PP7	**N**				
PP7	**E**				
PP7	**S**				

PP7	**W**				
PP8	**N**				
PP8	**E**				

PP8	**S**				
PP8	**W**				
PP9	**N**				

PP9	**E**				
PP9	**S**				
PP9	**W**				

3. Results of the inspections required - as per item 1.3 of Annexure D to the BioBanking Agreement

1. *Percentage of ground cover present on the biobank site for the purpose of item 1.1 of Section 1 of Annexure C* (reporting - 12 monthly) – No stock incursion has allowed groundcover to be maintained as a similar density across the site over the previous 3 years due to the installation of the exclusion fencing (refer to photopoints for further detail) recent rainfall has increased growth of existing groundcover.

2. *Number of stock and date/s when the stock have entered the management zones of the biobank site* (reporting - 6 monthly) – No further evidence of stock on the site since the previous reporting period.

3. *Physical condition of fencing and gates to ensure they are maintained to the standard listed in Annexure D section 1.3 of the BBA*:

    a. Currently maintained to the standard to exclude stock from the site and inspected annually:
        - As at 5 Nov 2019 the site fencing was maintained; and
        - As at 6 Aug 2020 two of the plain and one barb strand of the wires in MZ1 eastern section (along boundary behind stone house) had been damaged. A quote for repair was sought on 10 August, and will be repaired by 21 Aug 2020.

    b. Currently maintained to a standard to control human disturbance and inspected annually:
        - As at 5 Nov 2019 it was maintained; and
        - As at 6 Aug 2020 two of the plain and one barb strand of the wires in MZ1 eastern section (along boundary behind stone house) had been damaged. A quote for repair was sought on 10 August, and will be repaired by 21 Aug 2020

    c. Currently maintained at a standard to control feral or overabundant herbivores and/or vertebrate pests and inspected annually (inspected 5 Nov 2019) - feral and/or native herbivores have been observed onsite during quarterly site visits. The boundary fences installed will not prevent non-native herbivores from accessing the site.

4. *Records of any human disturbance on the biobank site* – (reporting 6 monthly) – Human disturbance observed at the site on 9 August 2019 and 6 August 2020. A Breach Report was prepared for the BCT in regards to the illegal tree felling in MZ1 in August 2019.

    A damaged fence was reported on 6 August 2020 to South32, and repairs to the fence are planned to be completed by 21 Aug 2020.

5. *Evidence of erosion* – (reporting 6 monthly) - There are no identified areas across all Management Zones as currently requiring any supplementary erosion control or stabilisation (inspected on 29 April 2019, 5 Nov 2019, 12 May 2020 and 6 Aug 2020).

6. *Evidence of Waste* – (reporting 6 monthly) – No evidence of additional or new waste was observed during the quarterly site visits on 29 April 2019, 5 Nov 2019 12 May 2020 and 6 Aug 2020.

4. Site visit April 2019, August, 2019, October 2019, November 2019, May 2020 and August 2020

4.1. Weeds

Template for reporting of monitoring activities		
Management Zone	**Date**	**Observations and assessment of monitoring**
MZ1	29 April 2019, 16 Oct 2019, 5 Nov 2019, 12 May 2020 and6 Aug 2020	Treatment of exotic weeds and grasses with herbicide spot spraying and hand pulling of weeds.
MZ2	29 April 2019, 16 Oct 2019, 5 Nov 2019, 12 May 2020, and 6 Aug 2020	Undertaken in conjunction with weed control works at MZ1. Treatment of exotic weeds and grasses with herbicide spot spraying and hand-pulling of weeds.
Transmission line (TL) and associated cleared area	29 April 2019, 16 Oct 2019, 5 Nov 2019, 12 May 2020 and 6 Aug 2020	Undertaken in conjunction with weed control works at MZ1 and MZ2. Treatment of exotic weeds (Particularly Paterson's Curse and Stinking Roger) and grasses with herbicide (using quick spray™ unit), spot spraying and hand-pulling of weeds.
MZ3	29 April 2019, 16 Oct 2019, 5 Nov 2019, 12 May 2020 and 6 Aug 2020	Undertaken in conjunction with weed control works at MZ1 and MZ2. Treatment of exotic weeds (particularly Paterson's curse) and exotic grasses with herbicide spot spraying and hand-pulling of weeds inside tree guards. Specific supplementary watering of 225 tubestock on 20 August 2019.
MZ4	29 April 2019, 16 Oct 2019, 5 Nov 2019, 12 May 2020 and6 Aug 2020	Management zone not visited: no access due to high-risk cliffs. No weeds observed in adjacent management zones.
MZ5	29 April 2019, 16 Oct 2019, 5 Nov 2019, 12 May 2020 and 6 Aug 2020	Management zone not visited: no access due to high-risk cliffs. No weeds observed in adjacent management zones.
MZ6	29 April 2019, 16 Oct 2019, 5 Nov 2019, 12 May 2020 and 6 Aug 2020	Undertaken in conjunction with weed control works in MZ7. Maintenance sweep targeting key weed threats, concentrating along existing tracks.
MZ7	29 April 2019, 16 Oct 2019, 5 Nov 2019, 12 May 2020 and6 Aug 2020	Undertaken in conjunction with weed control works at MZ6. Maintenance sweep targeting key weed threats, concentrating along existing tracks.

Diary template for weed control management			
Date	**Management Zone**	**Description and type of activity undertaken or observation made**	**Minor variations** (details and reasons)
29 April 2019, 16 Oct 2019, 5 Nov 2019, 12 May 2020 and 6 Aug 2020	**1,2,3 and TL easement**	Weed control, herbicide spot spraying, quick spray unit and hand pulling of: - Blue Periwinkle *(Vinca major*); - Paterson's' Curse (*Echium plantagineum)*; - African Lovegrass *(Eragrostis curvula*); - Spear Thistle *(Cirsium vulgare)*; - Bridal Creeper *(Asparagus asparagoides)*; - Small-leaved Privet (*Ligustrum sinense)*; and - Stinking Roger *(Tagetes minuta)*	Ongoing treatment in MZ1, MZ2 and transmission line (TL) to treat, Paterson's curse, African Lovegrass, Spear Thistle, Bridal Creeper and Stinking Roger. Consideration should be given to funding slashing the TL easement. This would improve efficiency of weed treatment in this Zone.
29 April 2019, 16 Oct 2019, 5 Nov 2019, 12 May 2020 and 6 Aug 2020	**MZ 6 and 7**	Quarterly maintenance weeds sweeps ongoing. Occasional spot spraying of African Lovegrass in these zones	Ongoing observation in these Zones
29 April 2019, 16 Oct 2019, 5 Nov 2019, 12 May 2020 and 6 Aug 2020	**MZ 1, 2, 3, TL, 6 , 7**	Site walk to observe any pests or evidence of presence via scats. Evidence of Foxes observed at the site (scats).	It is recommended that a Fox baiting program in conjunction with GSLLS in Spring and Autumn be conducted at the site.

4.2. Fire

Template for reporting of monitoring activities		
Management Zone	**Date**	**Observations and assessment of monitoring**
MZ 1, 2, 3, TL, 6, 7	29 April 2019, 16 Oct 2019, 5 Nov 2019, 12 May 2020 and 6 Aug 2020	No evidence of recent fire activity during site visit (Management report suggests last burn was in 2004). *Acacia* spp. in MZ 2 and MZ 7 continue to exhibit senescence. Fuel loads approx. 20 tonnes per hectare on average.

Diary template for fire management activities			
Date	**Management Zone**	**Description and type of activity undertaken or observation made**	**Minor variations** (details and reasons)
29 April 2019, 16 Oct 2019, 5 Nov 2019, 12 May 2020 and 6 Aug 2020	MZ 1, 2, 3, TL, 6, 7	No fire management activities undertaken except for opportunistic observation during weeding activities.	N/A

4.3. Pest Animals

1. Template for reporting of monitoring activities		
Management Zone	**Date**	**Current level of impact on vegetation** This column must record impacts as Negligible, Minimal, Moderate or High
MZ 1, 2, 3, TL, 6, 7	29 April 2019, 16 Oct 2019, 5 Nov 2019, 12 May 2020 and 6 Aug 2020	Minimal grazing by native herbivores in all zones except MZ3. Heavy grazing of seedlings planted in this zone. All seedling with growth above the corflute guards have been impacted by native or non-native herbivores (kangaroos and possibly goats).

Diary template for feral and overabundant herbivore management			
Date	**Management Zone**	**Description and type of activity undertaken** This column must include details of the feral and overabundant herbivores targeted, control techniques, and numbers controlled.	**Minor variations** (details and reasons)
29 April 2019, 16 Oct 2019, 5 Nov 2019, 12 May 2020 and 6 Aug 2020	**All**	No specific pest management work undertaken except for opportunistic observation during weeding activities.	As suggested above it is recommended that a Fox baiting program in conjunction with GSLLS in Spring and Autumn 2020-21 to be conducted at the site.

Appendix F: 2019/20 Ventilation Shaft No.6 Offset Annual Monitoring Report

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Appin No. 6 Ventilation Shaft Offset Area

Offset Site Monitoring Report 2019

Prepared for South 32 Illawarra Coal | 16 December 2019

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Document control

Project number	Client	Project manager	LGA
5342	South 32 Illawarra Coal	Sian Griffiths	Wollondilly Shire Council

Version	Author	Review	Status	Date
D1	Sarah Hart	Sian Griffiths	Draft	10 December 2019
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Executive summary

As part of the project approval (MP 10_0079) and EPBC Approval (2010/5722) for the Appin Ventilation Shaft Site No.6, South 32 Illawarra Coal is required to implement a formal monitoring program of the management actions that were approved for the associated offset site at the Mountbatten Stud property at Douglas Park, NSW. This report is the eighth annual report for the monitoring program, conducted by Niche Environment and Heritage (Niche) in November 2019.

The aim of the monitoring program is to demonstrate the success of the management actions through the collection of empirical data, mapping and photographic record for the offset site. The monitoring methodology employs fixed floristic plots to collect vegetation condition data, population estimates of the threatened plant species *Pimelea spicata* (conducted every five years), strategic photo-point monitoring and vegetation distribution mapping.

The 2019 monitoring results in relation to the floristic composition and improvement through the site, indicate that, on average, the bushland on the site is outside of benchmark attribute values for the Cumberland Plain Woodland but is showing trends towards benchmark values. An increase in exotic species may be due to the lack of bush regeneration works within 2017 and 2018, although after works during 2019 this should decrease again with time after follow up treatments.

An assessment of the change in size and distribution of the threatened plant population of *Pimelea spicata* (Spiked rice-flower) was undertaken as part of the 2016/17 monitoring program and was not repeated this year. The next scheduled census of the *Pimelea spicata* population is in 2021/22.

Recommendations in relation to the on-going management of the site include continued treatment of African Olive and African Boxthorn, seasonal spraying of Blackberry, continued treatment of exotic vines and exotic perennial grasses.

Glossary and list of abbreviations

Term or abbreviation	Definition
BAM	Biodiversity Assessment Methodology
BC Act	*Biodiversity Conservation Act 2016* (NSW)
CEEC	Critically Endangered Ecological Community
DPIE	NSW Department of Planning, Industry and Environment was NSW Department of Planning and Environment (DP&E)
EEC	Endangered Ecological Community
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
FM Act	*Fisheries Management Act 1994* (NSW)
ha	Hectare/s
IBRA	Interim Biogeographic Regionalisation for Australia
LEP	Local Environmental Plan
Locality	The Work Zone and surrounds, nominally a 10 km radius from the Work Zone.
MNES	Matters of National Environmental Significance (from the Commonwealth Environment Protection and Biodiversity Conservation Act 1999).
m	Metre/s
m^2	Metres square
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
OEH	Office of Environment and Heritage (formerly DECCW, DECC, DEC)
Study area	Means the Work Zone and surrounding land where surveys were conducted.
PCT	Plant Community Type
TEC	Threatened Ecological Community

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1. Introduction

1.1 Background

The Appin No. 6 Ventilation Shaft Site project approval requires South 32 Illawarra Coal to secure, manage and monitor an 8.7 hectare offset of Cumberland Plain Woodland (CPW) such that an improve or maintain outcome would be achieved for threatened biodiversity.

The offset area is known as MZ5 and is located to the north of the Appin No. 6 Ventilation Shaft site on the property known as Mountbatten Stud at Douglas Park NSW (Figure 1). An initial assessment of the proposed offset area was conducted by Niche in December 2010 to assess the suitability of the site to be used as an offset for the unavoidable impacts associated with the development site. Niche determined that the site was indeed CPW and, under management, would improve to benchmark condition over time. The initial inspection of MZ5 also resulted in the discovery of a population of the threatened plant, *Pimelea spicata*, adding significant conservation value to the offset area.

In accepting the offset proposal, the Department of Planning and Environment (DPE) and Department of Environment and Energy (DoEE) provided a number of approval conditions relating to the reservation, management and monitoring of management actions within MZ5. One of the conditions required Illawarra Coal to implement a formal monitoring program for both the management of the native vegetation on the site and the extent and health of the *Pimelea spicata* population.

Conditions 2(c) (v – vii) of the NSW project approval (MP10_0079) and condition 3(d) of the EPBC Approval (2010/5722) are the conditions that require a monitoring and performance evaluation program to be implemented (Table 1).

Table 1: Conditions of approval requiring a monitoring program

Approval	Condition of Approval
NSW approval	2(c)(v) – A program to monitor the effectiveness of these measures, and progress against the performance and completion criteria
	2(c)(vi) – A description of the potential risks to re-vegetation, and a description of the contingency measures that would be implemented to mitigate these risks
	2(c)(viii) – Details of who would be responsible for monitoring, reviewing and implementing the plan
Commonwealth approval	3(d) The plan must include key milestones, performance indicators, corrective actions and timeframes for the completion of all actions outlined in the plan for the life of the project

1.2 Purpose and objectives

The aim of the monitoring program is to demonstrate the success of the management actions through the collection of empirical data, mapping and establishment of a photographic record for the offset site. The specific objectives of this report are:

1. To describe and evaluate the re-vegetation and bush regeneration works undertaken to date against the key performance criteria as detailed in the Biodiversity Management Plan (BMP) for the site (South 32 Illawarra Coal 2017);
2. To outline any problems encountered during works and how these were managed;
3. To recommend alterations or additions to management actions as required; and

4. To provide an analysis of vegetation monitoring results, including;
    - Comparison of data from Monitoring plots to benchmark condition levels for CPW,
    - Visual comparative analysis of photo point monitoring locations,
    - Vegetation and condition mapping at a scale deemed appropriate to inform management decisions.

Mapping will include:

1. Location of vegetation monitoring plots
2. Photo point monitoring locations
3. Baseline mapping of native vegetation and condition within MZ5.

The 2016 monitoring report included the details regarding the latest results of the *Pimelea spicata* population census, along with associated mapping. The 2021/2022 monitoring report will contain the next *Pimelea spicata* population census.

2. Management Actions

2.1 Management actions undertaken

Since 2011, management actions have been conducted at both the offset site (MZ5) and the voluntary management area (MZ6) to enhance and maintain native biodiversity. Stock has been excluded from the offset area by the installation of a fence around the site boundary, which was installed in 2011.

Toolijooa Bushland Restoration Pty Ltd (Toolijooa) has been conducting the bushland restoration works at both M5 and M6 sites between 2011 and 2016. Bush regeneration works were undertaken by Landcare Australia in 2019, with no works undertaken in the 2017 to 2018 monitoring period. The Landcare Australia (2019) monitoring report details the most recent bush regeneration works undertaken at MZ5 and MZ6. Planned bush regeneration works to be undertaken in 2020 include quarterly maintenance visits by a team of bush regenerators, as recommended by Landcare Australia (2019).

Weeds treated across the site since 2011 include:

- Herbaceous species: *Bidens pilosa* Cobbler's Peg, *Brassica* sp., *Cirsium vulgare* Spear Thistle, *Conyza* spp. Fleabane, *Echium plantagineum* Paterson's Curse, *Ehrharta erecta* Panic Veldt Grass, *Modiola caroliniana Modiola, Onopordum acanthium* Scotch Thistle, *Paspalum dilatatum* Paspalum, *Pennisetum clandestinum* Kikuyu, *Plantago lanceolata* Ribwort Plantain, *Senecio madagascariensis* Fireweed, *Solanum nigrum* Blackberry Nightshade, *Sonchus oleraceus* Common sowthistle, *Verbena bonariensis* Purpletop, *Xanthium* sp Noogoora Burr;
- Woody weeds: *Lycium ferocissimum* African Boxthorn, *Olea europaea* subsp. *cuspidata* African olive) and
- Vines (*Araujia sericifera* Moth Vine, *Delairea odorata* Cape Ivy and *Rubus sp.* Blackberry).

2.2 Management actions compared to BMP

The current management actions have addressed the recommended actions proposed in the BMP (South 32 Illawarra Coal 2017) for the site. These have been compared in Table 2. It should be noted that the actions are on-going.

Table 2: Proposed and current management actions in the BMP

Action	Description	Performance Target (Milestones)	Completion Status
MZ5 Fencing	▪ The first action within the offset area will be to exclude stock. Existing four-strand post-and-wire fence will be utilised and additional fencing installed where required. No barbed-wire will be used and the bottom strand will have a clearance of 400mm above the ground to sallow the movement of native fauna. Stock will be herded out of the area prior to fencing taking place.	Four-strand post-and-wire fence installed, no strands barbed and 400 mm separation from ground to lowest strand.	Fence installed. On-going monitoring.

Action	Description	Performance Target (Milestones)	Completion Status
Bush Regeneration in MZ5	▪ Primary, secondary and maintenance weed management within MZ5 will target the treatment of Blackberry, African Olive, Lantana, African boxthorn, privet, Cape ivy and a variety of exotic perennial grasses such as African Lovegrass, Rhodes Grass, Kikuyu and Couch. ▪ All weed management works will be supervised by a suitably qualified bush regenerator. A team of four bush regenerators will be engaged for five days for the primary weeding and then a team of two for one day every four months thereafter for secondary and maintenance weed management as required.	Engagement of suitably qualified bush regeneration contractor to implement primary, secondary and maintenance weed management program. Annual vegetation condition assessment Improvement in condition of offset bushland to within, or as near as possible to, benchmark condition levels.	Currently being conducted. On-going. Section 4 of this report regarding vegetation condition to benchmarks.
Pimelea spicata Monitoring program	▪ Design a program to determine the success of management or the need for intervention. ▪ Annual population counts within permanent plots. ▪ 5 yearly population census. ▪ Condition of individual plants from mixed cohorts. ▪ Condition of habitat. ▪ Annual inspections of fencing to ensure maintenance and up-keep. ▪ Regular site visits the potential presence of stock and/or feral herbivores that have breached fencing to ensure that such impact is eliminated by fencing and that trapped stock or feral herbivores are freed. ▪ Monitoring against stochastic events.	Sustainable *Pimelea spicata* population with population numbers staying level with or exceeding current numbers.	Census proposed to occur every five years. Most recent census undertaken in early 2017 and reported on in the 2016 monitoring report. Details regarding the *Pimelea spicata* population will be provided in the 2021 monitoring report. This report provides general observations for the species and presence within plots.
MZ6 Fencing	▪ The first action within the native vegetation area will be to exclude stock. Existing four-strand post-and-wire fence will be utilised and additional fencing installed where required. No barbed-wire will be used and the bottom strand will have a clearance of 400mm above the ground to allow the movement of native fauna. Stock will be herded out of the area prior to fencing taking place.	Four-strand post-and-wire fence installed, no strands barbed and 400 mm separation from ground to lowest strand.	Fence erected. On-going monitoring.
Bush Regeneration in MZ6	▪ Weed management within MZ6 will target the treatment of Blackberry, African Olive, lantana, African Boxthorn, privet, Cape ivy and a variety of exotic perennial grasses such as African lovegrass, Rhodes grass, Kikuyu and couch. ▪ All weed management works will be supervised by a suitably qualified bush regenerator.	Engagement of suitably qualified bush regeneration contractor to implement weed management program. Improvement in condition of offset bushland to within, or as near as possible to, benchmark condition levels.	Currently being conducted. On-going. Section 4 of this report regarding vegetation condition to benchmarks.

3. Methodology

3.1 Key performance criteria

The priority management actions, performance criteria and timeframes for the works in MZ5, as described in the BMP, are provided in Appendix A. The key elements include:

- Engagement of suitably qualified bush regeneration contractor to implement a primary, secondary and maintenance weed management program.
- Annual vegetation condition assessment.
- Improvement in condition of offset bushland to within, or as near as possible to, benchmark condition levels.
- Sustainable *Pimelea spicata* population with population numbers staying level with or exceeding current numbers.

Utilising these elements, Niche developed the monitoring methodology described in Section 3.2.

3.2 Monitoring methodology

The monitoring methodology will follow that outlined in the BMP.

Fixed plot vegetation monitoring for 2019 was conducted on 13 and 15 November 2019 by three Niche employees: Sian Griffiths (Senior Botanist and Accredited BAM Assessor), Yogesh Nair (Botanist and Accredited BAM Assessor) and Sarah Hart (Ecologist).

3.2.1 Fixed plot vegetation monitoring

The plot monitoring incorporated the following (Figure 2):

1. Five fixed BAM (Biodiversity Assessment Method) plots within MZ5, monitored annually.
2. Five fixed BAM plots within MZ6, monitored annually.
3. Comparison of site collected attribute data with the benchmarks for the PCT 850 Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain (CPW) from the PCTs Benchmarks Database. The BAM site attributes and their methods of measurement are provided in Appendix C.

Historically, the fixed plot vegetation monitoring has used the BioBanking Plot methodology. However, in 2017 a new industry standard was developed in association with the *Biodiversity Conservation Act 2016* (BC Act). Biodiversity Assessment Method (BAM) Plots have replaced BioBanking Plots as the standard method of collecting attribute data. As such, BAM plots were utilised in the 2017 and 2018 monitoring instead of BioBanking Plots in order to collect data consistent with updated methodologies, PCTs and benchmarks.

3.2.2 *Pimelea spicata* population Census

Monitoring of the *Pimelea spicata* population takes place annually as part of the fixed plot vegetation monitoring, with counts of *P.spicata* stems occurring within the BioBanking Plots. *P.spicata* occurs within BAM plots MZ5-001, MZ5-003, MZ5-004. These plots coincide to some extent with the monitoring plots used to count *P.spicata* during the population census, as detailed below. Annual observations within the BAM plots can monitor the extent of the population throughout zone MZ5 within areas monitored by Niche. General observations of the population outside of the plots are also undertaken annually to highlight identify any obvious declines in population health.

A population census of the *P.spicata* population in the study area occurs once every five years to estimate the population size and determine the health of the population. With monitoring of the presence of the species undertaken annually, it is determined that a full population census undertaken every five years is

adequate. If the species was determined not to be present in plots where it is known to previously occur during the annual monitoring, this would trigger a full population census regardless of its scheduled timeframe.

The original census of the *Pimelea spicata* population was undertaken in October 2012 and a second census was undertaken in February 2017. The next *Pimelea spicata* census is due in 2021/2022.

3.2.3 Photo-point monitoring

The photo-point monitoring was planned as follows:

1. Five fixed photo-points were sited within MZ5, coincident with the BAM plots.
2. Five fixed photo-points were sited within MZ6, coincident with the BAM plots.
3. An additional five photo-points were located within 200 metres of the external boundary of MZ5 to enable a visual assessment of the health of the vegetation in that area. Opportunistically favourable locations for photo-points were also recorded.

The photo-point locations are those shown in Figure 2.

3.2.4 Vegetation distribution monitoring

1. The boundary of the native vegetation within MZ5 and MZ6 will be mapped annually using a hand held GPS and interpretation of the available aerial imagery.
2. The mapped vegetation boundary will be compared each year, with the expectation that the extent of native vegetation within the offset area will increase with management.

3.3 Survey stratification

Stratification of the monitoring sites within the offset area was determined on-site whilst conducting the first round of monitoring surveys in spring 2012. Stratification was based on condition such that an accurate comparison of the improvement in that condition could be gained over time. Three broad condition categories existed on the site:

1. Woodland (Section 4.2.1).
2. Blackthorn (*Bursaria spinosa*) thicket (Section 4.2.2).
3. Pasture (Section 4.2.3).

Five BAM plots were conducted in each of MZ5 and MZ6 (ten in total) and distributed over the three condition types as shown in Table 3 and Figure 2.

Table 3: Location of monitoring sites

Management Zone	Area (ha)	Monitoring Site	Easting	Northing	Condition Class
MZ5	8.7	MZ5-001	290285	6216759	Woodland
		MZ5-002	290360	6216591	Woodland
		MZ5-003	290365	6216665	Woodland
		MZ5-004	290195	6216725	Blackthorn thicket
		MZ5-005	290017	6216883	Pasture
MZ6	12.43	MZ6-006	289842	6216418	Woodland
		MZ6-007	289990	6216474	Woodland
		MZ6-008	289852	6216665	Woodland
		MZ6-009	289925	6216342	Pasture
		MZ6-010	289974	6216678	Blackthorn thicket

* Easting and Northing provided in GDA94, MGA Zone 56.

3.4 Data analysis and interpretation

A series of key attributes were identified for assessing the current condition of the vegetation and habitats at the Offset Area, the restoration pathways and progress towards attaining the conservation objectives. These attributes relate to species richness and percent cover of native plants in vegetation layers, as well as fauna habitat features and canopy regeneration. This monitoring report presents the 2019 monitoring data according to these key attributes.

Basic statistical analyses have been conducted incorporating temporal variation (i.e. changes over time) in vegetation condition to assess the magnitude and direction of change in vegetation communities. Statistical analysis conducted involved temporal comparisons of means and standard errors (variability in data between quadrats) between the average survey data from 2012 to 2019. Key attributes which would be most informative for management input were selected for comparison, such as native species diversity, percent cover of exotics and native canopy cover. Calculations of mean and standard error were not conducted where less than three plots were undertaken within a plant community type as this is not enough data to provide meaningful or statistically robust analysis. Therefore, analysis was limited to the woodland plots in MZ5 and MZ6.

Benchmark values based on the Plant Community Type (PCT) accessed from the Vegetation Information System (VIS) database were used to provide an indication of the condition of the vegetation in a broader context. It should be noted that these benchmark values are not site specific and therefore are not intended to represent a target for measuring restoration success. Comparison of site values with benchmark values is intended to provide a broader context for interpreting the restoration pathway and the trajectory of change as management measures are implemented (direction of change).

3.5 Limitations

Some plant species are cryptic and can only be detected when flowering at certain times of the year. For example some orchids flower within certain seasons and cannot be detected at other times of the year.

The density of blackthorn at plots 004 and 010 prevented the placement of the 50 metre transect tape. An estimate of the BAM composition, structure and function attributes were therefore used for the plot. Different staff to previous monitoring events were used and this may introduce observer bias in the results. Analysis of results should be undertaken with these limitations in mind.

4. Results

4.1 Flora recorded

A total of 74 species were recorded across ten floristic plots within the study area during the 2019 monitoring event. The number of species recorded varies slightly with each monitoring event, with 82 species recorded in 2018, 81 species recorded in 2017, 83 species recorded in 2016, 96 species recorded in 2015 and 2014, 85 species recorded in 2013 and 90 species recorded in 2012. The observed differences are likely attributed to seasonal variation.

During the current monitoring, 14 species were exotic which accounts for five percent of species recorded. This is a decrease in percent of exotic species recorded when compared to 2018 (37 percent), and a decrease to that recorded in 2016 (46 percent of species exotic), 2015 monitoring (45 percent of species were exotic), and 2014 monitoring (55 percent of species were exotic).

4.2 Assessment of site attribute data

4.2.1 Woodland

Plate 1. Woodland during 2019 at monitoring plot MZ5-003

4.2.1.1 Plot Data

BAM site attribute data was collected at six sites that corresponded to a woodland structure. Three of the sites were collected from MZ5 and three were collected from MZ6. The data collected is contained in Table 4 (2019, 2018 and 2017 data) and Table 5 (2012-2016 data), which also includes the benchmarks for each

of the site attributes for the relevant PCT. The relevant PCT is 850 Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain. Benchmarks for 2012-2016 data are for BVT HN529.

Graph 1 and Graph 2 show the temporal change for key attributes for woodland plots in MZ5 and MZ6 respectively and compare the average values to benchmarks (shown as line graphs).

MZ5 offset site and MZ6 voluntary management site woodland plot comparison

Table 4. Comparison of woodland plots to PCT benchmarks (2017, 2018 and 2019)

Plot	Composition (Richness)						Structure (Cover)						Function			
	T	S	G	F	Fe	O	T	S	G	F	Fe	O	NLT	LC	FL	HTW
Benchmark	5	8	12	15	2	5	52	18	61	10	1	5	3	35	40	
MZ5																
M5_001 (2019)	2	2	4	8	0	3	37	45.1	7.1	2.8	0	1.2	1	52	8	8.6
M5_002 (2019)	1	1	5	3	0	1	10	15	21	0.4	0	0.1	0	43	0	5
M5_003 (2019)	2	1	3	6	0	2	25	20	20	5.7	0	0.2	2	36	3	5.7
2019 Average	**1.6**	**1.3**	**4**	**5.6**	**0**	**2**	**24**	**26.7**	**16**	**2.9**	**0**	**0.5**	**1**	**43.6**	**3.6**	**6.4**
M5_001 (2018)	1	2	4	12	0	4	20	45.1	10.6	4.1	0	1.3	1	87	36	10.1
M5_002 (2018)	2	1	5	8	0	4	15	15	46.5	1.4	0	0.4	0	37	2	1
M5_003 (2018)	2	2	2	10	0	5	23	15.1	15	6.1	0	0.9	1	38	0	3
2018 Average	**1.7**	**1.7**	**3.7**	**10.0**	**0.0**	**4.3**	**19.3**	**25.1**	**24.0**	**3.9**	**0.0**	**0.9**	**0.7**	**54.0**	**12.7**	**4.7**
M5_001 (2017)	2	2	6	9	0	4	20	40.1	25.6	4.1	0	0.5	1	56	8	5.2
M5_002 (2017)	2	1	5	8	0	3	16	10	27.1	1.2	0	0.3	0	22	1	17
M5_003 (2017)	2	2	2	8	0	4	17	9.1	20.5	7.3	0	0.8	1	64	3	4.5
2017 Average	**2.0**	**1.7**	**4.3**	**8.3**	**0.0**	**3.7**	**17.7**	**19.7**	**24.4**	**4.2**	**0.0**	**0.5**	**0.7**	**47.3**	**4.0**	**8.9**
MZ6																
M6_006 (2019)	2	1	4	8	0	0	25	50	55.1	4.1	0	0	2	39	7	1
M6_007 (2019)	1	1	4	4	0	0	50	10	12.5	6.2	0	0	2	97.4	0	75
M6_008 (2019)	1	2	6	3	0	1	15	30	45.8	5.6	0	0.1	1	62	0	19.4
2019 Average	**1.3**	**1.3**	**4.6**	**5**	**0**	**0.3**	**30**	**30**	**37.8**	**5.3**	**0**	**0.1**	**1.6**	**66.1**	**2.3**	**31.8**
M6_006 (2018)	4	1	5	11	0	3	23	20	12.6	5.7	0	0.3	2	71	24	6
M6_007 (2018)	1	1	2	7	0	2	20	12	9	2.8	0	0.2	3	77	50	20.4
M6_008 (2018)	1	2	5	11	0	5	10	53	18.6	4.7	0	0.9	1	75	8	2.6

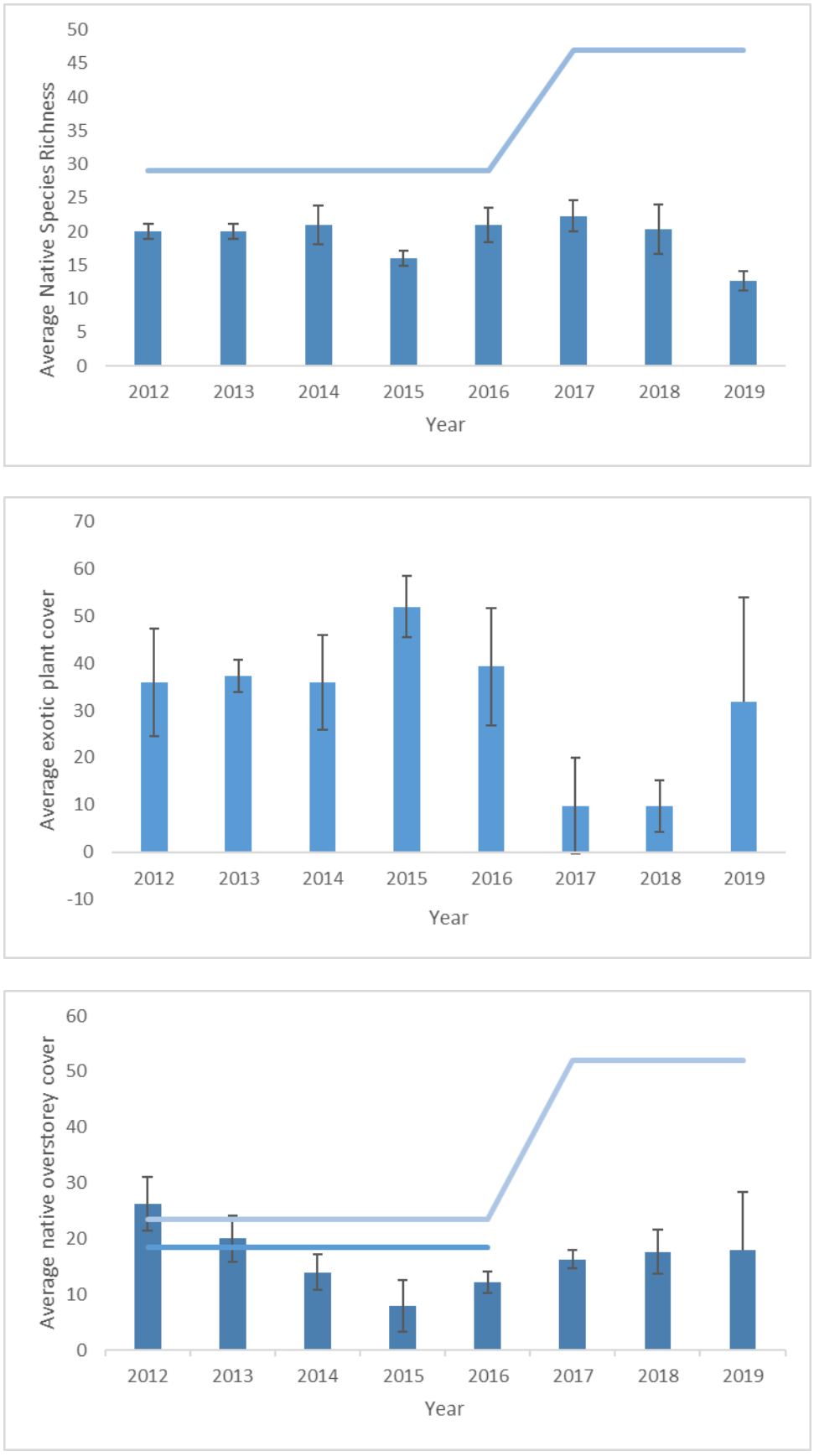
Plot	Composition (Richness)						Structure (Cover)						Function			
	T	S	G	F	Fe	O	T	S	G	F	Fe	O	NLT	LC	FL	HTW
2018 Average	**2.0**	**1.3**	**4.0**	**9.7**	**0.0**	**3.3**	**17.7**	**28.3**	**13.4**	**4.4**	**0.0**	**0.5**	**2.0**	**74.3**	**27.3**	**9.7**
M6_006 (2017)	3	1	6	10	0	2	19	15	24.1	4.2	0	0.3	2	52	18	7.2
M6_007 (2017)	1	1	7	6	0	4	20	25	18.3	7.4	0	0.4	6	48	51	15.9
M6_008 (2017)	1	2	8	11	0	4	10	50	21.4	4.2	0	0.5	1	61	4	4.2
2017 Average	**1.7**	**1.3**	**7.0**	**9.0**	**0.0**	**3.3**	**16.3**	**30.0**	**21.3**	**5.3**	**0.0**	**0.4**	**3.0**	**53.7**	**24.3**	**9.1**

Table 5. Comparison of woodland plots to PCT benchmarks (2012-2016)

Plot	NPS	NOS		NMS		NGCG		NGCS		NGCO		EPC	NTH	OR	FL
		L	U	L	U	L	U	L	U	L	U				
Benchmark	29	18.5	23.5	20	30	23	31	0	5	11.75	19.75	0	0	1	0
MZ5															
M5_001 (2016)	22		3.5		26		44		28		22	24	1	1	37
M5_002 (2016)	17		6		1.2		94		8		8	24	1	1	2
M5_003 (2016)	23		0.5		17.5		76		4		8	16	1	1	10
Average 2016	**21**		**3.3**		**14.9**		**71.3**		**13.3**		**12.7**	**21.3**	**1**	**1**	**16.3**
M5_001 (2015)	24		1		41.5		92		10		4	56	1	1	15
M5_002 (2015)	20		4.5		1.5		86		2		18	36	1	1	0
M5_003 (2015)	23		0.5		22.5		68		16		6	64	1	1	8
Average 2015	**22**		**2.0**		**21.8**		**82.0**		**9.3**		**9.3**	**52.0**	**1.**	**1**	**7.7**
M5_001 (2014)	21		0		62.5		26		26		6	10	1	1	12
M5_002 (2014)	17		7.5		0		78		2		0	12	1	1	3
M5_003 (2014)	16		30		53		22		28		9	14	2	1	0
Average 2014	**18**		**12.5**		**38.5**		**42**		**18.5**		**5**	**12**	**1**	**1**	**5**
M5_001 (2013)	12		9		20.5		58		10		42	39	1	1	12
M5_002 (2013)	18		2		1.5		82		0		30	44	1	1	6
M5_003 (2013)	17		24		3		6		2		16	23	2	1	0
Average 2013	**16**		**11.6**		**8.3**		**48**		**4**		**29**	**35**	**1**	**1**	**6**
M5_001 (2012)	17		5.5		24		66		8		50	24	1	1	8
M5_002 (2012)	18		6.5		3		92		2		18	50	1	1	6

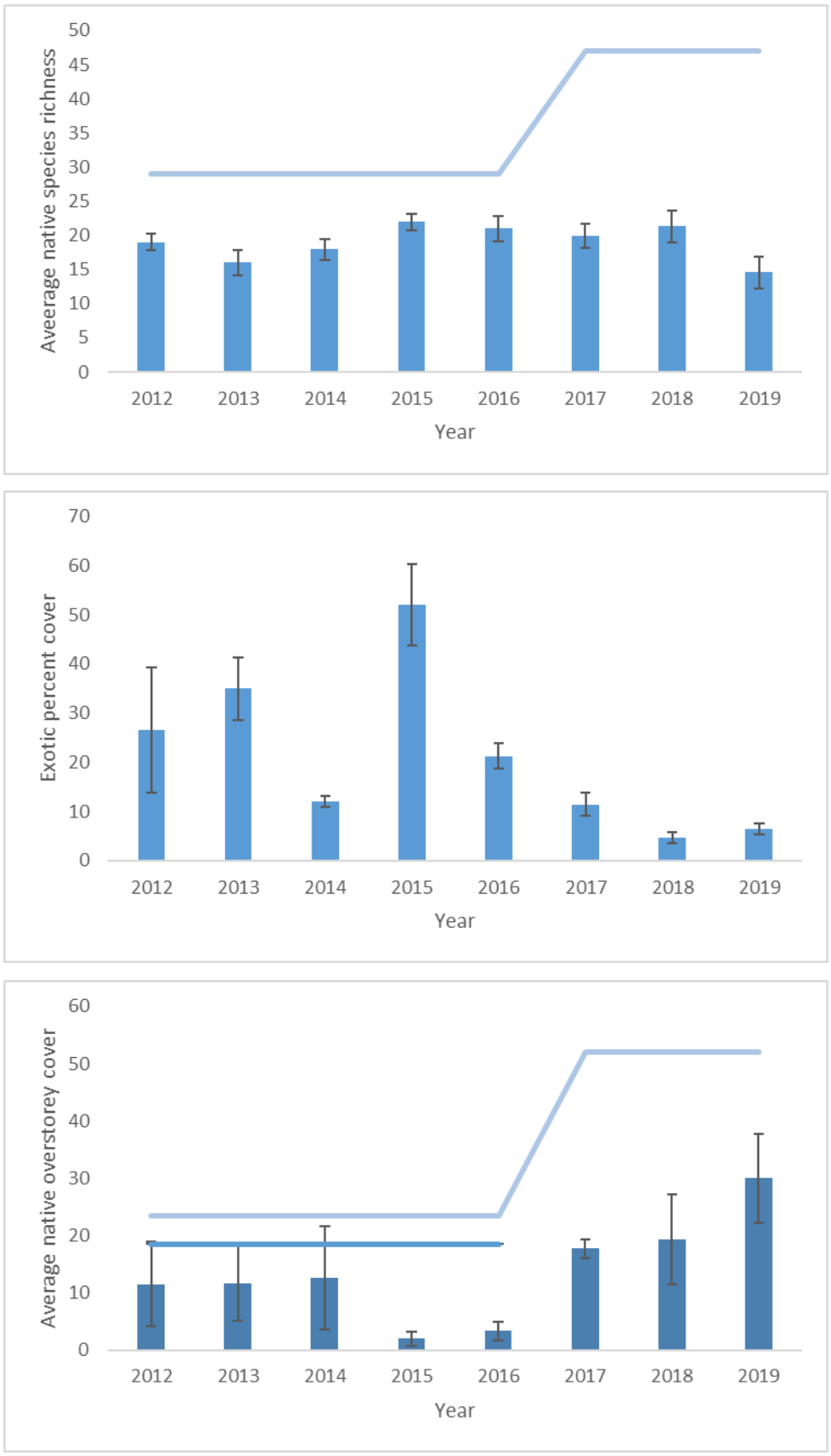
Plot	NPS	NOS		NMS		NGCG		NGCS		NGCO		EPC	NTH	OR	FL
		L	U	L	U	L	U	L	U	L	U				
M5_003 (2012)	21		22.5		1		3.8		3.4		12	6	2	1	0
Average 2012	**19**		**11.5**		**9.3**		**53.9**		**4.5**		**26.6**	**26.6**	**1**	**4.6**	**4.6**
MZ6															
M6_006 (2016)	23		10		15		88		16		20	24	6	1	32
M6_007 (2016)	16		16		10		36		20		4	64	8	1	70
M6_008 (2016)	24		10.5		30		70		14		16	30	1	1	10
Average (2016)	**21**		**12.2**		**18.3**		**64.7**		**16.7**		**13.3**	**39.3**	**5**	**1**	**37.3**
M6_006 (2015)	16		0		60		85		0		6	50	1	0	0
M6_007 (2015)	18		16		7.5		26		16		10	42	4	1	40
M6_008 (2015)	14		8.5		13.5		76		12		6	64	1	1	8
Average (2015)	**16**		**8**		**27**		**62**		**9**		**7**	**52**	**2**	**1**	**16**
M6_006 (2014)	27		18		8		60		6		30	48	2	1	16
M6_007 (2014)	21		17		0		26		16		24	16	4	1	10
M6_008 (2014)	17		8		16		50		0		16	44	1	1	8
Average 2014	**21**		**14**		**8**		**45**		**7**		**23**	**36**	**2**	**1**	**11**
M6_006 (2013)	22		26		16		90		2		30	34	2	1	22
M6_007 (2013)	20		22		0		22		12		16	44	4	1	20
M6_008 (2013)	18		12		12		60		12		18	34	1	1	10
Average (2012)	**20**		**20**		**9.3**		**57.3**		**8.6**		**21.3**	**37.3**	**2.3**	**1**	**17.3**
M6_006 (2012)	20		26.5		10.5		82		4		44	42	2	1	22
M6_007 (2012)	18		34.5		0		8		18		6	14	4	1	14
M6_008 (2012)	22		18		10		72		0		22	52	1	1	8
Average (2012)	**20**		**26.3**		**6.8**		**54.0**		**7.3**		**24**	**36**	**2.3**	**1**	**14.6**

NPS – Native Plant Species richness, NOS – Native Over-storey cover, NMS – Native Mid-storey cover, NGCG – Native Ground-cover (grasses), Native Ground-cover (shrubs), Native Ground-cover (other), EPC – Exotic Plant Cover, NTH – Number of Trees with Hollows, OR – Over-storey regeneration, FL – Length of Fallen Logs. L – Lower Benchmark, U – Upper Benchmark



Graph 1: Comparison of key attributes for woodland plots in MZ5 (HN529/PCT850) (Note only High Threat Weeds (HTW) measured in 2017, 2018 and 2019, as per BAM methodology)

Mean (±SE) 2012-2019 quadrat data (*n* = 3*).* Benchmark values/ranges shown as line graphs.



