggered.

### 1.1 Overview of Operations and Approvals

The Tarrawonga Coal Mine is an open cut coal mine which was originally approved by the Minister for Planning under Project Approval PA 11\_0047 on 22 January 2013 to Tarrawonga Coal Pty Ltd (TCPL). PA 11\_0047 MOD 8 was approved in June 2020 with an expiry date of 31 December 2030.

The Tarrawonga Coal Mine lies within the mining leases (ML) 1579, 1685, 1693 and 1749. Tarrawonga is wholly owned by Whitehaven Coal Limited (WCL). The site holds Environmental Protection Licence (EPL) 12365, which was last varied in January 2020.



## 1.2 Overview of Biodiversity Management

Management of Biodiversity within the TCM project boundary and offset area is covered by a Biodiversity Management Plan (2020) (BMP). This BMP addresses the relevant key requirements outlined in PA 11\_0047, and the requirements for the Offset Management Plan outlined in the Commonwealth Approval Decision 2011/5923.

The BMP has been submitted to DPIE on a progressive basis and has been approved progressively. The BMP approved on 13 April 2015 was for the management of biodiversity at the TCM (Stage 1). A revision of the BMP (Stage 2) was prepared on 29 May 2020 in accordance with Condition 48 (b) of Schedule 3 to PA 11\_0047. This BMP (Stage 2) provides a consolidated plan for the management of flora and fauna at the TCM and 'Willeroi West' offset area, located approximately 25 kilometres north-east of the TCM. The current version of the BMP incorporates the approved TCM Threatened Fauna Implementation Plan in accordance with Condition 50(c) of Schedule 3 to Project Approval (PA) 11\_0047 and the approved TCM Box-Gum Woodland Endangered Ecological Community Implementation Plan in accordance with Condition 48(d) of Schedule 3 to PA 11\_0047. This version of the BMP also incorporates the requirements of the Leard Forest Regional Biodiversity Strategy Stage 2 – Strategy Report (Umwelt, 2017) Tables 2.1-2.4 and addresses recommendations from TCM Independent Biodiversity Audit 2017 (ERM, 2018) as required by Condition 50 of Schedule 3 to PA 11\_0047 and from TCM Independent EPBC Audit 2020 (ERM, 2020) as required by Condition 33 of EPBC Approval 2011/5923.

## 1.3 Audit Scope

The scope of works to complete the Audit included the following:

- the audit is to be carried out in accordance with DPIE's Requirements for Independent Audits and AS/NZS ISO 19011:2018: Guidelines for auditing management systems;
- review compliance requirements of CoA number 50 of Schedule 3 to Project Approval number PA 11\_0047 (Modification 8);
- site inspection to assess compliance against on-site rehabilitation works and field implementation of active CoA (relating to Schedule 3, CoA 50);
- assess the performance of management and restoration in the off-site biodiversity offset area completed to date against the completion criteria in the biodiversity management plan;
- identify measures that should be implemented to improve the performance of rehabilitation, management and restoration within the biodiversity offset area;
- where completion criteria have not been met, or are not adequately trending towards being met, determine the likely ecological value of the rehabilitation and restoration once completed, and recommends additional measure to augment the biodiversity management plan to ensure it adequately offsets the project's impacts on biodiversity;
- identify any measures that should be implemented to improve the performance against the CoA;
- draft report with results of compliance assessment to be issued for comment to Whitehaven Coal; and
- final report issued for submission to the DPIE.

The audit covers the period 1<sup>st</sup> August 2017 to 20<sup>th</sup> August 2020 and is limited to assessing the activities completed during the audit period. The site inspection was conducted on 20<sup>th</sup> August 2020.

## 1.4 Audit Criteria

The audit covered the following specifications and standards, with a particular focus on activities associated with the current stages of operation. The documents relevant to this audit included:

- Conditions of Approval PA 11\_0047 (Modification 8) including Statements of Commitments; and
- Implementation of approved Management Plans:
  - Draft Biodiversity Management Plan, dated 29 May 2020;
  - Mining Operations Plan, dated December 2019; and
  - Mine Site Rehabilitation Management Plan, dated March 2020

The BMP details the performance and completion criteria for restoration activities associated with the Offset Area. These are provided in Table 6.8 of the BMP, and reproduced in section 2.2.1 of this report. Short, medium and long-term measures are used to manage the vegetation and habitat in the Offset area. These are provided in Table 6.1 of the BMP, and reproduced in section 2.2.2 of this report. Performance of management within the Offset Area was assessed through interview of Group Superintendent - Biodiversity (Andrew Wright) to determine if management measures were being actively implemented. The Mine Site Rehabilitation Management Plan (RMP) and the Mining Operations Plan (MOP) details rehabilitation completion criteria for the Ecosystem Establishment and Ecosystem Sustainability phases, which were developed in 2018 in consultation with the NSW Office of Environment and Heritage (OEH). The completion criteria for the Ecosystem Establishment and Ecosystem Sustainability phases provided in Table 13 of the MOP are reproduced in section 2.1 of this report.

## 1.5 Limitations of this Report

This disclaimer, together with any limitations specified in the report, applies to this report and its use.

