BENGALLA MINE

ANNUAL COMPLIANCE REPORT FOR EPBC 2012/6378

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For:

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LIMITATIONS OF REPORT

In preparing this regulatory compliance audit report, Hansen Bailey has assessed all activities appropriate and necessary to evaluate the environmental status of the site during the reporting period. Hansen Bailey has addressed all technical matters which might reasonably be considered to be relevant to such an assessment conducted to standards which apply in New South Wales. Based on observations of the site, discussions with appropriate staff and a review of available documentation, it is Hansen Bailey's opinion that the potential critical environmental issues associated with the site and operations are those discussed in this report. However, Hansen Bailey can only advise on the basis of the information available to them and therefore cannot dismiss absolutely the possibility that parts of the site, or adjacent properties, may give rise to additional issues.

The conclusions presented in this report are professional opinions based solely upon Hansen Bailey's interpretation of the documentation reviewed, interviews and conversations with personnel knowledgeable about the site and other available information, as referenced in this report. These conclusions are intended exclusively for the purposes stated herein, at the site listed, and for the project indicated.

This report does not, and does not purport to, give legal advice on the actual or potential environmental liabilities of any individual or organisation, or to draw conclusions as to whether any particular circumstances constitute a breach of relevant legislation.

BENGALLA MINE
ANNUAL COMPLIANCE REPORT FOR EPBC 2012/6378

For
Bengalla Mining Company

1 INTRODUCTION

1.1 BACKGROUND

Bengalla Mining Company Pty Limited (BMC) operates the Bengalla Mine (Bengalla) which is located 130 km north-west of Newcastle and 4 km west of the township of Muswellbrook.

Bengalla commenced operations in 1998 and is approved to extract up to 15 Million tonnes per annum of run of mine coal until 2039.

On 3 March 2015, BMC was granted State Significant Development Consent (SSD-5170) by the NSW Secretary of Department of Planning and Environment (DPE) under the *Environmental Planning & Assessment Act 1979* (EP&A Act).

On 27 May 2015, BMC was granted *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Approval 2012/6378.

Both of the EPBC2012/6378 and SSD-5170 approvals are supported by the '*Continuation of Bengalla Mine Environmental Impact Statement*' (Hansen Bailey, 2013) (EIS) and *Continuation of Bengalla Mine Response to Submissions* (Hansen Bailey, 2014) (RTS).

1.2 PURPOSE AND SCOPE

This report has been prepared in accordance with Condition 12 of EPBC2012/6378 which states:

> *"By the end of March each year, the approval holder must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of the BOMP and VCLMP as specified in the conditions.*
>
> *Documentary evidence providing proof of the date of publication must be provided to the Department at the same time as the compliance report is published.*
>
> *Note: The Annual Review required under NSW Approval condition 4 (of Schedule 5) may be used to satisfy this condition if it meets the above content and submission requirements)."*

This report applies to the period 1 January 2017 to 31 December 2017 (reporting period).

This report will form an Appendix to the 2017 Annual Review for Bengalla required under SSD-5170 Schedule 5 Condition 4.

2 ACTIVITIES UNDERTAKEN IN 2017

During the reporting period, the Biodiversity Offset Management Plan (BOMP) was finalised in consultation with and approved by Department of Environment and Energy (DoEE). The BOMP has been developed for the ongoing management of biodiversity values within the Biodiversity Offset Areas formally held by BMC over a 20-year period.

Pre-clearing and clearing surveys commissioned by BMC during the reporting period were undertaken by a WSP Parsons Brinckerhoff ecologist. A copy of the WSP '*Bengalla Mining Company Annual Clearing Report 2017'* (Clearing Report) is provided in **Appendix C**.

Clearing works in 2017 were in relation to the:

- Relation of infrastructure and service roads; and
- Extension of the open cut mining pit to the west.

The Clearing Report summarises the 2017 pre-clearance and clearance surveys, which included:

- A total of 147 hollow-bearing trees were identified, 115 of which were felled;
- Successful relocation of 109 animals captured during pre-clearance and clearance surveys;
- Observation of 89 animals that evaded capture during clearing;
- Six animals killed or euthanised as a result of clearing operations; and
- No species listed under the EPBC Act were encountered during 2017 clearing operations.

Two non-compliances were identified during clearing activities undertaken in 2017. These non-compliances were both related to areas being clearing without the completion of the pre-clearing surveys required under the approved Biodiversity Management Plan (BDMP) and approval of a Ground Disturbance Permit (GDP) from the BMC Environment Department. These non-compliances included:

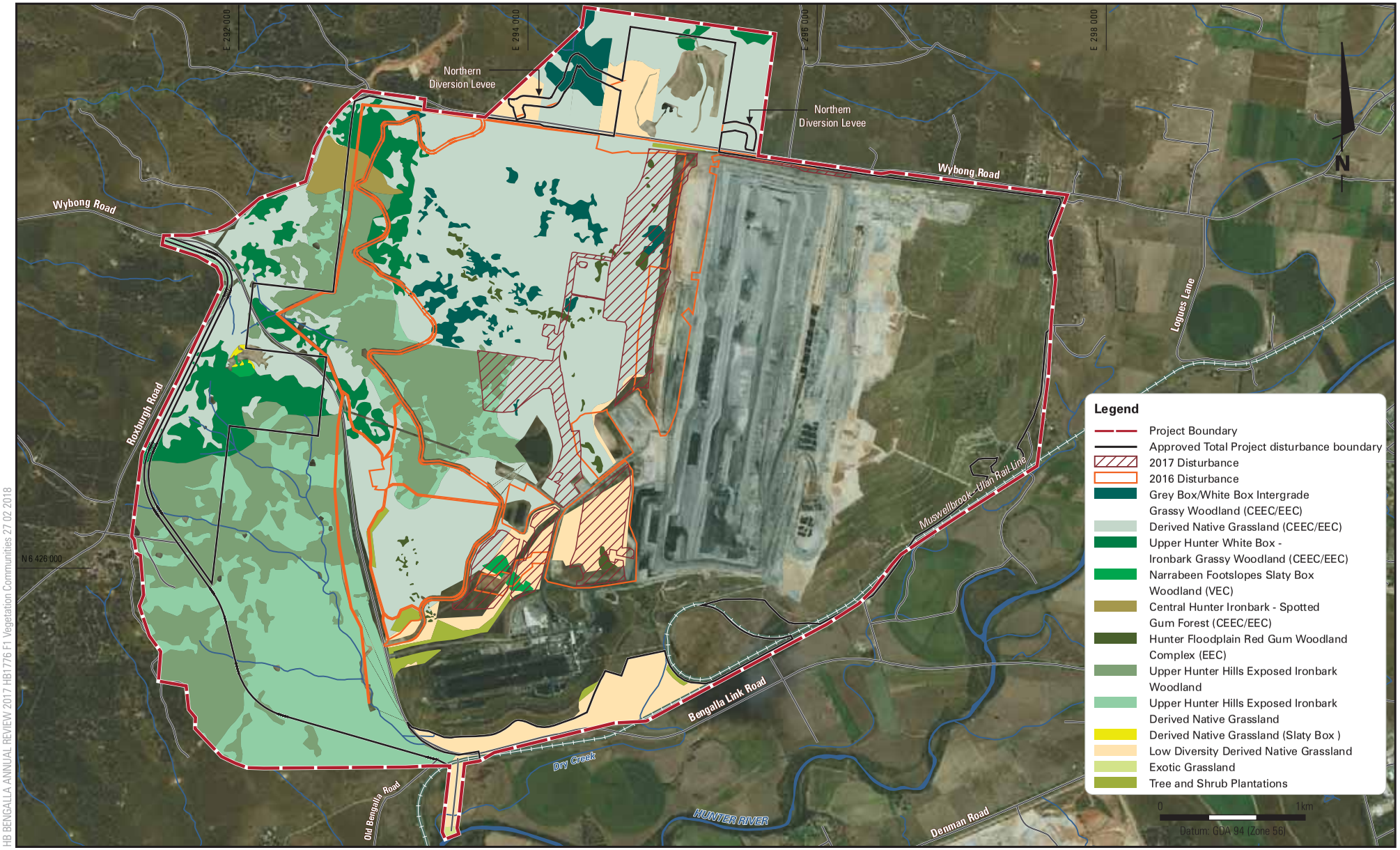
- Clearing of a 0.0874 ha area of Derived Native Grassland in June 2017. BMC notified the DoEE regarding a potential non-compliance against the site BDMP; and

Clearing of a 1.4 ha area identified as likely to have been woodland with a predominantly exotic understorey in October 2017. BMC notified the DoEE regarding a potential non-compliance against the site BDMP.

Figure 1 is a reproduction of Figure 4 from the approved BDMP and has been updated to illustrate areas cleared during the reporting period, including Critically Endangered Ecological Communities (CEEC) listed under the EPBC Act.

CEEC identified in environmental assessments completed for the EIS and RTS included the following four communities identified as conforming to Upper Hunter White Box-Ironbark Grassy Woodland (Box Gum Woodland):

- Grey Box/White Box Intergrade Grassy Woodland;
- Upper Hunter White Box -Ironbark Grassy Woodland;
- Central Hunter Ironbark – Spotted Gum Forest; and
- Derived Native Grassland.



HB BENGALLA ANNUAL REVIEW 2017 HB1776 F1 Vegetation Communities 27 02 2018

BENGALLA MINE

Vegetation Communities

FIGURE 1

3 COMPLIANCE REPORT

Table 2 lists the conditions of EPBC2012/6378 and indicates the compliance status of each as 'compliant', 'not compliant' or 'not triggered'. Comments are provided against each condition, where required.

The commitments made in the approved BDMP and BOMP, along with the compliance status of each are presented in **Appendix A** and **Appendix B,** respectively, with comments provided against each, where required.

Table 1 is a reproduction of Figure 6 from the BDMP. It provides details of the staged clearing approach undertaken at BMC. This approach was revised during the reporting period and included in the 2017 revision of the BDMP.