Graph 2: Comparison of key attributes for woodland plots in MZ6 (HN529/PCT850)

Mean (±SE) 2012-2019 quadrat data (*n* = 3*)*. Benchmark values/ranges shown as line graphs

4.2.1.2 Discussion

Compositionally, the data 2019 shows the woodland plots remaining below benchmark values for all growth forms, as was the case in 2017 and 2018. The average native species richness for 2018 was 15 in MZ5 (a slight decrease to previous monitoring data of 21 native species recorded in 2018, 20 native species recorded in 2017, 21 native species recorded on average in 2016, 22 native species recorded on average in 2015, and 18 native species recorded on average in 2014). The average native species richness for 2019 in MZ6 was 13 (a decrease from 2018 data of 20, and 2017 data of 22 native species on average). Values of native species richness remains below benchmark in both MZ5 and MZ6 (Graph 1 and 2). Reduction in native species diversity within woodland areas is likely attributable to ongoing drought conditions. It is likely over time with the continual management of the site that the offset is likely to reach benchmark condition.

Structurally, the percent cover of all growth forms remained below benchmark in 2019 for the woodland plots, with the exception of shrub cover, which was above benchmark, as was the case in 2017 and 2018. The average native overstorey cover (tree cover) for 2019 was below benchmark, but slightly higher than 2018 (see Graph 1 and 2). Given the current management of the site and the fact that five of the six plots had regenerating overstorey species (stem size class <5 cm and 5-9cm DBH present), it is considered that MZ5 and MZ6 is likely to maintain a healthy overstorey canopy in future years. Regeneration of eucalypts were observed throughout the site.

Native ground-cover grasses (grass cover/NGCG) averaged lower than benchmark in 2019, 2018 and 2017 and higher than the benchmark range during all previous monitoring years, though it should be noted that the benchmark values have increased using the BAM benchmarks. The 2019, 2018 and 2017 monitoring data shows a substantial decrease in native ground-cover grasses compared with 2016, however again it should be noted that the method for collecting cover data has changed with BAM.

Native ground-cover shrubs (shrub cover/NGCS) was above benchmark in 2019, 2018, 2017 and 2016. As mentioned in the previous monitoring report this is likely attributed to the regeneration of blackthorn which have increased over the monitoring years. The score is likely to increase with management of the site and recruitment growth. Native ground-cover other (NGCO) remained below benchmark in 2019, 2018 and 2017, which was a decrease from 2016 where this attribute was within benchmark for the first time since monitoring commenced and had increased compared with 2015 on average. Again, the change in methodology could be attributed to this change.

Functionally, average litter cover was again above benchmark values in 2019 and all other attributes were below benchmark (as was the case in 2018 and 2017).

Trees with hollows (NTH) were present in three of the six plots in 2019 (down from being present in four of the six plots in 2017).

The length of fallen logs (FL) remained well below the benchmark of 40 m in all of the woodland plots, but had not changed in 2019 compared with 2018 data.

Exotic plant cover (EPC) during 2019 was slightly higher in MZ5 compared with 2018 data (6% in 2019, 5% in 2018 down from 11% in 2017), but much higher in MZ6 from 2019 (31.8%) compared to 2018 (9.6%) and 2017 (9.8%). Exotic cover in 2019 was much higher than previous years at MZ6, but similar for MZ5 (see Chart 1 and Chart 2). This reflects the historic bush restoration works, which have involved woody weed control as well as management of other weeds. However, again the different methodology for collecting data could also be attributed to this change. Woody weeds such as African Olive and African Boxthorn are

persisting in the woodland area throughout MZ5 and MZ6 and it is recommended that woody weed control be undertaken again in this area in 2019.

4.2.2 Blackthorn thicket

Plate 2. Blackthorn thicket in plot MZ5-004

4.2.2.1 Plot Data

BAM site attribute data was collected at two sites within patches of Blackthorn thicket. One site was located within the M5 offset site, and the other in the M6 voluntary management site. The data collected are contained in Table 6 (2019, 2018 and 2017 data) and Table 7 (2012-2016 data), which also includes the benchmarks for each of the site attributes for the relevant PCT. The relevant PCT is 850 Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain. Benchmarks for 2012-2016 data are for BVT HN529.

MZ5 offset site and MZ6 voluntary management site blackthorn thicket plot comparison

Table 6. Comparison of blackthorn thicket plots to PCT benchmarks (2017-2019)

Plot	Composition (Richness)						Structure (Cover)						Function			
	T	S	G	F	Fe	O	T	S	G	F	Fe	O	NLT	LC	FL	HTW
Benchmark	5	8	12	15	2	5	52	18	61	10	1	5	3	35	40	0
M5_004 (2019)	0	3	4	5	0	3	0	70.2	20.3	1	0	0.3	0	45	0	30.1

Plot	Composition (Richness)						Structure (Cover)						Function			
	T	S	G	F	Fe	O	T	S	G	F	Fe	O	NLT	LC	FL	HTW
M5_004 (2018)	0	2	6	7	0	5	0	66	31	0.9	0	0.5	0	52	0	26.1
M5_004 (2017)	0	2	6	7	0	4	0	42	29.1	2.7	0	0.4	0	40	0	10.1
M6_010 (2019)	0	1	7	3	0	3	0	60	65.2	0.6	0	0.3	0	68	0	30.2
M6_010 (2018)	0	1	4	6	0	4	0	60	11.2	1.9	0	0.4	0	50	0	15.2
M6_010 (2017)	0	1	3	5	0	5	0	45	19.1	7.3	0	0.6	0	39	0	10.1

T – Tree, S – Shrub, G – Grass, F – Forb, Fe – Fern, O – Other; NLT –Number of Large Trees, LC – Litter cover, FL – Length of Fallen Logs. HTW – High Threat Weeds

Table 7. Comparison of blackthorn thicket plots to PCT benchmarks (2012-2016)

	NPS	NOS		NMS		NGCG		NGCS		NGCO		EPC	NTH	OR	FL
		L	U	L	U	L	U	L	U	L	U				
Benchmark	29	18.5	23.5	20	30	23	31	0	5	11.75	19.75	0	0	1	0
M5_004 (2016)	16		0		37.5		80		4		24	18	0	0	0
M5_004 (2015)	16		0		45		75		5		20	25	0	0	0
M5_004 (2014)	18		0		20		70		28		22	55	0	0	0
M5_004 (2013)	15		0		18		84		22		24	55	0	0	0
M5_004 (2012)	18		0		11		82		26		32	67	0	0	0
M6_010 (2016)	18		0		60		65		10		8	60	0	1	0
M6_010 (2015)	10		12		10.5		74		20		2	38	3	1	15
M6_010 (2014)	18		0		50		54		2		32	28	0	0	0
M6_010 (2013)	20		0		60		62		12		20	10	0	0	0
M6_010 (2012)	20		0		53		56		14		18	10	0	0	0

NPS – Native Plant Species richness, NOS – Native Over-storey cover, NMS – Native Mid-storey cover, NGCG – Native Ground-cover (grasses), Native Ground-cover (shrubs), Native Ground-cover (other), EPC – Exotic Plant Cover, NTH – Number of Trees with Hollows, OR – Over-storey regeneration, FL – Length of Fallen Logs. L – Lower Benchmark, U – Upper Benchmark

4.2.2.2 Discussion

The results for blackthorn thicket during 2019 were relatively similar to the previous monitoring years, through shrub cover had increased in 2019. Results for the plots within the blackthorn thicket should be interpreted with caution, as the thicket both MZ5 and MZ6 were so dense that it prevented access to much of the plot and it was not possible to run the 50 m transect out. As such, estimates were used to gather the data in 2015, 2016, 2017, 2018 and 2019.

Compositionally, blackthorn thickets plots scored below benchmark for all growth form groups in 2019 (with the exception of other growth form for MZ5-004), but was fairly consistent with previous years.

Native plant species richness (NPS) has scored below the benchmark in all monitoring years, including 2019. However, this was to be expected given the thicket of Blackthorn.

Structurally, the percent cover of all growth forms remained below benchmark for the woodland plots in 2019, 2018 and 2017, with the exception of shrub cover, which was above benchmark in all years. No canopy species were recorded within the thicket, therefore native overstorey cover (tree cover/NOS) and overstorey regeneration (presence of stem size class <5 cm DBH/OR) were zero, as expected. Shrub cover was given a score higher than benchmark during 2019, 2018 and 2017, which is relatively consistent with previous years data (native mid-storey cover). It has been raised previously in the Niche (2018, 2017, 2016, 2015, 2014 and 2012) monitoring reports that, given the density of these thickets, there would be some ecological benefit to thinning the blackthorn within the woodland areas to diversify the habitat structure. One such ecological benefit may be in controlling the Bell Bird population, as discussed below. As previously stated, the density of blackthorn in these areas is considered unnaturally high.

Native ground-cover grasses (NGCG) was below benchmark in 2019, 2018 and 2017 and was lower than previous years. Native ground-cover other (NGCO) was also well below previous monitoring years in 2019 and 2018. The lower cover values could be attributed to the long period of dry weather preceding the surveys in 2019, 2018 and 2017 and also partly due to the change in method of estimating percent cover.

EPC has been given a score of 30 percent in 2019 (down from 5-10 precent in 2018 and 10-11 percent in 2017), again higher than previous years. Exotic cover is relatively high throughout the blackthorn thicket due to the presence of exotic perennial grasses, Blackberry (*Rubus fruticosis*), African Boxthorn (*Lycium ferrocissimum*) and African Olive (*Olea europea* subsp*. cuspidata*). The presence of African Olive in the midstorey and groundlayer is of concern, with numerous seedlings developing underneath the larger specimens. *Lantana camara* (Lantana) was also recorded in the groundlayer of MZ6-010 plot. Weed maintenance should be undertaken in this area to prevent African Olive and Lantana dominating.

Trees with hollows (NTH) and the length of fallen logs (FL) were zero in 2019, 2018 and 2017 within the blackthorn thickets, as expected in the absence of native overstorey cover.

As recommended in previous monitoring reports, bush regeneration works should continue and focus on the removal of African Olive and Blackberry within the vicinity of plot MZ5-004, due to the presence of the threatened plant, *Pimelea spicata*. Any management in this area should be conducted with care so as to minimise any impact to *Pimelea spicata* individuals. It is significant in this area as the population of *Pimelea spicata* is largely associated with the Blackthorn thicket.

During the monitoring surveys in 2019, 2018 and 2017, it was noted that Bell Miners were abundant in the MZ5 area. Management actions to reduce the Bell Miner colony should be considered as the birds seem to be having an impact on mature overstorey in woodland areas in MZ5. Eucalypt dieback in association with Bell Miners is listed as a Key Threatening Process on the NSW *Biodiversity Conservation Act* 2016 (Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners).

An independent review of bell miner associated dieback was commissioned by Office of Environment and Heritage, which details management recommendations for bell miner associated dieback (Silver and Carnegie 2017):

- Prevention:
  - Disturbance of the canopy should be minimised where possible.
  - Where the canopy is disturbed, rehabilitation should focus on re-establishment of a canopy as soon as possible to limit unnatural understorey density.

- Site rehabilitation should include ongoing management of invasive weeds, particularly those that minimise natural regeneration and can act as superior nesting sites for Bell miners.
- Exclusion of fire is an artificial disturbance activity that can lead to woody weed invasion. Appropriate fire regimes should be designed and implemented.

- Treatment
  - A site assessment should be undertaken to ensure that Bell miners are present and psyllid attack is the primary cause of dieback.
  - If the prevailing vegetation community is naturally dense in the understorey or midstorey then consideration should be given to not intervening in the site as Bell Miner associated dieback (BMAD) may be a natural process there.
  - At sites with an unnatural level of understorey and/or midstorey density the viability of the seed bank for rehabilitation without planting should be assessed.
  - In sites with high value assets being impacted by BMAD (e.g. threatened flora or fauna) consideration should be given to culling of Bell miners followed by site rehabilitation. This has been shown to have an immediate reduction on exclusion of other bird species for example.
  - The primary aim of site treatment should be to reduce the occurrence of superior nesting sites for the Bell miner. The method best to use to achieve this will depend on site-specific characteristics.

Management at the offset site would involve undertaking primary weed management works surrounding areas of woodland. Weed management would involve removing all woody weeds, including African Olive and African Boxthorn.

4.2.3 Pasture

Plate 3. Plot (MZ5-005) within pasture land during 2019

4.2.3.1 Plot Data

BAM site attribute data was collected at two sites dominated by pasture. One site was located within the MZ5 offset area and the other in the M6 voluntary management area. The data collected are contained in Table 8 (2019, 2018 and 2017 data) and Table 9 (2012-2016 data), which also include the benchmarks for

each of the site attributes for the relevant PCT. The relevant PCT is 850 Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain. Benchmarks for 2012-2016 data are for BVT HN529.

Table 8. Comparison of pasture plots to PCT benchmarks (2019, 2018 and 2017)

Plot	Composition (Richness)						Structure (Cover)						Function			
	T	S	G	F	Fe	O	T	S	G	F	Fe	O	NLT	LC	FL	HTW
Benchmarks	**5**	**8**	**12**	**15**	**2**	**5**	**52**	**18**	**61**	**10**	**1**	**5**	**3**	**35**	**40**	**0**
M5_005 (2019)	0	1	4	1	0	2	0	2	17	0.5	0	0.2	0	20	0	2.2
M5_005 (2018)	0	2	4	4	0	3	0	2.1	28	20.7	0	0.3	0	24	0	6.5
M5_005 (2017)	0	1	6	3	0	1	0	1	22.1	2.1	0	0.1	0	28	0	11.1
MZ6_009 (2019)	0	1	6	3	0	1	0	5	83	0.3	0	0.1	0	33	0	3.5
MZ6_009 (2018)	0	1	4	8	0	2	0	5	13.2	0.8	0	1.1	0	24	0	5
MZ6_009 (2017)	0	1	5	5	0	2	0	4	18.1	0.5	0	0.2	0	14	0	23.5

T – Tree, S – Shrub, G – Grass, F – Forb, Fe – Fern, O – Other; NLT –Number of Large Trees, LC – Litter cover, FL – Length of Fallen Logs. HTW – High Threat Weeds

Table 9. Comparison of the pasture plots to PCT benchmarks (2012-2016)

	NPS	NOS		NMS		NGCG		NGCS		NGCO		EPC	NTH	OR	FL
		L	U	L	U	L	U	L	U	L	U				
Benchmark values	29	18.5	23.5	20	30	23	31	0	5	11.75	19.75	0	0	1	0
M5_005 (2016)	10		0		0		90		0		8	56	0	0	0
M5_005 (2015)	12		0		0		94		0		4	72	0	0	0
M5_005 (2014)	14		0		0		76		0		2	50	0	0	0
M5_005 (2013)	10		0		0		86		0		0	64	0	0	0
M5_005 (2012)	12		0		0		78		0		0	74	0	0	0
M6_009 (2016)	13		0		1.2		88		0		10	52	0	1	0
M6_009 (2015)	18		0		44		2		0		0	99	0	1	0
M6_009 (2014)	13		0		0		38		6		12	76	0	0	0
M6_009 (2013)	14		0		0		50		0		0	68	0	0	0
M6_009 (2012)	16		0		0		58		0		0	70	0	0	0

NPS – Native Plant Species richness, NOS – Native Over-storey cover, NMS – Native Mid-storey cover, NGCG – Native Ground-cover (grasses), Native Ground-cover (shrubs), Native Ground-cover (other), EPC – Exotic Plant Cover, NTH – Number of Trees with Hollows, OR – Over-storey regeneration, FL – Length of Fallen Logs. L – Lower Benchmark, U – Upper Benchmark

4.2.3.2 Discussion

Compositionally, pasture plots scored below benchmark for all growth form groups, but was fairly consistent in 2019 with previous years. Total native plant species richness (NPS) was lower than each of the woodland and blackthorn thicket condition classes for both MZ5 and MZ6. As stated in the previous monitoring reports this is an indication of the poor condition in these areas, the high percentage cover of

exotic pasture grasses and few key native grasses (NGCG) such as Weeping Grass (*Microlaena stipoides*), Kangaroo Grass (*Themeda australis*) and Wallaby Grass (*Rytidosperma racemosum*).

As discussed in previous monitoring reports (Niche 2012, 2013, 2015, 2016, 2017 and 2018), effective regeneration of these areas would be difficult without some re-vegetation of overstorey species, though in time blackthorn is likely to establish. As discussed in Niche (2014) better patches of pasture that are dominated by native grasses should be prioritised if any weed management work is conducted in these pastures. Chilean Needle Grass (*Nassella neesiana*) was recorded in the pasture plot in MZ6 in 2019, 2018 and 2017 and is observed to be dominant in parts of pasture surrounding the woodland areas. This exotic grass in very invasive and should be appropriately controlled as part of the bush regeneration program.

4.3 *Pimelea spicata* annual counts

Annual counts of *Pimelea spicata* where they occur within the fixed monitoring BAM plots are required. *Pimelea spicata* is known to occur in plots MZ5-001, MZ5-003, and MZ5-004. The annual count trigger for intervention is significant loss of population (>20% decline from one year to the next in population across biobanking plots), which would trigger full scale census.

At the time of the 2019 survey, there were no flowers present (likely due to the lack of rain), therefore the results are likely an underestimate of the *Pimelea spicata* stem count within the plots. Please note, previously only percent cover was estimated for *Pimelea spicata* within plots (not stem count), so stem count data is restricted to the years that the annual census was undertaken and the current survey (2019).

Table 10. Stem count of *Pimelea spicata* within fixed monitoring plots

Plot code	2012	2013	2014	2016	2019
MZ5-001	12	0	20	47	14
MZ5-003	5	0	4	4	0 (2 plants at 30 m mark of transect)
MZ5-004	52	218	61	7	47
Total count within BAM plots	**69**	**218**	**85**	**58**	**61**

Though some BAM plots have experienced a drop in stem count of *Pimelea spicata*, other BAM plots have experienced an increase in stem count. Overall, when accounting for all plots, there has been an increase in stem counts within the plots from 2016 to 2019 from 58 to 61. Across all BAM plots, there has not been a decease in *Pimelea spicata* population, therefore a full scale census is not triggered.

Differences in population counts between years are likely due to dry conditions around the time of monitoring resulting in the species not occurring above ground. This is supported by Recovery Plan for Pimelea spicata (DEC 2005) which states:

> 'It is difficult to accurately estimate population size and extent of occurrence for *P. spicata* given that the species is cryptic and difficult to detect, particularly when not in flower, and may not be apparent aboveground during drought conditions'.

4.4 Photo-points

Photo-point monitoring was conducted at each of the locations shown in Figure 2. A selection of the photo points has been provided in Appendix D. Changes evident include increased cover of ground and shrub layer over the monitoring period (2012 to present). Continued woody weed control is required in 2020, evident by the increase in woody weeds in the photo point monitoring.

4.5 Vegetation distribution monitoring

The extent of the wooded native vegetation of the site was mapped using aerial photography from NearMap (latest imagery December 2019) and data from the field surveys. The results were then compared with previous monitoring years.

Based on the results, no detectable increase in woody native vegetation cover was detected since the 2017 monitoring event. The increases in woody vegetation cover since the monitoring has been undertaken is shown in Table 11. The extent is illustrated in Figure 3and Table 11.

Table 11. Woody native vegetation increases per monitoring year

Management zone	2011 (NPWS 2003)	2012	2013	2014	2015	2016	2017	2018	2019
M5 Woody vegetation	5.28 ha	6.58 ha (1.3 ha increase)	6.73 ha (0.15 ha increase)	7.19 ha (0.46 ha increase)	7.19 ha (no detectable increase since 2014)	7.19 ha (no detectable increase since 2014)	7.27 ha (0.08 ha increase)	7.27 ha (no detectable increase since 2017)	7.27 ha (no detectable increase since 2017)
M6 Woody vegetation	4.49 ha	7.99 ha (3.5 ha increase)	8.34 ha (0.35 ha increase)	8.79 ha (0.45 ha increase)	8.79 ha (no detectable increase since 2014)	8.79 ha (no detectable increase since 2014)	8.91 ha (0.12 ha increase)	8.91 ha no detectable increase since 2017)	8.91 ha no detectable increase since 2017)
Total native woody vegetation	**9.77 ha**	**14.57 ha**	**15.07 ha**	**15.98 ha**	**15.98 ha**	**15.98 ha**	**16.18 ha**	**16.18 ha**	**16.18 ha**

5. Recommendations

The management actions recommended in the BMP are provided in Appendix A. A summary of the management actions implemented throughout 2018-19, and a qualitative assessment of the outcomes and recommendations for 2019-20 are each described below.

5.1 Fencing and stock management

Description/Requirement – Stock exclusion through the upgrading of existing fences and installation of new fences where required. Stock excluded from offset area (MZ5).

Enacted management – New four-strand post and wire fencing was installed in 2011 and stock removed from the offset area.

Outcome (spring 2019) – Fencing was intact. No recent evidence of stock in offset areas during field survey.

Recommendations for 2020

1. Continue to ensure integrity of fencing through regular inspections of the site;
2. Continue to exclude stock from MZ5.

5.2 Bush regeneration

Description/Requirement – Primary, secondary and maintenance weed management by Toolijooa has been conducted since 2011 in the MZ5 offset area, and the MZ6 voluntary management area. This year Landcare Australia (2019) has undertaken the primary, secondary and maintenance weed management.

Previous weed species targeted include: Blackberry (*Rubus fruticosus*), African Olive (*Olea europaea* subsp. *cuspidata*), Lantana (*Lantana camara*), African Boxthorn (*Lycium ferocissimum*), Privet (*Ligustrum* spp.), Cape Ivy (*Delairea odorata*) and a variety of exotic perennial grasses such as African lovegrass (*Eragrostis curvula*), Rhodes grass (*Chloris gayana*), Chilean needle grass and Kikuyu (*Pennisetum clandestinum*).

The weed species identified and targeted in 2019 are: Brassica (*Brassica spp*), Spear thistle (*Cirsium vulgare*), Fleabane (*Conyza spp*.), Paterson's curse (*Echium plantagineum*), Purpletop (*Verbena bonariensis*), Blackberry (*Rubus fruticosus*), African Olive (*Olea europaea subsp. cuspidata*) and African Boxthorn (*Lycium ferocissimum*).

Enacted management – Landcare Australia was engaged to undertake bush regeneration in 2019. Landcare Australia has completed three quarterly site visits on the following dates: 9 May 2019, 30 July 2019 and 21 October 2019. A further quarterly site visit is planned for December 2019 or January 2020.

Outcome (spring 2019) – Evidence of weed control shows in the data, with a reduction in EPC in MZ5. However, the dramatic reduction in exotic plant cover during 2018 and 2017 may be a consequence of the different method of data collection, given that no bush regeneration works were undertaken in 2017 or 2018. Weeds, particularly woody weeds, continue to be an issue that requires attention in both the MZ5 and MZ6 zones.

Recommendations for 2020

1. Continue the bush regeneration works, and target woody and vine weeds within better condition areas and drip-lines of large trees and adjacent to regenerating overstorey plants.
2. Ensure that herbaceous weeds and introduced grasses are targeted within woodland areas.

3. Areas which have had large woody weed removal should be followed up to ensure herbaceous weeds do not dominate and promote native regeneration.
4. Targeted spraying of Blackberry (or otherwise recommended treatment) throughout site. Ensure that those areas previously treated are re-inspected and follow up conducted where required.
5. Targeted removal of Chilean Needle Grass, which is beginning to dominate in parts of the pasture areas surrounding the woodland.
6. Ensure staff of the bush regeneration company are familiar with *Pimelea spicata* so as to identify it and avoid it during bush regeneration activities and especially weed spraying.
7. Selectively remove/trim areas of blackthorn thicket surrounding eucalypts. This will help reduce Bell Birds from occupying the site.

5.3 Monitoring of native vegetation and *Pimelea spicata*

Description/Requirement – Design a program to determine the success of management or the need for intervention including assessment of improvement in the condition of native vegetation, annual *Pimelea spicata* population counts, assessment of species and habitat condition and monitoring against stochastic environmental events.

Enacted management – Niche was engaged to develop and implement a monitoring strategy. The methodology is based on the BioBanking Assessment Methodology (DECCW 2014) (now modified to be consistent with the Biodiversity Assessment Method (OEH 2017)), photographic records and formalised *Pimelea spicata* population counts.

Outcome (spring 2019) – Monitoring of native vegetation was undertaken in November 2019, using five fixed BAM plots in MZ5, five fixed BAM plot in MZ6 and a number of photo points. Reduction in species diversity across management zones may be attributable to ongoing drought conditions. Weed control required in 2020 to reduce exotic species cover.

Monitoring of *Pimelea spicata* was conducted via stem counts within the BAM plots in 2019.An increase in number of *Pimelea spicata* stems across all BAM plots combined was observed, comparing latest two years of data (2016 and 2019 data)...

Recommendation for future monitoring

1. Conduct the next monitoring of native vegetation in spring 2019.
2. Conduct the next monitoring of *Pimelea spicata* during its correct flowering period (October-November) in 2021.
3. Maintain annual presence/absence and stem count monitoring for *Pimelea spicata* within BAM plots, and continue opportunistic observations of the presence and spread of the species throughout the offset area.
4. Ensure staff of the bush regeneration company are familiar with *Pimelea spicata* so as to identify it and avoid it during bush regeneration activities and especially weed spraying.

6. Conclusions

The aim of this report was to demonstrate the results of the on-going management actions at the offset and voluntary management areas associated with the Appin Ventilation Shaft Site No.6 site. The on-going management actions at these sites has resulted in improved vegetation condition overall measured by the collection of empirical data, through undertaking annual mapping of the vegetation extent on the site and through a photographic record.

For the most part, the site requires an on-going commitment to weed management and ecological restoration in order to reach a benchmark state and successfully achieve and improve or maintain outcome for biodiversity.

Recommendations for future adaptive management and monitoring of the management zones include:

1. Continue to ensure integrity of fencing through regular inspections.
2. Continue to ensure stock remains excluded from MZ5 in order to ensure the recovery and conservation of the *Pimelea spicata* population.
3. Continue to target woody and vine weeds within better condition areas and drip-lines of large trees and adjacent to regenerating overstorey plants.
4. Conduct herbaceous weed management and introduced grass management within areas of woodland and immediate surrounds.
5. Continue targeted spraying of Blackberry (or otherwise recommended treatment) throughout site. This includes re-visiting areas that have been previously treated to ensure treatment has been effective.
6. Consider feral herbivore control (rabbits), as evidence of rabbit occupation within *Pimelea spicata* habitat was observed in 2016.
7. Ensure bush regeneration staff are familiar with the identification of *Pimelea spicata*.
8. Maintain the timing of annual vegetation monitoring surveys to late October to beginning of December such that the data collected for the species richness and native ground-cover attributes are optimised.

References

DECC (2014) BioBanking Assessment Methodology 2014. Office of Environment and Heritage. Dated September (2014).

Landcare Australia (2019) Appin Vent Shaft 6 Bush Regeneration Report for South32 2019, prepared for South 32 Illawarra Coal.

OEH (2009) *BioBanking Assessment Methodology and Credit Calculator Operational Manual*, Sydney, NSW.

OEH (2017) Biodiversity Assessment Method. NW Office of Environment and Heritage. Dated August 2017.

Niche (2011) *Appin Mine Ventilation Shaft No.6 Project - Biodiversity Management Plan*, prepared for Illawarra Coal.

Niche (2012) *Appin Ventilation Shaft No. 6 Offset Area Monitoring Report 2012*, prepared for Illawarra Coal.

Niche (2013) *Appin Ventilation Shaft No. 6 Offset Area Monitoring Report 2013*, prepared for Illawarra Coal.

Niche (2014) *Appin Ventilation Shaft No. 6 Offset Area Monitoring Report 2014*, prepared for Illawarra Coal.

Niche (2015) *Appin Ventilation Shaft No. 6 Offset Area Monitoring Report 2015*, prepared for Illawarra Coal.

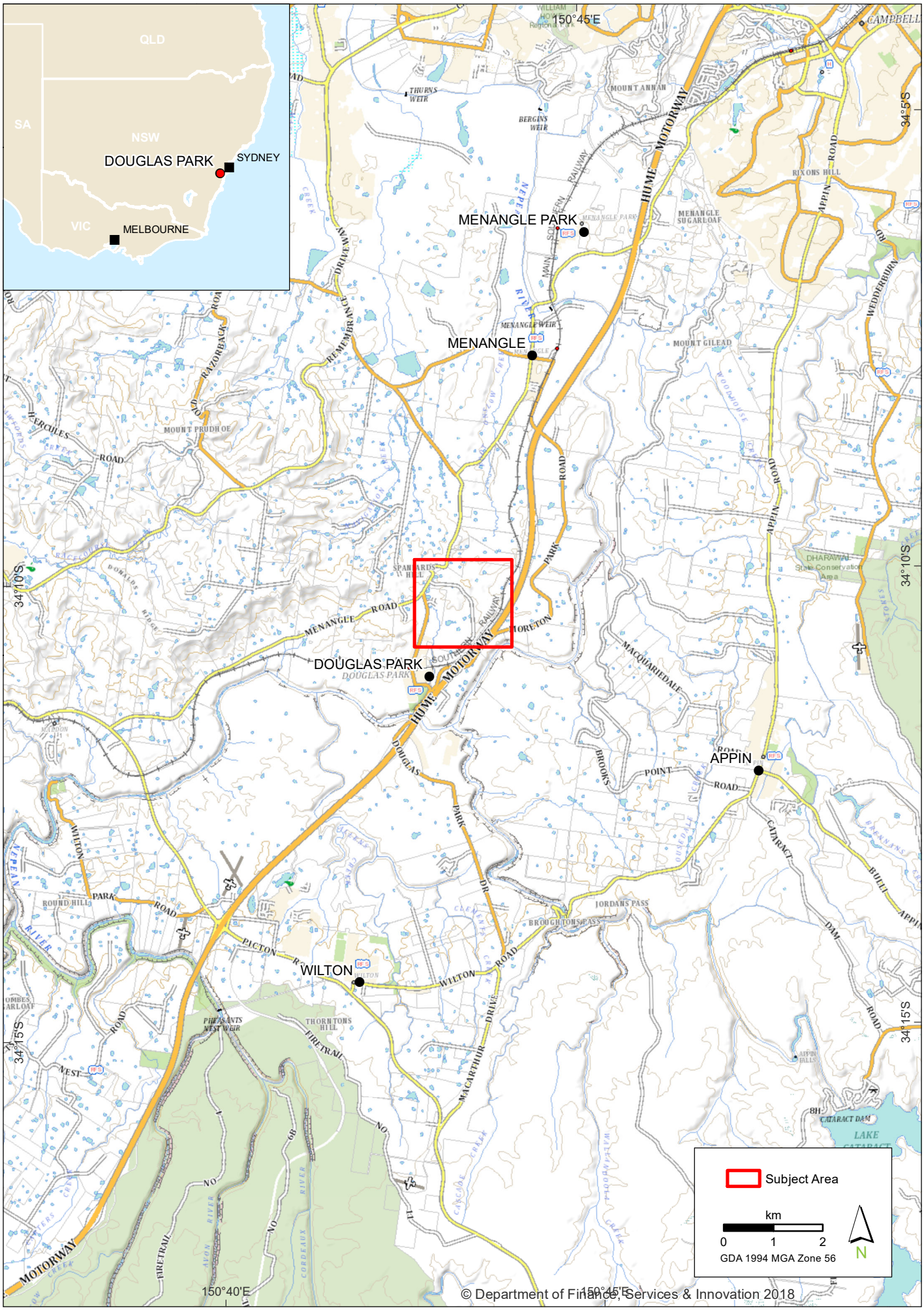
Niche (2016) *Appin Ventilation Shaft No. 6 Offset Area Monitoring Report 2016*, prepared for South 32 Illawarra Coal.

Niche (2017) *Appin Ventilation Shaft No. 6 Offset Area Monitoring Report 2017*, prepared for South 32 Illawarra Coal.

Niche (2018) *Appin Ventilation Shaft No. 6 Offset Area Monitoring Report 2018*, prepared for South 32 Illawarra Coal.

Silver, MJ and Carnegie AJ (2017) An independent review of bell miner associated dieback. Final report prepared for the Project Steering Committee: systematic review of bell miner associated dieback.

South 32 Illawarra Coal (2017) Appin VS#6 Biodiversity Management Plan Bulli Seam Operations. Version P5. Dated 30/01/2017.