This report was prepared in accordance with the contracted scope of services for the specific purpose stated and subject to the applicable cost, time and other constraints. In preparing this report, ERM relied on:

- a) client/third party information which was not verified by ERM except to the extent required by the scope of services, and ERM do not accept responsibility for omissions or inaccuracies in the client/third party information; and
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## 2. AUDIT METHODOLOGY

The audit comprised a site inspection, interviews with key personnel and review of records and other related documents over the period 20<sup>th</sup> August – 7<sup>th</sup> September 2020.

### 2.1 Rehabilitation Area

Completion Criteria for the Rehabilitation Area as outlined in the MOP are displayed in Table 2-1 (Ecosystem Establishment) and Table 2-2 (Ecosystem Sustainability) below. No rehabilitation areas are anticipated to enter the Ecosystem Sustainability phase during the current MOP period. As such, performance has been assessed against Table 2-2 (Ecosystem Establishment).

**Table 2-1 Rehabilitation Ecosystem Establishment Completion Criteria (MOP 2020)**

Domain Objective	Performance Indicator	Completion Criteria	Justification Source	Complete (Yes/No)	Link to TARP	Progress at start of MOP
Phase – Ecosystem Establishment						
Woodland rehabilitation established consistent with analogue vegetation communities. Note: Local benchmarks <sup>1</sup> will be developed in consultation with OEH in 2018 <sup>2</sup> for the purpose of the completion criteria from analogue vegetation communities.	Native Species Richness	Increase to at least 10% of lower benchmark	TCM BMP Table 6.8	No	Yes	Not commenced
	Native Overstorey Cover	Increase to at least 10% of lower benchmark.	TCM BMP Table 6.8	No	Yes	Not commenced
	Native Mid-storey Cover	Increase to at least 10% of lower benchmark	TCM BMP Table 6.8	No	Yes	Not commenced
	Native Groundcover (Grasses)	Increase to at least 10% of lower benchmark	TCM BMP Table 6.8	No	Yes	Not commenced
	Native Groundcover (Shrubs)	Increase to at least 10% of lower benchmark	TCM BMP Table 6.8	No	Yes	Not commenced
	Native Groundcover (Other)	Increase to at least 10% of lower benchmark.	TCM BMP Table 6.8	No	Yes	Not commenced

Domain Objective	Performance Indicator	Completion Criteria	Justification Source	Complete (Yes/No)	Link to TARP	Progress at start of MOP
	Exotic Plant Cover	Decreasing number and cover of exotic species	TCM BMP Table 6.8 Biosecurity Act 2015	No	Yes	Not commenced

1 Benchmark is the required standard for each respective Performance Indicator established for specific native vegetation communities (Biometric vegetation communities) in NSW, as determined by the Office of Environment and Heritage. Lower benchmarks are used for completion criteria as they best align to establishing systems such as areas under rehabilitation.

2 Completion Criteria will be updated and finalised with OEH by 30 September 2018 including:-

- . Inclusion of sufficient parameters/indicators such that successful completion of each rehabilitation phase can be demonstrated;
- Inclusion of defined trigger points to inform trajectory analysis, and
- Defined reference sites and site specific benchmarks.

Once finalised, Completion Criteria will be incorporated into an amended MOP that will be provided to agencies for consultation, and DRG for approval.

**Table 2-2 Rehabilitation Ecosystem Sustainability Completion Criteria (MOP 2020)**

Domain Objective	Performance Indicator	Completion Criteria	Justification Source	Complete (Yes/No)	Link to TARP	Progress at start of MOP
Phase – Ecosystem Sustainability						
Woodland rehabilitation established consistent with analogue vegetation communities. Note: Local benchmarks <sup>1</sup> will be developed in consultation with OEH in 2018 <sup>2</sup> for the purpose of the completion criteria from analogue vegetation communities	Native Species Richness	Increase to at least 80% of lower benchmark	TCM BMP Table 6.10	No	Yes	Not commenced
	Native Overstorey Cover	Increase to at least 80% of lower benchmark.	TCM BMP Table 6.10	No	Yes	Not commenced
	Native Mid-storey Cover	Increase to at least 80% of lower benchmark.	TCM BMP Table 6.10	No	Yes	Not commenced
	Native Groundcover (Grasses)	Increase to at least 80% of lower benchmark.	TCM BMP Table 6.10	No	Yes	Not commenced
	Native Groundcover (Shrubs)	Increase to at least 80% of lower benchmark.	TCM BMP Table 6.10	No	Yes	Not commenced
	Native Groundcover (Other)	Increase to at least 80% of lower benchmark.	TCM BMP Table 6.10	No	Yes	Not commenced

Domain Objective	Performance Indicator	Completion Criteria	Justification Source	Complete (Yes/No)	Link to TARP	Progress at start of MOP
	Exotic Plant Cover	Less than 10% of domain area	TCM BMP Table 6.10	No	Yes	Not commenced
	% Canopy Recruitment	Some natural regeneration of Eucalypt canopy species present	TCM BMP Table 6.10	No	Yes	Not commenced

1 Benchmark is the required standard for each respective Performance Indicator established for specific native vegetation communities (Biometric vegetation communities) in NSW, as determined by the Office of Environment and Heritage. Lower benchmarks are used for completion criteria as they best align to establishing systems such as areas under rehabilitation.

2 Completion Criteria will be updated and finalised with OEH by 30 September 2018 including:-

- Inclusion of sufficient parameters/indicators such that successful completion of each rehabilitation phase can be demonstrated;
- Inclusion of defined trigger points to inform trajectory analysis, and
- Defined reference sites and site specific benchmarks.