Table 1
Staged Clearing Approach

Stage	Actions
Pre-Clearing Survey	• Performed within one month of clearing • All fauna, flora and *Cymbidium canliculatum* recorded • Vegetation health assessed and documented • Habitat features marked and flagged • Fauna captured and relocated
Clearing – Stage 1	• Removal of all vegetation other than habitat trees • Habitat features left standing overnight
Clearing – Stage 2	• A final pre-clearing inspection will be conducted to identify and capture any fauna • Habitat trees lightly shaken by machinery prior to felling • Appropriate machinery used to fell the tree • Any *Cymbidium canaliculatum* (Tiger Orchid) translocated • Remaining fauna captured and relocated • Felled habitat trees left overnight and then appropriate sections are removed and relocated to a storage location, rehabilitation areas or disposed

Table 3.1 of the Clearing Report (**Appendix C**) outlines dates the pre-clearing inspections were undertaken.

Table 3.4 of the Clearing Report (**Appendix C**) describes when the clearing was undertaken. The timeframe between the pre-clearing inspections and clearing activities exceeds one week on some occasions. However, the Clearing Report identified that on these occasions, an ecologist conducted a final pre-clearance survey immediately prior to the felling of the habitat trees. The results of the final pre-clearance survey are recorded as part of the clearance documentation and not as a separate pre-clearing survey report. This variation may be reflected in the next update to the BDMP, if required.

As described above in **Section 2**, two non-compliances against the conditions of EPBC 2012/6378 were identified as a result of BMC clearing activities undertaken during 2017.

Table 2
BMC Compliance Status against Conditions of EPBC2012/6378

Ref	Condition	Status	Comment
1	The approval holder must not clear more than 535 hectares of *White Box-Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland* ecological community (Box Gum Woodland) and must limit clearing to within the project disturbance boundary defined at Schedule 1.	Compliant	In 2017 clearing was undertaken within the Project Disturbance Boundary. Approximately 68 ha of White Box-Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box Gum Woodland) was cleared in the reporting period as illustrated in **Figure 1**. To date, approximately 135 ha of White Box-Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box Gum Woodland) has been cleared.
2	To mitigate impacts of the action on Box Gum Woodland, the Grey Headed Flying Fox, Large-eared Pied Bat, South-eastern Long-eared Bat, Regent Honeyeater, Swift Parrot and Spotted-tail Quoll, the approval holder must prepare and submit, prior to the proposed date of commencement of the action, a mine site Vegetation Clearance Protocol and Landscape Management Plan (VCPLMP) for the Minister's written approval. The VCPLMP must: a. Delineate areas to be cleared, describe pre-clearance survey methods, specify actions to minimise fauna impacts and detail vegetation clearance procedures b. Require collection and stockpiling of habitat features important to threatened fauna species for reinstatement in rehabilitation areas c. Require use of native, locally sourced seed for propagation for rehabilitation activities d. Include measures to avoid, suppress and control the spread of plant pathogens (such as *Phytophthora cinnamomi*) e. Specify a two stage clearing protocol where non-habitat trees are cleared 24 hours prior to any habitat trees being cleared, to encourage fauna to move out of an area.	**Not Compliant**	A BDMP was developed to meet this requirement (see **Appendix A**). NSW approval for the BDMP was provided on 14 August 2015. Final approval from Department of Environment and Energy (DoEE) was provided on 14 August 2015. BMC commenced implementation of the BDMP after 14 August 2015. The BDMP was recently revised and approved by DoEE on 20 September 2017 and by DPE on 18 August 2017. Section 1.3 of the BDMP describes where sub-conditions a) to e) are addressed.

Ref	Condition	Status	Comment
			Two non-compliances against the requirements of the BDMP clearing procedure were identified during 2017 (see **Section 2**)
	The approval holder must not commence the action until the VCPLMP is approved by the Minister. The approved VCPLMP must be implemented. Note: The Biodiversity Management Plan required under NSW Approval condition 29 may be used to satisfy this condition if it meets the above content and submission requirements.	Compliant	The BDMP (prepared to address the requirement for the VCPLMP) was approved on 14 August 2015 and the Action commenced on 1 October 2015.
3	To compensate for the loss of 535 hectares of Box Gum Woodland ecological community and 272 hectares of habitat for the Grey Headed Flying Fox, Large-eared Pied Bat, Southeastern Long-eared Bat, Regent Honeyeater, Swift Parrot and the Spotted-tail Quoll, the approval holder must prepare and submit, by 3 September 2015, a Biodiversity Offset Management Plan (BOMP) for the Minister's written approval. The BOMP must: a. Identify those lands described as the Offset Areas at Schedule 2 (Figures 1- 6) of this notice. This must include offset attributes, shape files, textual descriptions and maps to clearly define the location and boundaries of the offset area(s) b. Provide a survey and description of the current condition (prior to any management activities) of the offset areas identified in Condition 3a c. Detail management actions and regeneration and revegetation strategies to be undertaken on the offset areas to improve the ecological quality of these areas, including: (i) a description and timeframe of measures that would be implemented to improve the condition of Box Gum Woodland and habitat for the Grey Headed Flying Fox, Large-eared Pied Bat, South-eastern Long-eared Bat, Regent Honeyeater, Swift Parrot and the Spotted-tail Quoll on the offsets sites; (ii) performance and completion criteria for evaluating the management of the offset areas, and criteria for triggering remedial action; (iii) a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria; (iv) a description of potential risks to the successful implementation of the plan, a description of the measures that will be implemented to mitigate against these	Compliant	Following extensive consultation (Appendix A of BOMP), the BOMP received approval from DoEE on 8 March 2017. The BOMP was later granted approval by DPE on 18 August 2017 (see **Appendix B**). Table 1 of the approved BOMP details where each requirement of Condition 3 is satisfied.

Ref	Condition	Status	Comment
	risks and a description of the contingency measures that will be implemented if defined triggers arise; and (v) details of who would be responsible for monitoring, reviewing, and implementing the plan. The approved BOMP must be implemented. The approved BOMP must be published on the approval holder's internet web site within 1 month of being approved. The most recently approved version of the BOMP must be published on the approval holder's internet web site for a period of 5 years after it is approved. Note: The Biodiversity Management Plan required under NSW Approval condition 29 may be used to satisfy this condition if it meets the above content and submission requirements.		
4	The approval holder must secure the lands identified as the *Offset Areas* at Schedule 2 (Figures 1- 6) of this notice as a biodiversity offset, in accordance with NSW Approval condition 28.	Compliant	All Biodiversity Offset Areas identified in Schedule 2 (Figures 1-6) of EPBC 2012/3678 conditions of approval are under the ownership of and management of BMC. All Biodiversity Offset Areas identified in EPBC 2012/3678 are managed in accordance with the BOMP. Discussions with NSW OEH, NPWS and DP&E commenced in 2017 in relation to determining the appropriate long term mechanism for biodiversity offset areas, in accordance with Condition 28 of SSD-5170. Further updates will be provided in the 2018 Annual Review.
5	In order to protect listed threatened species and listed threatened ecological communities, the approval holder must undertake rehabilitation activities in accordance with NSW approval conditions 44, 45 and 46.	Compliant	An Independent Environmental Audit was finalised on 5 August 2017. NSW Approval conditions 44, 45 and 46 were identified as compliant by the auditor. Additional information is provided in Sections 6.14, 6.15 and 8 of the Bengalla 2017 Annual Review (Annual Review).

Ref	Condition	Status	Comment
6	The approval holder must undertake management and monitoring of water resources in accordance with NSW approval conditions 23 to 25.	Compliant	See Sections 6.7, 6.8 and 7 of the Annual Review.
7	In order to protect water resources, the approval holder must undertake rehabilitation activities in accordance with NSW approval conditions 44 and 46.	Compliant	See Sections 6.14, 6.15 and 8 of the Bengalla 2016 Annual Review (Annual Review).
8	Upon request, the approval holder shall supply the groundwater monitoring data for the Bengalla Mine to the Department, NSW Government agencies, operators of the Mt Arthur and/or Mount Pleasant mines or other adjacent mine operators. A protocol for the supply of the data must be included in the approval holder's Water Management Plan.	Not Triggered	No request has been made in the regard in the reporting period (CW pers comms).
9	The approval holder must make available to the Minister on request, all plans or programs and any review of plans or programs required under the Project Approval issued for the project under *the Environmental Planning and Assessment Act, 1979* (NSW), including the Biodiversity Management Plan, the Rehabilitation Management Plan and the Water Management Plan, which must include a Site Water Balance, Surface Water Management Plan and Groundwater Management Plan.	Not Triggered	No request has been made in the regard in the reporting period (CW pers comms). Approved Bengalla management plans are available for download from the BMC website; www.bengalla.com.au.
10	Within 30 days after the commencement of the action, the approval holder must advise the Department in writing of the actual date of commencement.	Compliant	BMC advised DoE via email on 30 October 2015 that the Action commenced on 1 October 2015.
11	The approval holder must maintain accurate records substantiating all activities associated with or relevant to these conditions of approval, including measures taken to implement the BOMP and VCPLMP, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	Not Triggered	No request has been made in the regard in the reporting period. **Appendix C** describes activities implemented under the BDMP.