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Study area

Appin Mine Ventilation Shaft No.6 – Biodiversity Offset Monitoring 2019

FIGURE 1

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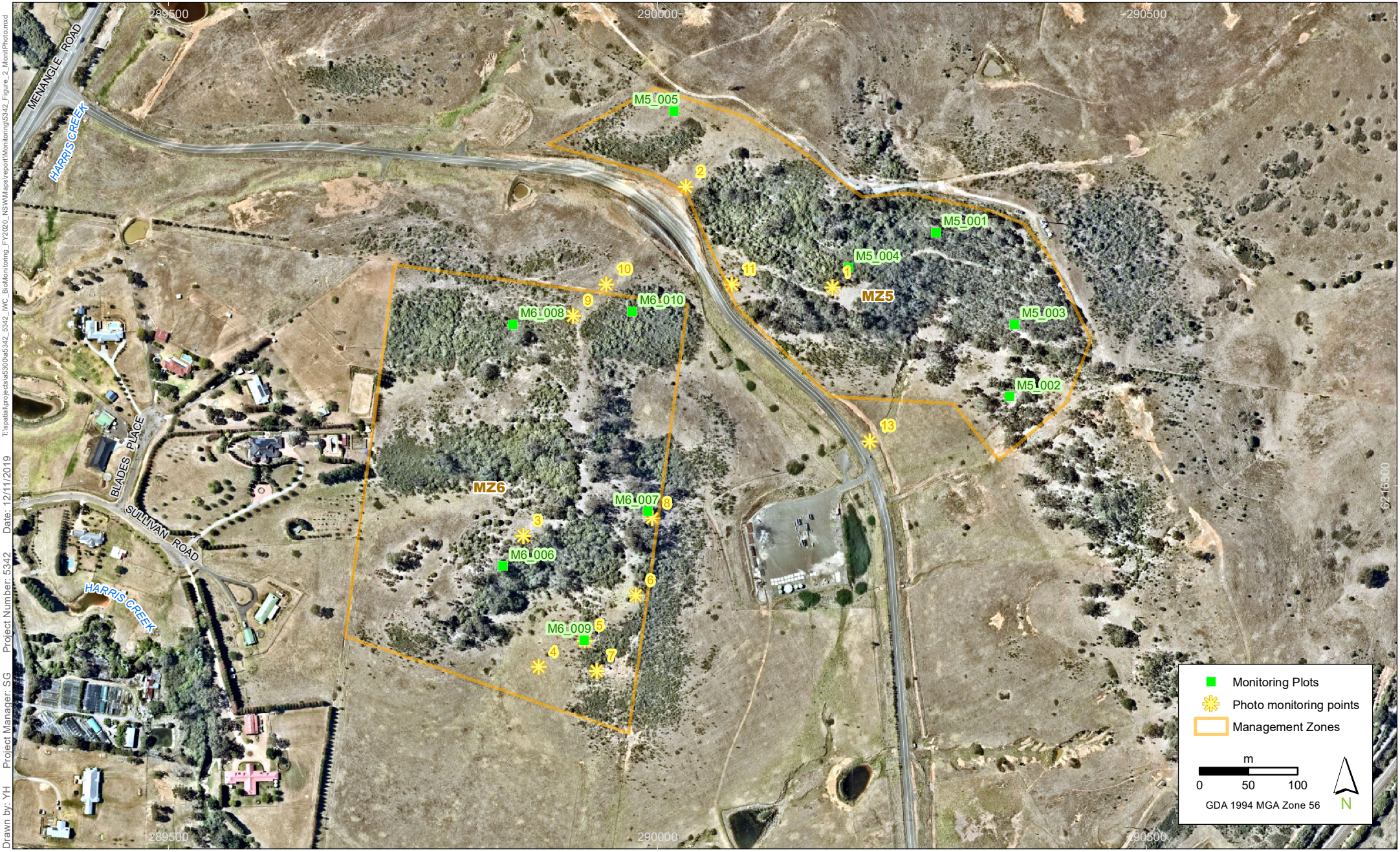

Monitoring plot and photo point monitoring locations

Appin Mine Ventilation Shaft No.6 – Biodiversity Offset Monitoring 2019

FIGURE 2

Imagery: (c) Nearmap 2019-11-13

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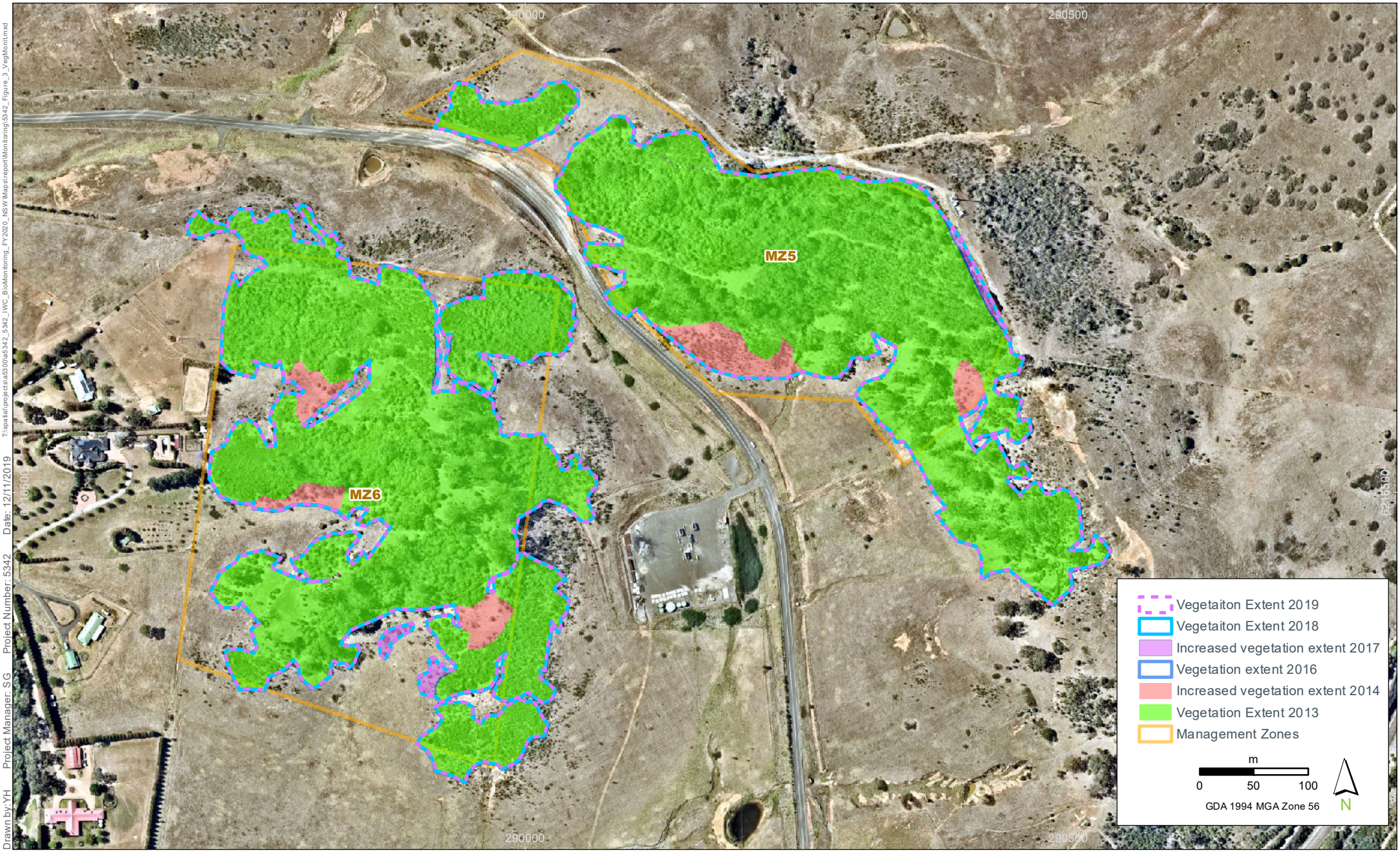

Vegetation extent

Appin Mine Ventilation Shaft No. 6 - Biodiversity Offset Monitoring 2019

FIGURE 3

Imagery: (c) Nearmap: Image Captured 2019-11-13

niche Environment and Heritage

Appendix A– Management actions, performance criteria, corrective actions and timeframes

Action	Description	Performance Target (Milestones)	Corrective Actions	Timeframe
MZ5 and MZ6 Fencing	The first action within the offset area will be to exclude stock. Existing four-strand post-and-wire fence will be utilised and additional fencing installed where required. No barbed-wire will be used and the bottom strand will have a clearance of 400mm above the ground to allow the movement of native fauna. Stock will be herded out of the area prior to fencing taking place.	Four-strand post-and-wire fence has been installed, no strands barbed and 400 mm separation from ground to lowest strand.	Maintenance of fencing – fencing to be inspected at regular intervals and repairs made as required.	Every 3 months
Bush Regeneration in MZ5	Primary, secondary and maintenance weed management within MZ5 will target the treatment of Blackberry, African Olive, Lantana, African Boxthorn, Privet, Cape Ivy and a variety of exotic perennial grasses such as African lovegrass, Rhodes Grass, Kikuyu and Couch. All weed management works will be supervised by a suitably qualified bush regenerator. A team of four bush regenerators will be engaged for five days for the primary weeding and then a team of two for one day every four months thereafter for secondary and maintenance weed management as required.	Engagement of a suitably qualified bush regeneration contractor to implement primary, secondary and maintenance weed management program has occurred. Annual vegetation condition assessment has commenced. Improvement in condition of offset bushland to within, or as near as possible to, benchmark condition levels – on-going.	On-ground weed management regime to be adaptable and able to respond to changing conditions and weed problems. Given that the Offset Area has an intact soil profile and moderate resilience, sound bush regeneration methods and observance of integrated pest management should minimise the need for corrective actions. Weed management program in Offset Area to be annually reviewed and altered actions documented and implemented. Revegetation with locally collected native vegetation of local genetic stock as recommended by an appropriately qualified expert.	Annually
Pimelea spicata Monitoring program	Design a program to determine the success of management or the need for intervention. Annual population counts within permanent plots. 5 yearly population census.	Sustainable *Pimelea spicata* population with population numbers staying level with or exceeding current numbers.	Annual count trigger for intervention is significant loss of population (>20% of monitored population within BioBanking Plots). Response: undertake full scale census. Stochastic events such as one off fire events will reset the baseline population size which will be determined after a population census immediately after the event	Annually as part of the fixed plot vegetation monitoring and

	Condition of individual plants from mixed cohorts. Condition of habitat. Annual inspections of fencing to ensure maintenance and up-keep. Regular site visits the potential presence of stock and/or feral herbivores that have breached fencing to ensure that such impact is eliminated by fencing and that trapped stock or feral herbivores are freed. Monitoring against stochastic events.		and then again at six, twelve, eighteen and twenty four months post disturbance. 5 yearly population census trigger for intervention is: >35% decline in population from preceding census; or Two consecutive (over two census') declines of >20%; or Area of occupancy is mapped to decrease to 50% or lower than originally mapped. Intervention Actions: Stop regeneration works; Consult with experts (RBG Mt Annan); Implement actions as recommended by experts; additional actions may include slashing of competing native grasses, thinning of competing native shrubs or trees (e.g., *Bursaria spinosa*), ecological burning or resting of weed management until the population stabilises.. Crash grazing should only be utilised as a last resort. In emergency situations, plant rescue and re-introduction may be required.	population census undertaken every five years
Bush Regeneration in MZ6	Weed management within MZ6 will target the treatment of Blackberry, African Olive, Lantana, African Boxthorn, Privet, Cape Ivy and a variety of exotic perennial grasses such as African Lovegrass, Rhodes Grass, Kikuyu and Couch. All weed management works will be supervised by a suitably qualified bush regenerator.	Engagement of a suitably qualified bush regeneration contractor to implement weed management program has occurred Improvement in condition of offset bushland to within, or as near as possible to, benchmark condition levels – on-going.	On-ground weed management regime to be adaptable and able to respond to changing conditions and weed problems. Given that the native vegetation areas have an intact soil profile and moderate resilience, sound bush regeneration methods and observance of integrated pest management should minimise the need for corrective actions. Weed management program in native vegetation area to be annually reviewed and altered actions documented and implemented.	Annually

Appendix B. Plant species list (2019)

Scientific Name	MZ5_01	MZ5_02	MZ5_03	MZ05_04	MZ05_05	MZ06_06	MZ06_07	MZ06_08	MZ06_09	MZ06_10
Acacia implexa								5		
Amyema pendula							0.1			
Anagallis arvensis								0.1		
Araujia hortorum	0.1	0.1	0.2							
Araujia sericifera								0.1		0.1
Aristida ramosa	1	5	5		5	5	10	20		5
Arthropodium milleflorum						0.1				
Asparagus asparagoides	0.1									
Asperula conferta			0.1	0.1	0.5					
Bromus catharticus								0.1		
Bromus hordeaceus									5	
Brunoniella australis	2	0.1	2	0.5		0.5	0.5		0.1	0.2
Bursaria spinosa					2		10			
Bursaria spinosa spinosa	45	15	20	70		50		25	5	60
Calotis cuneata						0.1	0.5	0.5	0.1	
Calotis lappulacea						0.1				
Capsella bursa-pastoris							0.1			
Carex inversa										0.1
Chloris truncata		0.5	5		5	10		10	5	
Clematis aristata				0.1						
Convolvulus erubescens					0.1				0.1	0.1
Crassula sieberiana						0.1				
Cynodon dactylon dactylon									15	
Cyperus laevis								0.2		
Delairea odorata	0.5		0.2	0.1						
Desmodium varians	0.1	0.1	0.1	0.1						0.1

Scientific Name	MZ5_01	MZ5_02	MZ5_03	MZ05_04	MZ05_05	MZ06_06	MZ06_07	MZ06_08	MZ06_09	MZ06_10
Dianella longifolia longifolia								0.1		
Dichondra repens	0.1	0.2	0.2	0.2		0.1	0.2			0.3
Echinopogon ovatus				0.2						
Einadia hastata	0.2		3							
Einadia nutans						3				
Einadia nutans nutans							5	5		
Einadia polygonoides			0.2							
Einadia trigonos	0.1									
Elymus scaber									3	
Eragrostis leptostachya								0.1		
Eucalyptus crebra						20		15		
Eucalyptus moluccana	2		5			5	50			
Eucalyptus tereticornis	35	10	20							
Galium spp.	0.1									
Glycine tabacina	0.1		0.1	0.1	0.1			0.1		0.1
Lantana camara								10		0.1
Lolium perenne									0.5	
Lomandra filiformis coriacea						0.1		0.5		
Lycium ferocissimum			0.5				5	1		
Microlaena stipoides					5					
Microlaena stipoides stipoides	5	5	10	10		40	0.5		50	5
Nassella neesiana							5		3	
Olea europaea africana		5								
Olea europaea cuspidata							65	8	0.5	30
Olea europaea europaea	8		5	30	0.2					
Oplismenus aemulus	0.1			0.1						
Oplismenus spp.										0.1
Opuntia stricta	0.1		0.1							
Oxalis perennans	0.1			0.1						

Scientific Name	MZ5_01	MZ5_02	MZ5_03	MZ05_04	MZ05_05	MZ06_06	MZ06_07	MZ06_08	MZ06_09	MZ06_10
Panicum simile		0.5								
Paspalum dilatatum					2			0.3		
Pennisetum clandestinum					35					
Pimelea spicata	0.1			0.1						
Plantago gaudichaudii										0.1
Plantago lanceolata		0.1		0.1	0.5	0.5		0.1	2	0.1
Poa labillardierei labillardierei	0.5		2		0.5					
Poa sieberiana sieberiana										10
Rubus fruticosus		0.1		0.2	0.1					
Rubus parvifolius				0.1						
Rytidosperma spp.					2				5	15
Senecio madagascariensis					0.1	0.1	0.1			0.1
Sida corrugata						0.1			0.1	
Sida rhombifolia		0.1	0.1	0.1	0.2		0.5	0.1		
Smilax glyciphylla	1									
Solanum prinophyllum	0.1		0.2							
Sporobolus spp.									5	
Themeda triandra	1	10		10			2	15		30
Verbena bonariensis		0.1			0.2					
Verbena rigida									5	
Veronica plebeia	0.1	0.1		0.1						

Appendix C. Biodiversity Assessment Method: measuring vegetation integrity attributes (OEH 2017)

Composition

- Assessment of composition is based on the number of native plant species (richness) observed and recorded by the assessor within a plot for each growth form group shown in Table 3 of the BAM (OEH 2017).
- The assessor must assign a native plant species to a growth form group according to the definitions set out in Appendix 4 of the BAM. An assessor must allocate a species to one growth form group based on the adult/mature growth form of the species.
- The minimum vegetation survey data required to be recorded by the assessor for composition at each 20m x 20m condition plot are:

  (a) full species name (*Genus species*) for the three dominant native species within each growth form group. Dominant native species means those native species that contribute most to the total cover of the growth form group, and

  (b) genus name or the full species name where practicable for all other species. Practicable means that sufficient plant material is present to make a species level identification and the assessor has sufficient skills and knowledge to make the identification in the field

  (c) whether each species is native, exotic, or high threat exotic

  (d) the growth form group to which each native species has been allocated.
- The composition of each growth form group is assessed by counting the number of different native plant species recorded within each growth form group within each 20m × 20m condition plot.

Structure

- Structure is the assessment of foliage cover for each growth form group within the 20m x 20m plot boundary. Foliage cover for a growth form group is the percentage of cover of all living plant material of all individuals of the species present for that group. This includes leaves, twigs, branchlets and branches as well as canopy overhanging the plot even if the stem is outside the plot.
- The assessor must record an estimate of the foliage cover for each native and exotic species present within the 20m x 20m plot. Foliage cover estimates for each species must draw from the following number series: 0.1, 0.2, 0.3,……1, 2, 3,……10, 15, 20, 25,……100%.
- The assessor must not use methods such as Braun-Blanquet (or other) classes, or a transect point intercept method to record the foliage cover score for a growth form group.
- The structure of each growth form group for the 20m x 20m plot is recorded by the assessor as the sum of all the individual foliage cover estimates of all native plant species recorded within each growth form group within each plot.
- The assessor must assign each non-native (exotic) plant species a foliage cover estimate and either E (exotic) or HTE (high threat exotic).

Function

- The number of large trees, tree stem size class, tree regeneration and length of fallen logs is recorded within a 1000m_2 plot.
- Tree stem size classes should be measured at 1.3m above ground height, referred to as ‘diameter at breast height over bark’ or DBH.
- Tree stem size classes are: <5, 5–9, 10–19, 20–29, 30–49, 50–79, and 80+ cm DBH and include all species in the tree growth form group.
- Only living trees contribute to counts for determination of presence and for a multi-stemmed tree, only the largest living stem is included in the count.

- The number of large trees is a count of all living stems with a DBH equal to or greater than the large tree benchmark DBH size for that PCT or vegetation class.
- For a multi-stemmed tree, at least one living stem must be equal to or greater than the large tree benchmark DBH size to count as a large tree.
- Stem size class is based on the presence or absence of living tree stems within size classes that fall between regenerating stems (<5cm DBH) and the large tree benchmark DBH size(s).
- For a multi-stemmed tree, only the largest living stem is counted for determining the presence or absence of stems within each size class.
- Regeneration is based on the presence or absence of living trees with stems <5cm DBH.
- The length of fallen logs is the total length in metres of all woody material greater than 10cm in diameter that is dead and entirely or in part on the ground within the 20m x 50m plot. Where logs extend outside of the plot, the assessor must only record the length of fallen log that is contained within the plot.
- Litter cover is assessed as the average percentage ground cover of litter recorded from five 1m x 1m plots evenly located along the central transect. Litter cover includes leaves, seeds, twigs, branchlets and branches (<10cm in diameter). The assessment of litter cover must include all plant material that is detached from a living plant. Dead material still attached to a living plant (such as a grass) is assessed as litter cover where it is in contact with the ground. Dead material still attached to a living plant that is not in contact with the ground, or litter suspended in the canopies of other plants is not assessed as litter cover. Litter cover should be considered as the two-dimensional litter layer and includes litter under the canopies of erect plants.
- The number of trees with hollows is determined by counting the number of trees with hollows that are visible from the ground in the 20m x 50m plot. The number of trees with hollows can include native species allocated to the shrub growth form group. It must include both living and dead trees.
- The number of trees with hollows does not contribute to the vegetation integrity score. The presence of hollow bearing trees is used as part of the habitat suitability assessment for some threatened species in Chapter 6 and for identifying the credit class for biodiversity credits in Chapter 11 of the BAM.

Appendix D. Photo point monitoring







Derived grassland and area of woodland from MZ6-009 (photo point 5) during 2012, 2013, 2014, 2015, 2016, 2017, 2018 and 2019

Derived grassland from photo point 4 during 2012, 2013, 2014 2015, 2016, 2017, 2018 and 2019.

Area of erosion from photo point 7 during 2012, 2013, 2014, 2015, 2017, 2018 and 2019.

MZ6_006 during 2012, 2013, 2014, 2015, 2016, 2017, 2018 and 2019. Note the obvious cover differences between the years. Woody weed control required in 2020.

MZ6_007 during 2012, 2013, 2014, 2015, 2016, 2017, 2018 and 2019. Note the ground cover since 2012. Woody weed control required in 2020.

Regenerating woodland from MZ5_002 during 2012, 2013, 2014, 2015, 2016, 2017, 2018 and 2019. Note the increase in the regeneration of *Bursaria spinosa* within the woodland understorey.

Derived grassland from M5_005 during 2012, 2013, 2014, 2015, 2016, 2017, 2018 and 2019.

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Ecology and biodiversity
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Research and monitoring
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Heritage management
Aboriginal heritage
Historical heritage
Conservation management
Community consultation
Archaeological, built and landscape values

Environmental management and approvals
Impact assessments
Development and activity approvals
Rehabilitation
Stakeholder consultation and facilitation
Project management

Environmental offsetting
Offset strategy and assessment (NSW, QLD, Commonwealth)
Accredited BAM assessors (NSW)
Biodiversity Stewardship Site Agreements (NSW)
Offset site establishment and management
Offset brokerage
Advanced Offset establishment (QLD)

Appendix G: 2019/20 Nepean River BioBank Site Annual Report

Landcare Australia

Annual Report for the Biodiversity Conservation Trust 2019-2020

Nepean BioBanking Site (ID: 382)

Contents

1. BioBanking Annual Reporting Table

BioBank Site Annual Report					
Location Details					
BioBanking agreement ID: 382		Name of landowner – Endeavour Coal Pty Ltd. All conservation land management works undertaken by Landcare Australia on behalf of Endeavour Coal Pty Ltd.			
Reporting date: 2 September 2020		Property address: 1025 and 1235 Menangle Rd, Douglas Park			
Management actions	**Required completion time and frequency**	**Action completed (Yes/No)**	**Actual completion date/s**	**Description of actions undertaken** (including reference to management zones), any variations and the reasons for variation.	**Visual observations and other comments** (including reasons for non-completion)
1. Management of grazing for conservation	Ongoing	Yes	Recorded at the following site visits including: 2 Sept 2019 26 Oct 2019 5 Mar 2020 20 Mar 2020 13 Aug 2020	On 20 March 2020 cattle (from the property to the east) were reported onsite, the gate on the eastern boundary was open, the stock were removed and the gate was permanently locked. No other stock has been observed in all management zones during site all sites visits.	No observed evidence of recent stock grazing (except for the 20 March 2020), trampling or other traces of stock animals.
2. Weed control	Ongoing – (4 times per year)	Yes	Quarterly site visits, including 2 Sept 2019 26 Oct 2019 5 March 2020 13 Aug 2020	Weed control at MZ1 and MZ2 spot spraying using herbicide and hand-pulling of species listed in BioBanking Agreement (BBA) 382. Infestation of Prickly Pear in MZ1 and MZ2 not listed in the BBA. However, approx. 70% of existing Prickly Pear population has been removed to date. Broadacre treatment with a quick spray unit was undertaken in MZ1 and MZ2 using a selective herbicide in March 2020. Maintenance Sweeps for key weed threats through MZ3 and the accessible parts of MZ4. No access permitted to MZ5 due to the high cliffs and gorges. However, no weeds	Additional herbicide treatment required in MZ1 and MZ2. African lovegrass, Stinking Roger, various Thistle, Fleabane, Blackberry, Prickly Pear and woody species such as African Boxthorn. As per the BBA, areas previously disturbed require ongoing control for at least the following 10 years, after which time these zones are to be reassessed for the need for further control.

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Management actions	**Required completion time and frequency**	**Action completed (Yes/No)**	**Actual completion date/s**	**Description of actions undertaken** (including reference to management zones), any variations and the reasons for variation.	**Visual observations and other comments** (including reasons for non-completion)
				observed.in adjoining management zones during maintenance sweeps. Herbicides have been used on the BioBanking site at the quarterly site visits and during seedling planting prep to undertake management actions (i.e. weed control) in each respective management zone as listed in the BBA. A list of herbicides used at each visit is available (if required).	
3. Management of fire for conservation	Ongoing	Yes	Quarterly site visits.	No evidence of recent fire activity during site visits (BBA suggests no burn as far back as 1962). No ecological burns are planned in any zone until at least 2024 and then the site will be reconsidered for future ecological burns in a mosaic pattern across the site.	Fuel loads vary in all management zones but are at least 15-25 tonnes per hectare or greater across the site.
4. Management of human disturbance	Ongoing	Yes	Quarterly site visits.	All permanent stewardship signage has been installed and is in good working order (7 in total). There has been no observations or evidence of incursions onto the site from the neighbouring properties.	Access for management purposes includes South32 and Landcare Australia (land management contractor) staff. There is no ability for stock or unauthorized motor vehicles to access the site with the current exclusion fencing in place.

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Management actions	**Required completion time and frequency**	**Action completed (Yes/No)**	**Actual completion date/s**	**Description of actions undertaken** (including reference to management zones), any variations and the reasons for variation.	**Visual observations and other comments** (including reasons for non-completion)
				No new waste has been observed on the site during site visits this year.	Routine inspections conducted at each site visit to ensure fencing is secure and that there have been no incursions.
5. Retention of native vegetation	Ongoing	Yes	Quarterly site visits.	No native vegetation has been removed or poisoned onsite.	No evidence or observation of recent ringbarking or tree felling (since commencement of the BBA) on the site.
6. Planting or seeding	May/June 2020	Yes	June 2020.	As per the BBA, a planting program a further 3300 tree and shrub species tube stock was planted in the eastern section of MZ1 from the species listed in the planting schedule of the BBA, including: *Eucalyptus tereticornis* x 1380 *Eucalyptus crebra* x 400 *Eucalyptus moluccana* x 420 *Acacia decurrens* x 400 *Acacia parramattensis* x 400 *Bursaria spinosa* x 300 Further deep watering was undertaken at the Stage 1 plantings in MZ1 in Nov and Dec 2019 due to the weather conditions at that time.	Jute matting, guarding, staking and watering with a diluted seasol solution and crystals for each tube stock at the time of planting. Feral goats appear to be impacting on the growth of the seedlings at both planting locations (see section 10 below)

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				This concludes all planting requirements for additional planting in MZ1 West and MZ1 East as per the BBA. Currently there is a 65% success rate in survivability (in the western section following the summer drought) and approx. 95% survivability in the eastern section of MZ1 (planted in June 2020).	
7. Retention of dead timber	Ongoing	Yes	Quarterly site visits.	No dead timber (standing or fallen) has been removed and no additional timber has been introduced to the site since commencement of the BBA.	Observations made during maintenance sweeps for all zones during quarterly sites visits.
8. Erosion control	Ongoing	Yes	Quarterly site visits.	No areas identified across the site which currently require any supplementary erosion control or stabilisation.	Observations made during maintenance sweeps for all zones during quarterly sites visits.
9. Retention of rocks	Ongoing	Yes	Quarterly site visits.	No rock removal has occurred on the site since the commencement of the BBA.	Site monitored for rock removal at quarterly site visits to the respective management zones.
10. Control of feral and overabundant native herbivores	Ongoing	Yes	Quarterly site visits.	Feral or overabundant native herbivory observed during site visits including feral goats on 2 Sept and 26 Oct 2019, (also during watering visits in Nov 2019 and Jan 2020) and 5 March 2020.	In accordance with the BBA annual inspection required for species traces. Opportunistic observations made during weed control and maintenance sweeps for all zones during either the annual and/or quarterly site visits. Feral goats have had a significant impact on the seedlings planted in MZ1 western and eastern sections. Approx. 95% of all seedlings above the

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					height of the corflute guards have been grazed by feral goats (as observed onsite by LA staff).
11. Vertebrate pest management	Ongoing Autumn and Spring	Yes	CPE program completed in spring and autumn each year.	Candid Pest Ejectors (CPEs) with baits and 1080 capsules were installed at two sites in MZ3, each with trail cameras within the vicinity to record any movements around each CPE.	CPE sites were visited weekly to check CPE bait and capsule and monitor and retrieve camera footage (Spring - 17 Sept to 23 Oct 2019 and Autumn 29 April to 29 May 2020). Foxes had activated one (1) CPE in Spring 2019 and Autumn 2020 At the completion of both programs all CPEs and trail cameras were removed from site as per the LLS spring and autumn fox and wild dog baiting program.
12. Nutrient control	Ongoing	Yes	Quarterly site visits.	N/A	No fertilizers (except for diluted seasol for the seedlings) have been used on the site since the commencement of the BBA.
13. Control of exotic fish species	N/A	N/A	N/A	N/A	No action required under the BBA
14. Maintenance or reintroduction of natural flow regimes	Ongoing	Yes	Ongoing	N/A	Natural flow regimes are maintained on the site in accordance with the BBA

Incident or event that has adverse effect on biodiversity values on biobank site	
Incident or event including adverse impacts (e.g. natural events)	**Action taken and proposed recommended actions**
Stock from the adjoining property observed on the site on 20 March 2020.	Stock removed on 20 March and gate permanently locked to prevent re-entry.

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Management actions	**Required completion time and frequency**	**Action completed (Yes/No)**	**Actual completion date/s**	**Description of actions undertaken** (including reference to management zones), any variations and the reasons for variation.	**Visual observations and other comments** (including reasons for non-completion)
Records submitted with this report					
☑ Photographs taken at the photo points set in the BioBanking agreement – see attached					
☑ Results of the inspections required to be conducted in item 1.3 of annexure D to the BioBanking agreement – see attached					
☑Results of any monitoring, inspections, surveys required in Annexures C and D to the BioBanking agreement – see attached					

Signature and certification	
I hereby declare that the information supplied in this report is accurate and complies with the reporting requirements under item 2 of the Annexure D to the BioBanking agreement Note: If the land that forms the biobank site is owned by multiple persons, each landowner must sign this annual report	
Signed: 	 Signed:
Date: 27 August 2020	Date: 31/08/2020

2. Photo Points

Location of Photopoints					
Projected Coordinate System: GDA 94, MGA – Zone 56					
Photopoint Ref.	**Easting**	**Northing**	**Feature**	**Direction of Photo**	**Comment (Date)**
PP1	285862	6215244	Weed control and boundary fence	NE/NW	1 Star Picket, flagged
PP2	284670	6214464	Weed control and boundary fence	SE/NW	1 Star Picket, flagged
PP3	284753	6214555	Revegetation CPW Zone 1	N/S	1 Star Picket, flagged
PP5	284810	6214720	Revegetation CPW Zone 1	E/W	1 Star Picket, flagged
PP6	284930	6214751	Cumberland Plain Woodland Zone 2	N/S	1 Star Picket, flagged
PP7	285161	6214854	Grey Myrtle Dry Rainforest edge	SE	New Photopoint established approximately 30m east of original GPS location to improve accessibility. 1 Star Picket, flagged
PP9	285412	6215024	Cumberland Plain Woodland Zone 2	NE/NW	1 Star Picket, flagged
PP10	286216	6215177	Riparian Scrub edge	E/W	New Photopoint established approximately 100m north of the original GPS location to improve accessibility. 1 Star Picket, flagged
PP11	286265	6215312	Shale Sandstone	E/W	1 Star Picket, flagged

PP#	Direction	25 March 2019	August 2020
PP1	NE		
PP1	NW		
PP2	SE		

PP2	**NW**		
PP3	**N**		
PP3	**S**		

PP5	**E**		
PP5	**W**		
PP6	**N**		

PP6	**S**		
PP7	**SE**		
PP9	**NE**		

PP9	**NW**		
PP10	**SE**		
PP10	**NW**		

PP11	**E**		
PP11	**W**		

3. Results of the inspections required by the BioBanking Agreement

1. *Percentage of ground cover present on the biobank site for the purpose of item 1.1 of Section 1 of Annexure C* (reporting - 12 monthly) – The exclusion fencing has allowed groundcover density to build-up across the site over the previous two (2) years and recent rainfall has further increased growth of existing ground cover as at 13 Aug 2020.

2. *Number of stock and date/s when the stock have entered the management zones of the biobank site* (reporting - 6 monthly) – Only one stock incursion (approx. 10 cows) observed in the eastern section of the site in March 2020 since monitoring under the BBA commenced in March 2019. The entry of stock was not authorised, and it is unclear as to whom or how the gate was left open.

3. *Physical condition of fencing and gates to ensure they are maintained to the standard listed in Annexure D section 1.3 of the BBA*:

    a. *Currently maintained to the standard to exclude stock from the site* on the eastern, western and northern boundaries (last inspected 26 Oct 2019 and 13 Aug 2020).
    b. *Currently maintained to a standard to control human disturbance* on the eastern, western and northern boundaries (inspected 26 Oct 2019 and 13 Aug 2020).
    c. *Currently maintained to a standard to control feral or overabundant herbivores and/or vertebrate pests* (inspected 26 Oct 2019 and 13 Aug 2020) – feral and/or native herbivores have been observed onsite during all quarterly site visits. The boundary fences installed will not prevent native and non-native herbivores from accessing and grazing the planting areas in MZ1 on the site.

4. *Records of any human disturbance on the biobank site* – (reporting 6 monthly) – Nil human disturbance observed at the site (inspected on 26 Oct 2019 and 13 Aug 2020).

5. *Evidence of erosion* – (reporting 6 monthly) – There are no areas identified across management zones as currently requiring any supplementary erosion control or stabilisation (inspected on 26 Oct 2019 and 13 Aug 2020).

6. *Evidence of Waste* – (reporting 6 monthly) – No evidence of additional or new waste was observed during site visit on 26 Oct 2019 and 13 Aug 2020.

4. Landcare Australia Quarterly Site Visits Sept, Oct, and Nov 2019 and March, and August, 2020

4.1. Weeds

Template for reporting of monitoring activities		
Management Zone	**Date**	**Observations and assessment of monitoring**
MZ 1	2 Sept 2019 26 Oct 2019 5 Mar 2020 13 Aug 2020	Treatment of exotic weeds and grasses spot spraying with herbicide or using a quick spray™ unit and hand-pulling of weeds undertaken in conjunction with MZ2. Maintenance sweep targeting key weed threats.
MZ 2	2 Sept 2019 26 Oct 2019 5 Mar 2020 13 Aug 2020	Treatment of exotic weeds and grasses spot spraying with herbicide, or using a quick spray unit and hand-pulling of weeds undertaken in conjunction with MZ1. Maintenance sweep targeting key weed threats.
MZ 3	2 Sept 2019 26 Oct 2019 5 Mar 2020 13 Aug 2020	Maintenance sweep targeting key weed threats.
MZ 4	2 Sept 2019 26 Oct 2019 5 Mar 2020 13 Aug 2020	Maintenance sweep targeting key weed threats in accessible sections of this zone.
MZ 5	2 Sept 2019 26 Oct 2019 5 Mar 2020 13 Aug 2020	No activity conducted – no access to the gorge.

Diary template for weed control management			
Date	**Management Zone**	**Description and type of activity undertaken or observation made**	**Minor variations** (details and reasons)
2 Sept 2019 26 Oct 2019 5 Mar 2020 13 Aug 2020	1, 2, 3, 4	Weed control, herbicide (spot spraying and or using a quick spray unit) and hand pulling of: • *Opuntia stricta,* Prickly Pear • *Lycium ferocissimum,* African Boxthorn • *Rubus fruiticosus,* Blackberry • *Verbena rigida,* Purpletop • *Conyza bonariensis,* Fleabane • *Tagetes minuta,* Stinking Roger • *Asparagus asparagoides,* Bridal creeper • *Cirsium vulgare,* Spear Thistle	Will need to revisit MZ1 and MZ2 to continue treating the key threat weed species listed. Continue weed sweeps in MZ3 and MZ4. The BBA does not list presences of Prickly Pear onsite. Along with African Boxthorn it is one of the more prevalent invasive

		• *Eragrostis curvula,* African Lovegrass	weed species identifiable on the site and will require significant follow-up for emergents

4.2. Fire

Template for reporting of monitoring activities		
Management Zone	**Date**	**Observations and assessment of monitoring**
1, 2, 3, 4, 5	2 Sept 2019 26 Oct 2019 5 Mar 2020 13 Aug 2020	No evidence of recent fire activity during site visit (Management report suggests no burns reported on the property since 1962).

Diary template for fire management activities			
Date	**Management Zone**	**Description and type of activity undertaken**	**Minor variations** (details and reasons)
2 Sept 2019 26 Oct 2019 5 Mar 2020 13 Aug 2020	All	No specific fire management activities undertaken except for opportunistic observation during weeding, watering, planting and fox baiting activities.	N/A

4.3. Native herbivores

Template for reporting of monitoring activities			
Management Zone	**Date**	**Current level of impact on vegetation** This column must record impacts as Negligible, Minimal, Moderate or High	**Observations and assessment of monitoring**
All	2 Sept 2019 26 Oct 2019 5 Mar 2020 13 Aug 2020	No specific native herbivore management work undertaken except for opportunistic observation during weeding, watering, planting and fox baiting activities.	Trail cameras set up for fox baiting revealed several common native mammal and bird species regularly traverse the site

Diary template for overabundant herbivore management			
Date	**Management Zone**	**Description and type of activity undertaken** This column must include details of the overabundant herbivores targeted, control techniques, and numbers controlled.	**Minor variations** (details and reasons)

2 Sept 2019 26 Oct 2019 5 Mar 2020 13 Aug 2020	All	No specific native herbivore management work undertaken except for opportunistic observation during weeding, watering, planting and fox baiting activities.	Natives species observed include: Common Wombat Eastern Grey Kangaroo Swamp Wallaby Superb Lyrebird

4.4. Vertebrate (feral) pests

Template for reporting of monitoring activities			
Management Zone	**Date**	**Current level of impact on vegetation or threatened fauna species** This column must record impacts as Negligible, Minimal, Moderate or High	**Observations and assessment of monitoring**
MZ1	2 Sept 2019 26 Oct 2019 5 Mar 2020 13 Aug 2020	Feral Goats have been observed on at least three (3) occasions during quarterly site visits in a herd of approx. 10 animals in MZ1. Trail cameras installed in Sept 2019 and May 2020 during the GSLLS fox and wild dog baiting program revealed foxes traversing the site and activating the CPE's. Feral goats appear (personal observation R Porter) to be impacting significantly on the growth of the seedlings planted at both locations in MZ1 (6600 plants). LLS have been consulted about control options. As shooting has been considered as high risk (in the BBA), mustering the animals should be considered and the animals taken off site for slaughter. No threatened native fauna has been observed within the site to date by Landcare Australia. Common native fauna species observed may be impacted by the presence of foxes	Feral species observed onsite include feral goats and foxes.
MZ2	2 Sept 2019 26 Oct 2019 5 Mar 2020 13 Aug 2020	Feral Goats have been observed on at least three (3) occasions during quarterly site visits in a herd of approx. 10 animals in MZ2. No threatened native fauna has been observed within the site to date by Landcare Australia. Common native fauna species observed may be impacted by the presence of foxes.	As above
MZ3	2 Sept 2019 26 Oct 2019	Feral Goats have been observed on at least three (3) occasions during	As above

	5 Mar 2020 13 Aug 2020	quarterly site visits in a herd of approx. 10 animals in MZ3. No threatened native fauna has been observed within the site to date by Landcare Australia. Common native fauna species observed may be impacted by the presence of foxes.	
MZ4/MZ5	2 Sept 2019 26 Oct 2019 5 Mar 2020 13 Aug 2020	No threatened native fauna has been observed within the site to date by Landcare Australia. Common species observed may be impacted by the presence of foxes.	N/A

Diary template for vertebrate pest management			
Date	**Management Zone**	**Description and type of activity undertaken** This column must include details of the vertebrate pests targeted, control techniques applied and numbers controlled.	**Minor variations** (details and reasons)
Sept 2019 and May 2020	MZ3	Setup for GSLLS fox and wild dog baiting program including installation of signage, setup of trail cameras and CPEs. CPE with lure and 1080 capsule were installed in two sites including CPE1 in east MZ3 and CPE2 in central MZ3. Each CPE has a trail camera within its vicinity.	Foxes had activated one (1) CPE in Spring 2019 and Autumn 2020.

4.5. Nest boxes

Template for reporting of nestbox monitoring				
Nest box type and location (Easting and Northing)	**Date**	**Evidence of occupation** (e.g. scratches, chew marks, whitewash)	**Species recorded**	**Observations and assessment of monitoring** (e.g. breeding events occurring? Feral species present?)
271 nest boxes monitored across the site. Refer to separate PDF attachment for evidence of occupation, species	Inspected August 2020	Refer to table below	Refer to table below	Refer to table below

and other observations.				