Once finalised, Completion Criteria will be incorporated into an amended MOP that will be provided to agencies for consultation, and DRG for approval.

## 2.2 Offset Area

### 2.2.1 Restoration Completion Criteria

The Restoration Completion Criteria as outlined in the BMP against which performance has been assessed are displayed in Table 2-3 and Table 2-4.

**Table 2-3 Vegetation Performance and Completion (BMP 2020)**

Domain Objective	Performance Indicator	Performance Criteria							Justification/ Source
		Time since Initial Revegetation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
<b>PERFORMANCE CRITERIA</b>									
Woodland revegetation for White Box grassy woodland (BVT 226 and PCT 1383) and Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest (BVT 316 and PCT 592) as consulted with DPIE September 2018	BVT 226 and PCT 1383 Native Species Richness	Mean Target	1	2	3	4	5	5	Powerpoint Presentation used to consult with DPIE in September 2018 titled "WHC-OEH Woodland Revegetation Completion Criteria Meeting 25Sept18.pptx"
		Minimum Target	1	1	2	3	3	4	
	BVT 226 and PCT 1383 Native Overstorey Cover	Mean Target	1%	3%	4%	5%	6%	8%	
		Minimum Target	0%	0%	0%	0%	0%	0%	
	BVT 226 and PCT 1383 Native Mid-storey Cover	Mean Target	0%	1%	1%	1%	1%	2%	
		Minimum Target	0%	0%	0%	0%	0%	0%	
	BVT 226 and PCT 1383 Native Groundcover (Grasses)	Mean Target	2%	4%	6%	8%	10%	12%	
		Minimum Target	2%	3%	5%	6%	8%	9%	

Domain Objective	Performance Indicator	Performance Criteria							Justification/ Source
	BVT 316 and PCT 592 Native Species Richness	Mean Target	1	2	4	5	6	7	
		Minimum Target	1	2	3	4	5	6	
	BVT 316 and PCT 592 Native Overstorey Cover	Mean Target	2%	4%	6%	8%	10%	12%	
		Minimum Target	0%	0%	0%	0%	0%	0%	
	BVT 316 and PCT 592 Native Mid-storey Cover	Mean Target	1%	3%	4%	5%	6%	8%	
		Minimum Target	0%	1%	1%	1%	2%	2%	
	BVT 316 and PCT 592 Native Groundcover (Grasses)	Mean Target	2%	3%	5%	6%	8%	9%	
		Minimum Target	1%	2%	3%	4%	5%	6%	

**Table 2-4 Vegetation Performance and Completion Continued (BMP 2020)**

Domain Objective	Performance Indicator	Completion Criteria					Justification/ Source		
COMPLETION CRITERIA		Benchmarks	RBS* (80%) BVT NA 226	BVT NA 226	PCT BBS 1383**	Local Reference			
Woodland revegetation for White Box grassy woodland (BVT 226 and PCT 1383) and Narrow-leaved Ironbark - cypress pine - White Box shrubby open forest (BVT 316 and PCT 592) as consulted with DPIE September 2018	BVT 226 and PCT 1383 Native Species Richness	Mean Target	18	23	33	60	Powerpoint Presentation used to consult with DPIE in September 2018 titled "WHC-OEH Woodland Revegetation Completion Criteria Meeting 25Sept18. pptx"		
		Minimum Target	13	18	28	55			
	BVT 226 and PCT 1383 Native Overstorey Cover	Mean Target	Not Applicable	25%	17%	13%			
		Minimum Target	Not Applicable	6%	Not Applicable	Not Applicable			
	BVT 226 and PCT 1383 Native Mid-storey Cover	Mean Target	Not Applicable	5%	2%	4%			
		Minimum Target	Not Applicable	0%	Not Applicable	Not Applicable			
	BVT 226 and PCT 1383 Native Groundcover (Grasses)	Mean Target	Not Applicable	40%	45%	38%			
		Minimum Target	Not Applicable	30%	Not Applicable	Not Applicable			
			Benchmarks	RBS* (80%) BVT NA 316	BVT NA 316	PCT BBS 592**		Local Reference	
	BVT 316 and PCT 592 Native Species Richness	Mean Target	24	30	35	Not Applicable		Powerpoint Presentation used to consult with DPIE in September 2018 titled "WHC-OEH Woodland	
		Minimum Target	19	25	30	Not Applicable			
	BVT 316 and PCT 592 Native Overstorey Cover	Mean Target	Not Applicable	40	59	Not Applicable			
Minimum Target		Not Applicable	25	Not Applicable	Not Applicable				

BVT 316 and PCT 592 Native Mid-storey Cover	<b>Mean Target</b>	Not Applicable	25	30	Not Applicable	Revegetation Completion Criteria Meeting 25Sept18. pptx"
	<b>Minimum Target</b>	Not Applicable	6	Not Applicable	Not Applicable	
BVT 316 and PCT 592 Native Groundcover (Grasses)	<b>Mean Target</b>	Not Applicable	30	22	Not Applicable	
	<b>Minimum Target</b>	Not Applicable	20	Not Applicable	Not Applicable	

## 2.2.2 Management Implementation

Management measures outlined in the BMP against which performance has been assessed are displayed in Table 2-5 below.