Ref	Condition	Status	Comment
12	By the end of March each year, the approval holder must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of the BOMP and VCPLMP as specified in the conditions. Documentary evidence providing proof of the date of publication must be provided to the Department at the same time as the compliance report is published. Note: The Annual Review required under NSW Approval condition 4 (of Schedule 5) may be used to satisfy this condition if it meets the above content and submission requirements.	Compliant	The report to which this is an appendix meets this requirement. The BDMP has been implemented from commencement of the Action (1 October 2015). **Appendix A** provides a summary of commitments from the BDMP and how each has been addressed in the reporting period. **Appendix B** provides a summary of the commitments from the BOMP and how each has been addressed in the reporting period.
13	Non-compliance with any of the conditions of this approval must be reported to the Department within 2 business days of the approval holder becoming aware of the non-compliance.	Compliant	BMC notified DoEE in regards to two potential non-compliances on 3 July 2017 & 16 October 2017 discussed further in **Appendix A**. No further action was requested by DoEE during the reporting period.
14	Upon the direction of the Minister, the approval holder must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.	Not Triggered	No request has been made in the regard in the reporting period.
15	If the approval holder wishes to carry out any activity other than in accordance with a Plan as specified in the conditions, the approval holder must submit to the Department for the Minister's written approval a revised version of that Plan. The approval holder must not commence the varied activity until the Minister has approved the varied Plan in writing. The Minister will not approve a varied Plan unless the revised Plan would result in an equivalent or improved environmental outcome over time. If the Minister approves the revised Plan, that Plan must be implemented in place of the Plan originally approved.	Not Triggered	No activities other than those described in the BDMP or BOMP have been required in the reporting period.

Ref	Condition	Status	Comment
16	If the Minister believes that it is necessary or convenient for the better protection of listed threatened species and ecological communities to do so, the Minister may request that the approval holder make specified revisions to a Plan specified in the conditions and submit the revised Plan for the Minister's written approval. The approval holder must comply with any such request. The revised approved Plan must be implemented. Unless the Minister has approved the revised Plan then the approval holder must continue to implement the Plan originally approved, as specified in the conditions.	Not Triggered	No request has been made in the regard in the reporting period.
17	If, at any time after 5 years from the date of this approval, the approval holder has not commenced the action, then the approval holder must not commence the action without the written agreement of the Minister.	Not Triggered	BMC advised DoE via email on 30 October 2015 that the Action commenced on 1 October 2015.

4 CONCLUSION

This review of the compliance status of the Bengalla operations during the 2017 reporting period against the EPBC 2012/6378 approval identified two non-compliances and provided one general recommendation regarding the implementation of BOMP commitments.

BMC will continue to review and document all relevant activities on site during 2018 to assist in maintaining compliance with the EPBC 2012/6378 conditions.

Appendix A and **Appendix B** provide comment in regards to the implementation of a BDMP and BOMP commitments during the reporting period.

Yours faithfully,
HANSEN BAILEY

Dianne Munro
Principal

Appendix A
BDMP Commitments

BMP Section	Control / Action	Timing / Trigger	Responsibility	Monitoring	Reporting	Status	Comment
4.1	Marking Limits of Clearing	Prior to clearing	Environmental Specialist/ Mining Manager / Surveyors	Inspection to be undertaken throughout duration of clearing.	Documented in GDP form and signed off.	**Not Compliant**	Two areas were cleared during 2017 without the approval of a GDP (see **Section 2**). These included: • An area of 0.09 ha cleared in June 2017; and • An area of 1.4 ha cleared in October 2017. Also see Section 2.3 of **Appendix C**.
4.2	Identification of suitable fauna relocation sites	Prior to clearing	Environmental Specialist / Mining Manager	N/A	Documented in GDP form and signed off.	Compliant	Section 2.3.5 of **Appendix C**.
4.2	Pre-clearing surveys	Within one month prior to clearing	Suitably qualified person	Monitoring of fauna and flora (including Tiger Orchid, pest and weed species), habitat features and plant pathogens.	To be documented and signed off in the clearing report. Results to be reported in Annual Review. OEH notified if new threatened species identified.	**Not Compliant**	See **Section 2** and BMP Section 4.1 above for summary of non-compliances against BMP commitments during 2017. Section 3.1 of **Appendix C**. <u>Observation:</u> The BMP outlines that a staged clearing approach will be implemented. This approach is summarised in **Table 1** of this report. The Annual Clearing Report 2017 (WSP, 2018) notes that the staged clearing approach procedure was followed during the reporting period, as referenced in the BMP.

BMP Section	Control / Action	Timing / Trigger	Responsibility	Monitoring	Reporting	Status	Comment
4.2	Clearing Surveys	Within one month of the pre-clearing survey	Suitably qualified person	Monitoring of fauna and flora (including Tiger Orchid, pest and weed species), habitat features and plant pathogens.	To be documented and signed off in the clearing report. Results to be reported in Annual Review. OEH notified if new threatened species identified.	Compliant	Section 3.2 of **Appendix C**.
4.3	Pre-clearing weed management	Prior to clearing and during clearing	Suitably qualified person and Environmental Specialist	Inspection to be undertaken prior to clearing.	Documented and signed off in the GDP. Results to be reported in the Annual Review.	Compliant	Section 3.1.7 of **Appendix C**.
4.2.3	Relocation of habitat features to rehabilitation areas, adjacent vegetation or storage location.	During and/or after clearing	Environmental Specialist	N/A	Documented and signed off in the GDP. Results to be reported in the Annual Review.	Compliant	Section 3.1.8 of **Appendix C**.
4.1	Inductions and Staff Education	Ongoing as part of the existing induction procedure or as part of toolbox talks prior to commencement of controls	Environmental Specialist/ Safety Specialist	N/A	As per Induction procedure	Compliant	Inductions provided to all BMC staff and contractors include a component on biodiversity management.

BMP Section	Control / Action	Timing / Trigger	Responsibility	Monitoring	Reporting	Status	Comment
4.2	Vehicle Driving Policy and Signage	Ongoing or when wildlife crossing areas are identified	Mining Manager / Environmental Specialist	N/A	N/A	Compliant	No wildlife crossing areas were identified by PB during 2017 clearing (see **Appendix C**). Site access tracks and controls are included in site inductions for BMC personnel and contractors.
4.2.5	Seed collection	Targeted throughout year; and opportunistically before and immediately after clearing	Environmental Specialist	Observations to be made throughout year to check flowering / seeding development of key species. Ensure correct licences are held by any contractors.	To be documented and reported in the Annual Review.	Compliant	Section 3.1.6 of **Appendix C**. Native seed collection was undertaken during pre-clearance surveys during the reporting period.
4.3	Weed control	Ongoing over life of mine	Environmental Specialist	Routine field observations in Weed Control Zones, including rehabilitation areas.	Results to be reported in Annual Review.	Compliant	**Sections 6.14.2, 6.15** and **8** of the 2017 Annual Review.
4.4	Feral control	Ongoing over life of mine	Environmental Specialist	Routine field observations in Weed Control Zones including rehabilitation areas	Results to be reported in Annual Review.	Compliant	**Section 6.14.2** of the 2016 Annual Review.
5.0	Monitoring Program	Ongoing over life of mine	Ecologist	N/A	Results to be reported in the Annual Review	Compliant	**Appendix C**.

Appendix B
BOMP Commitments

BOMP Section	Commitment	Status	Comment
Notification			
2.3	Following approval, all actions detailed within this BOMP will be implemented. Within one month of receiving approval, this BOMP will be made available to the public on the BMC website.	Compliant	At the time of this compliance review, the BOMP (with regulatory approval letters) (August, 2017) was available on the BMC website.
Fencing, Gates and Signage			
8.1	Boundary fencing will remain around all BOS Areas and will be inspected annually to identify area that may require maintenance.	Complaint	Fencing and maintenance works were undertaken at Black Mountain (approx. 2km) and Echo (Kenelea) (approx. 1.3km) properties during 2017.
8.1	Internal fencing within Kenalea Properties and Black Mountain will be maintained (where appropriate) to allow for the management of controlled grazing in these properties.	Compliant	Fencing and maintenance works were undertaken at Black Mountain (approx. 2km) and Echo (Kenelea) (approx. 1.3km) properties during 2017.
8.1	Stock proof fencing will be utilised where existing fences are absent to protect sensitive areas.	Not Triggered	Not required during the reporting period.
8.1	Current gates for access to BOS Areas will be retained and kept locked.	Complaint	All gates to BOS area remained secured and locked during 2017 (BS pers comms).
8.1	BMC will install signage at the entrances to the BOS Area to inform the public of restricted access to properties.	Compliant	Signage at the entrances to the BOS Areas has been installed.
Controlled Activities			
8.2	All contractors, stakeholders and visitors to the BOS Areas will be inducted. The induction will include information on activities prohibited in BOS Area unless explicitly undertaken for the purposes of ongoing management.	Compliant	As required by internal polices, all staff, stakeholders and visitors working at Bengalla (or offsets) are required to be inducted prior to undertaking specified bodies of work.
Control Grazing			
8.3	Controlled grazing will only be permitted in Zone 1 and Zone 2 management areas.	Compliant	Cumberland Ecology undertook a Pre- and Post-Grazing Assessment of the Echo (Kenalea) property to assess locations suitable for grazing. These locations are classified as Zone 1 and Zone 2 management areas (Cumberland Ecology, 2017).

BOMP Section	Commitment	Status	Comment
8.3	Best practice guidelines for control grazing will be implemented wherever control grazing is employed, including: • Providing adequate rest periods and adjusting rest periods to suit the recovery needs and growth rates of the desirable plants; • Targeting defined areas with high fuel loads or weed infestations; • Cattle stocking numbers kept below 4 Dry Sheep Equivalent; • Pre and Post-grazing monitoring; • Periods of grazing must be kept as short as practicable; and • Control grazing will not be conducted during declared drought periods.	Compliant	Cumberland Ecology undertook a Pre- and Post-Grazing Assessment of the Echo (Kenalea) property to assess locations suitable for grazing. This assessment indicated 11 of the 17 available paddocks at Echo were suitable for grazing activities under the BOMP requirements (Cumberland Ecology, 2017).
8.3	Control grazing will be monitored against Trigger and Performance Criteria	Not Triggered	Trigger and Performance Criteria comment from Year 5 onwards.
8.3	Should monitoring results indicate that regeneration is not occurring naturally after Year 5, assisted revegetation will take place in areas that require this management action.	Not Triggered	Trigger and Performance Criteria comment from Year 5 onwards.
8.3	Stock will be excluded from riparian areas and will access water primarily from farm dams or water troughs.	Compliant	Cumberland Ecology undertook a Pre- and Post-Grazing Assessment of the Echo (Kenalea) property to assess locations suitable for grazing. Stock were excluded from riparian areas previously identified by Cumberland Ecology.
8.3	Monitoring will be undertaken pre- and post-grazing with the use of photo-reference points. Areas subject to control grazing will be monitored as part of annual monitoring program.	Compliant	Cumberland Ecology undertook a Pre- and Post-Grazing Assessment of the Echo (Kenalea) property to assess locations suitable for grazing. This assessment indicated 11 of the 17 available paddocks at Echo (Kenelea) were suitable for grazing activities under the BOMP requirements.
Bushfire Management			
8.4	BMC will take practicable steps to prevent the occurrence of bushfires on the land and minimise the spread of bushfire.	Compliant	BMC undertook controlled grazing at Echo (Kenelea) during 2017. As identified in Section 8.4 of the BMC BOMP, controlled grazing is utilised as a fire load reduction management technique.