Box number	**Box Type**	**GPS Co-ordinates**	**observations in nest boxes**	**external markings on box**
Station 1	**Light orange dots**			
Tal001	Possum	S34° 10.889' E150° 40.659'	unreachable	-
Tal002	Rear entry glider	S34° 10.906' E150° 40.685'	-	-
Tal003	Possum	S34° 10.913' E150° 40.696'	-	-
Tal004	Small parrot	S34° 10.891' E150° 40.699'	-	-
Tal005	Rear entry glider	S34° 10.886' E150° 40.704'	-	-
Tal006	Triple chamber Microbat	S34° 10.919' E150° 40.699'	-	-
Tal007	Rear entry glider	S34° 10.922' E150° 40.695'	-	-
Tal008	Small parrot	S34° 10.912' E150° 40.703'	-	entrance chewed, box slanted
Tal009	Possum	S34° 10.872' E150° 40.720'	unreachable	-
Tal010	Extra-large box	S34° 10.883' E150° 40.685'	brushtail possum with young	-
Tal011	Extra-large box	S34° 10.888' E150° 40.669'	-	-
Station 2	**Black dots**			
Tal012	Extra-large box	S34° 10.913' E150° 40.619'	brooding duck with eggs	slanted box
Tal013	Possum	S34° 10.926' E150° 40.595'	eggs and feathers	entrance chewed
Tal014	Small parrot	S34° 10.924' E150° 40.597'	-	-
Tal015	Triple chamber Microbat	S34° 10.950' E150° 40.612'	-	-
Tal016	Possum	S34° 10.950' E150° 40.614'	-	-
Tal017	Rear entry glider	S34° 10.954' E150° 40.613'	-	-
Tal018	Small parrot	S34° 10.944' E150° 40.583'	-	-
Tal019	Possum	S34° 10.955' E150° 40.611'	-	-

Tal020	Rear entry glider	S34° 10.958' E150° 40.608'	unreachable	-
Tal021	Rear entry glider	S34° 10.967' E150° 40.610'	-	-
Tal022	Extra-large box	S34° 10.942' E150° 40.566'	leaf arrangement indicates activity	-
Station 3	**Blue dots**			
Tal023	Small parrot	S34° 10.939' E150° 40.552'	-	-
Tal024	Rear entry glider	S34° 10.939' E150° 40.548'	unreachable	-
Tal025	Rear entry glider	S34° 10.947' E150° 40.546'	-	-
Tal026	Triple chamber Microbat	S34° 10.957' E150° 40.551'	-	-
Tal027	Triple chamber Microbat	S34° 10.960' E150° 40.554'	-	-
Tal028	Possum	S34° 10.975' E150° 40.576'	unreachable	-
Tal029	Small parrot	S34° 10.961' E150° 40.559'	-	-
Tal030	Possum	S34° 10.983' E150° 40.574'	-	-
Tal031	Rear entry glider	S34° 10.979' E150° 40.569'	-	-
Tal032	Possum	S34° 10.965' E150° 40.567'	-	-
Tal033	Rear entry glider	S34° 10.977' E150° 40.571'	-	-
Tal034	Rear entry glider	S34° 10.974' E150° 40.552'	spider	-
Tal035	Possum	S34° 10.976' E150° 40.561'	unreachable	-
Tal036	Possum	S34° 10.982' E150° 40.548'	-	-
Tal037	Rear entry glider	S34° 10.982' E150° 40.553'	leaf arrangement indicates activity	-
Tal038	Small parrot	S34° 10.990' E150° 40.562'	-	entrance chewed
Station 4	**Green dots**			
Tal039	Possum	S34° 10.957' E150° 40.531'	scat	-
Tal040	Possum	S34° 10.964' E150° 40.525'	-	-
Tal041	Rear entry glider	S34° 10.967' E150° 40.523'	leaf arrangement indicates activity	-
Tal042	Extra-large box	S34° 10.932' E150° 40.541'	leaf arrangement indicates activity	-
Tal043	Extra-large box	S34° 10.945' E150° 40.515'	-	-

Tal044	Double chamber Microbat	S34° 10.963' E150° 40.506'	-	-
Tal045	Rear entry glider	S34° 10.977' E150° 40.499'	-	-
Tal046	Small parrot	S34° 10.963' E150° 40.511'	-	-
Tal047	Rear entry glider	S34° 10.967' E150° 40.513'	-	-
Tal048	Small parrot	S34° 10.989' E150° 40.444'	-	-
Tal049	Possum	S34° 10.985' E150° 40.449'	-	-
Tal050	Rear entry glider	S34° 10.987' E150° 40.427'	-	-
Tal051	Possum	S34° 10.991' E150° 40.422'	-	-
Tal052	Possum	S34° 11.003' E150° 40.420'	leaf arrangement indicates activity	-
Tal053	Small parrot	S34° 10.996' E150° 40.424'	-	-
Tal054	Rear entry glider	S34° 11.000' E150° 40.414'	-	-
Station 5	**Bright orange dots**			
Tal055	Rear entry glider	S34° 11.010' E150° 40.421'	-	-
Tal056	Triple chamber Microbat	S34° 11.009' E150° 40.421'	-	-
Tal057	Triple chamber Microbat	S34° 10.999' E150° 40.432'	-	-
Tal058	Small parrot	S34° 11.008' E150° 40.426'	-	-
Tal059	Small parrot	S34° 11.015' E150° 40.418'	-	-
Tal060	Possum	S34° 11.022' E150° 40.415'	leaf arrangement indicates activity	-
Station 6	**Purple dots**			
Tal061	Rear entry glider	S34° 11.015' E150° 40.440'	honey comb like substance but no sign of bees	-
Tal062	Possum	S34° 11.025' E150° 40.417'	leaf arrangement indicates activity	-
Tal063	Possum	S34° 10.971' E150° 40.500'	-	chewed entrance
Tal064	Small parrot	S34° 10.979' E150° 40.505'	-	-
Tal065	Triple chamber Microbat	S34° 10.967' E150° 40.509'	-	-
Tal066	Rear entry glider	S34° 10.992' E150° 40.504'	-	-

Tal067	Double chamber Microbat	S34° 10.999' E150° 40.505'	-	-
Tal068	Double chamber Microbat	S34° 11.005' E150° 40.508'	-	-
Tal069	Triple chamber Microbat	S34° 10.965' E150° 40.476'	-	-
Tal070	Possum	S34° 10.953' E150° 40.453'	-	-
Tal071	Possum	S34° 10.955' E150° 40.465'	-	-
Tal072	Possum	S34° 10.959' E150° 40.434'	leaf arrangement indicates activity	-
Tal073	Small parrot	S34° 10.963' E150° 40.437'	-	-
Tal074	Rear entry glider	S34° 10.963' E150° 40.455'	-	-
Tal075	Rear entry glider	S34° 10.960' E150° 40.446'	leaf arrangement indicates activity	-
Tal076	Rear entry glider	S34° 11.019' E150° 40.438'	unidentified object	-
Tal077	Rear entry glider	S34° 11.020' E150° 40.431'	-	-
Tal078	Small parrot	S34° 11.022' E150° 40.433'	-	-
Tal079	Rear entry glider	S34° 11.017' E150° 40.424'	-	-
Station 7	**Green and red dots**			
Tal080	Rear entry glider	S34° 11.030' E150° 40.390'	scat, leaf arrangement indicates activity	-
Tal081	Rear entry glider	S34° 11.036' E150° 40.392'	-	-
Tal082	Triple chamber Microbat	S34° 11.018' E150° 40.404'	-	-
Tal083	Small parrot	S34° 11.043' E150° 40.396'	-	-
Tal084	Small parrot	S34° 11.018' E150° 40.385'	-	-
Tal085	Possum	S34° 11.043' E150° 40.402'	-	-
Tal086	Rear entry glider	S34° 11.012' E150° 40.386'	-	-
Tal087	Rear entry glider	S34° 11.012' E150° 40.379'	-	-
Tal088	Small parrot	S34° 11.023' E150° 40.376'	-	-
Tal089	Rear entry glider	S34° 11.020' E150° 40.379'	-	-
Tal090	Possum	S34° 11.023' E150° 40.371'	leaf arrangement indicates activity	-

Tal091	Rear entry glider	S34° 11.024' E150° 40.378'	-	-
Tal092	Triple chamber Microbat	S34° 11.021' E150° 40.378'	-	-
Tal093	Triple chamber Microbat	S34° 11.022' E150° 40.377'	-	-
Tal094	Rear entry glider	S34° 11.035' E150° 40.363'	scat	-
Tal095	Small parrot	S34° 11.041' E150° 40.370'	unidentified object	entrance chewed
Tal096	Triple chamber Microbat	S34° 11.041' E150° 40.358'	-	-
Tal097	Double chamber Microbat	S34° 11.040' E150° 40.366'	-	-
Tal098	Rear entry glider	S34° 11.048' E150° 40.365'	-	-
Tal099	Triple chamber Microbat	S34° 10.998' E150° 40.376'	-	-
Station 8	**Red flags**			
Tal100	Possum	S34° 11.003' E150° 40.362'	-	-
Tal101	Rear entry glider	S34° 11.004' E150° 40.361'	-	-
Tal102	Rear entry glider	S34° 10.987' E150° 40.360'	-	-
Tal103	Double chamber Microbat	S34° 11.009' E150° 40.347'	-	-
Tal104	Small parrot	S34° 11.013' E150° 40.348'	-	entrance chewed
Tal105	Rear entry glider	S34° 11.016' E150° 40.351'	-	-
Tal106	Rear entry glider	S34° 11.016' E150° 40.334'	scat	-
Tal107	Double chamber Microbat	S34° 11.018' E150° 40.330'	-	-
Tal108	Small parrot	S34° 11.008' E150° 40.327'	-	entrance chewed
Tal109	Small parrot	S34° 11.026' E150° 40.328'	-	entrance chewed
Tal110	Possum	S34° 11.020' E150° 40.333'	leaf arrangement indicates recent activity	-
Tal111	Small parrot	S34° 11.030' E150° 40.329'	-	entrance chewed
Tal112	Triple chamber Microbat	S34° 11.032' E150° 40.325'	-	-
Tal113	Double chamber Microbat	S34° 11.040' E150° 40.329'	-	-
Tal114	Double chamber Microbat	S34° 11.048' E150° 40.323'	-	-

Tal115	Triple chamber Microbat	S34° 11.050' E150° 40.321'	-	-
Tal116	Small parrot	S34° 11.047' E150° 40.305'	-	-
Tal117	Rear entry glider	S34° 11.055' E150° 40.322'	-	-
Tal118	Rear entry glider	S34° 11.061' E150° 40.321'	-	-
Tal119	Rear entry glider	S34° 11.057' E150° 40.320'	-	-
Tal120	Double chamber Microbat	S34° 11.050' E150° 40.317'	-	-
Tal121	Rear entry glider	S34° 11.035' E150° 40.304'	-	-
Tal122	Possum	S34° 11.037' E150° 40.300'	-	-
Tal123	Rear entry glider	S34° 11.027' E150° 40.301'	-	-
Tal124	Small parrot	S34° 11.031' E150° 40.294'	-	-
Tal125	Rear entry glider	S34° 11.000' E150° 40.324'	-	-
Tal126	Triple chamber Microbat	S34° 11.001' E150° 40.329'	-	-
Tal127	Double chamber Microbat	S34° 11.016' E150° 40.285'	-	-
Tal128	Rear entry glider	S34° 11.011' E150° 40.292'	spider	-
Tal129	Rear entry glider	S34° 11.008' E150° 40.286'	-	-
Tal130	Rear entry glider	S34° 11.012' E150° 40.292'	-	-
Tal131	Extra-large box	S34° 10.995' E150° 40.290'	leaf arrangement indicates activity	-
Station 9	**Blue flags**			
Tal132	Rear entry glider	S34° 11.014' E150° 40.223'	-	-
Tal133	Rear entry glider	S34° 11.014' E150° 40.226'	scat, leaf arrangement indicates activity	-
Tal134	Small parrot	S34° 11.020' E150° 40.235'	-	entrance chewed
Tal135	Possum	S34° 11.022' E150° 40.223'	Brushtail possum with young	-
Tal136	Rear entry glider	S34° 11.026' E150° 40.231'	-	-
Tal137	Rear entry glider	S34° 11.031' E150° 40.215'	leaf arrangement indicates recent activity	-
Tal138	Small parrot	S34° 11.030' E150° 40.226'	-	-

Tal139	Double chamber Microbat	S34° 11.036' E150° 40.209'	-	-
Tal140	Rear entry glider	S34° 11.038' E150° 40.207'	-	-
Tal141	Triple chamber Microbat	S34° 11.037' E150° 40.228'	-	-
Tal142	Double chamber Microbat	S34° 11.030' E150° 40.206'	-	-
Tal143	Rear entry glider	S34° 11.028' E150° 40.201'	-	-
Tal144	Double chamber Microbat	S34° 11.043' E150° 40.218'	-	-
Tal145	Small parrot	S34° 11.041' E150° 40.193'	-	entrance chewed
Tal146	Triple chamber Microbat	S34° 11.042' E150° 40.184'	-	-
Tal147	Small parrot	S34° 11.044' E150° 40.180'	-	entrance chewed
Tal148	Double chamber Microbat	S34° 11.039' E150° 40.175'	-	-
Tal149	Rear entry glider	S34° 11.038' E150° 40.177'	-	-
Tal150	Small parrot	S34° 11.015' E150° 40.167'	-	-
Tal151	Rear entry glider	xS34° 11.032' E150° 40.184'	-	-
Tal152	Double chamber Microbat	S34° 11.031' E150° 40.164'	-	-
Tal153	Rear entry glider	S34° 11.030' E150° 40.163'	-	-
Tal154	Triple chamber Microbat	S34° 11.069' E150° 40.181'	-	-
Tal155	Small parrot	S34° 11.060' E150° 40.159'	-	entrance chewed
Tal156	Rear entry glider	S34° 11.061' E150° 40.161'	leaf arrangement indicates activity	-
Tal157	Rear entry glider	S34° 11.076' E150° 40.179'	-	-
Tal158	Possum	S34° 11.071' E150° 40.179'	scat, leaf arrangement indicates activity	-
Tal159	Double chamber Microbat	S34° 11.070' E150° 40.162'	-	-
Tal160	Rear entry glider	S34° 11.068' E150° 40.187'	-	-
Station 10	**Green flags**			
Tal161	Rear entry glider	S34° 11.082' E150° 40.151	-	-
Tal162	Double chamber Microbat	S34° 11.061' E150° 40.088'	-	-

Tal163	Rear entry glider	S34° 11.065' E150° 40.082'	-	-
Tal164	Triple chamber Microbat	S34° 11.070' E150° 40.074'	-	-
Tal165	Triple chamber Microbat	S34° 11.094' E150° 40.094'	-	-
Tal166	Rear entry glider	S34° 11.096' E150° 40.108'	-	-
Tal167	Small parrot	S34° 11.097' E150° 40.108'	-	-
Tal168	Rear entry glider	S34° 11.081' E150° 40.074'	-	-
Tal169	Rear entry glider	S34° 11.085' E150° 40.072'	-	-
Tal170	Possum	S34° 11.095' E150° 40.081'	-	-
Tal171	Rear entry glider	S34° 11.083' E150° 40.078'	-	-
Tal172	Possum	S34° 11.098' E150° 40.077'	-	-
Tal173	Possum	S34° 11.091' E150° 40.090'	-	-
Tal174	Small parrot	S34° 11.062' E150° 40.068'	-	-
Tal175	Possum	S34° 11.085' E150° 40.150'	leaf arrangement indicates activity	-
Tal176	Rear entry glider	S34° 11.088' E150° 40.156'	leaf arrangement indicates activity	-
Tal177	Small parrot	S34° 11.087' E150° 40.144'	-	entranced chewed on
Station 11	red/yellow squares			
Tal178	Triple chamber Microbat	S34° 11.079' E150° 40.143'	-	-
Tal179	Double chamber Microbat	S34° 11.075' E150° 40.147'	-	-
Tal180	Possum	S34° 11.089' E150° 40.146'	leaf arrangement indicates activity	-
Tal181	Triple chamber Microbat	S34° 11.094' E150° 40.153'	-	-
Tal182	Double chamber Microbat	S34° 11.099' E150° 40.156'	-	-
Tal183	Possum	S34° 11.105' E150° 40.158'	-	-
Tal184	Double chamber Microbat	S34° 11.106' E150° 40.158'	-	-
Tal185	Rear entry glider	S34° 11.105' E150° 40.164'	spider	-
Tal186	Possum	S34° 11.107' E150° 40.172'	scat	-

Tal187	Rear entry glider	S34° 11.062' E150° 40.146'	-	-
Tal188	Small parrot	S34° 11.055' E150° 40.143'	-	-
Tal189	Double chamber Microbat	S34° 11.049' E150° 40.137'	-	-
Tal190	Rear entry glider	S34° 11.036' E150° 40.126'	unreachable	-
Tal191	Possum	S34° 11.086' E150° 40.030'	scat	-
Tal192	Small parrot	S34° 11.083' E150° 40.037'	-	entranced chewed on
Tal193	Rear entry glider	S34° 11.095' E150° 40.031'	-	-
Tal194	Rear entry glider	S34° 11.091' E150° 40.023'	-	-
Station 12	**Red pins**			
Tal195	Possum	S34° 11.118' E150° 39.995'	-	-
Tal196	Possum	S34° 11.125' E150° 39.991'	-	-
Tal197	Rear entry glider	S34° 11.116' E150° 39.985'	-	-
Tal198	Double chamber Microbat	S34° 11.111' E150° 39.978'	-	-
Tal199	Small parrot	S34° 11.116' E150° 39.979'	-	entranced chewed on
Tal200	Small parrot	S34° 11.120' E150° 39.979'	-	-
Tal201	Rear entry glider	S34° 11.136' E150° 39.986'	sleeping brushtail possum	-
Tal202	Rear entry glider	S34° 11.144' E150° 39.976'	-	-
Tal203	Double chamber Microbat	S34° 11.126' E150° 39.958'	-	-
Tal204	Possum	S34° 11.132' E150° 39.951'	-	-
Tal205	Small parrot	S34° 11.131' E150° 39.942'	-	-
Tal206	Double chamber Microbat	S34° 11.125' E150° 39.937'	-	-
Tal207	Possum	S34° 11.127' E150° 39.938'	Brushtail possum	-
Tal208	Rear entry glider	S34° 11.124' E150° 39.944'	-	-
Tal209	Triple chamber Microbat	S34° 11.149' E150° 39.985'	-	-
Tal210	Small parrot	S34° 11.151' E150° 39.984'	unreachable	-

Tal211	Possum	S34° 11.161' E150° 39.985'	-	-
Tal212	Possum	S34° 11.167' E150° 39.999'	-	-
Tal213	Double chamber Microbat	S34° 11.153' E150° 39.976'	-	-
Tal214	Possum	S34° 11.157' E150° 39.972'	-	-
Tal215	Rear entry glider	S34° 11.147' E150° 39.972'	-	-
Tal216	Possum	S34° 11.150' E150° 39.963'	-	-
Tal217	Triple chamber Microbat	S34° 11.152' E150° 39.959'	-	-
Tal218	Double chamber Microbat	S34° 11.157' E150° 39.952'	-	-
Tal219	Small parrot	S34° 11.172' E150° 39.949'	-	-
Tal220	Double chamber Microbat	S34° 11.172' E150° 39.958'	-	-
Tal221	Triple chamber Microbat	S34° 11.163' E150° 39.956'	-	-
Tal222	Rear entry glider	S34° 11.161' E150° 39.959'	-	-
Tal223	Rear entry glider	S34° 11.177' E150° 39.962'	-	-
Tal224	Possum	S34° 11.178' E150° 39.965'	-	fur/feather caught to entrance
Tal225	Double chamber Microbat	S34° 11.179' E150° 39.959'	-	-
Tal226	Small parrot	S34° 11.180' E150° 39.967'	-	-
Tal227	Possum	S34° 11.186' E150° 39.970'	-	-
Tal228	Double chamber Microbat	S34° 11.202' E150° 39.968'	-	-
Tal229	Small parrot	S34° 11.207' E150° 39.965'	-	-
Tal230	Rear entry glider	S34° 11.189' E150° 39.986'	-	-
Tal231	Rear entry glider	S34° 11.195' E150° 39.976'	-	-
Tal232	Possum	S34° 11.189' E150° 39.990'	-	-
Tal233	Rear entry glider	S34° 11.197' E150° 39.984'	-	-
Tal234	Possum	S34° 11.193' E150° 39.990'	-	-

Tal235	Triple chamber Microbat	S34° 11.188' E150° 39.990'	-	-
Tal236	Rear entry glider	S34° 11.180' E150° 39.986'	leaf arrangement indicates activity	-
Tal237	Possum	S34° 11.184' E150° 39.979'	-	-
Tal238	Rear entry glider	S34° 11.174' E150° 39.995'	-	-
Tal239	Possum	S34° 10.878' E150° 40.832'	-	-
Tal240	Rear entry glider	S34° 10.907' E150° 40.851'	-	-
Tal241	Rear entry glider	S34° 10.893' E150° 40.842'	leaf arrangement indicates activity	-
Tal242	Small parrot	S34° 10.913' E150° 40.843'	spider	-
Tal243	Small parrot	S34° 10.912' E150° 40.838'	-	-
Tal244	Triple chamber Microbat	S34° 10.897' E150° 40.848'	-	-
Tal245	Possum	S34° 10.910' E150° 40.830'	-	-
Tal246	Possum	S34° 10.903' E150° 40.848'	-	-
Tal247	Possum	S34° 10.899' E150° 40.831'	-	-
Tal248	Rear entry glider	S34° 10.894' E150° 40.822'	-	-
Tal249	Extra-large box	S34° 10.911' E150° 40.858'	scat	-
Tal250	Triple chamber Microbat	S34° 10.906' E150° 40.811'	-	-
Tal251	Triple chamber Microbat	S34° 10.915' E150° 40.816'	-	-
Tal252	Rear entry glider	S34° 10.910' E150° 40.807'	-	-
Tal253	Small parrot	S34° 10.906' E150° 40.819'	-	-
Tal254	Small parrot	S34° 10.915' E150° 40.808'	-	-
Tal255	Possum	S34° 10.900' E150° 40.819'	-	nest box is slanted
Tal256	Small parrot	S34° 10.930' E150° 40.819'	-	-
Tal257	Rear entry glider	S34° 10.895' E150° 40.816'	-	-
Tal258	Rear entry glider	S34° 10.933' E150° 40.821'	spider	-
Tal259	Possum	S34° 10.932' E150° 40.824'	-	-

Tal260	Rear entry glider	S34° 10.907' E150° 40.871'	-	-
Tal261	Rear entry glider	S34° 10.898' E150° 40.868'	-	-
Tal262	Rear entry glider	S34° 10.886' E150° 40.870'	-	-
Tal263	Small parrot	S34° 10.910' E150° 40.877'	-	-
Tal264	Rear entry glider	S34° 10.910' E150° 40.886'	-	-
Tal265	Possum	S34° 10.892' E150° 40.880'	-	-
Tal266	Small parrot	S34° 10.898' E150° 40.883'	-	-
Tal267	Possum	S34° 10.914' E150° 40.880'	sleeping Brushtail possum	-
Tal268	Triple chamber Microbat	S34° 10.897' E150° 40.891'	-	-
Tal269	Possum	S34° 10.886' E150° 40.902'	leaf arrangement indicates activity	-
Tal270	Extra-large box	S34° 10.886' E150° 40.861'	-	-
Tal271	Extra-large box	S34° 10.887' E150° 40.855'	-	-

Appendix H: Rehabilitation Cost Estimate

Rehabilitation cost estimate provided only for Department of Regional NSW (Resources Regulator). The Rehabilitation Cost estimate is commercial in nature.

Please contact the Department or IMC representative for further information.

Appendix I: Appin Mine Community Complaints Report FY20

APPENDIX H: COMMUNITY COMPLAINTS REPORT FY20

Month	Date	Nature of Complaint	Actions / Follow Up
June		No complaints received for the month.	
May	12/05/2020	Community member contacted the Community Call Line at 11.40am to express disappointment that Exploration Licence 8972 had been granted by the government. The community member wished to remain anonymous and did not provide any contact details.	The Community Team followed up with the team at the Call Centre (external organisation) to seek further detail. No further detail regarding the call was provided, including contact details. The Call Centre staff advised the community member was very clear that they wished to remain anonymous. The exploration licence was granted by NSW Government earlier this month and landholders within the licence area were provided an update by letter. No further action was taken given the limited detail available for follow up.
April		No complaints received for the month.	

Month	Date	Nature of Complaint	Actions / Follow Up
March	29/03/2020	Community member sent an email at 8.27pm to advise of a speeding truck on Appin Road. The licence plate and time of incident (6.30pm) were provided.	The email was shared with the logistics team the following day and an investigation commenced. The primary investigation determined the truck was not on Appin Road at the reported time. The resident was contacted to reconfirm the time at 2.46pm on 30 March – the time was confirmed as closer to 6.50pm. The investigation continued with the new information and confirmed the truck was on Appin Road at the time, however the highest speed recorded on the trucks monitoring device was 92 km/h; the posted speed limit is 90km/h. The driver was requested to make a statement confirming he was not speeding. The resident was provided the investigation outcome by email at 2.10pm on 3 April. The resident appreciated the information but reiterated the truck was seen to be going greater than 92km/h.
February		No complaints received for the month.	
January	08/01/2020	Resident raised a concern with a survey employee about the number of Illawarra Metallurgical Coal vehicles associated with an exploration site using their driveway as a turning point.	The exploration supervisor was contacted immediately and confirmed vehicles associated with the exploration site were using the driveway as a turning point. Arrangements were made the same day to ensure vehicles had an appropriate turning point that did not impact landholders in the area. No feedback was provided to the resident as details were not collected at the time of receiving the complaint.

Month	Date	Nature of Complaint	Actions / Follow Up
December	09/12/2019	Resident emailed a complaint against an Illawarra Metallurgical Coal employee's actions and raised concern about their intellectual property being stolen.	The complaint was investigated. As it related to an employee the details of the outcome remain confidential. The alleged stolen intellectual property was determined to be shared between parties in a legal manner. The resident was provided initial written feedback on 19 December 2019, and further written feedback on 31 January 2020.
November		No complaints received for the month.	
October		No complaints received for the month.	
September	13/09/2019	Resident presented a letter to a South32 Board member with concern about a staff member of Illawarra Metallurgical Coal. The resident noted they could not find the complaints line on the South32 website.	The letter was forwarded to the appropriate team for investigation. As the concern related to an employee the details of the outcome remain confidential. The South32 website was updated to ensure the Community Call Line was in a prominent location. The resident was provided feedback on the concern by return letter on 13 September 2019.

Month	Date	Nature of Complaint	Actions / Follow Up
August	24/08/2019	Resident contacted the Community Call Centre at 2.53pm concerned about more coal dust on his truck than usual.	Community Lead spoke to the resident by phone at 3:30pm on 26/08/2019. The resident said he drives his truck to work every day from Appin and his truck has recently been covered in a lot more coal dust than usual. He would like to know if there is any reason for the extra dust. Community Lead advised the resident she would investigate and get back to him. Following consultation with subject matter experts, Community Lead called the resident on 27/08/2019 and explained that dry weather may contribute to dust, but that dust mitigation processes are in place to minimise any impacts, including sweeper trucks and wheel washes. In light of the resident's concerns we advised him that we will review our dust mitigation processes to identify any opportunities for possible improvements. The resident was satisfied.
July	22/07/2019	Community Officer contacted the resident to proactively advise of an additional compressor operating at the site 22 July 2019 in daylight hours. The resident advised the low-level hum at his property was continuing and he believed it to be from the ventilation shaft.	The community officer offered noise monitoring at the resident's property. The resident agreed to this and it was arranged for the following week. The noise monitoring was cancelled 29 July 2019 as the resident reported the noise had disappeared. The community officer confirmed the hired compressor was removed from site last week which supports the noise ending.

Appendix J: Appin Mine EPBC Approval 2010/5350 Compliance Report

Bulli Seam Operations Annual Compliance Report – August 2020 (EPBC 2010/5350)

Date of submission: 11 August 2020

South32 Website Upload Date: 11 August 2020

Abbreviations:

DOtEE – Federal Department of the Environment & Energy (Now DAWE)

DAWE – Department of Agriculture, Water and the Environment (Formerly DOtEE)

OEH – NSW Office of Environment and Heritage (now DPIE)

CCL – Consolidated Coal Lease

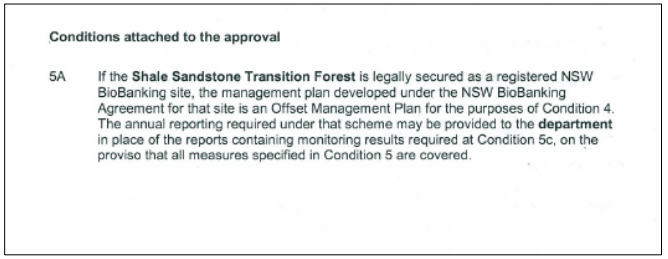
EPBC – Environment Protection and Biodiversity Conservation

IMC – Illawarra Metallurgical Coal

In accordance with condition 14 of the EPBC approval (2010/5350) within three months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the department at the same time as the compliance report is published.

Condition	Condition Summary	Status	Compliant 2020 Y/N
1	Persoonia Hirsuta Approval holder must legally secure the approved offset area for conservation for the duration of the EPBC approval.	Proposed offset area submitted to DOtEE in the Persoonia hirsuta Offset Management Plan. Application submitted on 26 Nov 2013 to amend CCL724 via a s238 Condition under the Mining Act 1992 to legally secure a Persoonia Offset Area at West Cliff Mine as required by our Bulli Seam Operations EPBC Approval (2010/5350). The Minister for Resources and Energy amended CCL 724 on 23 March 2014.	Yes

Condition	Condition Summary	Status	Compliant 2020 Y/N
2	Persoonia Hirsuta Develop a management plan for the *Persoonia hirsuta* offset area. Annual monitoring requirements and provide results of the monitoring to the Dept within a timeframe. No clearing of Stage 4 emplacement area permitted until the Offset MP has been approved by the Minister.	Persoonia management plan was submitted to DOtEE prior to the 31st December 2012 and approved on 22 November 2013 (ref 2013/10882). The latest revision (version 8) was approved April 2019. Plan is available on our website using this link: Persoonia hirsuta Offset Management Plan Persoonia hirsuta Condition Reports submitted as required in 2013, 2014, 2015 (submitted late), 2016, 2017, 2018 and 2019. Clearing for Stage 4 coal-wash has not yet been undertaken.	Yes
3	Persoonia Hirsuta Engage a suitably qualified expert to undertake targeted research to inform conservation activities. Make research publicly available.	IMC received an extension to the deadline for finalising and reporting the research to 30 June 2021. The research strategy is included within the approved Offset MP (see link above).	Yes
4	Shale/Sandstone Transition Forest Implement the approved SSTF Offset MP. Legally secure the offset for long term conservation.	In 2012, IMC provided an offset management plan as well as ecological survey information to comply with these conditions. The plan was approved by the DOtEE in June 2013. In 2014, IMC requested an extension to the deadline to	Yes

Condition	Condition Summary	Status	Compliant 2020 Y/N
		have the offset secured in perpetuity. DOtEE granted an additional 18 months, making the deadline March 2016. In October 2015, IMC made an application to (then) NSW Office of Environment & Heritage (OEH) to have the SSTF offset secured via a BioBanking Agreement under Part 7A Division 2 of the *Threatened Species Conservation Act 1995*. The BioBanking Agreement was finalised and executed on 1st February 2017.	
5	<u>Shale/Sandstone Transition Forest</u> Provide a management plan for shale/sandstone transition forest.	Management plan submitted and approved on 7 June 2013. The revised Plan was updated and approved on 2 September 2014. The Management Plan was updated in 2018 and re-submitted to the DOtEE to reflect the new offset mechanism (BioBanking). Condition 5A was added to the EPBC approval in May 2018:  **Conditions attached to the approval** 5A If the **Shale Sandstone Transition Forest** is legally secured as a registered NSW BioBanking site, the management plan developed under the NSW BioBanking Agreement for that site is an Offset Management Plan for the purposes of Condition 4. The annual reporting required under that scheme may be provided to the **department** in place of the reports containing monitoring results required at Condition 5c, on the proviso that all measures specified in Condition 5 are covered. The 2017/18, 2018/19 and 2019/20 SSTF monitoring was conducted under the requirements of the Biobanking Agreement. The annual monitoring report for 2017/18 was provided to DOtEE on 31 May 2018 which is later than “30 days of every 12-month anniversary of the date the Offset is protected in perpetuity” (technically required by March 2018 as a requirement of Condition 5c). IMC delayed submission of the report until the DOtEE decision to revise Condition 5. S32IMC received the Department’s decision May 2018.	Yes

Condition	Condition Summary	Status	Compliant 2020 Y/N
		The 2019 annual report was completed in accordance with the BioBanking Agreement and provided to the DOtEE in Aug 2019 once completed. The 2020 annual report was also completed in accordance with the BioBanking Agreement and provided to the DAWE in Aug 2020. In the Independent Environmental Audit (Dec 2019) that was conducted for the Bulli Seam Operations (BSO) under Condition 9 of Schedule 6 of the BSO Project Approval and Condition 18 of EPBC Approval 2010/5350, an administrative non-compliance was noted, and a recommendation was made as follows: *It is recommended that confirmation be sought from the Department that the required timing for submission of the monitoring report in Condition 5c be changed to that required under the Biobanking Scheme.* South32 received the below response from DAWE in July 2020:	

Condition	Condition Summary	Status	Compliant 2020 Y/N
		From: Peter Blackwell <Peter.Blackwell@awe.gov.au> **Sent:** Friday, 10 July 2020 2:34 PM **To:** Schultz, Chris <Chris.Schultz1@south32.net> **Cc:** Vaughn Cox <Vaughn.Cox@awe.gov.au> **Subject:** RE: Submission date for Biobanking Report - Shale/Sandstone Transition Forest Offset [SEC=OFFICIAL] Hi Chris I confirm that, consistent with the intent of condition 5A, added to the conditions attached to the approval on 4 May 2018, if the SSTF is legally secured as a registered NSW BioBanking site, the annual reporting required under NSW BioBanking for that site may be provided to the Department in place of the reports containing monitoring results required at condition 5c, and thus such reports should be provided to the Department in accordance with the timing required under NSW BioBanking for that site. Cheers **Peter Blackwell** Post Approvals Section Assessments (WA, SA, NT), Post Approvals and Policy Branch Environment Approvals Division **Department of Agriculture, Water and the Environment** | awe.gov.au T: 03 6208 2927 | E: peter.blackwell@awe.gov.au	
6	<u>Coal Wash Emplacement Staging and Rehabilitation Plan</u> Develop a Coal Wash Emplacement Staging and Rehabilitation Plan for stage 4 coal wash emplacement area. Submission of rehabilitation monitoring results.	The West Cliff Coal Wash Emplacement Area Management Plan (available on our website) incorporates the requirements of both the EPBC Act approval and NSW EP&A Act. The latest version of the Plan was approved by the DOtEE on 18 Aug 2017. The Plan will be revised and resubmitted in 2020. 2017 Results were provided in the Annual Review which is published on our website. A link to the 2017 report was provided by email to DOtEE on 28 Sept 2018 meaning the reporting of monitoring results was not within the 30 days of every 12-month anniversary of the implementation date of the Plan (Condition 6f – Technical due date is 18 Sept). The 2018 report was submitted on time by email on the 12 September 2019. The 2019 report was submitted on time by email on the 23 July 2020.	Yes – See comments regarding the 2017 report.

Condition	Condition Summary	Status	Compliant 2020 Y/N
7	Southern Brown Bandicoot and Broad Headed Snake Management Plan or Plans Develop a Southern Brown Bandicoot and Broad Headed. Snake conservation management plan or plans.	Draft Plans completed and submitted to DOtEE on 15 May 2013. Plans revised following comments from DOtEE and OEH. Final Plans re-submitted to DOtEE and OEH on 29 April 2014. Plans approved on the 28 May 2014. The Plans were revised in 2016 and resubmitted to DOEE for approval. The revised Southern Brown Bandicoot Plan was approved November 2017. The revised Broad-headed Snake Plan was approved 17 Jan 2019. The current Plans are available on the IMC website using these links: • Southern Brown Bandicoot Management Plan • Broad Headed Snake Management Plan	Yes
8	Surface and Ground Water Quality Monitoring and Adaptive Management Plan Develop a Surface and Ground Water Quality Monitoring and Adaptive Management Plan for species listed in the EPBC Act.	Original Plan submitted on the 30 September 2012 to DOtEE. Plan was approved on 3 July 2014. The Plan was revised and submitted to DOtEE on 29 June 2017; The latest version was approved on 29 August 2018. Current Plan is available on the IMC website at: Adaptive Management Plan for Water Sensitive EPBC Act Listed Species	Yes
9	Mine Closure Environmental Management Plan Develop a mine closure plan 3 years prior to closure for EPBC Act listed species.	Plan not yet submitted. To be submitted in the mine closure plan.	N/A
10	Mine Closure Environmental Management Plan Management for EPBC listed bats through the decommissioning of mining equipment.	Plan not yet submitted. To be submitted in the mine closure plan.	N/A
11	Shapefiles Provide offset area shapefiles to the DOtEE.	Shapefiles provided on 26 November 2013.	Yes
12	Notification of Actual Date of Commencement	Letter sent to DOtEE (previously DSEWPaC) on 31 May 2012.	Yes

Condition	Condition Summary	Status	Compliant 2020 Y/N
	Notification date of commencement to be supplied to DSEWPaC.		
13	Publication Requirements Publish all management plans, reports, strategies or agreements with the Department	Undertaken as required. See IMC website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents.	Yes
14	Compliance Report Publish a report on website addressing compliance with each of the conditions of this approval.	This compliance report meets this condition. The 2013, 14, 15,16,17,18 and 19 reports were submitted and are available on the IMC website. The 2013 compliance report was submitted five days after the due date required by the condition. This was found to be non-compliant due to late submission of the compliance report. All other reports have been submitted on time.	Yes
15	Accurate Records Must be Maintained Maintain accurate records substantiating all activities associated with or relevant to the conditions of approval.	Documents are maintained in the IMC controlled document registers (iPick).	Yes
16	Minister's Approval of the Modification to a Management Plan, Report, Strategy or Agreement Apply to the minister for approval to modify management plans, reports, strategies or agreements.	There were no modifications required.	Yes
17	Minister's Modification to a Management Plan, Report, Strategy or Agreement Comply with the minister's request to modify management plans, reports, strategies or agreements.	No requests received from the Minister for modifications in this reporting period.	Yes

Condition	Condition Summary	Status	Compliant 2020 Y/N
18	Independent Auditor Commission and pay the full cost for independent environmental auditor of the project.	Independent audits were carried out in accordance with the conditions in 2013/14, 2017 and 2019. EPBC condition (14) was previously found to be non-compliant in the 2013 Independent Environmental Audit due to late submission of the 2013 compliance report (5 days late). During the 2017 Audit, EPBC condition (2) was found to be administratively non-compliant as one of the Annual Persoonia condition-monitoring reports was submitted late (2015 report). In the Dec 2019 Audit, an administrative non-compliance was noted, and a recommendation was made as follows: *It is recommended that confirmation be sought from the Department that the required timing for submission of the monitoring report in Condition 5c be changed to that required under the Biobanking Scheme.* South32 received the below response from DAWE in July 2020:	No – See comments regarding the 2019 Audit.

Condition	Condition Summary	Status	Compliant 2020 Y/N
		From: Peter Blackwell <Peter.Blackwell@awe.gov.au> **Sent:** Friday, 10 July 2020 2:34 PM **To:** Schultz, Chris <Chris.Schultz1@south32.net> **Cc:** Vaughn Cox <Vaughn.Cox@awe.gov.au> **Subject:** RE: Submission date for Biobanking Report - Shale/Sandstone Transition Forest Offset [SEC=OFFICIAL] Hi Chris I confirm that, consistent with the intent of condition 5A, added to the conditions attached to the approval on 4 May 2018, if the SSTF is legally secured as a registered NSW BioBanking site, the annual reporting required under NSW BioBanking for that site may be provided to the Department in place of the reports containing monitoring results required at condition 5c, and thus such reports should be provided to the Department in accordance with the timing required under NSW BioBanking for that site. Cheers **Peter Blackwell** Post Approvals Section Assessments (WA, SA, NT), Post Approvals and Policy Branch Environment Approvals Division **Department of Agriculture, Water and the Environment** | awe.gov.au T: 03 6208 2927 | E: peter.blackwell@awe.gov.au The 2019 Audit also identified an additional administrative non-compliance with Condition 18 i.e. the endorsement of the audit team was not received from the Minister prior to conducting the audit. This most recent report is available on the South32 website at: IEA 2019 The next audit will take place in 2022.	
19	Unsatisfactory Commencement of Action If work has not commenced within 5 years of approval, written approval needs to be obtained from the minister.	Work commenced on 15 May 2012 as per date of commencement letter sent to the Department.	Yes

EPBC 2010/5350 Management Plan Compliance Tables

			Compliance	Comment	Proposed Action
AUDIT REVIEW					
Section	**MP Ref.**	**Requirement / Obligation**			
Review of the MP	2.2	This management plan will be reviewed, and if necessary revised, following the submission of an independent Environmental Audit report, or any modification to relevant Project approval conditions (unless the conditions require otherwise); and if required by Condition 17 of the EPBC Act Approval	In Control	Plan was last reviewed and approved 29 Nov 2017. See approval notice from DoEE dated 29 Nov 2017.	
Management Strategies	4.1	Clearing practices will incorporate appropriate controls to minimise mortality and injury to Southern Brown Bandicoots occupying the site.	In Control	Clearing practices involve a two-staged process as required by the MP.	
Pre clearance surveys	4.1.1	Prior to the first stage of clearing, the area to be cleared will be marked using flagging and surveyed by an ecologist or suitably trained site environmental representative to locate record and mark specific habitat features that are proposed for preservation and redistribution to the emplacement (e.g. rocks and boulders, stags and large hollows).	In Control	Pre-clearing assessment undertaken as required which contains instructions for redistributing habitat	
Two stage Clearing	4.1.2	Where possible, (i.e. where access to trees by the excavator is safe and practical), clearing of hollow bearing trees will be performed in a two stage process where surrounding vegetation is cleared separately, before the removal of habitat trees to allow fauna an opportunity to move.	In Control	As above	

Management of Captured SBBs	4.1.3	In the event that an individual is found during the two-stage clearing process, the animal will be relocated to pre-determined suitable habitat within the West Cliff surface mining lease area.	In Control	Not triggered	
Management of Captured SBBs	4.1.3	Sites for relocation will take into account the species home ranges and be evenly spaced to avoid social conflict. Where possible, captured bandicoots will be translocated from the initial capture point to the nearest site considered suitable for the long-term habitation by the species, but not more than 1 km from that point (where possible) to reduce the possibility for unfavourable genetic mixing.	In Control	Not triggered	
Management of Captured SBBs	4.1.3	Bandicoots will be released at sites as soon as practicable after capture.	In Control	Not triggered	
Habitat Protection during construction	4.1.4	Sediment control measures will be adopted during clearing, as outlined in the West Cliff Coal Wash Emplacement Area Management Plan;	In Control	Incorporated into emplacement design requirements	
Habitat Protection during construction	4.1.4	The emplacement area will be clearly demarcated and regularly surveyed to prevent unnecessary clearing or access by construction vehicles and plant to surrounding potential habitat;	In Control	Emplacement boundaries are defined on digital plans and bounded by haul roads and diversion drains.	