**Table 2-5 Offset Area Biodiversity Management Assessment (BMP 2020)**

Management measure	Proposed frequency/ timing
Removal of Mount Kaputar National Park boundary fence (subject to approval with NPWS)	Once only (indicative timing 2023-2025)
Fencing, gates, access tracks/fire trails and signage inspections	Annually
Seed assessment programs	Seasonal, based on life cycle stage and development of native plants
Seed collection and propagation	As required, and based on seed assessment results and/or from other opportunistic observations
Installation of nest boxes	Staged over three years commencing from July 2020
Primary weed control	Biannually, following monitoring
Feral animal control	As required
Erosion control	As required
Inspection of fire breaks and access trails	Annually, prior to the fire season
Maintenance of fire breaks and access trails	As required
Fuel load monitoring	Annually
Controlled (Ecological ) burns	As required (subject to consultation with RFS)

### 3. AUDIT FINDINGS

#### 3.1 Rehabilitation Area

##### 3.1.1 Revegetation Completion Criteria

Rehabilitation at TCM has been assessed in accordance with completion criteria described in the MOP and is based on a review of the Rehabilitation Completion Criteria Analysis report (Eco Logical Australia, 28 August 2020) which details the monitoring of those rehabilitation areas that had reached the Ecosystem Establishment rehabilitation phase for the 2018 – 2019 period.

In terms of Native Species Richness (NPS), all monitoring sites exceeded the Ecosystem Establishment completion criteria. However, there was a decrease in NPS at all sites except site 21 since 2018. This was noted to be likely due to dry conditions during two consecutive years (2018 and 2019) leading up to the 2019 monitoring.

No monitoring sites met the Ecosystem Establishment criteria for Native Overstorey Cover (NOS), based on the accepted (canopy) height threshold for Eucalypt woodlands (i.e. >10 m) (Commonwealth of Australia, 2013). Although Ecosystem Establishment criteria for NOS was not met, planted canopy species were recorded to be approximately 5m – 10 m tall at the majority of sites and were considered likely to move towards NOS between 2020 and 2021.

Native Mid-storey Cover (NMS) Ecosystem Establishment completion criteria was exceeded at nine monitoring sites (7, 8, 9, 11, 12, 13, 14, 15 and 21) for the Biometric Vegetation Type (BVT) benchmark and six monitoring sites (9, 12, 13, 14, 15 and 21) for the Plant Community Type (PCT) benchmark. Observer error was attributed to multiple sites (7, 8, 10 and 11) that met completion criteria in 2018 and not in 2019. Given this, the reduced success results were considered negligible for these sites.

No rehabilitation areas are anticipated to enter the Ecosystem Sustainability phase during the current MOP period (i.e. 1<sup>st</sup> November 2015 to 30<sup>th</sup> November 2020). Despite this, the Rehabilitation Completion Criteria Analysis report also included an assessment against Ecosystem Sustainability phase criteria. As such, these results have been included in this report but were not considered in the assessment of performance.

Thirteen (13) monitoring sites (6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 21, 22 and 23) were assessed against completion criteria, which included NPS, NOS (projective foliage cover %), NMS (projective foliage cover %), and Exotic Plant Species (EPC %) (Table 3-2). The BVT and PCT lower benchmarks were determined for native woodland and forest and the White Box – Yellow Box – Blakey's Red Gum Ecological Endangered Community (EEC) rehabilitation area (Table 3.1). It is noted that the MOP measures native groundcover (%) in categories for grasses, shrubs and other. As these categories were not used in the 2019 monitoring, completion criteria for native groundcover (%) has not been assessed.

Although native ground cover was not categorised during the 2019 flora surveys, grass percentage cover within the rehabilitation plots was measured. The largest grass percentage measure was recorded below the lower benchmark values for BVT and PCT. Eco Logical Australia (2020) noted that groundcover was impacted by drought conditions in 2018 and 2019 and previous monitoring surveys have measured higher values.

Exotic plant species richness and cover was recorded to be generally declining between 2016 and 2019, with the exception of Rehabilitation zone 5 which had a minor increase compared to 2018. Monitoring identified priority weed species *Optunia stricta* (Prickly Pear) and *Lycium ferocissimum* (African Boxthorn) at five monitoring sites.



**Table 3-1 Lower Benchmarks for BVT NA316 and PCT592 for Assessment of Native Woodland/Forest Rehabilitation (Ecological Australia, 2020)**

Completion Criteria	BVT Lower Benchmark	PCT Lower Benchmark
NPS	30*	35*
NOS	25	59
NMS	6	30
NGCG	20	22

\*Standard Deviation Minimum Target.