BOMP Section	Commitment	Status	Comment
			Fire trail maintenance was conducted or had commenced on all BOS Area during 2017. BMC conducted a bushfire risk assessment and mitigation plan across all offsets during 2017.
8.4	BMC will provide maps (including water fill points) and contact details of the properties to the RFS.	In progress	Maps, keys and relevant contact information was provided to local area RFS captains. Fire trail GIS files were provided to RFS Liverpool Rangers to be loaded into the Fire Trail portal. Locations of water fill points will be provided to the RFS in 2018 following the ground truthing of these locations. (BS pers comm)
Weed Control			
8.5	Weed management actions will target Weeds of National Significance and Noxious Weeds across BOS Area.	Complaint	HLM undertook a weed monitoring and control program in BOS areas during the reporting period. HLM records the location of weeds identified during the program and records their location for GIS input (HLM, 2017). Recommendation: GIS information provided by HLM should identify weed by species.
8.5	Weed control will focus on species that exclude or have the potential to exclude native species, disrupt the recruitment of native species or impede ecological progress.	Compliant	A summary of the weed monitoring and control program undertaken on BOS areas during the reporting period is provided in **Section 6.15** of the 2017 Annual Review.
8.5	Weed management will be undertaken in accordance with the management principles listed in **Section 8.5** of the BOMP.	Compliant	Weed management practices were undertaken in accordance with Section 8.5 of the BOMP.
8.5	The results and outcomes of weed management will be documented and analysed for each year in the Annual Review. This will include documentation of areas subject to weeding, techniques used, target species controlled, new species identified, chemicals used and revised approaches to weed control in light of learnings during the previous reporting period.	Compliant	A summary of the weed monitoring and control program is provided in **Section 6.15** of the 2017 Annual Review.

BOMP Section	Commitment	Status	Comment
8.5	Weed infestation maps will be updated annually and annotated as required with information about previously implemented weed controls	Compliant	A weed monitoring and control program was undertaken in BOS areas during the reporting period. The location of weeds identified during the program was recorded for GIS input. Recommendation: GIS information should identify weed by species
Feral Animal Control			
8.6	BMC will conduct an annual feral animal control program in conjunction with current Local Land Services programs	Compliant	A feral animal control program was undertaken during 2017. This was undertaken in line with neighbouring properties and the LLS Baiting program.
8.6	Should any native fauna deaths be recorded during 1080 baiting and if sufficient carcass is available, the animal will be sent to a veterinarian to provide a cause of death. Should there be any evidence of poisoning of native animals	Not Triggered	No native fauna deaths were reported during the 2017 feral animal control program.
8.6	The results and outcomes of feral animal management will be documented for each year in the Annual Review. This will include documentation of the techniques used for each feral species, the quantity of bait material purchased and deployed, the areas subject to control, estimate of the numbers of animals culled, new species identified (if any) and any other chemicals used.	Complaint	A summary of the 2017 feral animal control program is provided in **Section 6.14** of the 2017 Annual Review.
8.6	All personnel involve in feral animal management must hold relevant and valid licences/permits, including any relevant chemical licences for pesticide use or a firearms licence for shooting.	Compliant	Staff and/or contractors involved in feral animal management held all relevant licences and accreditation to undertake the feral control program works in 2017.
Maintenance Track Improvement and Additional Infrastructure			
8.7	Maintenance of existing tracks and installation of additional infrastructure may be required to provide safe access to BOS Areas. Maintenance or construction works may result in minor/localised disturbance. BMC will ensure compliance with all legal and environmental protection measures prior to any significant disturbance.	Complaint	Minor maintenance to access tracks and boundary fences only during 2017.

BOMP Section	Commitment	Status	Comment
	BMC will record and store all relevant GIS information related to the improvement or installation of additional infrastructure.	Complaint	BMC has recorded and stored all improvements and installation of additional infrastructure on the BMC GIS Database.
	BMC will undertake routine inspections and maintenance of BOS infrastructure (e.g. tracks, fence lines and gates).	Compliant	Termite inspections were undertaken of structures on Kenelea during the reporting period (Flick, 2017). Tracks and fencelines were maintained as required (BS pers comms).
Contingency Measures			
8.8	Contingency measures will be utilised should monitoring indicate that performance.	Not Triggered	No contingency measures were required during the monitoring period.

Appendix C
Annual Clearing Report 2017

BENGALLA MINE

ANNUAL CLEARING REPORT

2017

MARCH 2018

Question today
Imagine tomorrow
Create for the future

Annual Clearing Report 2017

Bengalla Mine

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REV	DATE	DETAILS
A	31/01/2018	Revision A
B	12/03/2018	Revision B

	NAME	DATE	SIGNATURE
Prepared by:	Paul Shelley Troy Jennings	30/01/2018	
Reviewed by:	Nathan Cooper	31/01/2018	
Approved by:	Alex Cockerill	31/01/2018	

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ABBREVIATIONS

BMC	Bengalla Mining Company Pty Ltd
Bengalla	Bengalla Mine
BMP	Biodiversity Management Plan
EEC	Endangered Ecological Community
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
GDP	Ground Disturbance Permit
TSC Act	Threatened Species Conservation Act 1995
BC Act	Biodiversity Conservation Act 2016

EXECUTIVE SUMMARY

The Bengalla Mine (Bengalla) Biodiversity Management Plan (BMP) (Bengalla Mining Company Pty Ltd 2017) provides a framework for biodiversity management, reporting and auditing of ecological issues across Bengalla. As part of the Ground Disturbance Permit (GDP) process, the BMP requires that ecological pre-clearing and clearing surveys be carried out by a suitably qualified person to minimise harm to native flora and fauna.

This report summarises the pre-clearing and clearing surveys completed at Bengalla between January and December of 2017 (reporting period). These works were in relation to:

— General pit progression and relocation of infrastructure.

During the reporting period, pre-clearing and clearing surveys were undertaken by appropriately qualified WSP ecologists in accordance with the BMP.

During pre-clearing surveys habitat features such as hollow trees were recorded, marked with the letter "H" (for habitat) and flagged with fluorescent tape. A total of 147 hollow-bearing / habitat trees were identified within GDP areas, 115 of which were felled in 2017. Salvaged habitat items were stockpiled, with the intention to relocate them to rehabilitation areas as the areas become available.

Immediately prior to the habitat trees being felled, the ecologist generally conducted a final pre-clearance survey and recorded the results as part of the clearance documentation. Following the felling of the tree, the ecologist investigated hollows for the presence of animals. During the 2017 clearing activities, 109 animals were successfully relocated, 89 were observed but evaded capture and 6 animals died or were euthanised. No injured or immature animals were taken to either the local veterinary centre or directly to the wildlife care group Wildlife Aid, for treatment and/or rehabilitation.

Clearing activities undertaken throughout 2018 will continue to follow the methodology outlined within the BMP.

1 INTRODUCTION

1.1 EXISTING OPERATION

The Bengalla Mining Company (BMC) operates Bengalla Mine (Bengalla), an open cut coal mine located approximately four kilometres (km) west of Muswellbrook in the Upper Hunter Valley, NSW. In March 2015, development consent was granted to expand and continue the operation of the mine, which permits the following activities:

- open cut mining towards the west at a rate of up to 15 million tonnes per annum (Mtpa) run-of-mine (ROM) coal until 2039
- continued use of the existing dragline, truck fleet and excavator
- an out of pit Overburden Emplacement Area (OEA) to the west of Dry Creek which may be utilised for excess spoil material until it is intercepted by mining
- various upgrades, relocations or additional new infrastructure to support the Project
- processing, handling and transportation of coal via the (upgraded) Coal Handling and Preparation Plant (CHPP) and rail loop for export and domestic sale
- continued rejects and tailings co-disposal in the Main OEA and temporary in pit reject emplacement
- relocation of a 6 km section of Bengalla Link Road, at approximately Year 15, near the existing mine access road to facilitate coal extraction
- the diversion of Dry Creek via dams and pipe work with a later permanent alignment of Dry Creek through rehabilitation areas once emplacement areas are suitably advanced
- relocation of water storage infrastructure as mining progresses through existing dams (including the Staged Discharge Dam and raw water dam)
- a workforce of approximately 900 full time equivalent personnel (plus contractors) at peak production.

Activities associated with clearing operations during the reporting period relate to the relocation of infrastructure and service roads, in addition to an extension of the open cut mining pit towards the west.

1.2 AIMS AND OBJECTIVES

The aims of the report are to detail the procedures and results for all pre-clearing and clearing survey operations completed in 2017, inclusive of:

- Ecology pre-clearing surveys
- Stage 1 and Stage 2 clearing operations
- Fauna handling and relocation
- Habitat salvage and procedures.

2 METHODS

2.1 PERSONNEL

The contributors to the delivery of clearing operations and reporting, their qualifications and roles are listed in Table 2.1.