Habitat Protection during construction	4.1.4	Construction materials and spoil must not be stored, dumped or stockpiled within surrounding habitat; and	In Control	Stockpiling of freshly stripped topsoil is avoided through progressive rehabilitation. There are some stockpiles onsite containing topsoil material from the original stage 3 emplacement development construction; however this is strategically set aside for future capping material as the emplacement progresses down the valley. These stockpiles are stable and non-polluting and situated within the approved disturbance footprints.	
Habitat Protection during construction	4.1.4	Induction of the Emplacement Area Supervisory personnel will include information about the Southern Brown Bandicoot and its habitat within Stage 4 of the Emplacement Area, along with protection measures that will be in place and enforced during the construction period;	In Control	Construction in Stage 4 has not yet commenced.	
Habitat Protection during construction	4.1.4	Inclusion of general information on threatened species (including key Site contacts for threatened species) for all West Cliff Emplacement personnel.	In Control After Action Close-out	See action	Refresh emplacement operational personnel on the requirements for threatened species during emplacement construction This is planned for the latter half of 2020.

Summary of Impact Minimisation Strategies	4.2	Vegetation clearing to be within approved boundaries	In Control	Boundaries set out in Emplacement MP	
Summary of Impact Minimisation Strategies	4.2	Future development requiring land clearing to consider Isoodon obesulus obesulus individuals.	In Control	Any additional clearing (outside the emplacement area) onsite needs to consider internal and external approval requirements i.e. internal = Permit to Disturb; External = Revision of the BSO Biodiversity Management Plan and subsequent approval from the NSW Department of Planning and Environment.	
Summary of Impact Minimisation Strategies	4.2	Conduct pre-clearance surveys in the Stage 3 and 4 emplacement areas and subsequent two-stage clearing, to give animals the opportunity to move away. Individuals found will be relocated to pre-determined suitable habitat within the West Cliff surface mining lease area.	In Control	Two-stage clearing processes are being followed as required. No SBB individuals have been found to date. Most recent clearing is included in above items.	
Summary of Impact Minimisation Strategies	4.2	Document by preparation of pre-clearing survey reports for every emplacement phase cleared including use of GIS coordinates for survey results.	In Control	Pre-clearance survey reports completed as required and issued to the emplacement contractors undertaking the clearing.	
Summary of Impact Minimisation Strategies	4.2	Document numbers of individuals trapped and released. Observation of animal condition. Record release location.	In Control	Not triggered	
Summary of Impact Minimisation Strategies	4.2	Placement of topsoil, hollow logs and other structural elements of habitat for the Southern Brown Bandicoot in rehabilitated areas.	In Control	Undertaken as part of the progressive rehabilitation program - See Annual Emplacement Rehabilitation Monitoring Report.	
Summary of Impact Minimisation Strategies	4.2	Annual Emplacement Rehabilitation Inspection program undertaken	In Control	As above	

Summary of Impact Minimisation Strategies	4.2	Reports from the annual rehabilitation monitoring program to be attached to the Bulli Seam Annual Environmental Management Report (Annual Review).	In Control	Report is included each year as an appendix to the Annual Review. https://www.south32.net/docs/default-source/illawarra-coal-bulli-seam-operations/annual-review/bso-annual-review---fy19---with-appendices.pdf?sfvrsn=63b1a45e_10	
Summary of Impact Minimisation Strategies	4.2	Dust impacts from emplacement operations will be mitigated by the coal wash material being wet from coal washing processes and being compacted once emplaced.	In Control	In addition to this, watercart in use for the active emplacement areas as additional dust control.	
Summary of Impact Minimisation Strategies	4.2	Active emplacement areas will be capped and vegetated as soon as practicable.	In Control	Rehabilitation is progressive as required. Report is included each year as an appendix to the Annual Review. https://www.south32.net/docs/default-source/illawarra-coal-bulli-seam-operations/annual-review/bso-annual-review---fy19---with-appendices.pdf?sfvrsn=63b1a45e_10	
Summary of Impact Minimisation Strategies	4.2	Annual environmental reporting of dust results in the Bulli Seam Annual Environmental Management Report (Annual Review).	In Control	Dust results are provided in the Annual Review each year as required. https://www.south32.net/docs/default-source/illawarra-coal-bulli-seam-operations/annual-review/bso-annual-review---fy19---with-	
Summary of Impact Minimisation Strategies	4.2	Participation in regional vertebrate pest programs with National Parks & Wildlife Service and Sydney Catchment Authority.	In Control	Not aware of any such program existing. No population of SBBs has been confirmed or defined.	

Summary of Impact Minimisation Strategies	4.2	Note: The regional research program established under the EPBC Act project approval (condition 7b) will focus on population monitoring. A regional pest problem will be designed once a population of Southern Brown Bandicoots has been confirmed and defined.	In Control	No population of SBBs has been confirmed or defined.	
Summary of Impact Minimisation Strategies	4.2	Reporting of project to DoE and other stakeholders	In Control	Dept is provided with a copy of the Annual Review each year.	
Summary of Impact Minimisation Strategies	4.2	Adjustments made to systems and methods as required	In Control	Not Triggered	
Summary of Impact Minimisation Strategies	4.2	Monitoring including pre-clearing surveys, capture and transfer of animals, implementation of two-stage clearing, success of translocation efforts, progress in rehabilitation of emplacement sites, success of captive breeding programs if applicable.	In Control	Pre-clearance surveys undertaken as required, no animals have been captured, success of rehabilitation reported in the Annual Review. Report is included each year as an appendix to the Annual Review. https://www.south32.net/docs/default-source/illawarra-coal-bulli-seam-operations/annual-review/bso-annual-review---fy19---with-appendices.pdf?sfvrsn=63b1a45e_10	

Summary of Impact Minimisation Strategies	4.2	Annual compliance report to DAWE.	In Control	Annual compliance report submitted as required https://www.south32.net/docs/default-source/illawarra-coal-bulli-seam-operations/annual-reports/bulli-seam-operations-epbc-compliance-report-2019.pdf?sfvrsn=b7a9b962_4. Department requested additional information in 2019 which was accommodated and also included in the	
Provision of Regional Funding	5.1	IC has funded $250,000 towards the regional management of the Southern Brown Bandicoot and Broad Headed Snake programs as outlined in this Plan (Attachment B). The project will take place over three years commencing July 2014 and finishing June 2017 with payments scheduled as follows: * Year 1 $85,000 July 2014 * Year 2 $85,000 July 2015 * Year 3 $80,000 July 2016	In Control	Program completed as required	
Actions to be funded	5.2	The Office of Environment and Heritage (OEH) developed a Project Proposal to be funded by IC, which addresses points (c) to (f) of the EPBC Act Approval Condition 7. The OEH letter and Project Proposal is included in this Plan as Attachment B.	In Control	The (then) NSW Office of Environment and Heritage (OEH) developed a Project Proposal to be funded by IC, which addresses points (c) to (f) of the EPBC Act Approval Condition 7.	

Impacts to other EPBC Act Listed Species	5.3	Condition 7(d) of the EPBC Approval for works conducted by OEH as follows: (d) a demonstration that management actions to be undertaken will not adversely impact EPBC Act listed species; The OEH Proposal addressed the above requirement (see section titled Consideration of Impacts of the Project).	In Control	The OEH Proposal addressed the above requirement.	
Funding Arrangements	5.4	OEH provided a Project Proposal for the Broad headed snake and Southern Brown bandicoot Recovery Actions (see Attachment B). IC provided the funding through a Non-order Invoice (NOI). OEH issued three separate invoices, prior to the start of each financial year i.e. year 1, year 2 and year 3.	In Control	IMC provided the funding through a Non-order Invoice (NOI). OEH issued three separate invoices, prior to the start of each financial year i.e. year 1, year 2 and year 3.	
Documentary Evidence of Funding	5.5	IC provided documentary evidence to the DoTE&E in September 2016 to satisfy this condition. Once the project is completed (June 2017), relevant results will be included in the FY17 BSO Annual Review.	In Control	IMC provided documentary evidence to the DoTE&E in September 2016 to satisfy this condition. https://www.south32.net/docs/default-source/illawarra-coal-bulli-seam-operations/annual-review/bulli-seam-operations-project-annual-review-fy2017.pdf?sfvrsn=2ace739a_4	

			Compliance	Comment & Evidence	Proposed Action
AUDIT REVIEW					
Section	**MP Ref.**	**Requirement / Obligation**			
Review of the MP	2.2	This management plan will be reviewed, and if necessary revised, following the submission of an independent Environmental Audit report, or any modification to relevant Project approval conditions (unless the conditions require otherwise); and if required by Condition 17 of the EPBC Act Approval	In Control	Plan was last reviewed and approved 17 Jan 2019. See approval notice from DoEE dated 17 Jan 2019.	
Management Strategies	4.1	Clearing practices will incorporate appropriate controls to minimise mortality and injury to Broad-headed Snakes occupying the site.	In Control	Clearing practices involve a two-staged process as required by the MP. Pre-clearing assessment undertaken as required which contains instructions for redistributing habitat	
Pre clearance surveys	4.1.1	Prior to the first stage of clearing, the area to be cleared will be marked using flagging and surveyed by an ecologist or suitably trained site environmental representative to locate record and mark specific habitat features that are proposed for preservation and redistribution to the emplacement (e.g. rocks and boulders, stags and large hollows).	In Control	Pre-clearing assessment undertaken as required which contains instructions for redistributing habitat Pre-clearing assessment undertaken as required which contains instructions for redistributing habitat	
Two stage Clearing	4.1.2	Where possible, (i.e. where access to trees by the excavator is safe and practical), clearing of hollow bearing trees will be performed in a two stage process where surrounding vegetation is cleared separately, before the removal of habitat trees to allow fauna an opportunity to move.	In Control	Clearing practices involve a two-staged process as required by the MP. Pre-clearing assessment undertaken as required which contains instructions for redistributing habitat	

Management of Captured BHSs	4.1.3	In the event that an individual is found during the two-stage clearing process, the animal will be relocated to pre-determined suitable habitat within the West Cliff surface mining lease area.	In Control	In April 2016, one individual Broad-headed Snake was found in the Stage 3 area during a pre-clearing survey. The individual was captured and released to another location in accordance with this Plan. No other individuals have been located since.	
Management of Captured BHSs	4.1.3	Pre-determined sites for relocation will take into account the species home ranges and be evenly spaced to avoid social conflict. Ideally, predetermined relocation sites should not be inhabited by another Broad-headed snake at the time of relocation.	In Control	In April 2016, one individual Broad-headed Snake was found in the Stage 3 area during a pre-clearing survey. The individual was captured and released to another location in accordance with this Plan. No other individuals have been located since.	
Management of Captured BHSs	4.1.3	Pre-determined relocation sites will necessarily consist of the following: * Occur on Hawkesbury Sandstone within the current known range of the species and provide rocky outcrops with a westerly or north-westerly aspect, and horizontal crevices (Webb and Shine 1998c); * Have large adjacent areas of woodland that support large stags or trees bearing numerous hollows (Webb and Shine 1997b). The adjacent woodland will ideally be larger than the area supporting rocky outcrops (Webb and Shine 1997a) and contain preferred species of 'habitat trees' (trees most often selected by Broad-headed Snakes) such as Eucalyptus gummifera, E. punctata, E. agglomerata and E. pipperita (Webb and Shine 1997b).	In Control	The snake found in April 2016 was relocated to pre-determined habitat in accordance with Figure 4 of the MP.	

Management of Captured BHSs	4.1.3	Any other fauna located within the emplacement area during the pre-clearing survey will also be relocated. In particular, any Velvet Geckos (and other lizards) encountered will be relocated to the same pre-determined sites for Broad-headed Snakes to provide prey for the relocated snakes.	In Control	Not triggered	
Management of Captured BHSs	4.1.3	Where possible, snakes will be translocated from the initial capture point to the nearest site considered suitable for the long-term habitation by the species, but not more than 1 km from that point (where possible) to reduce the possibility for unfavourable genetic mixing. Snakes will be released at sites as soon as practicable after capture.	In Control	The snake found in April 2016 was relocated to pre-determined habitat in accordance with Figure 4 of the MP.	
Habitat Translocation	4.1.4	Suitable winter habitat occurring within the Stages 3 and 4 of the Emplacement Area will be identified during the pre-clearing survey.	In Control	Pre-clearing assessment undertaken as required which contains instructions for redistributing habitat	

Habitat Translocation	4.1.4	Rehabilitation of the Emplacement area behind the line of clearing for the Broad-headed Snake, in terms of winter habitat, will include the following: * Translocated rocky outcrops and boulders will ideally be positioned with a westerly or north-westerly aspect and crevices should remain horizontal (Webb and Shine 1998c); * The Velvet Gecko should also be translocated (Webb and Shine 2000). Suitable habitat for this prey species is the same as for the Broad-headed Snake's winter habitat and includes loose rock on rock substrate (Shine et al. 1998, Webb and Shine 1998c); * The above shelter sites will ideally be evenly spaced and not clumped together to encourage a greater number of Broad-headed Snakes to the area (Webb and Shine 1997a). If shelter sites are too close together, they are likely to remain uninhabited due to home range overlap. Shelter sites will ideally be placed at least 300 m apart and close/adjacent to suitable summer habitat (translocated hollow-bearing trees or limbs within rehabilitating sections of the old Emplacement areas; Webb and Shine 1997a); * Artificial rocks/concrete pavers will be added to the Emplacement area behind the line of clearing to increase habitat opportunities for prey items and the Broad-headed Snake if insufficient natural rock cannot be sourced from the Emplacement Area for this purpose. Webb and Shine (2000) recommend the use of large pavers (30 – 45 cm wide and 5 – 10	In Control	Rehabilitation includes placement of rocks and hollows as required. Pre-clearance inspections also identify flat rock to be retained and translocated to the rehab areas. There is some further work required to install artificial pavers in the emplacement area. No translocation of Velvet Geckos has been undertaken or required.	Install artificial pavers on a westerly facing section of the emplacement area. This project is planned for FY21.

		cm thick), as well as a range of smaller pavers (e.g. 19 cm wide) and thicker pavers (e.g. > 30 cm thick) placed with a variety of crevice sizes (up to 10 mm). The artificial rocks will be placed in both shaded and exposed areas to provide a range of suitable micro-climates for the snake and its prey depending on the time of year. * Hollow logs and hollow-bearing stags will also be translocated to provide additional retreat-sites for the Broad-headed Snake and its prey (Webb and Shine 1997b).			
Summary of Impact Minimisation strategies	4.1.5	Vegetation clearing to be within approved boundaries	In Control	Boundaries set out in Emplacement MP	
Summary of Impact Minimisation strategies	4.1.5	Future development requiring land clearing to consider Hoplocephalus bungaroides individuals.	In Control	Any additional clearing (outside the emplacement area) onsite needs to consider internal and external approval requirements i.e. internal = Permit to Disturb; External = Revision of the BSO Biodiversity Management Plan and subsequent approval from the NSW Department of Planning and Environment.	
Summary of Impact Minimisation strategies	4.1.5	Conduct pre-clearance surveys in the Stage 3 and 4 emplacement areas and subsequent two-stage clearing, to give animals the opportunity to move away.	In Control	Two-stage clearing processes are being followed as required. No BHS individuals have been found to date.	

Summary of Impact Minimisation strategies	4.1.5	Individuals found will be relocated to pre-determined suitable habitat within the West Cliff surface mining lease area.	In Control	Two-stage clearing processes are being followed as required. No BHS individuals have been found since 2016 (see comment above).	
Summary of Impact Minimisation strategies	4.1.5	Document by preparation of pre-clearing survey reports for every emplacement phase cleared including use of GIS coordinates for survey results.	In Control	Pre-clearance survey reports completed as required and issued to the emplacement contractors undertaking the clearing. Last report completed March 2020.	
Summary of Impact Minimisation strategies	4.1.5	Document numbers of individuals trapped and released. Observation of animal condition. Record release location.	In Control	S32 engaged a snake expert from Niche Environment & Heritage in 2016 to capture and relocate the individual. A brief report was prepared documenting the process. The April 2016 snake was relocated to pre-determined habitat in accordance with Figure 4 of the MP.	
Summary of Impact Minimisation strategies	4.1.5	Placement of hollow logs and rock outcrop elements of habitat for the Broad-headed Snake in rehabilitated areas.	In Control	Rehabilitation includes placement of rocks and hollows as required. Pre-clearance inspections also identify flat rock to be retained and translocated to the rehab areas. There is some further work required to install artificial pavers in the emplacement area. No translocation of Velvet Geckos has been undertaken or required.	

Summary of Impact Minimisation strategies	4.1.5	Installation of artificial habitat (e.g. concrete paving slabs) if necessary as per Webb and Shine (2000).	In Control After Action Close-out	Rehabilitation includes placement of rocks and hollows as required. Pre-clearance inspections also identify flat rock to be retained and translocated to the rehab areas. There is some further work required to install artificial pavers in the emplacement area. No translocation of Velvet Geckos has been undertaken or required.	As per action above regarding the installation of artificial pavers
Summary of Impact Minimisation strategies	4.1.5	Annual Emplacement Rehabilitation Inspection program undertaken	In Control	Undertaken as part of the progressive rehabilitation program - See Annual Emplacement Rehabilitation Monitoring Report	
Summary of Impact Minimisation strategies	4.1.5	Reports from the annual rehabilitation monitoring program to be attached to the Bulli Seam Annual Environmental Management Report (Annual Review).	In Control	Report is included each year as an appendix to the Annual Review. https://www.south32.net/docs/default-source/illawarra-coal-bulli-seam-operations/annual-review/bso-annual-review----fy19---with-appendices.pdf?sfvrsn=63b1a45e_10. The 2020 Annual Review is not due to be	
Summary of Impact Minimisation strategies	4.1.5	Dust impacts from emplacement operations will be mitigated by the coal wash material being wet from coal washing processes and being compacted once emplaced.	In Control	In addition to this, watercart in use for the active emplacement areas as additional dust control.	

Summary of Impact Minimisation strategies	4.1.5	Annual environmental reporting of dust results in the Bulli Seam Annual Environmental Management Report (Annual Review).	In Control	Dust results are provided in the Annual Review each year as required. https://www.south32.net/docs/default-source/illawarra-coal-bulli-seam-operations/annual-review/bso-annual-review---fy19---with-appendices.pdf?sfvrsn=63b1a45e_10	
Summary of Impact Minimisation strategies	4.1.5	Active emplacement areas will be capped and vegetated as soon as practicable.	In Control	Rehabilitation undertaken progressively As per Emplacement Area Management Plan (WCPMP0019)	
Summary of Impact Minimisation strategies	4.1.5	Reporting of project to DoEE and other stakeholders	In Control	Dept is provided with a copy of the Annual Review each year.	
Summary of Impact Minimisation strategies	4.1.5	Adjustments made to systems and methods as required	In Control	Not triggered	
Summary of Impact Minimisation strategies	4.1.5	Monitoring including pre-clearing surveys, capture and transfer of animals, implementation of two-stage clearing, success of translocation efforts, progress in rehabilitation of emplacement sites, success of captive breeding programs if applicable.	In Control	Pre-clearance surveys undertaken as required, no animals have been captured since 2016, success of rehabilitation reported in the Annual Review.	
Summary of Impact Minimisation strategies	4.1.5	Annual compliance report to DoEE.	In Control	Annual compliance report submitted as required https://www.south32.net/docs/default-source/illawarra-coal-bulli-seam-operations/annual-reports/bulli-seam-operations-epbc-compliance-report-2019.pdf?sfvrsn=b7a9b963_4	

Provision of Regional Funding	5.1	IC has funded $250,000 towards the regional management of the Southern Brown Bandicoot and Broad Headed Snake programs as outlined in this Plan (Attachment B). The project will take place over three years commencing July 2014 and finishing June 2017 with payments scheduled as follows: * Year 1 $85,000 July 2014 * Year 2 $85,000 July 2015 * Year 3 $80,000 July 2016.	In Control	Program completed as required.	
Actions to be funded	5.2	The Office of Environment and Heritage (OEH) developed a Project Proposal to be funded by IC, which addresses points (c) to (f) of the EPBC Act Approval Condition 7. The OEH letter and Project Proposal is included in this Plan as Attachment B.	In Control	The (then) Office of Environment and Heritage (OEH) developed a Project Proposal to be funded by IC, which addresses points (c) to (f) of the EPBC Act Approval Condition 7.	
Impacts to other EPBC Act Listed Species	5.3	Condition 7(d) of the EPBC Approval for works conducted by OEH as follows: (d) a demonstration that management actions to be undertaken will not adversely impact EPBC Act listed species; The OEH Proposal addressed the above requirement (see section titled Consideration of Impacts of the Project).	In Control	The OEH Proposal addressed the above requirement.	
Funding Arrangements	5.4	OEH provided a Project Proposal for the Broad headed snake and Southern Brown bandicoot Recovery Actions (see Attachment B). IC provided the funding through a Non-order Invoice (NOI). OEH issued three separate invoices, prior to the start of each financial year i.e. year 1, year 2 and year 3.	In Control	IMC provided the funding through a Non-order Invoice (NOI). OEH issued three separate invoices, prior to the start of each financial year i.e. year 1, year 2 and year 3.	

Documentary Evidence of Funding	5.5	IC provided documentary evidence to the DoTE&E in September 2016 to satisfy this condition. Once the project is completed (June 2017), relevant results will be included in the FY17 BSO Annual Review.	In Control	IMC provided documentary evidence to the DoTE&E in September 2016 to satisfy this condition. https://www.south32.net/docs/default-source/illawarra-coal-bulli-seam-operations/annual-review/bulli-seam-operations-project-annual-review-fy2017.pdf?sfvrsn=2ace739a_4	

			Compliance	Comment & Evidence	Proposed Action
AUDIT REVIEW					
Section	**MP Ref.**	**Requirement / Obligation**			
Protection Mechanism	1.4.1	The Persoonia hirsuta Offset Area is protected by incorporating a condition into Consolidated Coal Lease No. 724 (CCL724)	In Control	Refer to lease conditions	
Protection Mechanism	1.4.1	The leaseholder must comply with the Persoonia hirsuta Offset Management Plan approved (and modified if applicable) in accordance with the requirements of the Bulli Seam Operations Expansion, Bulli, NSW (EPBC 2010/5350) Approval dated 15 May 2012, made under sections 130(1) and 133 of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act Approval).	In Control	Link to last triennial audit - https://www.south32.net/docs/default-source/illawarra-coal-bulli-seam-operations/bulli-seam-operations-project-independent-environment/2013-bulli-seam-operations-independent-environmental-audit.pdf?sfvrsn=2e8378a1_5	
Protection Mechanism	1.4.1	The leaseholder must provide the Department of Trade and Investment NSW - Mineral Resources Unit with a copy of the Compliance Report required by condition 14 of the EPBC Act Approval at the same time that the report is published in accordance with the requirements of Condition 14.	In Control	The past compliance reports have been provided to the NSW Department of Planning and Environment as an appendix to the Annual Review; however, the annual review is generally submitted after the date of publishing the EPBC Compliance report (i.e. Compliance report due date is generally submitted and published in August each year whereas the Annual Review is not published and submitted until end of September each year. The 2020 report will be submitted as required by the condition.	

Protection Mechanism	1.4.1	The leaseholder must also provide Department of Trade and Investment NSW - Mineral Resources Unit with a copy of the Audit Report required by Condition 18 of the EPBC Act Approval as soon as practicable following confirmation that the Audit Report addresses the audit criteria to the satisfaction of the Minister responsible for the administration of the EPBC Act (or their delegate).	In Control	The triennial audit reports are provided to the NSW Department of Planning, Industry and Environment as required.	

Protection Mechanism	1.4.1	In the event that the Persoonia offset cannot achieve the objectives of Conditions 1 and 2, Illawarra Coal will provide an offsite offset or alternative offset if: - Annual surveys over the period 2037 – 2039 (both inclusive) demonstrate that the P. hirsuta core population has not been maintained or enhanced to the satisfaction of the Department. An offsite offset to be agreed by the department must be provided. The offsite offset must be secured by a legal mechanism acceptable to the Department six months prior to the expiry date of the EPBC approval (by 18 December 2041). In the event it can be demonstrated that a suitable offsite offset could not be found, Illawarra Coal will provide an alternative compensatory measure commensurate with the requirements of approval condition 1 to the satisfaction of the Department, or - CCL724 is not renewed or is revoked at any time prior to the expiry date of the EPBC approval (15 May 2042). An alternative offset to be agreed by the Department must be secured by a legal mechanism acceptable to the Department within two years of the relinquishment or revocation of CCL724. In the event it can be demonstrated that a suitable alternative offset could not be found, Illawarra Coal will provide an	In Control	Not triggered.	

		alternative compensatory measure commensurate with the requirements of approval condition 1 to the satisfaction of the Department.			
Review of the MP	1.5	This Plan will be reviewed in accordance with Condition 2(I) i.e. the findings from the research programs required by Conditions 3 will be incorporated into the approved Persoonia hirsuta Offset Management Plan and the revised plan will be re-submitted to the Minister for approval within 6 months of the research being finalised, i.e. within 6 months of 15 May 2021.	In Control	Not triggered.	
Persoonia Monitoring	4.1.2	All extant plants will be inspected annually to record the following attributes: * Height and width to measure growth rates; * Age class and Condition to assess reproductive activity, age to maturity overall health of the population etc; * Visual observations for any seedlings; and * Comments on any imminent threat or risk to the plants health (e.g. apparent disease, excessive dust deposition) to assess the effectiveness of management actions contained within this plan.	In Control	See Annual Persoonia health monitoring report that is submitted each year to the DAWE.	

Persoonia Monitoring	4.1.2	Height will be measured using a tape measure, measuring from the ground surface to the highest point on the plant, without physically moving any part of the plant. Condition will be defined using a combination of factors, including the percent cover of leaves, colour of leaves and the presence or absence of fruit or flowers, rating condition from 0 to 6, or from very poor condition to excellent condition (Appendix A). All plants have been recorded with a Garmin GPS and flagged with fluorescent, biodegradable flagging tape and given a unique ID.	In Control	Monitoring methods as per the above.	
Survey Timing	4.1.3	The survey will be conducted from late spring into early summer which is the peak flowering period for the species.	In Control	Monitoring is undertaken during the peak flowering season. This does change slightly depending on season but generally falls late Spring into early summer.	
Reporting	4.1.4	In accordance with Condition 2 (h) of the EPBC approval, the results of the monitoring will be provided to the Department within 30 days of every 12 month anniversary of the implementation date of this Plan.	In Control	2019 report was submitted in Dec 2019 as required.	

Research	5	South32 Illawarra Metallurgical Coal has engaged the University of Wollongong and Royal Botanic Gardens Trust to conduct research on Persoonia hirsuta. The aim of the research is to gain a better understanding of the ecology and genetics to satisfy Condition 3 of the EPBC Act approval. A summary of the research undertaken to-date as well as the research planned is provided in Table 3.	In Control	Research is now underway at the Mt Annan Royal Botanic Gardens as per strategy.	
Research	5	As new information becomes available regarding the local population of P. hirsuta, this will be incorporated into the Management Plan revisions as required.	In Control	Not required at this stage. Awaiting final research outcomes.	
Research	5	In accordance with the conditions, South32 Illawarra Metallurgical Coal will prepare a research report and this will be made available on the Company's website in accordance with Condition 3 (f) of the EPBC Act approval.	In Control	Not triggered.	
Performance Objectives and Management Actions	6	a. Secure Offset by the required timeframe i.e. 15 May 2014.	In Control	Offset secured as per timing requirements.	
Performance Objectives and Management Actions	6	b. Offset must include a minimum area of suitable habitat to support at least 150 P. hirsuta plants.	In Control	As per this plan	
Performance Objectives and Management Actions	6	c. Maintain or increase the number of individual plants in the Offset area relative to the 2012 baseline population (~44 plants).	In Control	Translocation experiment being undertaken as per research strategy.	Continue to monitor translocation experiment

Performance Objectives and Management Actions	6	S32IMC will provide an offsite offset or alternative offset if: - Annual surveys over the period 2037 – 2039 (both inclusive) demonstrate that the P. hirsuta core population has not been maintained or enhanced to the satisfaction of the Department. An offsite offset to be agreed by the Department must be provided. The offsite offset must be secured by a legal mechanism acceptable to the Department six months prior to the expiry date of the EPBC approval (by 18 December 2041). In the event it can be demonstrated that a suitable offsite offset could not be found, S32IMC will provide an alternative compensatory measure commensurate with the requirements of approval condition 1 to the satisfaction of the Department; or - CCL724 is not renewed or is revoked at any time prior to the expiry date of the EPBC approval (15 May 2042). An alternative offset to be agreed by the Department must be secured by a legal mechanism acceptable to the Department within two years of the relinquishment or revocation of CCL724. In the event it can be demonstrated that a suitable alternative offset could not be found, S32IMC will provide an alternative compensatory measure commensurate with the requirements of approval condition 1 to the satisfaction of the Department. - Undertake works which will lead to an increase of the density of Persoonia plants onsite;	In Control	Not triggered, research still underway.	

Performance Objectives and Management Actions	6	a. Develop a *P. hirsuta* research strategy	In Control	Research strategy is included in the MP.	
Performance Objectives and Management Actions	6	a. Targeted research commenced by July 2013	In Control	Targeted research has been underway since 2013.	
Performance Objectives and Management Actions	6	Research findings published by 30 June 2021 as per the EPBC Act consent.	In Control	Research findings will be published by the due date. Date not yet triggered.	
Performance Objectives and Management Actions	6	No loss of *Persoonia hirsuta* in the offset area due to land clearing or operational activities	In Control	Plants in an exposed position are clearly demarcated.	
Performance Objectives and Management Actions	6	No loss of *Persoonia hirsuta* in other areas of site (outside the approved emplacement and development footprints) due to land clearing or operational activities.	In Control	Plants in an exposed position are clearly demarcated.	
Performance Objectives and Management Actions	6	Avoidance of surface runoff from emplacement areas entering the *Persoonia hirsuta* Offset Area	In Control	Routine inspections of the Offset have not identified any issues regarding surface runoff from emplacement areas. Stage 4 emplacement construction has not yet commenced. Stage 3 is buffered by a haul road separating the Offset from the active disturbance areas. Drainage from disturbance areas is directed to dedicated catchment ponds.	

Performance Objectives and Management Actions	6	Restrict access to offset area	In Control	Signage in place	
Performance Objectives and Management Actions	6	Minimise weed infestation within the Offset Area	In Control	Minor weed control required for perennial grasses on the powerline easement.	Weed control is ongoing.
Performance Objectives and Management Actions	6	Minimise dust impacts to *Persoonia hirsuta* from operations	In Control	Routine inspections of the Offset have not identified any issues regarding dust impacts.	
Performance Objectives and Management Actions	6	Access to the Offset Area is only permitted for the purpose of managing the offset area. Access is required for vegetation management of the powerline easement within the offset area; however, this will be controlled through the site Permit to Disturb process (PTD).	In Control	Permit process is in place. ICHF0209.	
Performance Objectives and Management Actions	6	Flagging of individual plants with coloured flagging tape or exclusion fencing if in an exposed position.	In Control	Plants in an exposed position are clearly demarcated.	
Performance Objectives and Management Actions	6	Clean and dirty water drainage systems designed and constructed to hydrologically separate the emplacement from the *Persoonia hirsuta* Offset Area.	In Control	This will be incorporated into the design of Stage 4 emplacement. Not required as yet.	
Performance Objectives and Management Actions	6	Weed control (as required) by appropriately experienced personnel.	In Control	Minor weed control required for perennial grasses on the powerline easement.	Weed control is ongoing.

Performance Objectives and Management Actions	6	Dust impacts from emplacement operations will be mitigated by the coal wash material being wet from coal washing processes and being compacted once emplaced. Active emplacement areas will be capped and vegetated as soon as practicable.	In Control	In addition to this, watercart in use for the active emplacement areas as additional dust control.	
Performance Objectives and Management Actions	6	Signage in place to prevent unauthorised clearing and Permit to Disturb (PTD) authorisation process in place	In Control	Signage is in place.	
Performance Objectives and Management Actions	6	No fencing is proposed to enable safe implementation of physical management options for Offset Area as well as unimpeded access for wildlife and pollination vectors across the site.	In Control		
Performance Objectives and Management Actions	6	Annual condition survey and reporting of population size and health within the Offset Area.	In Control	Last report completed and submitted Dec 2019 in accordance with the condition.	
Performance Objectives and Management Actions	6	Adequate regeneration of emplacement as per the Approved Emplacement Management Plan.	In Control	As per Annual Emplacement Rehabilitation Report.	

Performance Objectives and Management Actions	6	Soil translocation protocols and re-vegetation protocols to be implemented as per the West Cliff Coal Wash Emplacement Area Management Plan e.g. Topsoil from the donor site will be stripped from the surface in layers. The most valuable layer is the top 50 mm of soil which contains the majority of soil stored seed and propagules, plant nutrients and beneficial soil microbes.	In Control	As per Emplacement MP	
Performance Objectives and Management Actions	6	Persoonia hirsuta individuals within the approved emplacement and development footprints may be translocated to the rehabilitating emplacement.	In Control	Not required at this stage.	
Performance Objectives and Management Actions	6	Introduce successfully propagated plants (or seed from propagated plants) from the nursery at Royal Botanic Gardens to the rehabilitating emplacement (or other suitable areas outside the emplacement and disturbance footprints).	In Control	If translocation experiment that is underway in the Offset is successful, next phase will involve translocating plants from nursery to the rehab. Learnings from the initial offset trial will be incorporated into the translocation design for the rehab.	
Performance Objectives and Management Actions	6	Annual rehabilitation survey will be conducted and a report attached to the BSO Annual Review.	In Control	Annual report is attached as an appendix each year to the Annual Review. The 2019 rehabilitation report was submitted to DAWE via email on 23 July 2020	

			Compliance	Comment & Evidence	Proposed Action
AUDIT REVIEW					
Section	**MP Ref.**	**Requirement / Obligation**			
Monitoring and Adaptive Management Framework	2	Potential impacts from mining induced subsidence is monitored and managed via an Extraction Plan which is to be approved by the Director General of DoPE prior to longwall mining commencing in any area.	In Control	Extraction plans in place for Area 9. SMP for Area 7.	
Ecological Outcomes and Performance Measures	4	The "Trigger-Action-Response Plans (TARPs)" relate to identifying, assessing and responding to the range of conditions related to potential subsidence impacts on the Rivers which form the potential habitat for Macquarie Perch which is the primary species of management concern in this Plan. Detailed performance indicators are outlined in the Extraction Plan TARPs for each mining area.	In Control	Refer to each MP	
Ecological Outcomes and Performance Measures	4	If any impact is recorded, consideration would be given to implementing appropriate management, remediation and/or mitigation measures in consultation with OEH, DoEE and other relevant stakeholders (refer Section 6). If the performance measures are exceeded, ICHPL will notify OEH and other stakeholders and implement the Contingency Plan (Section 8).	In Control	Recorded impacts are reported to relevant agencies in line with the Trigger Action Response Plan (TARP). This includes initiating discussion around remediation measures. The Georges River Rehabilitation Plan has been developed, incorporating detailed feedback from agencies, prior to being approved by DPIE and the Resources Regulator. Additional approvals will be sought to undertake the remediation, as per the plan.	Execute the Georges River Rehabilitation Plan, once all necessary approvals in place.

Water Requirements for Fish	5.1	Macquarie Perch could be impacted by subsidence through reduced habitat availability through pool diminution and possible discontinuity in smaller tributaries. These impacts are largely mitigated through the Mine Plan or longwall layout that does not longwall mine below rivers and aims to avoid impacts to critical ecological assets such as the Macquarie Perch.	In Control	No Macquarie Perch have been identified within mining areas. Longwall mining does not occur below named streams where Macquarie Perch are found.	Continue monitoring fish habitat in the mining areas.
Water Requirements for Fish	5.1	Any impacts to potential habitat for Macquarie Perch would be rehabilitated as part of the Project.	N/A	There have been no impacts to known Macquarie Perch habitat.	Continue monitoring fish habitat in the mining areas.
Water Requirements for Fish	5.1	Through the implementation of pollution reduction programs and compliance with license requirements, impacts from mine water discharges such as the Brennans Creek discharge are mitigated.	In Control	EPL2504 is in place at Appin North.	
Water Requirements for Fish	5.1	Monitoring of mine water discharge and upstream and downstream water quality is an EPL requirement and is part of the ongoing management of mine water releases e.g. Brennans Creek.	In Control	As per EPL requirements.	
Water Requirements for Fish	5.1	However subsidence related impacts may affect small permanent, semi-permanent pools which they require to complete their life cycle. These impacts are largely mitigated through the mine planning that aims to avoid critical ecological areas.	In Control	Localised impacts to fish habitat has occurred as predicted in the EIS. No listed species of fish have been impacted.	Continue monitoring fish habitat in the mining areas.

Water Requirements for Fish	5.1	No EPBC listed threatened amphibian species have been recorded in the BSO project area therefore it is highly unlikely that project discharges will affect any populations. However subsidence related impacts may affect small permanent, semi-permanent pools which they require to complete their life cycle. These impacts are largely mitigated through the mine planning that aims to avoid critical ecological areas.	In Control	No EPBC listed threatened amphibian species have been recorded in the BSO project area.	Continue monitoring impacts in the mining areas.
Monitoring Overview	6.1	There are no records for Macquarie Perch within the Project Area. Potential habitat occurs in the project area but the species is highly unlikely to be present due to numerous fish barriers in the subject watercourses. A precautionary approach has been taken and routine aquatic monitoring (including fish sampling) is being undertaken in the relevant watercourses.	In Control	No Macquarie Perch have been identified within mining areas. Longwall mining does not occur below named streams where Macquarie Perch are found.	Continue monitoring fish habitat in the mining areas.
Monitoring Overview	6.1	There are no records for either the Giant Burrowing Frog or Little johns Tree Frog within the Project Area despite targeted surveys for these species. Marginal potential habitat exists within the Project Area but the species are unlikely to be present due to lack of preferred habitat. Accordingly, no targeted monitoring is proposed for these species unless unpredicted impacts occur or these species are detected.	In Control	No EPBC listed threatened amphibian species have been recorded in the BSO project area.	Continue monitoring impacts in the mining areas.

Monitoring Overview	6.1	Potential habitat for the Woronora Bearded Heath *(Leucopogon exolasius)* occurs within the Georges River but there are no records for this species within the Project Area despite survey completed for this species. Accordingly, no targeted monitoring is proposed for these species unless this species is detected in the project area.	In Control	Potential habitat for the Woronora Bearded Heath (*Leucopogon exolasius*) occurs within the Georges River but there are no records for this species within the Project Area despite survey completed for this species.	Continue monitoring impacts in the mining areas.
Table 6 Monitoring Summary for Macquarie Perch	6.1	Aquatic monitoring (including fish sampling) via the Appin Area 7 Longwalls 701 – 710 Extraction Plans (Biodiversity Management Plan). Refer Section 6.2, Figure 9 and Attachment B.	In Control	Monitoring plan in place.	Continue monitoring impacts in the mining areas.
Table 6 Monitoring Summary for Macquarie Perch	6.1	Aquatic monitoring (including fish sampling) via the West Cliff Area 5 Longwall 34 - 36 Extraction Plans (Biodiversity Management Plan). Refer Section 6.2, Figure 9 and Attachment C.	In Control	Monitoring plan in place.	Continue monitoring impacts in the mining areas.
Table 6 Monitoring Summary for Macquarie Perch	6.1	Aquatic monitoring (including fish sampling) via the Appin Area 9 Longwall 901-904 Extraction Plans (Biodiversity Management Plan). Refer Section 6.2, Figure 9 and Attachment D.	In Control	Monitoring plan in place.	Continue monitoring impacts in the mining areas.
Table 6 Monitoring Summary for Macquarie Perch	6.1	EPL 2504 Water quality monitoring (EPA Licence) for West Cliff, Appin East and Appin West Pit Top sites. Refer Section 6.2, Section 6.6 and Attachment G	In Control	As per EPL requirements	

Table 6 Monitoring Summary for Macquarie Perch	6.1	General WQ monitoring of subsidence impacts under the Extraction Plans referred to above. EPL Georges River Environmental Improvement Program (including program to improve water quality and minimum flow requirements) - See https://www.south32.net/docs/default-source/illawarra-coal-bulli-seam-operations/licenses/bulli-seam-georges-river-environmental-improvement-program.pdf?sfvrsn=f42f05e7_9	In Control	EIP revoked and replaced with the Georges River Aquatic Health Monitoring Program. Water quality monitoring is being undertaken in the BSO project area in line with the SMP, EP or EMP for each area or specific feature e.g. Georges River.	Continue monitoring in line with plans. Update Management Plan with new EPL monitoring program.
Table 6 Monitoring Summary for Macquarie Perch	6.1	Surface water (hydrological) monitoring via Extraction Plans referred to above. Refer Section 6.	In Control	Surface water monitoring plan in place.	Continue monitoring impacts in the mining areas.
Table 6 Monitoring Summary for Macquarie Perch	6.1	Monitoring of subsidence impacts via Extraction Plans referred to above.	In Control	Subsidence monitoring plan in place.	As above
Table 6 Monitoring Summary for Giant Burrowing Frog	6.1	Targeted monitoring may be initiated if relevant subsidence management TARPs reach level 3, triggering corrective management actions for terrestrial biodiversity. Refer to the relevant Extraction Plan.	In Control	TARPs are in place and reported, corrective actions as required.	TARPS have been reported and actioned as required.
Table 6 Monitoring Summary for Giant Burrowing Frog	6.1	Any individuals of this species discovered in the Project Area will be addressed by targeted monitoring that will be included in subsequent revisions of this Plan.	In Control	No individuals identified.	Continue monitoring impacts in the mining areas.
Table 6 Monitoring Summary for Littlejohns Tree Frog	6.1	Targeted monitoring may be initiated if relevant subsidence management TARPs reach level 3, triggering corrective management actions for terrestrial biodiversity. Refer to the relevant Extraction Plan.	In Control	No individuals identified.	Continue monitoring impacts in the mining areas.