**Table 3-2 Ecosystem Establishment Completion Criteria Assessment**

Domain Objective	Performance Indicator	Completion Criteria	Criteria Met	Comment
<b>Phase – Ecosystem Establishment</b>				
Woodland rehabilitation established consistent with analogue vegetation communities. Note: Local benchmarks <sup>1</sup> will be developed in consultation with OEH in 2018 <sup>2</sup> for the purpose of the completion criteria from analogue vegetation communities.	Native Species Richness	Increase to at least 10% of lower benchmark	Yes	
	Native Overstorey Cover	Increase to at least 10% of lower benchmark.	No	2018 and 2019 monitoring indicated most canopy species between 5 and 10 m tall.
	Native Mid-storey Cover	Increase to at least 10% of lower benchmark	Yes	Two sites did not meet completion criteria (6 and 23).
	Native Groundcover (Grasses)	Increase to at least 10% of lower benchmark	NA	Native ground cover was not categorised as per the MOP during monitoring.
	Native Groundcover (Shrubs)	Increase to at least 10% of lower benchmark	NA	Native ground cover was not categorised as per the MOP during monitoring.
	Native Groundcover (Other)	Increase to at least 10% of lower benchmark.	NA	Native ground cover was not categorised as per the MOP during monitoring.
	Exotic Plant Cover	Decreasing number and cover of exotic species	Yes	

**Table 3-3 Ecosystem Sustainability Completion Criteria Assessment**

Domain Objective	Performance Indicator	Completion Criteria	Criteria Met	Comment
<b>Phase – Ecosystem Sustainability</b>				
Woodland rehabilitation established consistent with analogue vegetation communities. Note: Local benchmarks <sup>1</sup> will be developed in consultation with OEH in 2018 <sup>2</sup> for the purpose of the completion criteria from analogue vegetation communities	Native Species Richness	Increase to at least 80% of lower benchmark	No	No sites met the BVT and PCT benchmarks.
	Native Overstorey Cover	Increase to at least 80% of lower benchmark.	No	No sites met the BVT and PCT benchmarks.
	Native Mid-storey Cover	Increase to at least 80% of lower benchmark.	No	Six sites exceeded the criteria for the BVT benchmark . No sites met the criteria for the PCT benchmark.
	Native Groundcover (Grasses)	Increase to at least 80% of lower benchmark.	NA	Native ground cover was not categorised as per the MOP during monitoring.
	Native Groundcover (Shrubs)	Increase to at least 80% of lower benchmark.	NA	Native ground cover was not categorised as per the MOP during monitoring.
	Native Groundcover (Other)	Increase to at least 80% of lower benchmark.	NA	Native ground cover was not categorised as per the MOP during monitoring.
	Exotic Plant Cover	Less than 10% of domain area	Yes	
	% Canopy Recruitment	Some natural regeneration of Eucalypt canopy species present	No	No canopy recruitment of <i>Eucalyptus</i> species was recorded. Seedlings in low numbers were noted at sites 15 and 23.

### 3.1.2 Improvement Recommendations

As outlined by Eco Logical Australia (2020), the following improvement recommendations are required to be implemented within the rehabilitation areas:

#### Shrub Species

Planting of additional shrub species that are native to the local area should occur in the rehabilitation zones.

#### Weed Control

Declared priority weeds (*Optunia stricta* and *Lycium ferocissimum*) under the *Biosecurity Act 2015* should be managed appropriately.

#### Monitoring

Given the rehabilitation areas have been impacted by drought, they should be closely monitored for erosion and exotic plant proliferation as a consequence of returning rains.

ERM recommends that native ground cover is divided into categories for grasses, shrubs and other as per the MOP during future monitoring.

## 3.2 Offset Area

### 3.2.1 Restoration Completion Criteria

The revegetation works at the Offset Area have been assessed in accordance with completion criteria outlined within the Biodiversity Management Plan (2020) aligned with performance criteria outlined within the Regional Biodiversity Strategy (RBS).

The '5-yearly Review of the Annual Flora Monitoring Program Data for the Maules Creek and Tarrawonga Mine Biodiversity Offset Areas' report (AMBS Ecology & Heritage, 2020) details findings of revegetation monitoring at the Offset Area. More specifically, seven monitoring sites were established in 2015 and assessed against performance criteria and completion criteria benchmarks (Table 3-4).

In terms of Native Species Cover, all seven sites achieved performance criteria for the RBS. This indicates that the revegetation sites are progressing well towards the completion criteria in regard to Native Species Cover.

Only three sites achieved performance criteria for the RBS in relation to Native Forb Cover. This may be a result of the extensive drought conditions the region has faced in the past few years. Following some recent rainfall in the region, the Site will monitor the natural regeneration of the ground cover over the next twelve months. In the event that performance criteria is still not met during the 2021 monitoring event, corrective action including active planting of native forbs species and control of environmental weeds will be required to ensure that performance criteria can be achieved within the completion timeframe and in accordance within the Biodiversity Management Plan (2020).

All seven sites achieved the RBS performance criteria for Native Midstory Cover. Completion benchmarks were also achieved for these sites, which indicates effective revegetation works across the Offset Area.

**Table 3-4 Offset Area Revegetation Completion Criteria Assessment**

Offset Area			Benchmarks			
Site	BMP 5yr Completion	RBS Performance Measure	BVT	VIS 2020	Local 2019	Local Average
<b>Native Species Cover</b>						
VS40	Yes	Yes	Yes	Yes	No	No
VS41	Yes	Yes	No	No	No	No
VS42	Yes	Yes	Yes	No	No	No
VS44	Yes	Yes	Yes	No	No	No
VS45	Yes	Yes	Yes	Yes	No	No
VS46	Yes	Yes	Yes	No	No	No
VS47	Yes	Yes	Yes	No	No	No
<b>Native Forb Cover</b>						
VS40	Yes	Yes	Yes	No	Yes	No
VS41	Yes	Yes	Yes	No	Yes	No
VS42	Yes	Yes	Yes	No	Yes	No
VS44	No	No	No	No	No	No
VS45	Yes	No	No	No	Yes	No
VS46	Yes	No	No	No	Yes	No
VS47	Yes	No	No	No	Yes	No
<b>Native Midstory Cover</b>						
VS40	Yes	Yes	Yes	No	No	No
VS41	Yes	Yes	Yes	No	No	No
VS42	Yes	Yes	Yes	No	No	No
VS44	Yes	Yes	Yes	No	No	No
VS45	Yes	Yes	Yes	No	No	No
VS46	Yes	Yes	Yes	No	No	No
VS47	Yes	Yes	Yes	No	No	No