Table 2.1 Contributors and their role

NAME	QUALIFICATION	ROLE
Troy Jennings	B. Biodiversity and Conservation M. Wildlife Management	Ecologist – Pre-clearing surveys, spotter catcher and reporting
Paul Shelley	Grad Cert App Sc (Ornithology)	Senior Ecologist – Pre-clearing surveys, spotter catcher and reporting
Nathan Cooper	B.Env.Sc., Grad Dip Ornithology	Senior Ecologist – Technical Review
Alex Cockerill	B.Sc. (Hons)	Principal Ecologist – Project Manager

All pre-clearing and clearing works were carried out under the appropriate licences, including a Scientific Licence as required under Clause 22 of the National Parks and Wildlife Regulations 2002 and Section 132C of the National Parks and Wildlife Act 1974, and Animal Research Authority issued by the Department of Primary Industries as supplied in 2017.

2.2 PRE-CLEARING SURVEY PROCEDURE

The ecology pre-clearance surveys were conducted throughout 2017 and were completed in accordance with Section 4.2.1 of the BMP, which outlines management actions for vegetation pre-clearance procedures.

The aims and objectives of the ecology pre-clearing survey include:

- detecting the presence/absence of threatened species and their habitat, including Cymbidium canaliculatum (Tiger Orchid)
- recording the presence of any fauna or flora species
- identification and demarcation of habitat trees, large logs and boulders
- identification and demarcation of salvageable material including hollow bearing trees, debris, and boulders
- searching for evidence of plant pathogen Phytophthora cinnamomi
- identification of appropriate fauna relocation sites for captured fauna species
- identification of plants suitable for seed collection
- identification of weed and pest species infestations.

Clearing boundaries were initially marked by a surveyor with survey pegs, generally incorporating spacing commensurate with visible line of sight. A hard copy map of the GDP area was also used as a reference when in the field.

It should be noted that throughout the year some GDP areas were assessed more than once due to only part of the GDP area being disturbed or an extended time frame between the initial pre-clearance inspection and commencement of works (see Section 3.1).

2.2.1 FAUNA HABITAT IDENTIFICATION

Each clearing area was traversed by a field ecologist to identify important fauna habitat values, including:

- habitat trees, identified as any substantial non hollow-bearing tree that either provided significant canopy cover and thus significant potential foraging resources, or was observed to contain nesting material
- hollow-bearing trees, which include any tree that was observed to contain a visible hollow or fissure that may support microhabitat values for native fauna.

All identified habitat, hollow-bearing or significant trees were marked with "H" (habitat tree) in high visibility paint as well as pink flagging tape to ensure dark trees, such as Eucalyptus crebra, were clearly marked prior to the commencement of clearing activities. The number of habitat, hollow-bearing or significant trees were recorded on field proforma.

2.2.2 SPECIES INVENTORY

All flora and fauna species identified during the ecology pre-clearance surveys and clearing surveys were recorded, and are presented in Appendix A and Appendix B.

2.2.3 SURVEYS FOR CYMBIDIUM CANALICULATUM

Trees within the clearing area were visually examined for the presence of Cymbidium canaliculatum (Tiger Orchid), which are listed as an endangered population under the NSW Biodiversity Conservation Act 2016 (BC Act).

2.2.4 SALVAEABLE HABITAT MATERIAL

In accordance with the BMP, selected salvageable hollow logs and rocks were identified for later reuse in rehabilitation areas. Since materials vary in abundance and quality throughout Bengalla, ecologists are guided by the selection criteria for salvageable materials (as outlined in Table 5 of the BMP) when identifying logs and rocks for re-use.

2.2.5 SURVEYS FOR PHYTOPHTHORA CINNAMOMI

Vegetation health assessments were undertaken to detect the presence of the plant pathogen Phytophthora cinnamomi. This involved assessing vegetation for any visible signs of disease and conformation of its presence through laboratory analysis of soils and plant tissue if necessary.

2.2.6 FAUNA RELOCATION SITES

Sites suitable for the relocation of displaced native fauna were assessed prior to the commencement of the ecology pre-clearance survey. Relocation sites were assessed for habitat attributes which represent similar or commensurate habitat attributes as those within the clearing areas. All relocation sites are located outside of the clearing area, and consist of the same vegetation community. Fauna relocation sites are shown on Figure 3.2.

2.2.7 COLLECTION OF SEEDS FOR REHABILITATION PURPOSES

In accordance with the BMP, native trees and shrubs suitable for the harvesting and propagation of native seed for use in rehabilitation activities were identified. Any areas of particularly high seed yield were marked on maps for future reference.

2.2.8 IDENTIFICATION OF WEED AND PEST SPECIES INFESTATIONS

Significant infestations of Weeds of National Significance (WONS) and noxious weeds identified during the field surveys were recorded and notified to Bengalla Environmental Supervisors.

2.3 CLEARING PROCEDURE

In accordance with Section 4.2.2 of the BMP, clearing activities in 2017 were undertaken as a two stage process as follows:

— Stage 1 clearing – removal of understory vegetation other than marked/flagged habitat features. Habitat trees, marked with an 'H', were left to stand overnight to enable any resident fauna to self-relocate into adjacent habitat.

— Stage 2 clearing – commenced no less than 24 hours following the completion of Stage 1 clearing. Felled habitat trees were left undisturbed over night to allow any undetected fauna further opportunity to relocate.

2.3.1 FAUNA HANDLING AND RELOCATION

The following information was recorded in relation to fauna species observed during the clearing activities:

— details of animals sighted, captured, relocated, injured, or killed as a result of vegetation clearing activities

— the relocation of fauna within designated relocation areas

— tree species used for breeding or roosting by fauna

— micro-habitat features of where the species was found on the tree.

Uninjured adult fauna were relocated into suitable habitat within designated relocation sites. Juvenile and injured fauna were passed on to the Muswellbrook Veterinary Hospital, local Wildlife Aid carers or euthanized in accordance with the Animal Research Authority Code of Practice.

3 RESULTS

3.1 ECOLOGY PRE-CLEARANCE SURVEYS

Pre-clearing surveys completed on behalf of BMC in 2017 are detailed in Table 3.1 and illustrated in Figure 3.1. As the ecologist completes a final pre-clearing inspection survey immediately prior to the felling of habitat trees, these results are recorded as part of the clearance documentation and as such, is not detailed in Table 3.1.

It should be noted that throughout 2017 some GDP areas were assessed more than once due to only part of the GDP area being disturbed or an extended time frame between the initial pre-clearance inspection and commencement of works.

Table 3.1 Pre-clearing surveys completed in 2017

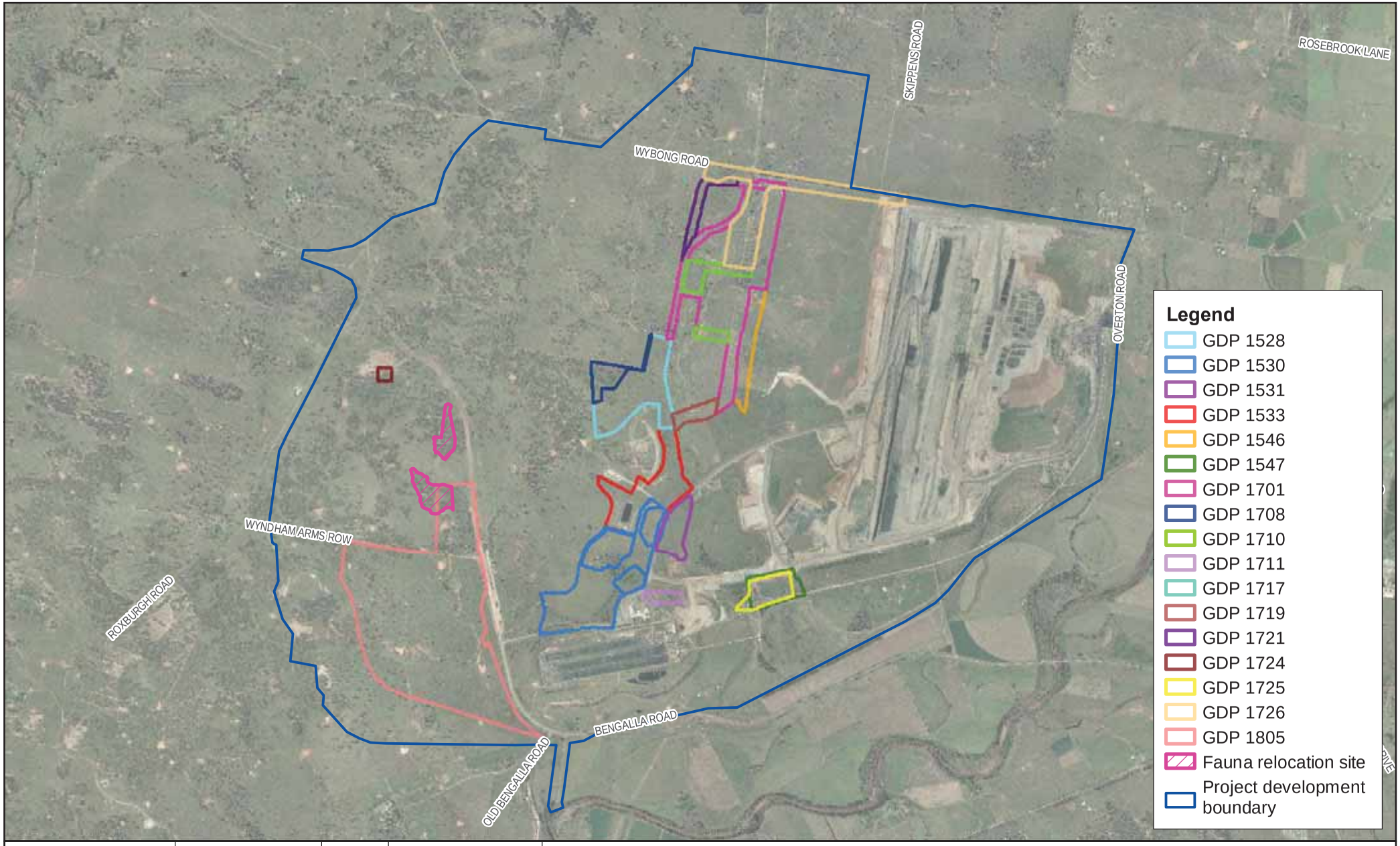
GROUND DISTURBANCE PERMIT AREA (GDP)	DATE PRE-CLEARANCE UNDERTAKEN	VEGETATION COMMUNITY
GDP 1547	10/01/2017	Derived Native and Exotic Grassland
GDP 1533 & 1528	10/01/2017	Derived Native Grassland with isolated pockets of *Allocasuarina luehmannii* and *Eucalyptus melanophloia*
GDP 1531	10/01/2017	Derived Native and Exotic Grassland
GDP 1530 & 1531	24 & 25/01/2017	Derived Native and Exotic Grassland & scattered *Allocasuarina luehmannii.* Derived Native Grassland with isolated pockets of *Allocasuarina luehmannii* and *Eucalyptus melanophloia* Hunter Floodplain Red Gum Woodland
GDP 1528, 1530, 1533, 1546 & 1701	13-14 -22 & 23/03/2017	GDP 1546 - Derived Native and Exotic Grassland. Derived Native Grassland with isolated pockets of *Allocasuarina luehmannii* and *Eucalyptus crebra* *GDP 1528 - Eucalyptus camaldulensis*
GDP 1708	27 & 28/04/2017	*Allocasuarina luehmannii* and *Eucalyptus crebra Woodland*
GDP 1711, 1710, 1528	11/07/2017, 02/08/2017 & 04/10/2017	Derived Native Grassland with isolated pockets of *Allocasuarina luehmannii* and *Eucalyptus crebra* regrowth
GDP 1717	2/8/2017	Derived Native and Exotic Grassland
GDP1701	10/8/2017	Derived Native and Exotic Grassland patches of Acacia
GDP1531	10/8/2017	Derived Native and Exotic Grassland
GDP 1719, 1701, 1710, 1721 & 1530	29/08/2017 & 04/10/2017	Derived Native and Exotic Grassland with isolated pockets of *Eucalyptus crebra* woodland. One threatened *Cymbidium canaliculatum* was identified during pre-clearing surveys for GDP 1701.
GDP 1710	13/10/2017	Derived Native and Exotic Grassland
GDP 1530	16/11/2017	Derived Native and Exotic Grassland