Table 6 Monitoring Summary for Littlejohns Tree Frog	6.1	Any individuals of this species discovered in the Project Area will be addressed by targeted monitoring that will be included in subsequent revisions of this Plan.	In Control	No individuals identified.	Continue monitoring impacts in the mining areas.
Table 6 Monitoring Summary for Leucopogon exolasius	6.1	Any individuals of this species discovered in the Project Area will be addressed in subsequent revisions of this Plan.	In Control	No individuals identified.	Continue monitoring impacts in the mining areas.

Aquatic Monitoring Programs	6.2.2	Currently aquatic monitoring is conducted across four programs relating to the current longwall mining areas (Appin Area 7, Area 9 and West Cliff Area 5) and monitoring under the Georges River Environmental Improvement Program required by EPL 2504. These programs are itemized below with references to further specific information attached to this document. * Aquatic monitoring (including fish sampling) via the Appin Area 7 Longwalls 701 – 710 Extraction Plans (Biodiversity Management Plan). Refer Attachment B. * Aquatic monitoring (including fish sampling) via the West Cliff Area 5 Longwall 37 - 38 Extraction Plan (Biodiversity Management Plan). Refer Attachment C. Aquatic monitoring (including fish sampling) via the Appin Area 9 Longwall 901 - 904 Extraction Plans (Biodiversity Management Plan). Refer Attachment D. * Georges River Environmental Improvement Program (EIP). The EIP for the Georges River incorporates (Refer to Attachment E): - A program of works to improve the aquatic health of the River; - Quantitative sampling of macroinvertebrates; - Ecological assessment processes using DNA extracted from sediment; and - Water quality testing	In Control	Georges River Aquatic Health Program is in place.	Continue monitoring impacts in the mining areas.

Aquatic Monitoring Methods	6.2.3	The following habitat features are recorded: * in-stream features such as sequence of pools, runs and riffles; * stream substratum; * presence, type and extent of aquatic vegetation; * presence of barriers to fish passage into and beyond the study area; and * a photographic record of the habitat.	In Control	Refer Georges River Aquatic Health Program methods.	
Aquatic Monitoring Methods	6.2.3	Water quality will be measured at each site using a water quality probe. Variables to be measured include; pH, dissolved oxygen, oxidation-reduction potential, temperature, turbidity and conductivity. Where applicable, the results will be compared to ANZECC (2000) water quality guidelines for the protection of aquatic ecosystems.	In Control	Georges River Aquatic Health Program is in place.	Update the Management Plan to reflect the revised monitoring program.
Aquatic Monitoring Methods	6.2.3	Fish will be sampled using a back-pack electro fisher and baited traps. At each site, six baited traps are to be deployed in a variety of habitats such as amongst aquatic plants and snags, in deep holes and over bare substratum. The back-pack electro fisher is to be operated around the edge of pools and in riffles. At each site, four, two minute shots are to be performed. Fish are to be collected in a scoop net, identified and measured. Native species are to be released unharmed whilst exotics are not to be returned to the water.	In Control	Georges River Aquatic Health Program has no requirement to monitor fish. This is only relevant to extraction plan monitoring.	Continue monitoring impacts in the mining areas.

Aquatic Monitoring Methods	6.2.3	At each site macroinvertebrates will be sampled using the AusRivAS protocol developed under the National River Health Program. Where available, riffle and edge habitats will be sampled using a dip net along a 10m stretch of habitat. Samples will be sorted in the field, preserved in alcohol and transported to a laboratory for identification. Taxa will be identified to levels required for calculating SIGNAL2 values according to the AusRivAS protocol.	In Control	Monitoring plan in place.	Continue monitoring impacts in the mining areas.
Aquatic Monitoring Methods	6.2.3	Reports will be produced at the conclusion of each aquatic monitoring survey that provide sufficient information to describe the habitats and biota that may be affected by subsidence or mining discharges.	In Control	Refer to last EIP report on South32 website: https://www.south32.net/docs/default-source/illawarra-coal-bulli-seam-operations/licenses/eip2-2020-report_final.pdf?sfvrsn=a813859a_6	Continue monitoring impacts in the mining areas.
Management Responses Monitoring Methods	6.2.4	If level 3 TARPs are triggered within potential Macquarie Perch habitat, Corrective Management Actions (CMAs) such as additional monitoring, habitat rehabilitation or other adaptive management measures will be considered.	In Control	No Macquarie Perch identified.	Continue monitoring impacts in the mining areas. Annual reports to be uploaded to the S32 web page.
Management Responses Monitoring Methods	6.2.4	Monitoring results will be reviewed by the ICHPL Subsidence Management Committee and determine whether performance indicators have been exceeded; and whether Corrective Management Actions (CMAs) are required.	In Control	Monthly meetings are conducted.	Continue with meetings and documentation.
Management Responses Monitoring Methods	6.2.4	If the findings of monitoring are deemed to warrant an immediate response the Manager Approvals will initiate the requirements of the TARP.	In Control	Actions are implemented as required and reported in the Monthly Subsidence Meeting Minutes.	Continue with meetings and documentation.

Terrestrial Biodiversity Monitoring Methods	6.3.2	Terrestrial monitoring occurs over longwall mining areas (i.e. Appin Area 7, West Cliff Area 5 , and in the future Appin Area 9) and focuses on detecting significant changes to vegetation communities and fauna habitat present within the mining area and aims to ensure complete coverage across the Study Area. Specific targeted monitoring sites will be determined if justified (e.g. if threatened species populations, EECs or habitats are known and have more than a negligible potential to be impacted).	In Control	Monitoring plan in place.	Continue monitoring impacts in the mining areas. Annual reports to be uploaded to the S32 web page. Negligible impact to EECs, habitats or populations to date.
Terrestrial Biodiversity Monitoring Methods	6.3.2	Inspections of vegetation communities within the mining areas is undertaken as a part of routine landscape and water monitoring programs. Targeted inspection by a qualified ecologist will follow should vegetation health changes be observed.	In Control	No vegetation health changes detected to date.	Continue monitoring impacts in the mining areas.

Terrestrial Biodiversity Monitoring Methods	6.3.2	Monitoring will focus on detecting significant changes to vegetation communities and fauna habitat present within the Study Area and will aim to ensure complete coverage across the Study Area. Inspections of vegetation condition will assess the following: * Does the vegetation appear healthy? * Are there any detectable visual impacts (e.g. canopy thinning, thinning of shrub layer, loss of ground cover, dead branches present)? * Are there any significant detectable visual impacts (e.g. canopy loss with areas of dieback present, loss of whole shrubs, loss of ground cover)? * Areas of impact or any subsidence effects will be mapped and documented using digital photography. Where a significant visual impact is detected a qualified ecologist will be engaged to document the following: * The total area of impact. This will be mapped using a GPS and aerial photo interpretation; * The Foliage Percentage Cover (FPC); and * Modified Braun-Blanquet cover abundance scores	In Control	No vegetation health changes detected to date.	Continue monitoring impacts in the mining areas.
Terrestrial Biodiversity Monitoring Methods	6.3.2	This information will be used to objectively assess extent and degree of impact. Assessment of similar vegetation communities or fauna habitat within the broader locality will be undertaken to determine if the detected changes are within normal variation or represent a possible impact of mining. Additional studies (e.g. gas release measurements) will be commissioned in response to an observed mining impact to understand the mechanism involved and consider any Correct Management Actions (CMAs) that may be required.	In Control	No vegetation health changes detected to date.	Continue monitoring impacts in the mining areas.

Terrestrial Biodiversity Monitoring Methods	6.3.2	Impacts are to be monitored as a part of ongoing observations to determine any change in extent or degree.	In Control	No vegetation health changes detected to date.	Continue monitoring impacts in the mining areas.
Terrestrial Biodiversity Monitoring Methods	6.3.2	The typical frequency of terrestrial biodiversity monitoring is: * Two baseline monitoring campaigns 1 year prior to mining; * During mining, (as part of Landscape Features Monitoring) monthly visual inspections, increased to weekly inspections during critical periods; * Post mining, (as part of Landscape Features Monitoring) 6 monthly monitoring for two years; * General observation of active mining areas during all	In Control	No vegetation health changes detected to date.	Continue monitoring impacts in the mining areas.
Terrestrial Biodiversity Monitoring Methods	6.3.2	Illawarra Coal will implement remediation measures where impacts to vegetation communities or fauna habitat are deemed to be caused by subsidence effects.	In Control	Georges River Rehabilitation Plan has been approved by DPIE and the Resources Regulator. Additional approvals will be sought to undertake the remediation, as per the plan.	Execute the Georges River Rehabilitation Plan, once all necessary approvals in place.
Monitoring methods for Leucopogon exolasius	6.4.2	Standard monitoring will be conducted as per Section 6.3.2. Any future targeted monitoring for this species may include (but not be limited to): * Fixed photo points. * Fixed vegetation quadrats. Data collected from each quadrat may include species richness, community structure and composition, vegetation condition, mortality and recruitment, the presence of soil profile development (leaf litter, presence/absence of invertebrates). * Random meander transects in targeted monitoring areas in order to identify recruitment	In Control	*Leucopogon exolasius* not identified in monitoring program.	Continue monitoring impacts in the mining areas.

Water Monitoring Overview and Context for EPBC Listed Species	6.5.1	Surface operations (that release discharges) are monitored and managed via the surface operations management plans and site specific plans as shown in diagram 1.	In Control	Refer to BSO Surface Water MP, West Cliff Coal Wash Emplacement MP and Georges River Aquatic Health Monitoring Program on the company website	
Water Monitoring Overview and Context for EPBC Listed Species	6.5.1	Longwall mining areas are addressed through specific Extraction Plans (and their constituent Water Management Plans) for each mining area.	In Control	Extraction plans/SMPs for Area 7 and 9 are on South32 website. https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents	
Water Monitoring for Potential Impacts from Mining Induced Subsidence	6.5.2	Extractions Plans with detailed monitoring programs are submitted on a progressive basis as mining commences in each mining domain. Currently, detailed Extraction Plans (or Subsidence Management Plans) are approved for: * Appin Area 7 Longwalls 701 – 710 (Refer Attachment B); * West Cliff Area 5 Longwall 34 – 38 (Refer Attachment C).	In Control	Approved monitoring plan in place.	Continue monitoring impacts in the mining areas.
Water Monitoring for Potential Impacts from surface Operations	6.5.3	Potential impacts from Project surface operations are monitored and managed via the surface operations management plans and site specific plans (shown in Diagram 1) and EPL2504 (Attachment G).	In Control	Refer to BSO Surface Water MP, West Cliff Coal Wash Emplacement MP and Georges River Aquatic Health Monitoring Program on the company website.	
Water Monitoring for Potential Impacts from surface Operations	6.5.3	EPL 2504 regulates, among other things, the discharge of water from the surface operations into receiving waters. Quantified limits are currently stated in EPL 2504 for a range of parameters. These limits are effectively the surface water quality performance indicators for this Management Plan as they are aimed at maintaining suitable water quality to support downstream aquatic habitat for species such as Macquarie Perch.	In Control	EPL2504 is in place.	

Monitoring Parameters and Performance Indicators	6.5.3	Monitoring is conducted monthly	In Control	Monthly samples are collected as required by EPL2504	
EPL Reporting	6.5.3	The specific requirements for the publication of EPL monitoring results are set out in section 66(6) of the POEO Act. In summary, this provision requires that licensees who undertake monitoring as a result of a licence condition must publish or make available monitoring data that relates to pollution within 14 days of obtaining the data and/or receiving a specific request for a copy of the data	In Control	Results are reporting online via the 14 day monitoring report https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents	
EPL Reporting	6.5.3	In addition to the above, an Annual Return is submitted to the NSW EPA as required by the EPL. The licence sets specific dates for PRP completion.	In Control	The 2019/20 Annual Return was submitted as required.	
Reporting	6.6	Operational and environmental performance of the BSOP is provided through the: * Compliance Report (required under Clause 14 of the EPBC Approval (EPBC 2010/5350) attached to the Annual Review (required under Condition 4, Schedule 6 (of the NSW DoPI BSOP Approval); * End of Panel Reports; and * Annual Review.	In Control		
Reporting	6.6	Reports are available on the South32 website. The Annual Review and Compliance Report will be provided to DoEE.	In Control	Annual review was provided to the Department end of Sept 2019. The 2020 Annual Review will be submitted as required in September 2020.	Submit 2020 Annual Review to the Department as per requirement

Reporting	6.6	In accordance with Condition 7, Schedule 6 (of the NSW DoPE BSOP Approval), ICHPL is to notify the Director-General of DoPE and relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment. Within seven days of the date of the incident, ICHPL is to provide the Director-General and relevant agencies with a detailed report on the incident.	In Control	Not triggered on the operational mine sites or mining area.	Continue monitoring impacts in the mining areas.
Summary of Performance Measures	7.1	The implementation of remedial or adaptive management measures would be assessed through the results of the Extraction Plan monitoring programs, EPL (surface water discharge) monitoring and additional detailed assessments as required.	In Control	Georges River Remediation Plan (not yet approved by agencies) & Georges River Aquatic Health Monitoring Program. GRAHMP is on South32 website: https://www.south32.net/docs/default-source/illawarra-coal-bulli-seam-operations/licenses/georges-river-aquatic-health-monitoring-program-(2020).pdf?sfvrsn=fab0c7b1_4	
Summary of Performance Measures	7.1	In the event the Performance Measures detailed in Table 9 Adopted Performance Measures for Macquarie Perch (based on BSO Project Approval) of this Plan are considered to have been exceeded, or are likely to be exceeded, Illawarra Coal will implement a Contingency Plan (refer Section 8) to manage any unpredicted impacts and their consequences. Such an exceedance would normally represent a Level 3 TARP for surface water quality, flow or aquatic habitat being triggered.	In Control	No Macquarie Perch identified to date.	Continue monitoring impacts in the mining areas.

Adaptive Management Options - Mine Planning	7.2.1	If impacts exceed performance measures, adaptive management techniques will be considered, such as seeking variations to adjustment the length of planned longwalls. This has been implemented in the past for Longwall 34 in West Cliff Area 5 where Level 2 impacts were identified from Longwall 33.	In Control	No performance measures exceeded. Georges River Rehabilitation Plan has been approved by DPIE and the Resources Regulator.	Execute the Georges River Rehabilitation Plan, once all necessary approvals in place.
Active Flow Management	7.2.2	During no or low rainfall periods the flow in the Georges River is largely determined by the volume of water discharged via Licensed Discharge Point 10 from Brennan's Creek Dam and from Appin East. If the Level 2 trigger for minor cracking leading to a reduction in pool water level is observed, then additional flow can be released from Brennans Creek Dam and/or Appin Colliery to ensure pool water levels are maintained.	In Control	Supplementary flows are and have been provided via Brennans Creek Dam. The EPA and Georges River Stakeholder Group is regularly advised and where required, consulted on the discharge from BCD.	
Water Quality and Discharge Management	7.2.3	Where low water quality is identified to be resulting from mining induced subsidence or surface discharges this exceeds relevant TARPs , consideration of appropriate CMAs will be undertaken with relevant stakeholders. Any CMA will be highly dependent on the parameter being exceeded and technical feasibility of interventions.	In Control	No performance measures exceeded. Georges River Rehabilitation Plan has been approved by DPIE and the Resources Regulator.	Execute the Georges River Rehabilitation Plan, once all necessary approvals in place.
Natural Remediation	7.2.4	While sealing of surface fractures will occur naturally in some instances and over time, it is recognised that this may not provide sufficient mitigation in some situations and that active sealing of the streams may be required in some locations.	In Control	Condition not yet triggered	
Hand Mortaring	7.2.5	Should large fractures occur in the base of the pools they may be sealed over with hand placed cement grout and natural oxides.	In Control	Georges River Rehabilitation Plan has been approved by DPIE and the Resources Regulator.	Execute the Georges River Rehabilitation Plan, once all necessary approvals in place.

Injection Grouting	7.2.6	These rehabilitation operations have the potential to cause adverse environmental impacts through the materials used and the disturbance associated with access and would be carefully planned to avoid contamination of watercourses. Bunds will be used to contain any spillage at mixing points. The materials used in these processes are non-toxic, environmentally inert and do not significantly impact upon the natural habitats of aquatic species.	In Control	Georges River Rehabilitation Plan approved by DPIE and the Resources Regulator incorporates these requirements.	
Surface Treatment	7.2.10	Where cracking develops in significant areas and natural sealing is not progressing, the cracks may require forking over and compacting to prevent subsequent erosion. Larger cracks may require more work to repair them, for example, mulch or other protection to prevent the development of erosion channels. Surface protection will remain in place until revegetation covers the disturbed area. In some cases, if the cracks are wider they may require gravel or sand filling up to surface level and revegetation using local native plants. Such rehabilitation measures have the potential to cause impact through the materials used and the disturbance associated with access. Considerable care and relevant approvals will be obtained to ensure the protection of the environment as such works are implemented.	In Control	No significant cracks have been observed that require remediation to prevent erosion. Fracturing in Georges River is covered by above sections 7.2.5 and 7.2.6	
Gas Releases	7.2.11	Where vegetation is impacted by gas releases the areas affected will be revegetated once monitoring determines the gas releases have ceased or reduced to an extent that vegetation is no longer affected.	In Control	No vegetation health changes detected to date.	Continue monitoring impacts in the mining areas.

Gas Releases	7.2.11	Where low DO is identified to be resulting from mining induced gas release and this exceeds TARPS, consideration of appropriate CMAS will be undertaken with relevant stakeholders.	In Control	No CMAs have been required as a result of low DO from gas release zones. Consideration includes agencies and specialist consultants.	Continue monitoring impacts in the mining areas.
Contingency and Response Plans	8	In the event the Performance Measures pertaining to Macquarie Perch or other EPBC listed species detailed in Section 7 of this Plan are considered to have been exceeded, or are likely to be exceeded, Illawarra Coal will implement a Contingency Plan to manage any unpredicted impacts and their consequences. This would involve: * Capture photographic record if appropriate; * Notify relevant stakeholders soon as practicable; * Notify relevant agencies and specialists as soon as practicable; * Conduct site visits with stakeholders as required; * Contract specialists to investigate and report on changes identified; * Provide incident report to relevant agencies; * Review monitoring and implement additional monitoring if required; * Inform relevant agencies and stakeholders of results of investigation; * Develop site Corrective Management Action (CMA) in consultation with key stakeholders if required and seek approvals; * Implement CMA as agreed with stakeholders following approvals; * Conduct initial follow up monitoring and reporting following CMA completion; * Review Management Plan; * Report in regular reporting and Annual Review	In Control	No Macquarie Perch identified to date.	Continue monitoring impacts in the mining areas.

Contingency and Response Plans	8	Illawarra Coal will consult with appropriate specialists and relevant agencies in order to devise an appropriate response in respect to any identified exceedance.	In Control	No exceedance to date.	Continue monitoring impacts in the mining areas.
Contingency and Response Plans	8	The development and implementation of contingency measures will be designed to address the specific circumstances of the exceedance and assessment of environmental consequences.	In Control	No exceedance to date.	Continue monitoring impacts in the mining areas.
Contingency and Response Plans	8	If the contingency measures implemented by Illawarra Coal fail to remediate or mitigate the impact or the Director-General determines that it is not reasonable or feasible to remediate the impact Illawarra Coal will provide a suitable offset to compensate for the impact to the satisfaction of the Director-General of DoPE (or DoEE as appropriate), in accordance with the BSO Approval Condition 2 Schedule 3.	In Control	No exceedance to date.	Continue monitoring impacts in the mining areas.
Contingency and Response Plans	8	All incidents will be reported internally through Illawarra Coal's Incident Procedure and related records will be maintained in accordance with the Records Management Procedure.	In Control	No incidents to date.	Continue monitoring impacts in the mining areas.
Performance Improvement	9	As part of the Statement of Commitments prepared for the BSO Project Environmental Assessment, Illawarra Coal committed to implement "research, offset and compensatory measures for Project impacts on water quality and ecological aspects" with the aim of continual performance review and improvement. The annual review process will also formalise opportunities for improvement based on the monitoring data.	In Control	As per Persoonia Offset and research. Georges River Aquatic Health Monitoring Program and future installation of a water filtration plant at Appin North and Water filtration plant upgrades at Appin West.	

Auditing	9.1	Each site has an independently certified Environmental Management System (EMS). Illawarra Coal EMS Team meets on a regular basis to develop, implement and improve the EMS. An on-going audit program is implemented in accordance with the schedule outlined in Table 10. The results of monitoring and auditing are regularly reported through to the senior management team to ensure that action items are addressed.	In Control		
Independent Audit under EPBC Approval	9.2	An independent Environmental Audit of the environmental performance of the BSO Project will be undertaken by December 2013 and every three years thereafter. The proposed audit scope, lead auditor and audit team will be sent to the Minister for endorsement.	In Control	Audit completed late 2019.	
Plan Review and Annual Reporting	10	This Management Plan will be reviewed and if necessary revised, within 3 months, of: * the submission of an annual review and compliance report if any modifications are required; * the submission of an independent Environmental Audit report if any modifications are required by the audit; or * any modification to relevant Project approval conditions (unless the conditions require otherwise).	In Control	Plan was last reviewed and reapproved in Aug 2018 (note: plan was submitted June 2017, then resubmitted 1 Aug 2018. Approval granted 29 Aug 2018.	

Annual Plan Reporting to the Minister	10.2	Annual reporting will be undertaken as per Condition 14 of the BSO Project EPBC Act Approval (EPBC 2010/5350) which requires the proponent to: Within three months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the department at the same time as the compliance report is published.	In Control	Annual report will be submitted in accordance with the conditions.	

			Compliance	Comment & Evidence	Proposed Action
AUDIT REVIEW					
Section	**MP Ref.**	**Requirement / Obligation**			
Objectives	Page 4	Emplacement construction and operations will be conducted in accordance with the detailed design plans prepared for each emplacement phase. Due to the long life of the emplacement detailed final design details are prepared progressively and are therefore not outlined in this plan for Stage 4. Emplacement of coal wash in Stage 3 is currently underway. The Stage 4 coal wash emplacement is scheduled to commence in approximately 10-15 years. This Plan will be updated and re-submitted for approval once the design details are available for Stage 4.	In Control	Detailed design plans are not yet available. Stage 4 construction is still some time away.	
Emplacement Design and Staging	Page 9	The maximum design parameters for Stage 3 are: * No more than 60.5 ha of native vegetation to be cleared	In Control	Area cleared to date for Stage 3 is ~40Ha	
Emplacement Design and Staging	Page 9	he maximum design parameters for Stage 4 of the emplacement design are: * Volume of 26Mt; * Height of 331 m AHD; * Footprint that retains the existing Brennans Creek Dam storage capacity and stockpile areas (refer Figure 2 attached); and * Maximum of 60ha of native vegetation clearance.	In Control	Detailed design plans are not yet available. Stage 4 construction is still some time away.	

Emplacement Design and Staging	Page 9	Measures to limit the clearing of native vegetation to no more than 60 Ha will include: * Survey and demarcation of the stage 4 boundary prior to construction works by a qualified surveyor; * Stage 4 boundary will be clearly outlined on site plans and plans will be provided to clearance contractors; * Pre clearing survey will be undertaken by Environment Officer who will be trained appropriately in survey methodology (Training provided by external consultancy). The area to be cleared will be clearly demarcated with flagging tape. Boundary markings will be placed in a way to ensure that each marker is within line of sight.	In Control	Detailed design plans are not yet available. Stage 4 construction is still some time away.	
Emplacement Design and Staging	Page 10	The Stage 3 valley will be filled in a north westerly direction and the Stage 4 from the eastern (or upstream/upslope) boundary and progress in Corridors westwards down the valley, as required by EPBC Project Approval Condition 6 (d)	In Control	As verified on Arc GIS. Stage 3 is progressing in NW direction	
Emplacement Design and Staging	Page 10	Coal wash will be deposited in benches across the valley (in the case of Stage 4 which will be north-south) and progressively down the valley from east to west.	In Control	Stage 4 not yet commenced. Stage 3 is being deposited in benches across the valley	
Emplacement Design and Staging	Page 10	As each section of fill reaches the designed height, it is top soiled and revegetated. The final landform created by the emplacement will be in sympathy with the regional morphology and will be largely masked from public view by the visual screening of existing eucalypt forest.	In Control	Morphology is as per approved design plans. The completed emplacement is topsoiled and revegetated progressively.	

Emplacement Design and Staging	Page 10	Emplacement construction and operations will be conducted in accordance with the final detailed engineering drawings prepared for each emplacement. The Stage 3 and 4 final landform concept designs are illustrated on plan 2 - stage 3 Final Emplacement Design (Concept) and plan 3 - stage 4 final emplacement design (concept).	In Control	Desktop review on Arc GIS suggests the Stage 3 construction is consistent with the design plans.	Formalise a process to audit emplacement progress against the design plans - Action from last review.
Emplacement Design and Staging	Page 10	The engineering drawings for the Stage 4 Emplacement will be prepared prior to implementation of the Stage 4 Emplacement and these plans will show staging of the emplacement will comply with Condition 17 (a) and (b) of the BSO Project Approval and Condition 6(b) of the EPBC Act Approval.	In Control After Action Close-out	To be incorporated into the Stage 4 design plans when available	Design plans to comply with Condition 17 (a) and (b) and Condition 6 of the EPBC approval
Emplacement Design and Staging	Page 10	plan 4 - Stage 4 emplacement staging sequence (concept) shows a preliminary concept staging plan that provides for the progressive staging of the Stage 4 coal wash emplacement to keep the minimum 100 m wide habitat corridor to link the Persoonia hirsuta core population with habitat north of the Stage 4 coal wash emplacement area, as required by Condition 6(b) of the EPBC Act Approval.	In Control After Action Close-out	To be incorporated into the Stage 4 design plans when available	Design plans to comply with this Condition
Emplacement Design and Staging	Page 10	The Stage 4 Design Plans (once approved by the DOTEE Minister) will be implemented and remain in place for at least 10 years at which point a revised plan taking into account the monitoring referred to above must be submitted to and approved by the Minister.	In Control	Condition not triggered. Stage 4 design plans are not yet initiated	

Haul Road Design	Page 12	Construction of coal wash haul roads associated with the emplacement are to be carried out in accordance with this management plan. Minimum Road Width: Minimum road pavement widths for coal wash haul roads associated with the emplacement area are to be no less than 15 m along curved and straight sections. Maximum Grade: Any Haul road with a grade greater than 1-9 grade = 11%	In Control After Action Close-out	Requires in field verification	In-field verification required
Haul Road Design	Table 3	A Risk Assessment is to be conducted to identify all the requirements that are to be put in place before operating on 11% to 20% grades.	In Control After Action Close-out	Requires in field verification	In-field verification required
Haul Road Design	Table 3	Risk assessment is to be conducted and approval obtained from the WCP Operations Superintendent (planned to operate for more than 12 months) for grades greater than 20%	In Control After Action Close-out	Requires in field verification	In-field verification required
Horizontal Curve Dimensions	Page 13	Sharp horizontal curves will be avoided at or near hill crests, at the bottom of hills, and after long sustained downgrades; If passing will be required, sections of haul road will be designed with long tangents and constant grades; Intersections will be avoided at the crest of vertical and/or sharp horizontal curves; and Tight curves will be avoided as a matter of course.	In Control After Action Close-out	Requires in field verification	In-field verification required
Vertical Curve Dimensions	Page 13	Coal wash haul roads associated with the emplacement are to be designed and constructed to a minimum vertical curve radius of 1500m and a minimum vertical curve length of 150m.	In Control After Action Close-out	Requires in field verification	In-field verification required
Construction of Brennan's Creek Diversion Channel	Page 13	Progressive rehabilitation of the Brennans Creek Diversion Channel will be undertaken in accordance with the approved Brennans Creek Bypass Channel Rehabilitation Plan.	In Control	Diversion channel (within channel) has been rehabilitated.	Refresh operational personnel on the requirements of the rehabilitation plan

Erosion and Sediment Control Measures for Clean Water Cut off Drains	Page 13	The drains are positioned to capture clean water runoff from valley sides and divert it past the emplacement dirty water catch pond system and essentially into BCD.	In Control		
Erosion and Sediment Control Measures for Clean Water Cut off Drains	Page 13	The drains are to be sized as required for the catchment area. Excavated material will be placed beside the drains to form access tracks in the valley for construction of catch ponds and development of the emplacement.	In Control		
Erosion and Sediment Control Measures for Clean Water Cut off Drains	Page 13	The channels will be modified as necessary during the life of the emplacement to adapt to the changing runoff conditions created by the advancing emplacement.	In Control		
Construction of Emplacement Subsoil Drainage Network	Page 14	Subsurface drains will be installed on the prepared active emplacement area under engineering supervision before coal wash emplacement commences. Construction of the subsurface drains shall be installed in accordance with detailed engineering drawings. Subsurface drains will be progressively linked to subsoil drainage from previous sections of the emplacement.	In Control After Action Close-out	Requires in field verification	In-field verification required
Construction of Emplacement Catch Ponds	Page 14	The emplacement area is to be served by two sequential catch ponds sited down Brennans Creek valley. As each phase approaches completion, and filling of the first catch pond is imminent, a new catch pond will need to be constructed and so on.	In Control After Action Close-out	Stage 3 emplacement is approaching Emplacement Pond 2	Review current storage vs catchment requirements given Stage 3 is progressing towards Pond EP2.

Construction of Emplacement Catch Ponds	Page 14	Clean water cut-off drains will be established prior to construction of catch ponds and flows in Brennans Creek will be diverted around the construction area via temporary dam and pump. This will prevent sediment contamination of clean water from surrounding clean water catchment and treated water from upstream emplacement catch ponds. Catch pond dam walls will be constructed using site won material excavated from an appropriate area onsite (most likely excavated material from base of dam storage area or areas being prepared for active emplacement). Where possible dam wall fill material will be transported directly to construction however it may be necessary at times for this material to be temporarily stockpiled until required.	In Control		
Erosion and Sediment Control Measures for Emplacement Catch Ponds	Page 15	Each phase of the West Cliff Emplacement area is to be served by two sequential catch ponds sited down Brennans Creek valley. The 1st (upstream) pond will enable passive settling of particles, while the 2nd pond will be chemically dosed to remove fine particulates from the water column.	In Control	Stage 3 emplacement is approaching Emplacement Pond 2	Review current storage vs catchment requirements given Stage 3 is progressing towards Pond EP2.
Erosion and Sediment Control Measures for Emplacement Catch Ponds	Page 15	Each catch pond system must be operational prior to commencement of coal wash emplacement in its catchment area. As each phase approaches completion and filling of the first catch pond is imminent, a new catch pond is to be constructed downstream, prior to the emplacement encroaching on the upstream pond. Catch pond dam walls will be constructed using site won material excavated (sandstone, coal wash or other appropriate material) from prepared active emplacement areas or other suitable areas.	In Control	Stage 3 emplacement is approaching Emplacement Pond 2	Review current storage vs catchment requirements given Stage 3 is progressing towards Pond EP2.

Preparation of Active Emplacement Areas	Page 15	Preparation of active emplacement areas will take place progressively as the emplacement advances down Brennans Creek Valley.	In Control	As per emplacement management plan rehabilitation program	
Preparation of Active Emplacement Areas	Page 15	The area of land cleared and dedicated as the active emplacement area will be restricted to an operational size of 18 ha (where practical with a maximum of 21ha) in order for the catch ponds to effectively treat surface flows.	In Control	As per last desktop review, active emplacement area is within limits	
Preparation of Active Emplacement Areas	Page 15	In general, stripped topsoil will be placed on finished emplacement areas and stripped sandstone/bedrock will be used onsite for emplacement catch pond dam wall construction. This may require temporary stockpiling of stripped topsoil and sandstone material and appropriate mitigative measures will be undertaken to minimise the effects of erosion and sediment runoff. Stage 4 of the emplacement has a design footprint of 59.4ha as shown in plan 3 - stage 4 final emplacement design (concept).	In Control	As per emplacement management plan rehabilitation program	

Veg and Topsoil Removal	Page 16	All vegetation including shrubs, trees and roots shall be cleared from the active emplacement area using the two-stage clearing process before coal wash emplacement commences. Loose vegetation from site clearing, such as tree branches, shall be used as mulch or brush matting over areas of the emplacement being rehabilitated. Soil will be stripped from areas cleared for coal wash emplacement and where practicable, the seed rich surface layer of topsoil shall be separated from lower level soils. Stripped soil will be applied to a depth of typically 0.5m (where appropriate) over completed areas of the emplacement as soon as practical. When seed rich topsoil stripped from cleared areas is available it will be spread as the surface layer on emplacement areas being rehabilitated. Seed rich topsoil is to be reused as quickly as possible to prevent seeds from dying.	In Control	As per emplacement management plan rehabilitation program	
Veg and Topsoil Removal		It is noted that when the emplacement is progressing to its final stages, particular attention must be paid to stockpiling the necessary volumes of soil to ensure adequate soil cover is achieved during rehabilitation of the final landform.	In Control After Action Close-out	A Biodiversity Risk Assessment was completed Apr 2020 which looked at "topsoil Deficit" and identified actions to reduce the risk of a topsoil shortfall.	Incorporate topsoil stockpiling into the design planning for Stage 4 (include a topsoil inventory for Stage 4). Investigate other options for sourcing alternative material.
Emplacement of coal Wash in Active Emplacement	Page 16	Active emplacement areas will be revegetated as soon as possible after the final emplacement design level has been reached.	In Control	Rehabilitation undertaken progressively	

Coal Wash Transportation	Page 17	The following procedures must be adhered to with regard to transportation of coal wash associated with the emplacement operations: * Coal wash shall be transported in trucks on the mine site; * Coal wash trucks shall be restricted to designated haul roads on the mine site; * The coal wash haul roads shall be designed in accordance with the haul road design guidelines in this management plan; * Coal wash haul roads must drain to contaminated water catchments and contain standard berms; * Coal wash haul roads must be maintained to minimise airborne dust; * Only dump trucks shall be permitted on the emplacement area. Semi-trailers shall only be permitted on areas of the emplacement that have been specially prepared for their access; * Dump trucks will be speed restricted to an appropriate speed to meet the site requirement. * All haul trucks must adhere to site speed limits to maintain operational safety and minimise dust impacts;	In Control		Requires in-field verification
Coal Wash Transportation	Page 17	Coal wash transport will comply with the safety and operational conditions of the West Cliff Surface Transport Management Plan (Document Number: WCPMP0012), Stockpile and Slope Stability Management Plan (Document Number: WCPMP0001), and the Road Maintenance Manual (Document Number: WCPM0004).	In Control		

Coal Wash Tipping	Page 17	A tipping area will be provided on each active coal wash bench for haul trucks to tip their loads onto the bench. There are currently 5 different materials which are required to be placed in a controlled manner into the emplacement. The tipping areas must be set up to handle all 5 materials each of which have different characteristics: * Dendrobium Coal Wash; * West Cliff Coal Wash; * Belt Press fines ex the West Cliff Washery; * Oversize Stone (Big Rock) ex the West Cliff Washery; and	In Control		Requires in-field verification
Coal Wash Tipping	Page 17	Inspections and records are of the following checks including: * Adequate areas and lighting for night time operations; * Berms in place; * Signage marking tip areas; * Allowance for drainage; * Surfaces suitable for dump trucks and other approved surface mobile equipment; and * Surfaces suitable for Tankers around Sludge dams	In Control After Action Close-out		To be verified
Coal Wash Tipping	Page 18	The Contract Supervisor for the emplacement operations is responsible for ensuring these inspections are undertaken. The adequacy of these inspection records will be periodically (annual) audited by Illawarra Coal personnel.	In Control After Action Close-out		To be verified
Coal Wash Drying	Page 18	If the moisture content of coal wash delivered to the emplacement area is too high for satisfactory compaction it will be left to dry naturally until suitable moisture content for compaction is reached.	In Control		Requires in-field verification

Coal Wash Drying	Page 18	Coal wash slimes/fines will be tipped into shallow temporary drying basins (i.e. sludge ponds) constructed with coarse coal wash. Temporary drying basins will be carefully located on the emplacement area well away from the embankment face and perimeter drains. No surface drainage will be permitted to enter a temporary drying basin.	In Control		Requires in-field verification
Compaction	Page 18	Coal wash will be spread from tipped heaps in layers typically no greater than 0.5 m thick and compacted with vibratory rollers. Fine coal wash will be combined with coarse coal wash in the spreading and compaction operation. Coal wash slimes/fines from temporary drying basins will be placed and compacted into the emplacement in a similar manner to fine coal wash.	In Control		Requires in-field verification
Compaction	Page 18	The Emplacement Supervisor manages the deposition of coal wash and is required to balance available areas for deposition, volumes and material types and compaction results.	In Control		Requires in-field verification
Compaction	Page 18	The developing emplacement benches shall be graded back into the valley to prevent surface water flowing over the front batter of the bench.	In Control		Requires in-field verification
Compaction	Page 18	The compaction testing is to be carried out 10 times per year with each testing campaign comprised of at least 5 representative samples. The compaction testing will test for Standard Maximum Dry Density (SMDD) and the results compared with a compaction criterion of 95% Standard Compaction. The tests are to be carried out by a Geotechnical consultant at test locations selected by the Contract Supervisor for the emplacement operations.	In Control	Records of compaction tests are maintained by the emplacement contractor.	