### 3.2.2 Management Implementation

**Table 3-5 Offset Area Biodiversity Management Assessment**

Management measure	Proposed frequency/ timing	Audit findings	Satisfactory implementation
Removal of Mount Kaputar National Park boundary fence (subject to approval with NPWS)	Once only (indicative timing 2023-2025)	Boundary fence has not yet been removed. Fence removal is planned for 2023-2025.	Not Yet Triggered (2023-2025)
Fencing, gates, access tracks/fire trails and signage inspections	Annually	Fences, Signs and Gates within the Offset Area are inspected annually by WHC Officer and data is captured/collected in ESRI Collector/Survey 123 and ArcGIS Online.	Yes
Seed assessment programs	Seasonal, based on life cycle stage and development of native plants	Stringybark Ecological (contractor) undertook the last routine Seed Assessment Program in March 2020.	Yes
Seed collection and propagation	As required, and based on seed assessment results and/or from other opportunistic observations	In 2019, Biobank Seeds/Fields Environmental (contractor) collected seed from several nearby properties, which was used in the revegetation process.	Yes
Installation of nest boxes	Staged over three years commencing from July 2020	No nest boxes have been installed at the Offset Area. However, a Habitat Needs Assessment undertaken by AMBS (contractor) was undertaken to determine an appropriate nest box application program. More specifically, determining how many nest boxes are required and the deployment locations. Although, no nest boxes have been installed, considerable planning has occurred to ensure this management approach is effectively implemented.	Yes
Primary weed control	Biannually, following monitoring	Hunter Land Management (Contractor) undertakes quarterly weed inspections of the Offset Area (last inspection March 2020). These weed inspections identify if primary weeds are present. If primary weeds are present weed control occurs. The Offset Area has been subject to extensive weed control efforts.	Yes
Feral animal control	As required	Hunter Land Management (Contractor) undertakes regular control programs. Shooting programs targeting pigs and kangaroos was last undertaken in 2019. 1080 bait programs were undertaken in March 2020. Pig and cat trapping was also undertaken in March 2020.	Yes
Erosion control	As required	Minesoils (contractor) responsible for assessing erosion issues within the Offset Area. Minesoils last assessed access tracks in November 2019. Minesoils have prepared an erosion register that monitors the erosive capacity of access tracks and fire breaks within the Offset Area, which is updated annually. Earthworks contractor engaged annually to respond to Minesoil assessments.	Yes
Inspection of fire breaks and access trails	Annually, prior to the fire season	Track Inspections undertaken annually by Minesoils.	Yes
Maintenance of fire breaks and access trails	As required	Earthworks contractor engaged annually to respond to Minesoil assessments.	Yes
Fuel load monitoring	Annually	Annual fuel load monitoring undertaken by LRM Fire and Rescue (contractor). Last monitoring event occurred in 2019.	Yes
Controlled (Ecological ) burns	As required (subject to consultation with RFS)	Last ecological burn completed in 2018. LRM planned ecological burn for 2020 but deferred due to wet weather.	Yes

### **3.2.3 Improvement Recommendations**

ERM recommends the following improvement actions are implemented within the offset areas:

#### Seed Collection and Propagation

The audit identified that seed hadn't been sourced from the Offset Area. ERM appreciates that seed was sourced from nearby properties, however, efforts should be made to attain seeds from the Offset Area.

#### Feral Animal Monitoring

ERM understands through consultation and review of feral animal monitoring reports that feral animal monitoring for the Offset Area is undertaken in accordance with the NSW DPIE guidelines 'Monitoring Techniques for Vertebrate Pests'. Despite WHC undertaking monitoring to this requirement, it is evident that these monitoring techniques are now dated and have not been effective. Camera trapping techniques have been found to be more effective at the Offset Area. Whitehaven should actively consult with the regulator to alter the BMP obligation and RBS-2 requirements so that feral animal monitoring does not have to be conducted completely in accordance with the NSW DPIE guidelines 'Monitoring Techniques for Vertebrate Pests'.



## 4. ASSESSMENT ON PERFORMANCE

### 4.1 Rehabilitation Area

#### 4.1.1 Revegetation

Ecosystem Establishment completion criteria was met for NPS, NMS, and EPC, indicating effective revegetation works for these criteria across the Rehabilitation Area. Although NOS did not meet Ecosystem Establishment completion criteria, planted canopy species identified to be 5 – 10 m tall in the 2019 monitoring are expected to move from NMS to NOS in the 2020 – 2021 period. Additionally, decreases in NPS Richness at the majority of sites, the minor increase in EPC at Rehabilitation zone 5 and the low recorded combined percentage grass cover are likely associated with recent drought conditions.