GROUND DISTURBANCE PERMIT AREA (GDP)	DATE PRE-CLEARANCE UNDERTAKEN	VEGETATION COMMUNITY
GDP1531	16/11/2017	Derived Native and Exotic Grassland
GDP 1533	16/11/2017	Derived Native and Exotic Grassland some eucalypt regeneration
GDP1701/1726	16/11/2017	Derived Native and Exotic Grassland patches of Acacia
GDP 1711	16/11/2017	Derived Native and Exotic Grassland
GDP 1719	16/11/2017	Derived Native and Exotic Grassland
GDP1725	16/11/2017	Hunter Floodplain Red Gum Woodland
GDP 1726	16/11/2017	Upper Hunter White Box – Ironbark Grassy Woodland
Haul Road north of magazine (GDP1721)	16/11/2017	Derived Native and Exotic Grassland with patches of *Angophora floribunda*
Bald Hill (GDP1724)	11/12/2017	Mixed Eucalypt Open Forest
Proposed Dam Area (GDP1805)	21-22/12/2017	*Allocasuarina luehmannii* and *Eucalyptus crebra* Open Woodland with Derived Native and Exotic Grassland

3.1.1 VEGETATION COMMUNITY STRUCTURE

The following vegetation communities were identified in the areas cleared in 2017:

- Derived Native and Exotic Grassland
- Derived Native Grassland with isolated pockets of Allocasuarina luehmannii and Eucalyptus melanophloia
- Derived Native and Exotic Grassland & scattered Allocasuarina luehmannii
- Hunter Floodplain Red Gum Woodland
- Derived Native Grassland with isolated pockets of Allocasuarina luehmannii and Eucalyptus crebra
- Derived Native and Exotic Grassland patches of Acacia
- Derived Native and Exotic Grassland some eucalypt regeneration
- Mixed Eucalypt Open Forest
- Allocasuarina luehmannii and Eucalyptus crebra Open Woodland with Derived Native and Exotic Grassland.



Map: 2270319A_GIS_F012_A1	Author: MitchellEm	
Date: 12/03/2018	Approved by: Nathan.Cooper	

Source: Bengalla Mine Satellite Orthophoto July 2017
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Bengalla Mine Annual Clearing Report 2017
Figure 3.1
Ground Disturbance Permit Areas Subject to pre-Clearing Surveys in 2017

3.1.2 HABITAT, HOLLOW-BEARING AND SIGNIFICANT TREES

A total of 147 hollow-bearing/ habitat trees were identified within GDP areas subject to pre-clearing surveys.

3.1.3 SPECIES INVENTORY

3.1.3.1 FLORA

A total of 83 flora species were recorded in 2017 during pre-clearing surveys. Of these, 34 were introduced species (Appendix A). One Cymbidium canaliculatum, which is listed as an Endangered Population under the BC Act, was recorded during pre-clearing surveys for GDP 1701.

3.1.3.2 FAUNA

A total of 39 fauna species were recorded in 2017 during pre-clearing surveys. Of these, five were introduced species (Appendix B). One threatened fauna species, Grey-crowned Babbler, which is listed under the BC Act was recorded during pre-clearing surveys.

3.1.4 CYMBIDIUM CANALICULATUM SURVEYS

One threatened Cymbidium canaliculatum was identified during pre-clearing surveys in 2017 in GDP 1701 and will be relocated during Stage 2 clearing (planned for 2018).

3.1.5 PHYTOPHTHORA CINNAMOMI SURVEYS

No evidence of disease or plant die-back was identified within GDP areas subject to pre-clearing surveys in 2017.

3.1.6 COLLECTION OF SEEDS FOR REHABILITATION PURPOSES

The following native grass seeds were collected during pre-clearing surveys. These seeds were given to the Environmental Section of Bengalla Mine for later sowing within rehabilitation areas.

- Cymbopogon refractus 10 grams (gm)
- Aristida ramosa 50 gm
- Austrstipa verticilata 50 gm.

3.1.7 WEED SPECIES

Table 3.2 Noxious weeds recorded during pre-clearance surveys

SPECIES	CLASS	LEGAL REQUIREMENTS
Lycium ferocissimum (African Boxthorn)	3	This plant must be continually suppressed and destroyed and the plant must not be sold propagated or knowingly distributed
Olea europaea subsp. cuspidata (African Olive)	4	The growth of the plant must be managed that reduces its numbers, spread and incidence and continuously inhibits its reproduction and the plant must not be sold propagated or knowingly distributed
Opuntia stricta (Prickly Pear)	4	The growth of the plant must be managed that reduces its numbers, spread and incidence and continuously inhibits its reproduction and the plant must not be sold propagated or knowingly distributed

3.1.8 SALVAGEABLE MATERIAL

A total of 115 habitat trees were felled during Stage 2 tree clearing operations, of which 13 were identified as potentially suitable for salvage. In addition, 125 lineal metres of hollow ground logs were identified for salvage in 2017.

Table 3.3 Salvageable material identified per GDP area

GDP AREA	SALVAGEABLE MATERIAL IDENTIFIED
GDP 1726	25m of hollow ground logs
Haul Road north of magazine (GDP1721)	3 Habitat trees & 40m of hollow ground logs
Bald Hill (GDP1724)	2 Habitat Trees
GDP1547	60m of hollow ground logs
GDP1546	8 Habitat Trees

Photo 3.1 Salvageable material identified in clearing area

Photo 3.2 Salvageable material identified in clearing area

3.2 STAGE 1 AND STAGE 2 CLEARING

The GDP areas cleared in full or in part in 2017 are summarised in Table 3.4 and illustrated on Figure 3.2. The removal of understory vegetation surrounding habitat trees was undertaken a minimum of 24 hours prior to habitat tree removal. Stage 2 clearing of habitat trees was undertaken over several periods in 2017, with a total of 115 habitat trees felled.

Table 3.4 Stage 2 clearing completed in 2017

GROUND DISTURBANCE PERMIT AREA (GDP)	DATE STAGE 2 CLEARANCE UNDERTAKEN	VEGETATION COMMUNITY
GDP 1530/1533/1546/1701	20 & 31/3/2017	Derived Native and Exotic Grassland & scattered Allocasuarina luehmannii. Derived Native Grassland with isolated pockets of Allocasuarina luehmannii and Eucalyptus melanophloia. Derived Native and Exotic Grassland patches of Acacia
GDP 1708	27-28/4/2017	Allocasuarina luehmannii and Eucalyptus crebra Woodland
GDP 1726/1701/1531	11/12/2017	Derived Native and Exotic Grassland patches of Acacia