Compaction	Page 18	A record of the test results and locations of where they have been taken shall be maintained in Documentum.	In Control After Action Close-out	Records of compaction tests are maintained by the emplacement contractor.	Maintain records in a South32 approved system
Bench Heights	Page 18	Coal wash deposition will progress in a series of filled horizontal benches until each active emplacement area reaches its finished height. Coal wash benches will extend down the valley in a repetitive sequence of tipping, spreading, and compacting. Coal wash material that is too wet to be emplaced immediately will be placed in drying ponds, which will be located within the emplacement footprint	In Control	As per standard process	Requires in-field verification
Bench Heights	Page 19	Coal Wash deposition in the valley shall commence at the lower end of the prepared “active emplacement area” and progress in a series of filled horizontal benches until the emplacement reaches the finished height. Coal Wash shall be deposited on the benches and compacted in layers of up to 0.5 meters thick as shown in Figure 1.	In Control	As per standard process	Requires in-field verification
Bench Heights	Page 19	The developing benches will be graded back into the valley to prevent surface water flowing over the front batter of the bench and operations will generally aim to maintain coal wash benches with a 30 m lift as outlined in Figure 1.	In Control		Requires in-field verification

Bench Heights	Page 19	The vertical height of a bench is measured at its highest point or crest and at the bench toe. A bench is established in 4 distinct stages and must be built with the materials natural angle of repose forming the maximum angle or slope. Any under-cut which increases this angle must be avoided and rectified before tipping can proceed on top of the bench. The procedure for constructing the benches is as follows: * Each layer of coal wash is pushed off with the dozer; * Depending on material type and compaction already achieved, a vibratory roller is used to further compact the coal wash; * Edges of the bench are further rolled providing increased compaction; * Surface gradient of the bench top is provided to facilitate quick water run off for rain events; and * Surface contour drains are provided at intervals and a new bench is started. The contour surface drains must have gradient which allows surface water to be discharged quickly	In Control		Requires in-field verification
Bench Heights	Page 19	Best practice at the West Cliff Emplacement has limited bench heights to 30m. This height can only be exceeded following a formal risk assessment which involves suitably qualified personnel other than the contractor or persons normally supervising the work.	In Control After Action Close-out		To be verified

Bench Heights	Page 19	The surface shape of the emplacement area will be finished to blend with the surrounding landform (as per the approved final landform) and provide for non-eroding table drains to carry surface water runoff to the emplacement perimeter drains. Batter slopes on the finished emplacement will be constructed to non-eroding grades where practical in accordance with the approved finished profile design contours. This profile has been designed to a maximum grade of 1(V):3(H) to prevent erosion and sediment runoff. Suitable erosion control methods will be adapted as necessary.	In Control	The finished landform is as per approved design plans in the West Cliff Coal Wash Emplacement Area MP.	
Coal Wash Properties	Page 19	Coal wash deposited at the West Cliff emplacement is sourced from WCCPP and the Dendrobium Coal Preparation Plant (DCPP)	In Control		
Cultural Heritage Management	Page 21	Detailed design plans which include options for reducing, avoiding and/or managing impacts on Aboriginal heritage sites in and adjacent to the southwestern fringe of the proposed Stage 4 footprint (including sites 52-2-2228/3617, 52-2-1373, 52-2-3533/3613 and 52-2-3506);	In Control	Stage 4 not yet commenced	
Cultural Heritage Management	Page 21	Management strategies to ensure no impacts to Aboriginal heritage site 52-2-3505 other than negligible impacts, including consideration of potential staged development of the emplacement and/or buffer areas.	In Control	Emplacement is some years away from this location. The site is also buffered by the Brennans Creek Diversion Channel	
Management and Mitigation	Page 25	There are 13 cultural heritage sites within the West Cliff Colliery Site that will require some form of management. Refer to Table 5 Page 26	In Control	Cultural heritage is managed as per the approved plan	

Management and Mitigation	Page 25	For sites located within the boundaries of the proposed Stage 4 Coal Wash Emplacement area, the proposed management approach is to conduct detailed recording and where appropriate archaeological salvage of a sample of occupation deposit. This strategy is consistent with that successfully employed for the Stage 3 Coal Wash Emplacement area.	In Control	Cultural heritage is managed as per the approved plan	
Management and Mitigation	Page 25	For sites avoided by the emplacement footprint, but located in close proximity, proposed management includes conducting detailed recording of the site prior to works in the vicinity, and demarcation of the site to minimize the potential for accidental impacts from mobile machinery working in the area.	In Control	Cultural heritage is managed as per the approved plan	
Management and Mitigation	Page 25	Detail and scheduling of these management strategies should be developed in consultation with the Aboriginal community through the AHP process.	In Control	Cultural heritage is managed as per the approved plan	
Veg and Fauna Management	Page 33	The unit of vegetation to be cleared will be surveyed (by a suitably trained Environmental Representative - training is provided by an external consultancy) and marked out using flagging.	In Control	Relevant site personnel have been trained	
Veg and Fauna Management	Page 33	Surveys of each unit will involve traversing the study area to locate record and mark specific habitat features that are proposed for preservation and redistribution to the emplacement (e.g. rocks and boulders, stags and large hollows).	In Control	Pre-clearance inspections are undertaken as required.	
Veg and Fauna Management	Page 33	Prior to any vegetation clearance occurring on site, specific details including the type and number of each habitat feature will be clearly recorded and identified on a pre-clearing checklist. Clearance will only occur following demarcation and survey by appropriately qualified personnel.	In Control	Pre-clearance inspections are undertaken as required.	

Veg and Fauna Management	Page 33	The survey will identify appropriate candidate boulders and outcrop rock that could be translocated for habitat creation in revegetated areas. Boulders shall be placed on top of replaced soils (on top of Emplacement area) to recreate habitat for species dependent on rocky outcrops, such as the Broad-headed Snake.	In Control	Pre-clearance inspections are undertaken as required.	
Veg and Fauna Management	Page 33	During the pre-clearance survey, habitat features within each unit will be inspected in order to identify the need for any relocation of resident fauna species. Relocation of fauna will also involve the identification of capture and release methods and release areas for the relocation of fauna species prior to clearing.	In Control	Pre-clearance inspections are undertaken as required.	
Permit to Disturb	Page 33	Prior to any vegetation clearance occurring on site, a clearance permit is to be issued. Specific details including the type and number of each habitat feature will be clearly recorded and identified on clearance permits prior to issue. Clearance permits will only be issued following demarcation and survey by the Environmental Representative.	In Control	Pre-clearance inspections are undertaken as required.	
Permit to Disturb	Page 33	A post-clearing inspection will be undertaken by the site Environment Officer to verify the clearing was done in-compliance with the *Permit to Disturb.*	In Control	Pre-clearance inspections are undertaken as required.	
Permit to Disturb	Page 33	In the event that unapproved clearing goes beyond the emplacement boundary: * The incident will be reported to regulators in accordance with the BSO Approval Conditions * Incident will be logged via the Illawarra Coal Event Management System (Isometrix) * The disturbed area will be rehabilitated immediately * The incident will be reported in the BSO Annual Review	In Control	Not triggered	

Clearing Process - Timing	Page 34	Where possible, the timing of vegetation clearance of important habitat features will be between January and May to avoid the primary breeding and nesting periods of most hollow-dwelling species	In Control	The last emplacement clearing permit was issued in March 2020; however due to coal wash bench levels at the time machinery could not access the area safely to clear the vegetation prior to May. It is anticipated the site will be suitable for clearing in the latter half of 2020	
Two-Stage Clearing	Page 34	Where possible, (i.e. where access to trees by the excavator is safe and practical), clearing of hollow bearing trees will be performed in a two stage process where surrounding vegetation is cleared separately, before the removal of habitat trees to allow fauna an opportunity to move.	In Control	Two stage clearing undertaken as required and as per requirements of the pre-clearing assessment report that is issued to the contractor before clearing can take place.	
Injured Animals	Page 35	The general practice of dealing with injured or captured fauna will be for the site operators to notify the site environmental representative who will arrange for fauna rescue or veterinary treatment. If the site environmental representative is not present when an injured or juvenile animal is found, the following steps will be implemented: Cover animal with a towel or blanket to minimise stress and place in an appropriate hessian or cloth bag. * Move animal to designated holding area. * Contact the local animal welfare group or veterinarian immediately.	In Control	Not triggered	
Stockpiling	Page 36	Vegetation shall be removed from the area in stages and stockpiled adjacent to the clearing.	In Control	Stockpiling is avoided where possible. Material is translocated directly to the rehabilitation areas.	

Stockpiling	Page 36	Further seed collection from felled vegetation (especially trees) will be undertaken immediately post clearing. Rocks and logs are to be redistributed to the recipient sites (as per clearance permit). Large boulders and stags which require partial soil cover to be secured in place will be moved to the recipient sites prior to soil translocation.	In Control	Collecting seed from felled vegetation has not been required as the trees and vegetative material are translocated along with the soil and placed directly into the rehabilitation areas.	
Stockpiling	Page 36	Where practical soil stockpiling will be avoided and stripped soil layers will be immediately redistributed to the donor sites. Soils will not be stockpiled for long periods of time. Soil horizons will not be removed during or immediately following rain in order to minimise the composting process during stockpiling.	In Control	Stockpiling is avoided where possible. Material is translocated directly to the rehabilitation areas.	
Stripping of soil horizons	Page 36	Topsoil from the donor site will then be stripped from the surface in layers. The most valuable layer is the top 50 mm of soil which contains the majority of soil stored seed and propagules, plant nutrients and beneficial soil microbes. The top 50 mm of soil will be stripped and mixed with the cleared vegetation and stockpiled adjacent to or on the selected and pre-prepared recipient site ready for spreading.	In Control	As evidenced by the success of the rehabilitation process. See last Annual Report.	
Stripping of soil horizons	Page 36	Stripping and stockpiling of subsoil horizons will be undertaken depending of depth of bedrock. Where possible the depth of subsoil removal should exceed 500 mm. Subsoil layers will then be translocated to the recipient sites.	In Control		
Progressive Rehab	Page 36	Rehabilitation of the emplacement surface will take place progressively as each section of embankment fill reaches the finished level. Completed sections of the emplacement will be trimmed to even grades, and spread with approximately 0.5 m of soil.	In Control		

Progressive Rehab	Page 36	Habitat reinstatement techniques such as transplanting dead stags, addition of habitat logs and woody debris, nest box use and installation reconstruction of rock outcrops will be undertaken as described in the following sections.	In Control		
Landform Design	Page 36	The surface of the emplacement will be reshaped in order to mimic micro-topographic features. Where possible, more natural concave slope profiles and slope angles will be used to limit the loss of sediment off the slope. The finished surface profile of the emplacement must be in accordance with the approved design contours (See plan 2 - stage 3 Final Emplacement Design (Concept) and plan 3 - stage 4 final emplacement design (concept)).	In Control	Desktop review on Arc GIS suggests the Stage 3 construction is consistent with the design plans.	
Translocation of Habitat and Soil	Page 36	To facilitate successful long term plant growth it will be necessary to avoid capillary rise of potential saline seepage from the coal wash. In order to avoid the potential for saline seepage (which can prevent seed germination and retard plant growth), the emplacement will be fully encapsulated by soil horizons to a depth of typically 0.5m where appropriate.	In Control	No evidence of capilliary rise.	
Translocation of Habitat and Soil	Page 36	Subsoil horizons will first be spread over the allocated recipient sites on the Emplacement surface. Finally, the remaining 50 mm (topsoil) will be spread over on top.	In Control		

Translocation of Habitat and Soil	Page 36	Redistribution of Logs and Rocks on Recipient Sites All remaining stockpiles of rocks, logs and vegetation will then to be redistributed over the recipient site. Avoiding excessive soil compaction is crucial to maximising plant establishment and all traffic should be excluded from the translocated soil horizons once all materials have been spread on the surface. Habitat logs and coarse woody debris from the cleared vegetation will provide microhabitat for fauna and protection for emerging seedlings.	In Control		
Translocation of Habitat and Soil	Page 36	Transplanting Dead Stags Large hollow bearing trees are numerous within areas proposed for clearing. Selected large hollow bearing trees within each clearance compartment will be transplanted to areas within the rehabilitating emplacement to become standing dead trees (stags). Provision of these dead stags will provide fauna habitat which may otherwise take decades to form. The quantity of dead stags transplanted to the emplacement will aim to mimic the numbers originally present within the cleared compartments.	In Control	Large stags are being identified during the pre-clearance inspections and placed within the rehabilitation areas	
Translocation of Habitat and Soil	Page 36	Reconstruction of Rock Outcrops In order to provide suitable habitats for certain fauna species (especially reptiles), relocation of sandstone rock outcrops to the emplacement will be undertaken. The location of rock outcrops will account for the thermoregulatory requirements of reptile fauna by concentrating placement of boulders and exfoliating rocks on westerly aspects of emplacement.	In Control	Rock outcrops are being constructed as required, however there is a need to focus on the western facing slopes as Stage 3 rehabilitation progresses. This has not been required as yet due to Stage 3 western slopes not yet ready for rehabilitation.	

Translocation of Habitat and Soil	Page 36	Seeding Seed mixes should resemble the local vegetation types (Exposed Sandstone Scribbly Gum Woodland (ESSW) and Sandstone Gully Peppermint Forest (SGPF)) to supplement rehabilitation of the emplacement and associated areas. Seed will be harvested from areas of land to be cleared for coal wash emplacement where possible (although some outside purchase of seeds may be required) and spread over bare areas of the rehabilitating Emplacement area. Where required (i.e. in areas that remain without any, or indeed poor natural regeneration for a period longer than 6 months), supplementary planting of local provenance tube stock will be undertaken to ensure vegetation is progressively reinstated.	In Control	Seed is sourced from a contractor. It is not always possible to guarantee local seed due to availability in the local areas. Due to health and safety risks associated with seed collection on an active mine site, no seed is formally collected on the mine site and it hasn't been required due to seed being available elsewhere in the region. Supplementary planting has not been required to date.	
Translocation of Habitat and Soil	Page 36	Seeding in accordance with the prescribed species list in table 6	In Control	Seed list has been provided to contractor. Monitoring results suggests revegetation is compliant with the listing provided.	
Weed and Pest Management	Page 38	Weed and Pest management as per TARP Table 7.	In Control	Regular slashing has continued as required.	
Bushfire Management	Page 38	The bushfire management at the West Cliff Site will be reviewed once the current *Persoonia hirsuta* research project findings are completed (which includes ecological burning). The updated bushfire management for the site will also consider the fire ecology of all threatened species at the site.	In Control	Not triggered	
Rehab Phases, indicators and Completion Criteria	Page 38	Undertaken as per Table 8	In Control	See last Annual Report	
Emplacement Rehab Monitoring	Page 43	Biometric assessments are required annually, starting at 1 year after translocation.	In Control	See last Annual Report. Two additional plots were added to the monitoring program in 2019.	

Emplacement Rehab Monitoring	Page 43	Surveys at control sites only required once every three years and the benchmarks as presented in this report remain so for the ensuing three year period.	In Control	Control sites last monitored in 2017 and due in Spr 2020.	
Emplacement Rehab Monitoring	Page 43	Photo point monitoring is required annually and done in conjunction with the above.	In Control	Photo points last monitored in 2019. See last Annual Report.	
Emplacement Rehab Monitoring	Page 43	Meanders for threatened plants are undertaken every three years.	In Control	Threatened plant meander last undertaken in 2017, due 2020.	
Emplacement Rehab Monitoring	Page 43	Fauna monitoring using camera traps is required annually, starting 5 years after translocation or as deemed appropriate depending on the maturity of the revegetation.	In Control	Fauna last monitored in Spring 2019. See last Annual Report	
Persoonia hirsuta management strategies	Page 43	The Stage 4 conceptual staging plan will facilitate pollination vectors for *Persoonia hirsuta* across remnant bushland for Corridors 1 through 3 as shown in plan 4 - Stage 4 emplacement staging sequence (concept).	In Control	Not yet triggered	Design plans to comply with this Condition
Water	Page 45	Runoff from the active emplacement areas (or areas where the vegetation has not yet been spread) is directed to the emplacement water management system (i.e. Ponds P4, EP2, and EP3) for treatment prior to being gravity fed to BCD.	In Control		
Water	Page 45	As the emplacement is being constructed a subsurface drainage system is then installed in the base of the cleared area. Emplacement under-drainage flows are generally clean. The emplacement under-drainage is pumped to the clean water diversion channel for release into BCD. If required (i.e. If the water is turbid), the underdrainage can be directed into the emplacement dirty water system. Overflow from the emplacement under-drainage system feeds directly to the emplacement water treatment system.	In Control	Underdrainage is monitored monthly via grab samples.	

Dust Control	Page 46	Dust impacts from emplacement operations will be mitigated by the coal wash material being wet from coal washing processes and being compacted once emplaced. Active emplacement areas will be vegetated as soon as is practical after emplacement and revegetated emplacement is typically stable. The following measures will be undertaken to reduce dust emissions associated with emplacement operations: * Regular inspections are undertaken to identify the presence of dry windy conditions and appropriate dust suppression shall be implemented as necessary; * Early warning weather alerts are received that predicted adverse weather condition and pre-emptive dust controls are implemented where required. A water cart is maintained on site and used when the surface of the emplacement is dry and airborne dust can be created; and * Vehicle speed limits are followed to reduce the risk of dust emissions from unsealed roads due to vehicle movements. Air quality around the Emplacement Area will be monitored by: * Collection and measurement of dust samples from strategically placed dust deposition gauges; * Use of real-time air quality monitors (DustTrak); and * Dust emission surveys and spot checks using hand-held photometers.	In Control	Watercart is in use on the haul roads and stockpiles.	

Noise Control	Page 46	Noise generated on the emplacement site is from coal wash haul trucks and earthmoving equipment and the noise impact from these operations is deemed to be minimal as noise is naturally mitigated by the emplacement being located in a valley and at a distance of 1.5 km to 2.5 km from the nearest residential development in Appin. This is confirmed by the quarterly noise monitoring program and the lack of complaints about noise from the site.	In Control	No noise complaints received	
Noise Control	Page 46	Operational noise is monitored on a quarterly basis at a set location.	In Control	As per Noise MP	
Noise Control	Page 46	Noise complaints will continue to be recorded and if a notable increase is identified, Illawarra Coal will undertake further investigations.	In Control	As per Noise MP	
Visual Impact	Page 46	The following measures will be undertaken to minimise impacts on visual amenity due to emplacement operations: * The finished level of the coal wash emplacement will be in accordance with approval conditions; * The land area dedicated to active emplacement operations will be kept to a minimum (typically 18ha, maximum 21ha); * The finished surface of the emplacement will be of a shape which complements and blends, as much as possible, with the surrounding natural landform, as per the approved final landform plans; and * Completed sections of emplacement area will be revegetated as soon as possible	In Control		

Emplacement Monitoring	Page 48	EMPLACEMENT HEIGHT Permanent survey control benchmarks will be established on stable ground outside the perimeter of the emplacement area from which the monitoring stations can be surveyed. Survey heights shall be taken regularly to determine the appropriate design heights.	In Control	Emplacement contractor achieves finished levels as follows; 1. At regular intervals depending upon the coal wash volumes (up to 6 times per year), a Surveyor provides positive proof of the current levels against the Illawarra Metallurgical Coal approved design. 2. Check of coal wash levels at 500mm below the finished plan undertaken (allowing for soil). 3. On occasion, clarification of the level after the soil is spread is obtained.	Requires in-field verification
Emplacement Monitoring	Page 48	EMPLACEMENT COMPACTION Compaction testing is to be carried out 10 times per year. Each testing campaign must take at least 5 representative samples. Compaction testing will test for SMDD and the results will be compared with a compaction criterion of 95% Standard Compaction. If after testing the compaction results are less than 95% then the fail area must be reworked and re-tested. The fail area shall be isolated from normal emplacement operation until results of re-testing indicate 95% or better compaction.	In Control	Compaction tests undertaken as required. Records are kept by the emplacement contractor.	Maintain records in a South32 approved system

Emplacement Monitoring	Page 48	EMPLACEMENT RUN-OFF AND SUBSURFACE DRAINAGE Runoff from active emplacement areas or areas where vegetation is not established is directed to the emplacement water management system (i.e. Ponds P4, EP2 and EP3) for treatment prior to being diverted to Brennans Creek Dam (BCD). Emplacement under-drainage flows are generally clean but have the potential to be dirty during the first-flush period of a rainfall event, especially after a prolonged dry period. Any first flush flows that are dirty are directed to the emplacement water treatment system (i.e., Ponds P4, EP2, and EP3). During clean subsurface flows, or once the dirty first flush flows have cleared, emplacement under-drainage is pumped to the clean water diversion channel for release into BCD. For more information on the emplacement water treatment system, refer to the approved Bulli Seam Operations Water Management Plan. Monthly water samples are taken to monitor the quality of the emplacement subsurface drainage.	In Control	Monthly samples collected as required - see 14 day report - Point 16	
Emplacement Monitoring	Page 48	Erosion and sediment control structures will be regularly inspected to check they are operating satisfactorily and to perform any maintenance work and repairs that may be required. Regular maintenance will include: * Sediment removal from drains and sediment basins; * Installation, proper operation and routine maintenance of any flocculant dosing equipment; Replacement and or repair of sediment control structures as required; and * Repair of areas that become unstable following periods of high flow.	In Control	Monitored as part of quarterly inspection regime by Specialist Environment. Last inspection completed in May 2020.	

Reporting and Review	Page 49	The environmental performance of the Emplacement will be reviewed annually with relevant details submitted in the Project Annual Review. The Annual Review will include: * Complaints relating to the Emplacement operations and management/mitigation measures undertaken; * Management/mitigation measures undertaken in the event of any confirmed exceedance of performance criteria; and * Review of the performance of management/mitigation measures and the monitoring program. The Annual Review will be submitted to the relevant agencies in accordance with the Approval Conditions. A copy of the report will also be made available to the general public via the South32 website.	In Control	Annual Review was submitted as required. A copy is on the South32 website: https://www.south32.net/docs/default-source/illawarra-coal-bulli-seam-operations/annual-review/bso-annual-review---fy19---with-appendices.pdf?sfvrsn=63b1a45e_10	
Reporting and Review		All non-conformances to this plan and Community Complaints are recorded in Isometrix. This system tracks non-compliances, corrective actions, and responsible persons, estimated and actual completions. Commitments made in this Plan are audited via an internal verification process at least once per year. Any issues arising from this are recorded and corrective actions issued.	In Control		Plan is currently being updated.
Public Reporting	Page 49	A summary of the emplacement environmental monitoring results (where applicable) will be provided on the South32 website in accordance with the reporting requirements of the *Protection of the Environment Operations Act 1997* (POEO Act).	In Control	Licence results under EPL2504 are reported online in the 14 day report as required by the POEO Act	
Document Control	Page 49	Controlled documents are available in the document control system, iPick. Copies of controlled documents are available to all employees and contractors working on the West Cliff site.	In Control	Plan is available in iPick	

Revision	Page 49	This Management Plan will be reviewed, and if necessary revised, within 3 months, of: * the submission of an annual review; * the submission of an incident report that has caused, or threatens to cause, material harm to the environment; * the submission of an Independent Environmental Audit report; or * any modification to relevant Project approval conditions (unless the conditions require otherwise).	In Control	Last reviewed and approved Nov 2016 by State government, Aug 2017 by Federal government. Plan was reviewed post submission of the Annual Review and is currently being revised.	
Independent Audit	Page 49	An independent Environmental Audit of this Plan and monitoring program was undertaken in December 2013 and will be every three years thereafter. The report will be submitted to the Director General (DoPI) and Minister (DSEWPaC) within 6 weeks of completion.	In Control	Completed in 2013, 2016 and 2019	

			Compliance	Comment & Evidence	Proposed Action
AUDIT REVIEW					
Section	**MP Ref.**	**Requirement / Obligation**			
Bulli Seam operations Project Environmental Assessment	1.5	South32 has committed to clearing no more than 9 ha of SSTF over the life of the project.	In Control		
Monitoring, Record Keeping & Reporting	3	This will include an Annual BioBank Report to include the information required under Annexure D, Condition 2.5	In Control	Reports submitted as required	

Monitoring, Record Keeping & Reporting	3	A copy of the BioBank report will also be submitted to the Department of the Environment and Energy (DOTEE) to satisfy the EPBC Approval conditions.	In Control	In the Independent Environmental Audit (Dec 2019) that was conducted for the Bulli Seam Operations (BSO) under Condition 9 of Schedule 6 of the BSO Project Approval and Condition 18 of EPBC Approval 2010/5350, an administrative non-compliance was noted, and a recommendation was made as follows: *It is recommended that confirmation be sought from the Department that the required timing for submission of the monitoring report in Condition 5c be changed to that required under the Biobanking Scheme.* South32 received the below response from DAWE in July 2020 (email from Peter Blackwell, 10th July 2020) : *Hi Chris* *I confirm that, consistent with the intent of condition 5A, added to the conditions attached to the approval on 4 May 2018, if the SSTF is legally secured as a registered NSW BioBanking site, the annual reporting required under NSW BioBanking for that site may be provided to the Department in place of the reports containing monitoring results required at condition 5c, and thus such reports should be provided to the Department in accordance with the timing required under NSW BioBanking for that site.*	
BioBanking Agreement ID number: 215	**Ref.**	**Requirement / Obligation**			

Use of the biobank site General responsibilities	3.1	Except as otherwise permitted by this agreement, the landowner must not carry out any act or omit to carry out any act, or cause or permit any act to be carried out or any act not to be carried out which act or omission may harm biodiversity values on the biobank site, including but not limited to any native animals, native plants, threatened species, populations and ecological communities, and their habitats. NOTE: The clearing of native vegetation that is otherwise permissible in accordance with the NV Act (whether it is permissible under a Property Vegetation Plan, routine agricultural management activity (as defined under the NV Act), or is otherwise permitted under Part 3 of that Act) can only be carried out on the biobank site to which this agreement applies if it is also permissible under this agreement. Item 5.1 of the management actions contained in Section 1 of Annexure C of this agreement sets out the limited circumstances in which native vegetation can be cleared on the biobank site. Annexure C of this agreement also contains limited exceptions in relation to when a landowner is not required to comply with the	In Control	As per Management Actions comments below.	
Use of the biobank site Cultural heritage	3.2	To avoid any doubt, nothing in this agreement is to be construed as authorising (including, but not limited to, by way of a consent, permit, approval or authorisation of any kind for the purposes of Part 6 of the NPW Act) any person to damage or to cause or permit damage to an Aboriginal object or Aboriginal place in, on or under the biobank site.	In Control	As per Management Actions comments below.	

Use of the biobank site Obtaining of consents, permits and authorisations	3.3	The landowner is responsible for obtaining all necessary licences, consents, authorisations, permits or approvals in order to lawfully comply with and carry out its obligations under this agreement or to undertake or enable any other identified matter under clause 3.5 and/or clause 3.6	In Control		
Use of the biobank site Development	3.4.1	The landowner must not carry out, or cause or permit to be carried out, any development (as defined under clause 1 above) on the biobank site, unless the development: 3.4.1 - is permitted or required under Annexure C, or 3.4.2 - is identified in the table entitled 'Permissible development on the biobank site' contained in clause 3.5 or identified in the table entitled 'Permissible human activities on the biobank site' contained in clause 3.6	In Control	As per Management Actions comments below.	
Use of the biobank site Permissible development	3.5	The landowner shall be permitted to carry out, or cause or permit to be carried out, the development specified in the following table in the management zone specified in the table: * All Management zones - Any development within the meaning of section 127 (1) of the Act reasonably considered necessary to remove or reduce an imminent risk of serious personal injury	In Control	As per Management Actions comments below.	

Use of the biobank site Permissible development	3.5	The landowner shall be permitted to carry out, or cause or permit to be carried out, the development specified in the following table in the management zone specified in the table: * All Management Zones - Any development permitted or required as part of a management action under Annexure C, including but not limited to maintaining existing access tracks on the biobank site, building shed/s to store weed control chemicals or other pesticides on the biobank site, building fences to manage stock on the biobank site and building structures to restore natural water flow regimes	In Control	As per Management Actions comments below.	
Use of the biobank site Permissible development	3.5	The landowner shall be permitted to carry out, or cause or permit to be carried out, the development specified in the following table in the management zone specified in the table: * All Management Zones - Construction of fencing to prevent stock incursion	In Control	The 2020 annual audit by BCT is not scheduled till after Aug 2020.	
Use of biobank site Permissible human activities	3.6	Notwithstanding clause 3.1, the landowner may carry out or cause or permit to be carried out any human activities specified in the following table, in the management zone specified in the table: * All Management Zones - Any human activity reasonably considered necessary to remove or reduce an imminent risk of serious personal injury or damage to property.	In Control	As per Management Actions comments below.	

Use of biobank site Permissible human activities	3.6	Notwithstanding clause 3.1, the landowner may carry out or cause or permit to be carried out any human activities specified in the following table, in the management zone specified in the table: * All Management Zones - Any activity or any development permitted or required as part of a management action under Annexure C, including but not limited to mustering stock or feral herbivores including with mechanised vehicles, spraying or mechanically removing weeds, planting tube stock or sowing seeds of native vegetation, using drip torches, thinning native vegetation, disturbing soil temporarily to control erosion, encouraging regeneration, controlling nutrients or restoring natural flow regimes, laying baits, trapping or otherwise controlling vertebrate pests and feral herbivores and overabundant native herbivores	In Control	As per Management Actions comments below.	
Use of biobank site Permissible human activities	3.6	Notwithstanding clause 3.1, the landowner may carry out or cause or permit to be carried out any human activities specified in the following table, in the management zone specified in the table: * All Management Zones - Passive recreation, with the exception of overnight stays and/or camp fires, is permissible on the land to the extent that the condition of vegetation on site is not degraded. Passive recreation can include but is not limited to activities such as walking and bird watching.	In Control	As per Management Actions comments below.	

Use of biobank site Permissible human activities	3.6	Notwithstanding clause 3.1, the landowner may carry out or cause or permit to be carried out any human activities specified in the following table, in the management zone specified in the table: * All Management Zones - Any activity required to undertake permissible development	In Control	As per Management Actions comments below.	
Management actions and management plans	4.1	The landowner must carry out or procure the carrying out of the management actions in accordance with the timing, manner and requirements of Annexure C.	In Control	As per Management Actions comments below.	
Management actions and management plans	4.2	The landowner must: I) implement or procure the implementation of; and ii) comply of procure the compliance with the management plans in accordance with the timing, manner and requirements of Annexure C NOTE: The management actions listed in Annexure C include requirements to take certain action and requirements to refrain from taking certain action.	In Control	As per Management Actions comments below.	
Management actions and management plans	4.3	Unless otherwise indicated by Annexure C, the landowner must ensure that; I) the management actions to be carried out in accordance with clause 4.1; and ii) the management plans to be implemented and complied with in accordance with clause 4.2	In Control	As per Management Actions comments below.	

Monitoring, record keeping and reporting	7.1	The landowner must comply with the monitoring and record keeping requirements as set out in Annexure D.	In Control	As per Management Actions comments below.	
Monitoring, record keeping and reporting	7.2	The landowner must submit an annual report complying with the requirements set out in Annexure D to the Chief Executive within the timeframe specified in Annexure D.	In Control	Reports submitted as required	
Monitoring, record keeping and reporting	7.3	The landowner must notify the Chief Executive in writing as soon as practicable after becoming aware of any failure to comply with this agreement or any other incident at the biobank site (or surrounds) which results or may result in a sudden or significant decline of biodiversity values at the biobank site. In particular, the landowner must notify the Chief Executive of: 7.3.1 - the nature, location and time of the incident 7.3.2 - the impact of the incident on biodiversity values 7.3.3 - the measures that have been taken or will be taken in response to the incident 7.3.4 - any provision of this agreement which may have been breached 7.3.5 - the extent of any damage caused or permitted by the incident 7.3.6 - the measures which have been taken or will be taken to prevent a recurrence of the incident	In Control	Trespass and unauthorised removal of trees in August 2019. Incident report was provided to the Biodiversity Conservation Trust as required by this condition. BCT satisfied with the report and actions taken by South32.	

Use of the land by servants, agents, leases or licensees	8	The landowner must incorporate all relevant requirements of this agreement in any lease or licence issued for the biobank site, and must at all times ensure that any servant, contractor, consultant, agent, lessee or licensee occupying the biobank site area shall be aware of, and not undertake any act inconsistent with, the landowner's obligations under this agreement.	In Control	Landcare have been provided a copy of the agreement as required.	
Change of land ownership of subdivision of land	9.1	The landowner must notify the Chief executive in writing of any change of: 9.1.1 - ownership of the biobank site, or any part thereof, within seven (7) days after the change of ownership of the biobank site; or 9.1.2 - lessee of the biobank site, or any part thereof, within twenty-eight (28) days after the change of lessee or licensee of the biobank site. The notice must include the name and address and other relevant contact details of the new	In Control	Not triggered	
Change of land ownership of subdivision of land	9.2	The landowner must provide a copy of this agreement, including a copy of each management plan and a copy of all records required to be kept under the record keeping requirements, to the transferee before completion of the assignment, transfer, disposal or sale of any interest in the biobank site.	In Control	Not triggered	
Change of land ownership of subdivision of land	9.3	The landowner must notify the Chief Executive in writing no less than 14 days before the biobank site is subdivided.	In Control	Not triggered	

Change of land ownership of subdivision of land	9.4	The landowner cannot assign, transfer, dispose of or sell its rights, title or interest in part of the land containing any area of the biobank site unless the landowner and the Minister have first agreed to vary the agreement to apportion the obligations and rights under the agreement in respect of that part of the biobank site that will be assigned, transferred, disposed of or sold.	In Control	Not triggered	
Right to enter biobank site for research and monitoring	10.1	The landowner must permit access to the biobank site at any time to the Minister, the Chief Executive, an authorised officer or an officer of OEH for the purpose of carrying out research or monitoring in relation to the biodiversity values on the biobank site for which biodiversity credits have been created under this agreement, but only where the person has given reasonable notice to the landowner and the landowner's agent, lessee or licensee, of the intention to enter the biobank site for that purpose and the nature of the research or monitoring that will be conducted. In exercising its right of access under this clause, the Minister, the Chief Executive, an authorised officer or an officer of OEH must ensure that such access does not: 10.1.1 - result in physical or radio interference which obstructs, interrupts or impedes the use or operation of any telecommunications network and telecommunications service of a lessee or licensee of a part of the land; or 10.1.2 - interfere with the electricity supply separate from the landowner's electricity supply to any part of the land occupied by a lessee or licensee.	In Control	BCT have been given access as required for the purpose of the annual audit.	

Right to enter biobank site for research and monitoring	10.2	The Minister, Chief Executive, an authorised officer or an officer of OEH may make a written request to the landowner to consent to any other person specified in the written request to enter the biobank site for the purpose of carrying out the research or monitoring referred to in clause 10.2, whether or not that person will accompany the Minister, Chief Executive, an authorised officer or an officer of OEH. The landowner will not unreasonably withhold consent.	In Control	Not triggered	
Ownership of the land and registration of this agreement	13.4	If the landowner elects to identify the exact boundaries of the biobank site on the Deposited Plan for the land, the landowner must bear any additional costs of registration.	In Control	Not triggered	
Variation and termination	14.1	Subject to clause 14.2, this agreement can only be varied or terminated in accordance with the Act.	In Control	Not triggered	
Dispute resolution	16.1	Where there is a dispute, difference or claim (dispute), the party raising the dispute must notify the other party in writing of the nature of the dispute, including the factual and legal basis of the dispute.	In Control	Not triggered	
Dispute resolution	16.2	Within 14 days of the written notice, the Chief Executive and the landowner, or nominated senior representatives of the parties, must confer to attempt to resolve the dispute, and if the dispute cannot be resolved within twenty-one (21) days of the written notice, the Chief Executive and the landowner will refer the matter to mediation.	In Control	Not triggered	

Dispute resolution	16.3	The parties will agree on the terms of appointment of the mediator and the terms of the mediation in writing within twenty-eight (28) days, failing which the mediation will be at an end and either party may commence court proceedings in respect of the dispute, difference or claim.	In Control	Not triggered	
Dispute resolution	16.4	If the matter has not been resolved within 28 days of the appointment of the mediator, the mediation process will be at an end and either part may commence court proceedings in respect of the dispute, difference or claim.	In Control	Not triggered	
Notices	21.1.	Any notice, consent, information, application or request that must or may be given or made to a party is only given or made if it is in writing and delivered or posted to that party as its address ser out (in the agreement), or faxed to that party at its fax number set out (in the agreement).	In Control	Not triggered	
Annexure A: Maps of biobank sites	**Ref.**	**Requirement / Obligation**			
Maps of Biobank site	Map A	Map A - Biobank site boundary map dated 01/03/2016.	In Control		
Maps of Biobank site	Map B	Map B - Vegetation zones, management zones and photo points map dated 16/05/2016.	In Control		
Maps of Biobank site	Map C	Map C - *Grevillea parviflora* subsp. *Parviflora* locations dated 09/05/2016	In Control		
Maps of Biobank site	Map D	Map D - *Epacris purpurascens* var. *Purpurascens* locations dated 10/05/2016.	In Control		
Maps of Biobank site	Map E	Map E - Koala habitat polygon dated 13/05/2016	In Control		

Annexure C: Management actions and management plans	**Ref.**	**Requirement / Obligation**			
Standard Management Actions Grazing	Section 1	Stock must not be permitted to graze in any area, remove stock immediately - Ongoing from commencement date	In Control	Comments as per past annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. Excluding the one horse observed in the eastern section of MZ1 in Oct 2018, no other stock observed in all management zones on each site visit. The fence allowing the neighbour's horse to enter the site was repaired to prevent further access to the site. Significant grazing by stock animals continues to occur on the private property (to the south) without incursion into the site.	

Standard Management Actions Weed Control	Section 1	Comply with Weed MP - Section 3 - Ongoing from commencement date	In Control	Comments as perlast annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. Weed control at MZ1, MZ2, MZ3 and Transmission easement and edges of MZ56 and MZ7 adjoining easement on each site visit using herbicide and hand pulling of species listed in BioBanking Agreement (BBA) 215. Maintenance Sweeps for key weed threats through MZ4, MZ6 and MZ7. No access permitted to MZ5 due to the high cliffs and gorges, however no weeds observed in adjoining management zones during maintenance sweeps. Herbicides have been used on the BioBanking site at the quarterly site visits to undertake management actions (i.e. weed control) in each respective management zone as listed in the BBA. A list of herbicide used at each visit is available (if required). Additional herbicide treatment required in MZ1, MZ2, MZ3 and the transmission easement for Blue periwinkle, Paterson's curse, Bridal creeper, African lovegrass, Stinking Roger, Thistle, Fleabane, Paddy's Lucerne and woody species such as Privet. As per the BBA, areas previously disturbed require ongoing control for at least the following 10 years, after which time these zones are to be reassessed for the need for further control.	

Standard Management Actions Weed Control	Section 1	Review Weed Management Plan every 4 -6 years. Notify Chief Executive in writing within 14 days of commencement of review. Findings of the review must be submitted to Chief Executive within 3 months of commencing the review. Chief executive to determine if update is required. Landowner must submit updated plan within 3 months of this request. Update must cover matters as per 2.2. of Section 1. - Ongoing from first payment date	N/A	BioBanking Agreement 215 only made on 1/2/17.	
Standard Management Actions Fire	Section 1	Comply with Fire MP - Ongoing from first payment date	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No ecological burns are planned in any zone until at least 2026 and then the site will be reconsidered for future ecological burns in a mosaic pattern across the site. Heavy senescence of *Acacia* spp. (predominantly *A. decurrens*) in MZ1, MZ2 and MZ7. Fuel loads vary in all management zones but are at least 15 -20 tonnes per hectare or greater across the site. Action Completed Satisfactorily	

Standard Management Actions Fire	Section 1	Review Fire Management Plan every 4 -6 years. Notify Chief Executive in writing within 14 days of commencement of review. Findings of the review must be submitted to Chief Executive within 3 months of commencing the review. Chief executive to determine if update is required. Landowner must submit updated plan within 3 months of this request. Update must cover matters as per 3.2. of Section 1. - Ongoing from first payment date	N/A	BioBanking Agreement 215 only made on 1/2/17	
Standard Management Actions Fire	Section 1	Do not light fires on the Biobank site other than for purposes of ecological burning of if permitted as a permissible activity as per Item 4, Clause 3.6. - Ongoing from commencement date	In Control	No ecological burns are planned in any zone until at least 2026 and then the site will be reconsidered for future ecological burns in a mosaic pattern across the site. Heavy senescence of *Acacia* spp. (predominantly *A. decurrens*) in MZ1, MZ2 and MZ7. Fuel loads vary in all management zones but are at least 15 -20 tonnes per hectare or greater across the site. No evidence of recent fire activity during all six site visits (BBA suggests last burn/wildfire was in 2004). Comment from last annual audit by BCT (18/9/19) - Action Completed Satisfactorily - No planned burns required until 2026. No evidence of recent fire activity observed during inspection.	

Standard Management Actions Human Disturbance	Section 1	No activities that will adversely effect biodiversity must be carried out except those permitted under Clause 3.6 - Ongoing from commencement date	In Control	Comments as per recent annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. • Access for management purposes includes South32 and Landcare Australia (land management contractor) staff. There is no ability for stock or unauthorized motor vehicles to access the site with the current exclusion fencing in place. • Routine inspections conducted at each site visit to ensure fencing is secure and that there have been no incursions (except for the horse observed as listed in item 1 above). • OEH mapping shows there is a spotlight location on the site as part of ongoing Koala surveys in South Western Sydney. Action Completed Satisfactorily: Unauthorised clearing of approximately 8 trees (presumably for firewood) was reported to the BCT by the landowner in August 2019 (see separate report - doc19/843854). The landowner has repaired the fencing that was damaged to gain access to the site and has committed to install signs warning that the area is under surveillance to deter similar incidents in future. Signage has been installed.	