### 4.2 Offset Area

#### 4.2.1 Restoration

Revegetation sites are progressing well towards the completion criteria in regard to Native Species Cover. However, only three sites achieved performance criteria for the RBS in relation to Native Forb Cover. This may be a result of the extensive drought conditions the region has faced in the past few years. Corrective action should be applied in future years if monitoring continues to fall below performance criteria.

All sites achieved the RBS performance criteria for Native Mid-storey Cover and completion benchmarks were also achieved for these sites, which indicates effective revegetation works across the Offset Area.

#### 4.2.2 Management

The management at the Offset Area appears to be comprehensive and following a scientific approach. The use of seed assessment, seed collection, habitat needs assessment, weed control, feral animal control, erosion control and fuel load monitoring by specialist contractors allows effective implementation of management. Of particular value is the implementation of a Habitat Needs Assessment to design effective nest box installation. Overall, biodiversity management at the Offset Area is compliant with Condition 50 (c).

## **APPENDIX A REGULATOR CORRESPONDENCE**



Mr Tony Dwyer  
Group Manager - Approvals and Environment  
Whitehaven Coal Limited  
PO Box 56  
BOGGABRI NSW 2382

Via Email Only: [tdwyer@whitehavencoal.com.au](mailto:tdwyer@whitehavencoal.com.au)

27/07/2020

Dear Mr Dwyer

**Agreement of Independent Auditor  
Tarrawonga Mine (PA 11\_0047)**

I refer to Whitehaven Coal Limited's (WCL) submission, dated 2 June 2020, seeking the agreement of the Secretary of the Department of Planning, Industry and Environment (the Department) of a suitably qualified, experienced and independent audit team to undertake the 2020 independent environmental audit (IEA) of Tarrawonga Mine and further submission dated 10 July 2020 seeking a replacement support auditor.

Reference is also made to correspondence received on 24 July 2020 from WCL seeking an administrative amendment to the original endorsement letter dated 5 June 2020 and endorsement of a replacement support auditor dated 13 July 2020 to include endorsement under an additional condition of consent.

As such, in accordance with Schedule 5, Condition 10 and Schedule 3, Condition 50 of PA 11\_0047 (the Approval) and the *Post-approval requirements for State significant developments* (Department, October 2015), the Secretary has agreed to the following audit team:

- Heather McKay – Lead Auditor;
- Brigitte Healey – Support Auditor;
- Oliver Moore – Technical Review;
- Wijnand (Vey) Gemson – Hydrogeologist;
- Sebastien Madden – Ecologist;
- Aaron Mckenzie – Noise and Vibration;
- Robert Smith – Back-up Lead Auditor.

Please ensure this letter, and all previous correspondence regarding the 2020 IEA, is appended to the IEA Report.

The IEA must be prepared, undertaken and finalised in accordance with the *Post-approval requirements for State significant developments* (Department, October 2015). Failure to meet these requirements will require revision and resubmission.

If you have any questions, please contact James Epstein, Senior Compliance Officer, on (02) 6575 3419 or email to [compliance@planning.nsw.gov.au](mailto:compliance@planning.nsw.gov.au)

Yours sincerely,

Heidi Watters  
Team Leader Northern  
Compliance  
As nominee of the Secretary

**From:** [James Hutchinson-Smith](#)  
**To:** [Heather McKay](#); [admin.northwest@lls.nse.gov.au](mailto:admin.northwest@lls.nse.gov.au)  
**Cc:** [Lynden Cini \(LCini@whitehavencoal.com.au\)](mailto:LCini@whitehavencoal.com.au); [Sebastien Moreno](#); [Oliver Moore](#); [Sebastian Madden](#)  
**Subject:** Re: Whitehaven Coal Tarrawonga Mine - Independent Environmental Audit and Independent Biodiversity Audit  
**Date:** Friday, 24 July 2020 12:22:43 PM  
**Attachments:** [image003.jpg](#)

---

Heather,

The Team and I will review what you have provided and try and get back to you before the deadline.

Regards

James.

**James Hutchinson-Smith | General Manager**  
North West Local Land Services  
Tamworth Agriculture Institute | 4 Marsden Park Road  
PO Box 500 | Calala NSW 2340  
T: 02 6764 5970 | M: 0428 485 985  
E: [James.hutchinson-Smith@lls.nsw.gov.au](mailto:James.hutchinson-Smith@lls.nsw.gov.au)  
W: [www.northwest.lls.nsw.gov.au](http://www.northwest.lls.nsw.gov.au)

---

**From:** Heather McKay <Heather.McKay@erm.com>  
**Sent:** Friday, 24 July 2020 12:13  
**To:** James Hutchinson-Smith <james.hutchinson-smith@lls.nsw.gov.au>;  
admin.northwest@lls.nse.gov.au <admin.northwest@lls.nse.gov.au>  
**Cc:** Lynden Cini (LCini@whitehavencoal.com.au) <LCini@whitehavencoal.com.au>; Sebastien Moreno <smoreno@whitehavencoal.com.au>; Oliver Moore <Oliver.Moore@erm.com>;  
Sebastian Madden <Sebastian.Madden@erm.com>  
**Subject:** Whitehaven Coal Tarrawonga Mine - Independent Environmental Audit and Independent Biodiversity Audit

Dear James,

I am currently completing the Independent Environmental Audit (IEA) and Biodiversity Audit on the Conditions of Approval issued to Tarrawonga Coal Mine, PA 11\_0047.