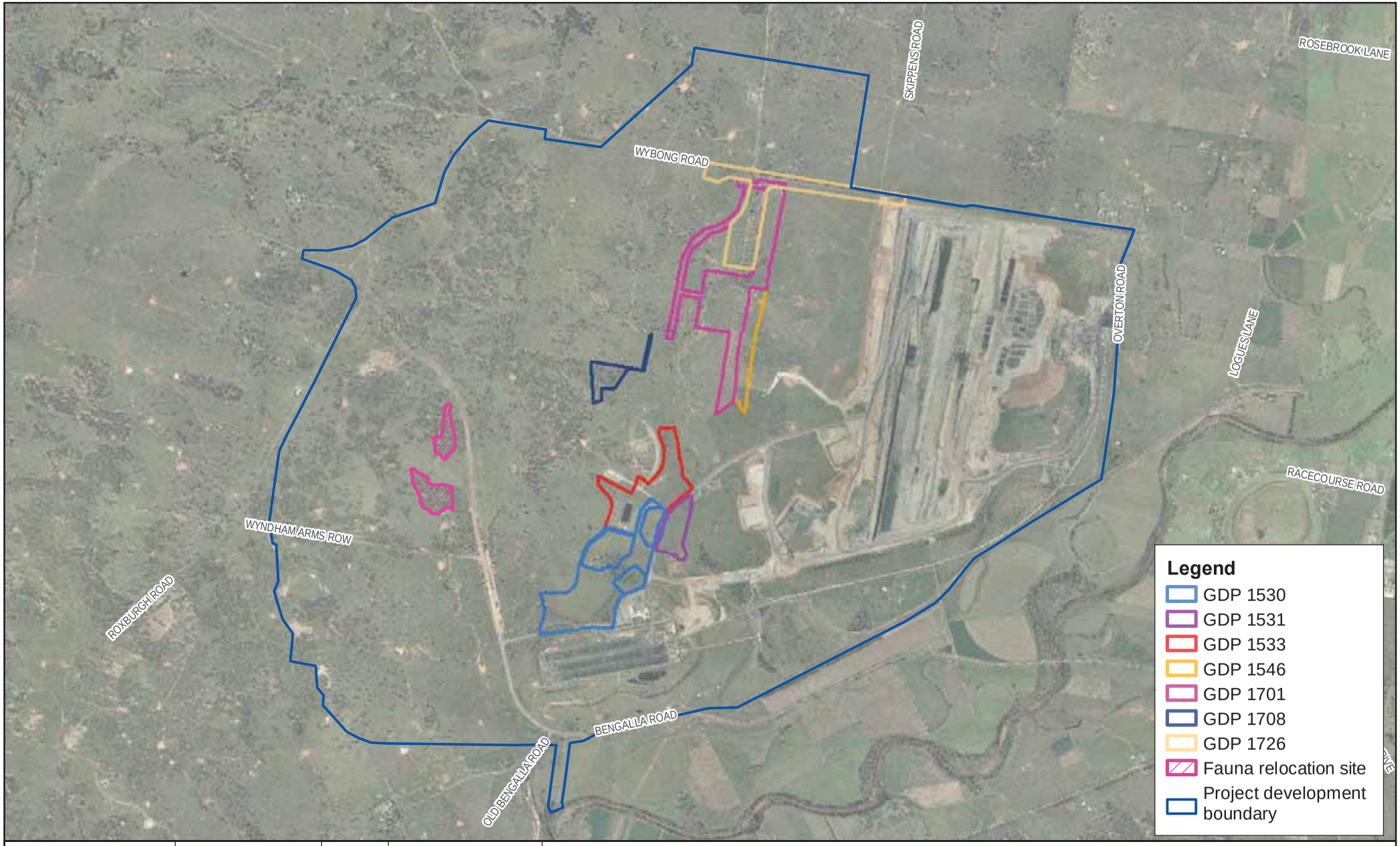
Prior to the habitat trees being felled, the trees were visually inspected to identify signs of fauna. Habitat trees were gently shaken prior to felling to encourage any resident fauna to vacate any fissure and/ or hollow.

Habitat trees were felled sequentially when directed by the supervising ecologist.

Immediately following the felling of each habitat tree, the supervising ecologist inspected the trees for remaining fauna. Tree hollows were inspected using a high-powered hand-held torch. Felled habitat trees were left undisturbed over night to allow any undetected fauna further opportunity to relocate. The habitat trees were then stockpiled for utilisation in rehabilitation areas.

Photo 3.3 Stage 2 – clearing – GDP 1701

Photo 3.4 Stage 2 – clearing – post felling



Map: 2270319A_GIS_F013_A1	Author: MitchellEm	
Date: 12/03/2018	Approved by: Nathan.Cooper	

Source: Bengalla Mine Satellite Orthophoto July 2017
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Figure 3.2

Ground Disturbance Permit Areas Subject to Clearing in 2017

3.2.1 FAUNA RECORDED AND RELOCATED

Fauna were handled in accordance with the Animal Research Authority Code of Practice. Details on fauna encountered during 2017 clearing activities are outlined below and animal statistics are presented in Appendix C.

Uninjured adult fauna were relocated into suitable habitat within designated relocation sites (see Figure 3.2).

A total of 109 individuals were relocated, 89 animals were observed from habitat trees and evaded capture, and six animals were killed or euthanised as a result of the clearing operations. No immature animals were taken to the local Wildlife Aid carers or the Muswellbrook Veterinary Hospital (Table 3.5). No threatened fauna species were encountered during the 2017 clearing operations.

Table 3.5 Fauna recorded during Stage 2 clearing operations in 2017

GUILD	NUMBER OF INDIVIDUALS RECORDED				TAKEN TO WILDLIFE CARER
	RELOCATED	OBSERVED	INJURED	DEAD/ENUTHANISED	
Reptiles	82	60	0	2	0
Microchiropteran bats / Mammals	25	28	0	3	0
Amphibians	2	0	0	0	0
Birds	0	1	0	1	0
Total	109	89	0	6	0

3.2.2 SALVAGE OF HABITAT RESOURCES

Pre-clearing surveys and clearing operations identified 13 trees and 125 lineal metres of hollow ground logs as potentially suitable for salvage and reuse in rehabilitation works (see Table 3.3). Salvaged habitat items have been stockpiled, with the intention to relocate within rehabilitation areas as work progresses.

4 CONCLUSION

This report documents the pre-clearing and clearing activities completed in 2017.

In 2017, pre-clearing and clearing surveys at Bengalla were undertaken by appropriately qualified WSP ecologists to allow for the safe removal and relocation of native flora and fauna, where practicable.

During Stage 2 clearing operations, 109 fauna were relocated, 89 fauna were observed but evaded capture, and six fauna were killed or euthanised. No injured, or immature animals were taken to the local veterinary centre for treatment and/or rehabilitation.

The most abundant group of animals encountered during clearing operations were reptiles (144 individuals) and mammals (56 individuals), followed by birds (two individuals) and amphibians (two individuals). Where appropriate, captured fauna were released into designated fauna relocation sites.

A total of 147 hollow-bearing/ habitat trees were identified within GDP areas, 115 of which were felled in 2017. In total, 13 hollow-bearing/ habitat trees and 125 lineal metres of hollow ground logs were identified as potentially suitable for salvage and have been stockpiled, with the intention to relocate within rehabilitation areas as work progresses.

Clearing activities undertaken throughout 2018 will continue to follow the methodology outlined within the BMP.

5 LIMITATIONS

5.1 SCOPE OF SERVICES

This report has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the client and WSP (scope of services). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or disturbance constraints.

5.2 RELIANCE ON DATA

In preparing the report, WSP has relied upon data, surveys, analyses, designs, plans and other information provided by the client and other individuals and organisations, most of which are referred to in the report (the data). Except as otherwise stated in the report, WSP has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report (conclusions) are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. WSP will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to WSP.

5.3 ENVIRONMENTAL CONCLUSIONS

In accordance with the scope of services, WSP has relied upon the data and has conducted environmental field surveys in the preparation of the report. The nature and extent of survey conducted is described in the report.

Varying degrees of non-uniformity are encountered across all natural areas. Hence no sampling technique can eliminate the possibility that results are not totally representative of conditions encountered. The conclusions are based upon the data and the ecological surveys and are therefore merely indicative of the environmental condition of the study area at the time of preparing the report.

Also, it should be recognised that conditions, including the presence of threatened biodiversity, can change with time. No sampling technique can eliminate the possibility that a species is present within the proposal area. For example, some flora may be present in the soil seed bank and some fauna species use habitats on a sporadic or seasonal basis and may not be present within the Proposal study areas during surveys.

Within the limitations imposed by the scope of services, the surveys and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

5.4 REPORT FOR BENEFIT OF CLIENT

The report has been prepared for the benefit of the client (and no other party). WSP assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of WSP or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Except as provided below parties other than the client should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

REFERENCES

Bengalla Mining Company Pty Ltd (2017). Bengalla Mine - Biodiversity Management Plan. Hansen Bailey on behalf of Bengalla Mining Company Pty Ltd.

APPENDIX A

RECORDED FLORA

Table A.1 RECORDED FLORA

SCIENTIFIC NAME	COMMON NAME	INTRODUCED	EPBC ACT	BC ACT[1]
Acacia sp.	Wattle			
Allocasuarina luehmannii	Bulloak			
Angophora floribunda	Rough-barked Apple			
Aristida ramosa	Purple Wiregrass			
Austrodanthonia caespitosa	Wallaby Grass			
Austrostipa scabra	Spear Grass			
Austrostipa verticillata	Slender Bamboo Grass			
Avena sativa	Oats	*		
Avena sp.	Wild Oats	*		
Bibens pilosa	Cobblers Pegs	*		
Brachychiton populneus	Kurrajong			
Brunoniella australis	–			
Bursaria spinosa	Blackthorn			
Carpobrotus sp.	Pigface			
Carthamus lanatus	Saffron Thistle	*		
Centaurium erythraea	Common Centaury			
Cheilanthes distans	Bristly Cloak Fern			
Chloris gayana	Rhodes Grass	*		
Chrysocephalum apiculatum	Golden Buttons			
Commelina sp.	–			
Convolvulus angustissimus	Australian Bindweed			
Conyza sp.	Fleabane	*		
Cymbidium canaliculatum	-			E2
Cymbopogon refractus	Barbed-wire Grass			
Cynodon sp.	Couch	*		
Dianella revoluta	Blue Flax-lilly			
Dianella sp.	-			
Dichanthium sericium	Queensland Bluegrass			
Dichelachne micrantha	Short-hair Plume Grass			
Dichondra repens	Kidney Weed			
Digitaria sp.	–			
Enchylaena tomentosa	Ruby Salt-bush			

SCIENTIFIC NAME	COMMON NAME	INTRODUCED	EPBC ACT	BC ACT[1]
Eragrostis curvula	African Lovegrass	*		
Eremophila debilis	Winter Apple			
Eucalyptus camaldulensis	River Red-Gum			
Eucalyptus crebra	Narrow-leaved Ironbark			
Eucalyptus melanophloia	Silverleaf Ironbark			
Eucalyptus moluccana	Grey Box			
Eucalyptus tereticornis	Forest Red Gum			
Foeniculum vulgare	Fennel	*		
Galenia pubescens	Galenia	*		
Glycene sp.	-			
Gomphocarpus fruticosus*	Balloon Cotton	*		
Hardenbergia sp.	-			
Hibbertia obtusifolia	Hoary Guinea-flower			
Hypochaeris radicata	Catsear	*		
Leptospermum sp.	-			
Lomandra sp.	-			
Lotus australis	Australian trefoil			
Lycium ferocissimum	African Boxthorn	*		
Magenta sp.	Geranium			
Medicago sp.	-			
Megathyrsus maximus	Guinea Grass	*		
Melinis repens	Red-natail Grass	*		
Microseris lanceolata	Murnong			
Nothoscordum inodorum	Onion Weed	*		
Olea europaea subsp. cuspidate	African Olive	*		
Onopordum acanthium	Scotch Thistle	*		
Opuntia stricta	Prickly Pear	*		
Panicum sp.	Panic Grass			
Paspalum sp.	Paspalum	*		
Pimelea sp.	-			
Plantago sp.	Plantain	*		
Ricinus communis	Castor Oil	*		

SCIENTIFIC NAME	COMMON NAME	INTRODUCED	EPBC ACT	BC ACT[1]
Rumex sp.	-	*		
Rytidospema caespitosum	Ringed Wallaby Grass			
Salsola australis	Soft Roly-poly			
Schinus sp.*	Peppercorn			
Sclerolaena birchii	Galvanised Burr			
Senecio madagascariensis	Fireweed	*		
Sida rhombifolia	Paddys Lucerne	*		
Silybum marianum	Blessed Milk Thistle	*		
Sisymbrium officinale	Mustard Weed	*		
Solanum sp.	–			
Sonchus oleraceus	Sow Thistle	*		
Tagetes minuta	Stinking Rodger	*		
Taraxacum officinale	Common Dandelion	*		
Themeda triandra	Kangaroo Grass			
Tragopogon porrifolius	Common Salsify	*		
Ulmus parvifolia	Chinese Elm	*		
Verbena litoralis	Seashore Vervain	*		
Verbena rigida		*		
Vittadinia sp.	–			
Wahlenbergia sp.	Blue Bells			

1 E2 = Endangered population under the Biodiversity Conservation Act 2016.

APPENDIX B

RECORDED FAUNA

Table B.1 RECORDED FAUNA

SCIENTIFIC NAME	COMMON NAME	INTRODUCED	EPBC ACT	BC ACT[1]
Amphibians (1)				
Litoria caerulea	Green Tree Frog			
Birds (24)				
Acanthiza chrysorrhoa	Yellow-rumped Thornbill			
Acridotheres tristis	Common Myna	*		
Aegotheles cristatus	Owlet Nightjar			
Aquila audax	Wedge-tailed Eagle			
Corcorax melanorhamphos	White-winged Chough			
Corvus coronoides	Australian Raven			
Cracticus tibicen	Australian Magpie			
Cracticus nigrogularis	Pied Butcherbird			
Egretta novaehollandiae	White-faced Heron			
Eolophus roseicapilla	Galah			
Grallina cyanoleuca	Magpie Lark			
Hirundo neoxena	Welcome Swallow			
Ptilotula penicillata	White-plumed Honeyeater			
Malurus cyaneus	Superb Fairywren			
Malurus lamberti	Variegated Fairywren			
Manorina melanocephala	Noisy Miner			
Ocyphaps lophotes	Crested Pigeon			
Platycerus eximius	Eastern Rosella			
Pomatostomus temporalis temporalis	Grey-crowned babbler			V
Sturnus vulgaris	Common Starling	*		
Taeniopygia bichenovii	Doubled-barred Finch			
Taeniopygia guttata	Zebra Finch			
Tyto alba	Barn Owl			
Vanellus miles	Masked Lapwing			
Mammals (8)				
Canis lupus	Dog	*		
Chalinolobus gouldii	Gould's Wattled Bat			
Lepus capensis	Brown Hare	*		

SCIENTIFIC NAME	COMMON NAME	INTRODUCED	EPBC ACT	BC ACT[1]
Macropus giganteus	Eastern-grey Kangaroo			
Mormopterus planiceps	South-eastern Freetail-bat			
Oryctolagus cuniculus	Rabbit	*		
Scotoropens greyii	Little Broad-nosed Bat			
Trichosurus vupecula	Common Brushtail Possum			
Reptiles (6)				
Anomalopus leuckartii	Two-clawed Worm-skink			
Cryptoblepharus pulcher	Elegant Snake-eyed Skink			
Cryptoblepharus australis	Inland Snake-eyed Skink			
Egernia striolata	Tree Skink			
Nebulifera robusta	Robust Velvet Gecko			
Pogona barbata	Eastern Bearded Dragon			

(1) V = Vulnerable under the Biodiversity Conservation Act 2016.

APPENDIX C

FAUNA CAPTURED AND RELOCATED DURING TREE CLEARING

Table C.1 Fauna captured and relocated during tree clearing

SPECIES	RELOCATED	OBSERVED	INJURED/ JUVENILE	DEAD/ EUTHANIZED	TOTAL	TAKEN TO CARE
Mammals						
Common Brushtail Possum (Trichosurus vupecula)	2				2	
Gould's Wattled Bat (Chalinolobus gouldii)	2	7			9	
Little Broad-nosed Bat (Scotoropens greyii)	20				20	
Microbat sp.		21			21	
Rabbit (Oryctolagus cuniculus)				3	3	
South-eastern Free-tailed Bat (Mormopterus planiceps)	1				1	
Birds						
Barn Owl (Tyto alba)				1	1	
Owlet Nightjar (Aegotheles cristatus)		1			1	
Reptiles						
Eastern Bearded Dragon (Pogona barbata)	3				3	
Robust Velvet Gecko (Nebulifera robusta)	29	5			34	
Tree Skink (Egernia striolata)	39	30		1	70	
Two-clawed Worm-skink (Anomalopus leuckartii)	1			1	2	
Inland Snake-eyed Skink (Cryptoblepharus australis)	10	25			35	
Amphibians						
Green Tree Frog (Litoria caerulea)	2				2	
TOTAL	109	89	0	6	204	0

APPENDIX D

SCIENTIFIC LICENCES

Office of Environment & Heritage
NSW National Parks & Wildlife Service

SCIENTIFIC LICENCE

NATIONAL PARKS & WILDLIFE ACT, 1974
Section 132c

Name and postal address of principal licensee	Nominated premises (where appropriate)
Mr Alex Cockerill Parsons Brinckerhoff Se 1 L 3 51-55 Bolton St NEWCASTLE NSW 2300	

Your licence number is: SL100630

This licence is valid from: 01 February 2017

This licence will expire on: 31 January 2018

Additional authorisations:

Project Title: General flora and fauna surveys for environmental impact assessments

This licence authorises the following activities: Pick protected flora for identification purposes; Harm, trap, release fauna.

This licence authorises the principal licensee and any associates named in **Attachment A** to conduct those activities authorised above, to those species, communities or materials listed in **Attachment B**, at the locations specified in **Attachment C** of this licence.

This licence also authorises the principal licensee to conduct research on National Park estate under clause 23 of the *National Parks and Wildlife Regulation 2009 (*NPW Reg*)*, where this forms part of a project approved by a delegated officer of the Office of Environment and Heritage (OEH).

This licence is issued subject to the provisions of NPW Act, NPW Reg, the general conditions listed below, any special conditions as may be notified in writing to the licensee by the Director General of the Department of Planning and Environment ("Director General") or a 'delegated officer' of OEH ("delegated officer") and the OEH "Scientific Licensing Policy".

Julie McInnes

Signature of Delegated Officer

Date: 07 February 2017

Signature of Principal Licensee*

Date: 7/2/2017

* This licence is not valid unless it is signed by the principal licensee. By signing this licence the licensee agrees that they have read, understood and agree to comply with all of the conditions listed on the licence.

ANIMAL RESEARCH AUTHORITY

Issued by

THE SECRETARY
NSW DEPARTMENT OF INDUSTRY

Principal Investigator: **Mr Alex Cockerill**
Principal Ecologist
WSP / Parsons Brinckerhoff Pty Ltd
PO Box 1162
NEWCASTLE NSW 2300

Associate Investigators:	**Ms Selga Harrington**	**Mr Mark Stables**
Mr Nathan Cooper	**Mr Allan Richardson**	**Ms Tanya Bangel**
Mr Troy Jennings	**Ms Clementine Watson**	**Mr Rob Harrison**
Ms Jessica Wait	**Mr Nathan Ottley**	**Ms Julia Wyllie**
Ms Samantha Vertucci	**Ms Jessica Gorring**	
Other Participants:	**Mr Paul Shelley**	**Dr Arthur White**

are authorised to conduct the following research

GENERAL FAUNA SURVEYS ASSOCIATED WITH ENVIRONMENTAL IMPACT ASSESSMENTS

Being fauna surveys for environmental impact assessments

Location: **Various locations throughout New South Wales**

As approved by and in accordance with the
ANIMAL CARE AND ETHICS COMMITTEE OF
THE SECRETARY NSW DEPARTMENT OF INDUSTRY

Being animal research carried out in accordance with the Code of Practice, for a recognised research purpose and in connection with animals (other than exempt animals) that have been obtained from the holder of an animal suppliers licence.

Approved with the following conditions:

1. The Secretary's Animal Care and Ethics Committee is to be informed of the specific location of each study and the procedures to be undertaken prior to work being commenced.
2. Cage and Elliott traps are limited to 100 traps per investigator;
3. Traps are cleared within two hours of sunrise;
4. Radio tracking equipment must not exceed 5% of bodyweight for possums and gliders.

This authority remains in force from **6 June 2017** to **6 June 2018** unless suspended, cancelled or surrendered

SUZANNE ROBINSON
DIRECTOR – ANIMAL WELFARE*
ANIMAL WELFARE UNIT

18 May 2017

NSW Department of Primary Industries, an office of NSW Department of Industry
*Delegate of the Secretary of the Department of Industry