One of the requirements of the audit is that it is to be undertaken in consultation with relevant agencies. To that end, this email invites you to raise any questions or concerns regarding this project from an environmental management aspect.

The attached Terms of Reference outlines the audit process, and also introduces the approved team of suitably qualified, experienced and independent experts who will be undertaking the audit. It would be appreciated if there are any concerns, areas of focus etc., they are raised by 3 August 2020.

I can be contacted at the details outlined below to discuss further.

Kind regards,

Heather

Heather McKay  
Senior Environmental and Social Governance Consultant

**ERM**

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**From:** [Renee Shepherd](#)  
**To:** [Heather McKay](#)  
**Cc:** [Samantha Wynn](#); [Liz Mazzer](#)  
**Subject:** RE: Whitehaven Coal Tarrawonga Mine - Independent Environmental Audit and Independent Biodiversity Audit  
**Date:** Monday, 3 August 2020 6:06:03 PM  
**Attachments:** [image005.jpg](#)  
[image006.jpg](#)

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Hi Heather,

Thank you for providing us with the opportunity to contribute to the Independent Environmental Audit and Biodiversity Audit for the Tarrawonga Coal Mine.

Given that Aboriginal cultural heritage responsibilities have transferred to Heritage NSW, BCD's main area of interest centres around biodiversity. As such, the items we request to be considered in the audit are:

1. Assess the adequacy and effectiveness of the implementation of the Biodiversity Management Plan (Schedule 3 Condition 47), in particular regarding:
  - a. delivery of the proposed management and monitoring actions, and performance and completion criteria
  - b. whether any of the trigger points in the TARP have been exceeded and whether the corresponding response was adequate
2. Determine whether an updated version of the BMP has been finalised as per Schedule 3 Condition 48 following completion of Stage 2 of the Leard Forest Regional Biodiversity Strategy (the Strategy was approved on 1 September 2017 and the version of the BMP on the website is 9 April 2015).
3. Determine whether an updated version of the Biodiversity Offset Strategy has been prepared as per Schedule 3 Condition 42 following completion of Stage 2 of the Leard Forest Regional Biodiversity Strategy (version on the website is 28 August 2013).
4. Update on IEA recommendations from the 2017 audit (Table 3.2 in the 2017 IEA) and whether findings and recommendations have been implemented by the proponent, including:
  - a. 3.40 – additional detail provided in the annual reviews as requested
  - b. 3.49 – confirm the conservation and biodiversity bond has been lodged
  - c. 3.64(h) – confirm that the MOP has been revised to describe implementation, monitoring and auditing of rehabilitation
  - d. 1.2.33 – confirm that the annual monitoring schedule has been developed, and there is evidence of regular monitoring of ecological rehabilitation risks

Regards,

Renee.

**Renee Shepherd**

**Senior Project Officer – Special Projects, North West**

Biodiversity and Conservation Division | Department of Planning, Industry and Environment

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**From:** Heather McKay <Heather.McKay@erm.com>

**Sent:** Friday, 24 July 2020 12:13 PM

**To:** Renee Shepherd <Renee.Shepherd@environment.nsw.gov.au>

**Cc:** Lynden Cini (LCini@whitehavencoal.com.au) <LCini@whitehavencoal.com.au>; Sebastien Moreno <smoreno@whitehavencoal.com.au>; Oliver Moore <Oliver.Moore@erm.com>; Sebastian Madden <Sebastian.Madden@erm.com>

**Subject:** Whitehaven Coal Tarrawonga Mine - Independent Environmental Audit and Independent Biodiversity Audit

Dear Renee,

I am currently completing the Independent Environmental Audit (IEA) and Biodiversity Audit on the Conditions of Approval issued to Tarrawonga Coal Mine, PA 11\_0047.

One of the requirements of the audit is that it is to be undertaken in consultation with relevant agencies. To that end, this email invites you to raise any questions or concerns regarding this project from an environmental management aspect.

The attached Terms of Reference outlines the audit process, and also introduces the approved team of suitably qualified, experienced and independent experts who will be undertaking the audit. It would be appreciated if there are any concerns, areas of focus etc., they are raised by 3 August 2020.

I can be contacted at the details outlined below to discuss further.

Kind regards,  
Heather

Heather McKay  
Senior Environmental and Social Governance Consultant

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## APPENDIX B REFERENCES

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AMBS Ecology & Heritage 2020, *Draft 5-yearly Review of the Annual Flora Monitoring Program Data for the Maules Creek and Tarrawonga Mine Biodiversity Offset Areas*. Prepared for Whitehaven Coal Ltd.

Eco Logical Australia 2020, *Rehabilitation Completion Criteria Analysis*. Prepared for Whitehaven Coal Ltd.

Tarrawonga Coal Pty Ltd 2020, *Tarrawonga Coal Mine Mining Operations Plan Amendment E*.

Umwelt 2017, *Leard Forest Regional Biodiversity Strategy Stage 2 – Strategy Report*. Prepared on behalf of NSW Planning & Environment.

Whitehaven 2020, *Draft Tarrawonga Coal Mine Biodiversity Management Plan*.

Whitehaven 2020, *Tarrawonga Coal Mine Mine Site Rehabilitation Management Plan*.

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