Standard Management Actions Human Disturbance	Section 1	Human activities that have negative effect on biodiversity are permitted if they are listed under Clause 6 or if they are undertaken as part of the management plans - Ongoing from commencement date	In Control	Trespass and unauthorised removal of trees in August 2019. Report was provided to the Biodiversity Conservation Trust as required.	
Standard Management Actions Human Disturbance	Section 1	Must not store or dispose of waste - Ongoing from commencement date	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No waste has been observed on the site during quarterly site visits this year. Action Completed Satisfactorily - No stored west observed during site inspection.	
Standard Management Actions Human Disturbance	Section 1	Must take all reasonable steps to remove waste deposited by others, or which is otherwise present on the site - Ongoing from first payment date	In Control	Comments as per recent annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No waste has been observed on the site during quarterly site visits this year. Action Completed Satisfactorily - No stored waste observed during site inspection.	

Standard Management Actions Human Disturbance	Section 1	Signage must be installed and maintained to deter human disturbance including dumping. Signage must be the biobanking signs available by OEH - Within 3 months of first payment date	In Control	Comments as per recent annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. Signage and fencing as per the BBA have been installed and are in good working order. Minor repairs required on the northern boundary to ensure no further incursions of horses onto the site from the neighbouring property. Action Completed Satisfactorily	
Standard Management Actions Human Disturbance	Section 1	Fencing of 3 km of the site. $4500 allocated every three years to maintain fencing. Single sign to be installed at each of the two locked gates - Within 3 months of first payment date	In Control	Comments as per recent annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. Signage and fencing as per the BBA have been installed and are in good working order. Minor repairs required on the northern boundary to ensure no further incursions of horses onto the site from the neighbouring property. Action Completed Satisfactorily	
Standard Management Actions Human Disturbance	Section 1	Retain the management access track on the Cataract River side - Ongoing from commencement date	In Control	Comments as per recent annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. Existing access track retained. Action Completed Satisfactorily	

Standard Management Actions Retention of regrowth and remnant Veg	Section 1	Native veg must not be cut down, felled, thinned, logged, killed, destroyed, poisoned, ringbarked, uprooted, burnt etc. Except in accordance with Fire Management Plan or Permissible Development under Clause 3.5 - Ongoing from commencement date	In Control	Comments as per recent annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No native vegetation has been removed, killed, destroyed or poisoned on the site. No evidence or observation of recent ringbarking or tree felling (since commencement of the BBA) on the site. No evidence of fire activity. Unauthorised clearing of approximately 8 trees (presumably for firewood) was reported to the BCT by the landowner in August 2019. The landowner has repaired the fencing that was damaged to gain access to the site and has committed to install signs warning that the area is under surveillance to deter similar incidents in future. No evidence of recent fire activity observed during inspection Action Completed Satisfactorily	

Standard Management Actions Replanting or supp planting	Section 1	Planting required in the 0.5 Ha Management Zone 3 - 250 plants. Record date of planting - commencing from first payment date	In Control	Comments as per recent annual audit by BCT (site visit 18/9/19) As per the Section 6.6 of the BBA, a planting program has been implemented as a ''local planting day", with preparation on 15/05/18 and planting on 22/05/18 for the species listed in the planting schedule. 250 canopy tube stock were watered on 22/10/18, 04/01/19 and 20/02/19. Currently there is a 90% success rate in survivability of the canopy species planted. Rob Porter (Illawarra Landcare) confirmed by email on 20/9/19 that species planted are consistent with planting schedule. Plant numbers installed are also consistent with planting schedule except for Eucalyptus crebra where 38 rather than 50 plants were installed. This minor deviation from the planting schedule is acceptable. Action Completed Satisfactorily	

Standard Management Actions Replanting or supp planting	Section 1	Protect plants from grazing for two years or until 50cm high. Record the date when the plant height requirements are met. - commencing from first payment date	In Control	Comments as per recent annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. Plant guards have been installed around plantings. Action Completed Satisfactorily	
Standard Management Actions Replanting or supp planting	Section 1	Survey the plants for success - Conduct first survey 24 months after completion of planting, then every 12 months for 5 years	In Control	Comments as per recent annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. Currently there is a 90% success rate in survivability of the canopy species planted. Not required until 24 months following planting Action Completed Satisfactorily.	
Standard Management Actions Replanting or supp planting	Section 1	Seeds and plants used for planting must be obtained from locally collected provenances, unless reasons to do otherwise. - Conduct first survey 24 months after completion of planting, then every 12 months for 5 years	In Control	Comments as per recent annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. Rob Porter (Illawarra Landcare) confirmed by email on 26/9/19 that all plantings were sourced from Western and South Western Sydney. Action Completed Satisfactorily.	

Standard Management Actions Retention of Dead Timber	Section 1	Don't remove dead timber except for firewood for one household (landowner) or fencing repairs. - Ongoing from commencement date	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No dead timber (standing or fallen) has been removed and no additional timber has been introduced to the site since commencement of the BBA. Observations made during maintenance sweeps for all zones during annual and quarterly sites visits. No evidence of dead timber removal observed during inspection. Action Completed Satisfactorily	
Standard Management Actions Retention of Dead Timber	Section 1	Timber brought from outside must be documented - Ongoing from commencement date	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No dead timber (standing or fallen) has been removed and no additional timber has been introduced to the site since commencement of the BBA. Observations made during maintenance sweeps for all zones during annual and quarterly sites visits. No evidence of dead timber removal observed during inspection. Action Completed Satisfactorily	

Standard Management Actions Erosion Control	Section 1	Take reasonable steps to prevent, control erosion - Ongoing from commencement date	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No areas identified across the site which currently require any supplementary erosion control or stabilisation. Observations made during maintenance sweeps for all zones during annual and quarterly sites visits. No evidence or erosion observed during site inspection. Action Completed Satisfactorily	
Standard Management Actions Erosion Control	Section 1	Don't remove rocks from the site - Ongoing from commencement date	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No rock removal has occurred on the site since the commencement of the BBA. Site monitored for rock removal at either quarterly or annual site visits to the respective management zones. No evidence of rock removal observed during inspection. Action Completed Satisfactorily	

Standard Management Actions Erosion Control	Section 1	Can bring rocks from outside the site but once onsite cant be removed. - Ongoing from commencement date	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No rock removal has occurred on the site since the commencement of the BBA. Site monitored for rock removal at either quarterly or annual site visits to the respective management zones. No evidence of rock removal observed during inspection. Action Completed Satisfactorily	

Additional Management Actions Control of Feral and Overabundant Native Herbivores	Section 2	Comply with the Management Plan - Ongoing from first payment date	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. Negligible feral or overabundant native herbivory (wallabies, kangaroo scats, but good floral recruitment observed). In accordance with the BBA annual inspection required for species traces. Opportunistic observations made during weed control and maintenance sweeps for all zones during either the annual and/or quarterly site visits. Minimal rabbit scratching/scat mounds observed in transmission easement (20/02/2019). No rabbit burrow/warrens found on property, numerous (generally inactive) wombat burrows also did not show signs of rabbits in residence. No evidence of goats or deer observed in the immediate areas. Action Completed Satisfactorily	
Additional Management Actions Control of Feral and Overabundant Native Herbivores	Section 2	Review Management Plan every 4 -6 years. Notify Chief Executive in writing within 14 days of commencement of review. Findings of the review must be submitted to Chief Executive within 3 months of commencing the review. Chief executive to determine if update is required. Landowner must submit updated plan within 3 months of this request. Update must cover matters as per 3.2. of Section 1. - Ongoing from first payment date	N/A	BioBanking Agreement 215 only made on 1/2/17	

Additional Management Actions Vert Pest Management	Section 2	Comply with Vertebrate Pest MP - Ongoing from first payment date	In Control	Comments as per recent annual audit by BCT (site visit 18/9/19) No pest animals observed during any site visits (only scats). Fox scat was observed in the transmission easement (20/02/2019). The pest management plan is not due for review until 2021, however liaison with Sydney Region Local Land Service will continue so as to determine if and when a fox/wild baiting program should be undertaken on the site. Action Completed Satisfactorily	
Additional Management Actions Vert Pest Management	Section 2	Review Pest Management Plan every 4 -6 years. Notify Chief Executive in writing within 14 days of commencement of review. Findings of the review must be submitted to Chief Executive within 3 months of commencing the review. Chief executive to determine if update is required. Landowner must submit updated plan within 3 months of this request. Update must cover matters as per 3.2. of Section 1. - Ongoing from first payment date	N/A	BioBanking Agreement 215 only made on 1/2/17	

Additional Management Actions Nutrient control	Section 2	Fertilisers or pesticides not to be used except for weed or pest control - Ongoing from commencement date	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No fertilizers have been used on the site since the commencement of the BBA. No evidence of fertiliser or pesticide use observed during site inspection. Herbicide use appears to be appropriate for implementation of management actions. Action Completed Satisfactorily	
Additional Management Actions Control of exotic fish	Section 2	Not relevant to this site - Ongoing from first payment date	N/A	Not relevant to this site	
Additional Management Actions Maintenance or reintroduction of natural flow regimes	Section 2	Don't impede natural flow regimes - Ongoing from commencement date	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No artificial structures installed to impede the natural flow regimes on the site. Natural flow regimes are maintained on the site in accordance with the BBA No evidence of artificial structures being constructed to impede natural flow regimes observed during site inspection. Action Completed Satisfactorily	

Standard Management Plan Weed Management Plan	Section 3	Spray/Slashing in Management Zones - Spray/Slashing 4 times per year (MZ1-3). Some moment zones only required once per year (MZ4, 5 & 6)	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. Level and type of weed control reported by landowner is consistent with agreement. Action Completed Satisfactorily	
Standard Management Plan Weed Management Plan	Section 3	Site inspections as weed treatments applied. Annual inspection and Monitoring Report - Annually from first payment date	In Control	Included in South32 BioBanking Agreement Annual Report. 2020 report due 18th August.	
Standard Management Plan Fire for Conservation	Section 3	Fires intervals between 7 and 30 years - Once every 12 to 30 years	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No planned burning in any zones until 2026 Action Completed Satisfactorily	
Standard Management Plan Fire for Conservation	Section 3	Exclude fire until 2026. Unplanned fires permitted. Must not burn >25% of the site at any one time. - Once every 12 to 30 years	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No planned burning in any zones until 2026 Action Completed Satisfactorily	

Standard Management Plan Fire for Conservation	Section 3	In MZ5 totally exclude fire other than wildfire - Once every 12 to 30 years	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No evidence of recent fire activity during all six site visits (BBA suggest last burn/wildfire was in 2004). No evidence of recent fire activity observed during inspection. Action Completed Satisfactorily	
Standard Management Plan Fire for Conservation	Section 3	Visual monitoring in 2026 as per MP table - 2026	N/A	Not required until 2026	
Standard Management Plan Fire for Conservation	Section 3	Monitoring prior to and after burning as per table - 2026 or following a wildfire	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No evidence of recent fire activity during all six site visits (BBA suggest last burn/wildfire was in 2004). No evidence of recent fire activity observed during inspection.	
Standard Management Plan Fire for Conservation	Section 3	Periodic trittering along fence lines is permitted but must not affect canopy or mid storey - Every 5 years	N/A	BioBanking Agreement 215 only made on 1/2/17	

Standard Management Plan Control of Feral and Overabundant Native Herbivores	Section 3	Monitoring of number and impacts on annual basis - No or negligible occurrence on the site	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No control required due to no or negligible impacts and no or low levels of occurrence. Tubestock planted in MZ3 to be protected with tree guards Annual inspections of species traces and potential impacts by suitably qualified restoration ecologist or environmental scientist No evidence of feral herbivore activity observed during site inspection; some macropods present. Tubestock in MZ3 are protected with tree guards. Monitoring undertaken as required and confirms negligible occurrence/impacts Action Completed Satisfactorily	

Standard Management Plan Control of Feral and Overabundant Native Herbivores	Section 3	Protect MZ3 Planting - Review annually	In Control	Comments as per recent annual audit by BCT (site visit 18/9/19) No control required due to no or negligible impacts and no or low levels of occurrence. Tubestock planted in MZ3 to be protected with tree guards Annual inspections of species traces and potential impacts by suitably qualified restoration ecologist or environmental scientist No evidence of feral herbivore activity observed during site inspection; some macropods present. Tubestock in MZ3 are protected with tree guards. Monitoring undertaken as required and confirms negligible occurrence/impacts Action Completed Satisfactorily	

Standard Management Plan Control of Feral and Overabundant Native Herbivores	Section 3	Species traces and potential impacts - Annually	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. No control required due to no or negligible impacts and no or low levels of occurrence. Tubestock planted in MZ3 to be protected with tree guards Annual inspections of species traces and potential impacts by suitably qualified restoration ecologist or environmental scientist No evidence of feral herbivore activity observed during site inspection; some macropods present. Tubestock in MZ3 are protected with tree guards. Monitoring undertaken as required and confirms negligible occurrence/impacts Action Completed Satisfactorily	
Standard Management Plan Vertebrate Pest Management Plan	Section 3	1080 baiting - If warranted (Consult OEH/LLS)	In Control After Action Close-out	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. Annual monitoring for traces and scats to record date, location and estimated number of pest species identified. 1080 baiting program for fox/dogs/rabbits to be implemented if required, in consultation with LLS. No evidence of vertebrate pest activity observed during site inspection. Monitoring identified some fox activity. Action Completed Satisfactorily	BCT Recommendation: Liaise with Local Land Services regarding the likely effectiveness of undertaking a fox baiting program on the site. Fox baiting will occur in Spring 2020.

Standard Management Plan Vertebrate Pest Management Plan	Section 3	Den fumigation or habitat removal - If warranted	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. Annual monitoring for traces and scats to record date, location and estimated number of pest species identified. 1080 baiting program for fox/dogs/rabbits to be implemented if required, in consultation with LLS. No evidence of vertebrate pest activity observed during site inspection. Monitoring identified some fox activity. Action Completed Satisfactorily	
Standard Management Plan Vertebrate Pest Management Plan	Section 3	Qualitative observation for traces and scats - Annually	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. Annual monitoring for traces and scats to record date, location and estimated number of pest species identified. 1080 baiting program for fox/dogs/rabbits to be implemented if required, in consultation with LLS. No evidence of vertebrate pest activity observed during site inspection. Monitoring identified some fox activity. Action Completed Satisfactorily	
Annexure D: Monitoring, reporting and record keeping requirements	**Ref.**	**Requirement / Obligation**			

Monitoring		Photo Points - Within 12 months or commencement date and every 12 months thereafter	In Control	Comments as per last annual audit by BCT (site visit 18/9/19). The 2020 annual audit is not due till after August 2020. The landowner must ensure that photographs are taken at photo-points at each of the locations and in the direction identified in the table titled 'Locations of photo points' shown in section 1.2, Annexure D of the biobanking agreement, within 12 months of the commencement date and then at least every 12 months thereafter. No photos were taken from PP10 for WHS reasons due its location in a steep gully. This is an acceptable minor variation. Action Completed Satisfactorily	
Monitoring		Percentage of ground cover present on the biobank site - Annually	In Control	Minimal stock incursion (excluding individual horse since previous reporting period) has allowed groundcover to be maintained as a similar density across the site over the previous 2 years due to the installation of the exclusion fencing (refer to photopoints for further detail). As per South32 Appin BioBanking Agreement Annual Report. 2020 report due 18th August 2020.	

Monitoring		Number of stock and dates when stock have entered - Quarterly	In Control	One stock incursion to the eastern side of MZ 1 in Oct 2018, the fence was repaired and there has been no further evidence of stock on the site since the installation of the fencing. As per South32 Appin BioBanking Agreement Annual Report. 2020 report due 18th August 2020.	
Monitoring		Physical condition of fencing - control of stock - control of humans - control of ferals and overabundant herbivores - control of vertebrates pests - Quarterly	In Control	a. Currently maintained to the standard to exclude stock from the site and inspected annually (inspected 26/4/2018 and 20/02/19). Next audit due after August 2020. b. Currently maintained to a standard to control human disturbance and inspected annually (inspected 26/4/2018 and 20/02/19). Next audit due after August 2020. c. Currently maintained to a standard to control feral or overabundant herbivores and/or vertebrate pests and inspected annually (inspected 26/4/2018, 22/10/2018, 04/01/2019 and 20/02/19) - Negligible feral or overabundant native herbivory observed in all management zones. Next audit due after August 2020. As per South32 Appin BioBanking Agreement Annual Report. 2020 report due 18th August 2020.	

Monitoring		Records of human disturbance - Bi-annually	In Control	Nil human disturbance observed at the site (inspected on 26/04/18, 22/10/18, 04/01/19 and 20/02/19). Next audit due after August 2020. As per South32 Appin BioBanking Agreement Annual Report. 2020 report due 18th August 2020	
Monitoring		Evidence of erosion - Bi-annually	In Control	No areas identified across the management zones which currently require any supplementary erosion control or stabilisation (inspected on 26/04/18, 22/10/18, 04/01/19 and 20/02/19). As per South32 Appin BioBanking Agreement Annual Report. 2020 report due 18th August 2020.	
Monitoring		Evidence of water - Bi-annually	In Control	No evidence of waste was observed during the quarterly site visits on 26/4/18, 22/10/18, 04/01/19 and 20/2/19. As per South32 Appin BioBanking Agreement Annual Report. 2020 report due 18th August 2020.	

Appendix K: Appin Mine Project Approval Compliance Report

Condition of Approval	Status	Comments
SCHEDULE 2: ADMINISTRATIVE CONDITIONS		
OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT		
1. In addition to meeting the specific performance criteria established under this approval, the Proponent shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.	Compliant	Management Plans developed and implemented to minimise harm to the environment.
TERMS OF APPROVAL		
2. The Proponent shall carry out the project generally in accordance with the: (a) EA; (b) Statement of Commitments; (c) PPR; and (d) conditions of this approval. Note: The general layout of the project is shown in Appendices 2 to 4	Non-compliant	Non-compliances have been recorded of Condition 2 of Schedule 4, Condition 15 of Schedule 4, Condition 29 of Schedule 4, and Condition 11 of Schedule 6. These are discussed in more detail in Section 11.
3. If there is any inconsistency between the above documents, the more recent document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency.	Noted	
4. The Proponent shall comply with any reasonable requirement/s of the Secretary arising from the Department's assessment of: (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this approval; and (b) the implementation of any actions or measures contained in these documents.	Compliant	Requirements of the Secretary have been addressed as required.
LIMITS ON APPROVAL		
Mining Operations		
5. The Proponent may carry out mining operations on the site until 31 December 2041. Note: Under this approval, the Proponent is required to rehabilitate the site and perform additional undertakings to the satisfaction of either the Secretary or the Executive Director Mineral Resources. Consequently this approval will continue to apply in all other respects other than the right to conduct mining operations until the rehabilitation of the site and these additional undertakings have been carried out satisfactorily.	Compliant	Mining operations were undertaken during the reporting period. The cessation date has not been triggered.
Coal Extraction and Production		
6. The Proponent shall not: (a) extract more than 10.5 million tonnes of ROM coal from the site in a financial year, or (b) transport more than 9.3 million tonnes of product coal from the site in a financial year.	Compliant	Coal extraction and transportation was below the limits as specified in the approval during the reporting period.
Appin Ventilation Shaft No. 6		
6A. The Proponent may operate Appin Ventilation Shaft No. 6 until 31 December 2041, unless otherwise agreed by the Secretary. Note: Under this approval, the Proponent is required to rehabilitate the site and perform additional undertakings, to the satisfaction of the Secretary and DRE. Consequently, this approval will continue to apply in all	Compliant	Ventilation occurred during the reporting period. The cessation date has not been triggered.

<table>
<tr><td>other respects other than the right to bore and operate the ventilation shaft until the site has been properly rehabilitated.</td><td></td><td></td></tr>
<tr><td colspan="3">Hours of Operation</td></tr>
<tr><td>7. The Proponent may undertake mining operations and mine ventilation activities 24 hours a day, 7 days a week</td><td>Compliant</td><td>Mining operations and construction are in accordance with hours of operation.</td></tr>
<tr><td>7A The Proponent shall comply with the construction and operating hours listed in Table 1A for the Appin Ventilation Shaft No.6:
Table 1A: Construction and operating hours
<table>
<tr><th>Activity</th><th>Hours
(Other than for emergency purposes)</th></tr>
<tr><td>Construction
Road and site access*, site preparation, liner construction, spoil management, drilling of boreholes, provision of services, related activities, post construction rehabilitation.</td><td>7.00am to 6.00pm, Monday to Saturday
No works on Sunday or Public Holidays</td></tr>
<tr><td>Shaft drilling and lining and water management works. Any works that are inaudible at residential premises.</td><td>24 hours per day, 7 days per week</td></tr>
<tr><td>Operation of Ventilation Shaft
Including commissioning of fans</td><td>24 hours per day, 7 days per week</td></tr>
<tr><td>Operation of Service Boreholes
Delivery of concrete to the site and associated surface operations</td><td>24hrs per day, 7 days per week</td></tr>
<tr><td>Delivery of other materials to the site and associated surface operations</td><td>7.00am to 6.00pm, Monday to Saturday</td></tr>
<tr><td>Provision of supplies, consumables or utilities to underground</td><td>24hrs per day, 7 days per week</td></tr>
</table>
Notes:
• *Some road works potentially requiring traffic management measures, such as cutting in the access road to Menangle Road, line marking the intersection and installation of asphaltic concrete, may be undertaken outside these hours (subject to Council's approval) to take advantage of reduced traffic volumes.
• 'Emergency purposes' refers to instances where the cessation of construction or operating activities would have the potential to generate serious harm to the environment or serious safety issues. Should these activities be conducted outside of the hours permitted, a report must be provided to the Department within 7 days of the event containing relevant information and/or to demonstrate the specific emergency purposes and circumstances at the time</td><td>Compliant</td><td>Activities at the ventilation shaft have been undertaken in accordance with the listed hours.</td></tr>
<tr><td colspan="3">SURRENDER OF CONSENTS AND APPROVALS</td></tr>
<tr><td>8. By 31 December 2012, or as otherwise agreed by the Secretary, the Proponent shall surrender all existing development consents and project approvals for mining operations relied on by the Proponent for the site (other than this approval) in accordance with Sections 75YA and 104A of the EP&A Act.

Note: This requirement does not extend to the surrender of construction and occupation certificates for existing and proposed building works under Part 4A of the EP&A Act. Surrender of a consent or approval should not be understood as implying that works legally constructed under a valid consent or approval can no longer be legally maintained or used.</td><td></td><td>Letters sent on 29 July 2014 to DoPE and 1 Aug 2014 to WSC advising that Illawarra Coal Holdings Pty Ltd surrenders all existing development consents and project approvals for mining (including Wollondilly Shire Council approvals for: Shaft and Electrical Substation 22 January 1972; Appin Mine 22 February 1972; West Cliff Mine 17 April 1975; West Cliff Extended 3 September 1986; Washing of Appin Coal at West Cliff 25 March 1997) operations relied on by the Proponent for the site (other than the Project Approval), subject to and in accordance with the regulations. A notice of Modification under Section 75W of the Environmental Planning and Assessment Act 1979 28 October 2016 incorporated the VS#6 Approval requirements into the Project Approval.</td></tr>
<tr><td>9. Prior to the surrender of these consents and/or approvals, the conditions of this approval (including any notes) shall prevail to the extent of any inconsistency with the conditions of these consents and/or approvals.</td><td>Compliant</td><td>Conditions transferred to updated management plans.</td></tr>
<tr><td colspan="3">STRUCTURAL ADEQUACY</td></tr>
<tr><td>10. The Proponent shall ensure that all new buildings and structures, and any alterations or additions to</td><td>Compliant</td><td>New buildings and structures were project managed by the</td></tr>
</table>

existing buildings and structure, that are part of the project are constructed in accordance with: (a) the relevant requirements of the BCA; and (b) any additional requirements of the MSB where the building or structure is located on land within declared Mine Subsidence Districts. Notes: • Under Part 4A of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for the proposed building works. • Part 8 of the EP&A Regulation sets out the requirements for the certification of the project.		engineering team to the relevant building codes.
DEMOLITION		
11. The Proponent shall ensure that all demolition work is carried out in accordance with Australian Standard AS 2601-2001: The Demolition of Structures, or its latest version	Compliant	Demolition carried out in the reporting period was undertaken to the required standard.
OPERATION OF PLANT AND EQUIPMENT		
12. The Proponent shall ensure that all plant and equipment used at the site is: (a) maintained in a proper and efficient condition; and (b) operated in a proper and efficient manner.	Compliant	Operations are conducted in accordance with approved management plans. Daily, weekly and monthly inspections of plant, equipment and site areas are conducted. This includes a number of system generated maintenance work orders. Regular site environmental inspections are undertaken to address inspections for leaking machinery and equipment. Mine machinery and equipment are maintained and serviced accordingly.
STAGED SUBMISSION OF STRATEGIES, PLANS OR PROGRAMS		
13. With the approval of the Secretary, the Proponent may submit any strategies, plans or programs required by this approval on a progressive basis. Notes: • While any strategy, plan or program may be submitted on a progressive basis, the Proponent will need to ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times; and • If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.	Compliant	Strategies, plans and programs are submitted as reviewed.
STRATEGIC BIODIVERSITY OFFSETS		
14. If the proponent is required to provide a biodiversity offset pursuant to this approval (including any biodiversity offset that is required under the conditions of a subordinate approval issued in accordance with this approval), the Secretary may, in consultation with OEH, accept in satisfaction of the requirement for the biodiversity offset, the provision of land that has	Compliant	Approved biodiversity offset strategy is in place.

conservation values which exceed the conservation values required to meet the relevant offsetting requirement. If the Secretary accepts such an offset under this condition, the Secretary shall issue a written statement to the proponent advising: (a) the details of the proposed offset land; (b) the offset requirements that are being met; (c) the conservation values that have been relied upon to meet the offsetting requirements; (d) that in the opinion of the Secretary: (i) the land has conservation values in addition to those that have been relied upon to meet the offsetting requirement in condition 14(b); or (ii) if the land has been subject to a previous statement from the Secretary under this condition, confirmation that the land continues to have conservation values in addition to those that have been relied upon to meet the previous offsetting requirement or that there are no further conservation values available in respect of the land. If the Secretary has issued a statement under this condition, the proponent can rely on that statement and the residual conservation values that the land subject to the statement may hold, to meet further offsetting requirement(s) that may be required under this approval or the development consent for the Dendrobium Coal Mine (60-3-2001). The Secretary's statement under this condition can be relied on a number of times in respect of the same land until all of the conservation values of the land the subject of the Secretary's statement have been relied upon to meet offsetting requirements under this approval or the development consent for the Dendrobium Coal Mine (60-3-2001). The proponent shall make suitable arrangements to provide appropriate long-term security for the biodiversity offset area(s) accepted under this condition, within 2 years of the date of the Secretary's statement in respect of that land, unless otherwise agreed with the Secretary.		
SCHEDULE 3 – SPECIFIC ENVIRONMENTAL CONDITIONS – UNDERGROUND MINING		
SUBSIDENCE		
Performance Measures – Natural and Heritage Features, etc		
1. The Proponent shall ensure that the project does not cause any exceedances of the performance measures in Table 1, to the satisfaction of the Secretary.	Compliant	For all observed impacts, the appropriate TARPs were applied, actions implemented, and key stakeholders notified as required by the approved Subsidence Management Plan and Extraction Plan. See Section 6.14 of this Annual Review for a summary of the predicted vs observed impacts.

Table 1: Subsidence Impact Performance Measures

Watercourses	
Nepean River	Negligible environmental consequences including: • *negligible* diversion of flows or changes in the natural drainage behaviour of pools; • *negligible* gas releases and iron staining; and • *negligible* increase in water cloudiness.
Georges River	Negligible environmental consequences including: • *negligible* diversion of flows or changes in the natural drainage behaviour of pools; • *negligible gas releases and iron staining; and* • *negligible increase in water cloudiness* over at least 80% of the stream length subject to vertical subsidence >20 mm. No subsidence impact or environmental consequence greater than minor.
Other watercourses	No greater subsidence impact or environmental consequences than predicted in the EA and PPR.
Land	
Dharawal State Conservation Area	Negligible environmental consequences.
Cliffs of "special significance" (ie cliffs longer than 200 m and/or higher than 40 m; and cliff-like rock faces higher than 5 m that constitute waterfalls)	Negligible environmental consequences (that is occasional rockfalls, displacement or dislodgement of boulders or slabs, or fracturing, that in total do not impact more than 0.5% of the total face area of such cliffs within any longwall mining domain).
Other cliffs flanking the Nepean River	Negligible environmental consequences (that is occasional rockfalls, displacement or dislodgement of boulders or slabs, or fracturing, that in total do not impact more than 0.5% of the total face area of such cliffs within any longwall mining domain).
Other cliffs	Minor environmental consequences (that is occasional rockfalls, displacement or dislodgement of boulders or slabs, or fracturing, that in total do not impact more than 3% of the total face area of such cliffs within any longwall mining domain).
Biodiversity	
Threatened species, threatened populations, or endangered ecological communities	Negligible environmental consequences.
Aboriginal heritage	
Sites determined to hold "special significance" as a result of studies required for Extraction Plans	Negligible impact or environmental consequence.
Sites determined to hold high or moderate significance as a result of studies required for Extraction Plans	Less than 10% of such sites across the mining area are affected by subsidence impacts (other than negligible impacts or environmental consequence).
Other Aboriginal heritage sites	Less than 10% of such sites (or 1 such site, whichever is the greater) within any longwall mining domain are/is affected by subsidence impacts (other than minor impacts or environmental consequence).
Historic heritage	
St James Church (Menangle) St Mary's Tower (Douglas Park)	Negligible loss of heritage value. Negligible impact on structural integrity or external fabric.
Broughtons Pass Weir	Negligible loss of heritage value.
Other buildings or structures of State or National heritage significance	Negligible loss of heritage value. Negligible impact on structural integrity or external fabric,
	unless the owner of the feature agrees otherwise in writing.
Other buildings or structures of identified heritage significance	No loss of heritage value greater than predicted under a Heritage Management Plan prepared under condition 6 below.
Mine workings	
First workings under an approved Extraction Plan beneath any feature where performance measures in this table require negligible impact, negligible consequence or negligible loss (including main headings under the Georges River)	To remain longterm stable and non-subsiding.
Second workings	To be carried out only within longwall mining domains, in accordance with an approved Extraction Plan.

Notes:
1) The Proponent will be required to define more detailed performance indicators (including impact assessment criteria) for each of these performance measures in the various management plans that are required under this approval (see condition 5 below).
2) Measurement and/or monitoring of compliance with performance measures and performance indicators is to be undertaken using generally accepted methods that are appropriate to the environment and circumstances in which the feature or characteristic is located. These methods are to be fully described in the relevant management plans. In the event of a dispute over the appropriateness of proposed methods, the Secretary will be the final arbiter.
3) The only cliffs of special significance known to occur within the site are termed A7_0088, A7_0102, A8_0001 and A8_0030 in the EA.
4) The requirements of this condition only apply to the impacts and consequences of mining operations undertaken following the date of this approval.
5) In the case of the Dharawal State Conservation Area, the Secretary's satisfaction can only be expressed following consultation with OEH.
6) Broughtons Pass Weir is also subject to performance measures set out in Table 2.
7) Listings of State or National heritage significance may be made before or after the date of this approval.
8) An Aboriginal heritage site of special significance has cultural and/or archaeological values which are considered to hold exceptionally high value, based on assessment of characteristics including size, complexity and quality of the site; its setting within the landscape; and associated cultural and historical contexts for Aboriginal people (see the Bulli Seam Operations PAC Report, July 2010). The only Aboriginal heritage feature within the site accepted as holding special significance as at the date of this approval is 52-2-5305. However, other sites may be identified as a result of studies required for Extraction Plans.

Offsets

2. If the Proponent exceeds the performance measures in Table 1 and the Secretary determines that: (a) it is not reasonable or feasible to remediate the impact or environmental consequence; or (b) remediation measures implemented by the Proponent have failed to satisfactorily remediate the impact or environmental consequence; then the Proponent shall provide a suitable offset to compensate for the impact or environmental consequence, to the satisfaction of the Secretary.	N/A	Condition not triggered during reporting period

<table>
<tr><td>Note: Any offset required under this condition must be proportionate with the significance of the impact or environmental consequence</td><td></td><td></td></tr>
<tr><td colspan="3">Performance Measures – Built Features</td></tr>
<tr><td>3. The Proponent shall ensure that the project does not cause any exceedances of the performance measures in Table 2, to the satisfaction of the Secretary.

Table 2: Subsidence Impact Performance Measures
<table><tr><td colspan="2">Built features</td></tr><tr><td>Key public infrastructure:
• Main Southern Railway;
• Hume Highway; and
• Key WaterNSW infrastructure (Nepean Tunnel, Cataract Tunnel, Upper Canal, Broughtons Pass Weir and other weirs)</td><td>Always safe and serviceable.

Damage that does not affect safety or serviceability must be fully repairable, and must be fully repaired.</td></tr><tr><td>Other public infrastructure (including water supply pipelines; high pressure gas pipelines and the gas distribution network; electricity transmission and distribution lines; telecommunications cables and optical fibre networks; roads, trails and associated structures).</td><td>Always safe.

Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated.

Damage must be fully repaired or fully compensated, or else the damaged built feature or damaged</td></tr><tr><td>Houses, industrial premises, swimming pools, farm dams and other built features or improvements</td><td>infrastructure component must be replaced.</td></tr><tr><td colspan="2">Public safety</td></tr><tr><td>Public Safety</td><td>Negligible additional risk.</td></tr></table>Notes: 1) The Proponent will be required to define more detailed performance indicators for each of these performance measures in Built Features Management Plans or Public Safety Management Plan (see condition 5 below).
2) Measurement and/or monitoring of compliance with performance measures and performance indicators is to be undertaken using generally accepted methods that are appropriate to the environment and circumstances in which the feature or characteristic is located. These methods are to be fully described in the relevant management plans. In the event of a dispute over the appropriateness of proposed methods, the Secretary will be the final arbiter.
3) The requirements of this condition only apply to the impacts and consequences of mining operations undertaken following the date of this approval.
4) Requirements regarding safety or serviceability do not prevent preventative or mitigatory actions being taken prior to or during mining in order to achieve or maintain these outcomes.</td><td></td><td>For all observed impacts, the appropriate TARPs were applied, actions implemented and key stakeholders notified as required by the approved Subsidence Management Plan and Extraction Plan. See Section 6.14 of this Annual Review for a summary of the predicted vs observed impacts.</td></tr>
<tr><td>4. Any dispute between the Proponent and the owner of any built feature over the interpretation, application or implementation of the performance measures in Table 2 is to be settled by the Secretary, following consultation with the MSB and the Executive Director Mineral Resources. Any decision by the Secretary shall be final and not subject to further dispute resolution under this approval.</td><td>Compliant</td><td>For all observed impacts, the appropriate TARPs were applied, actions implemented and key stakeholders notified as required by the approved Subsidence Management Plan and Extraction Plan. See Section 6.14 of this Annual Review for summary of the predicted vs observed impacts.</td></tr>
<tr><td colspan="3">Extraction Plans</td></tr>
<tr><td>5. The Proponent shall prepare and implement an Extraction Plan for first and second workings within each longwall mining domain to the satisfaction of the Secretary. Each extraction plan must:
(a) be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary;
(b) be approved by the Secretary before the Proponent carries out any of the second workings covered by the plan;
(c) include detailed plans of existing and proposed first and second workings and any associated surface development;
(d) include detailed performance indicators for each of the performance measures in Tables 1 and 2;
(e) provide revised predictions of the potential subsidence effects, subsidence impacts and environmental consequences of the proposed second workings, incorporating any relevant information obtained since this approval;
(f) describe the measures that would be implemented to ensure compliance with the performance measures in</td><td>Compliant</td><td>SMPs and Extraction Plans have been prepared as required to include the required information.

Approved plans are available on the regulatory website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents</td></tr>
</table>

Tables 1 and 2, and manage or remediate any impacts and/or environmental consequences; (g) include a Built Features Management Plan, which has been prepared in consultation with DRE and the owners of affected public infrastructure, to manage the potential subsidence impacts and/or environmental consequences of the proposed second workings, and which: • addresses in appropriate detail all items of key public infrastructure and other public infrastructure and all classes of other built features; • has been prepared following appropriate consultation with the owner/s of potentially affected feature/s; • recommends appropriate pre-mining mitigatory measures to reduce subsidence impacts; • recommends appropriate remedial measures and includes commitments to mitigate, repair, replace or compensate all predicted impacts on potentially affected built features in a timely manner; and • in the case of all key public infrastructure, and other public infrastructure except roads, trails and associated structures, reports external auditing for compliance with ISO 31000 (or alternative standard agreed with the infrastructure owner) and provides for annual auditing of compliance and effectiveness during extraction of longwalls which may impact the infrastructure; (h) include a Water Management Plan, which has been prepared in consultation with OEH, WaterNSW and DPI Water, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on watercourses and aquifers, including: • surface and groundwater impact assessment criteria, including trigger levels for investigating any potentially adverse impacts on water resources or water quality; • a program to monitor and report stream flows and assess any changes resulting from subsidence impacts; • a program to monitor and report groundwater inflows to underground workings; and • a program to predict, manage and monitor impacts on groundwater bores on privately-owned land; (i) include a Biodiversity Management Plan, which has been prepared in consultation with OEH and DPI (Fisheries), which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on aquatic and terrestrial flora and fauna, with a specific focus on threatened species, populations and their habitats; endangered ecological communities; and water dependent ecosystems, including (for Appin Areas 7, 8 and 9): • additional targeted surveys for threatened species, sufficient to identify any actions required to protect significant populations from potential impacts; (j) include a Land Management Plan, which has been prepared in consultation with any affected public		

authorities, to manage the potential impacts and/or environmental consequences of the proposed second workings on land in general, with a specific focus on cliffs and steep slopes; (k) include a Heritage Management Plan, which has been prepared in consultation with OEH and relevant stakeholders for both Aboriginal and historic heritage, to manage the potential environmental consequences of the proposed second workings on both Aboriginal and non-Aboriginal heritage items, and which: • includes additional investigations (such as surveys and current register searches) for Aboriginal heritage items (including previously known sites) and historic heritage items, sufficient to identify the significance (including "special significance") of all sites which may be impacted by subsidence and to identify any actions required to ensure that the performance measures in Table 1 are met; and • is prepared in accordance with the relevant requirements for preparation of the Heritage Management Plan required under condition 23 of Schedule 4; (l) include a Public Safety Management Plan, which has been prepared in consultation with DRE, to ensure public safety in the mining area; (m) include a subsidence monitoring program, which has been prepared in consultation with DRE, OEH and WaterNSW, to: • provide data to assist with the management of the risks associated with subsidence; • validate the subsidence predictions; • analyse the relationship between the predicted and resulting subsidence effects and predicted and resulting impacts under the plan and any ensuing environmental consequences; and • inform the contingency plan and adaptive management process; (n) include a regional seismic event monitoring program, which has been prepared in consultation with DRE, and which includes analysis of outcomes and proposed triggers for review of potential correlations with mining operations; (o) include a contingency plan that expressly provides for adaptive management where monitoring indicates that there has been an exceedance of any performance measure in Tables 1 and 2, or where any such exceedance appears likely; (p) proposes appropriate revisions to the Rehabilitation Management Plan required under condition 33 of Schedule 4; and (q) include a program to collect sufficient baseline data for future Extraction Plans. Notes: To identify the longwall mining domains referred to in this condition, see Appendix 3. An SMP that is substantially consistent with this condition and which is approved by DRE prior to 30 September 2012 is taken to satisfy the requirements of this condition.		

6. The Proponent shall ensure that the management plans required under condition 5(g)-(l) above include: (a) an assessment of the potential environmental consequences of the Extraction Plan, incorporating any relevant information that has been obtained since this approval; and (b) a detailed description of the measures that would be implemented to remediate predicted impacts.	Compliant	The Subsidence Management Plans and Extraction Plans include the required information and are available on the website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents
First Workings		
7. The Proponent may carry out first workings within the project area, other than in accordance with an approved extraction plan, provided that DRE is satisfied that the first workings are designed to remain stable and non-subsiding, except insofar as they may be impacted by approved second workings. Note: The intent of this condition is not to require an additional approval for first workings, but to ensure that first workings are built to geotechnical and engineering standards sufficient to ensure long term stability, with zero resulting subsidence impacts.	Compliant	First workings have been carried out as required. Link to Subsidence Management Plans and Extraction Plans https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents
Payment of Reasonable Costs		
8. The Proponent shall pay all reasonable costs incurred by the Department to engage suitably qualified, experienced and independent experts to review the adequacy of any aspect of an Extraction Plan.	N/A	Condition not triggered during the reporting period.
Improved Understanding and Prediction of Subsidence Impacts		
9. The Proponent shall prepare and implement a program to improve its prediction and understanding of subsidence impacts (in particular sub-surface impacts and impacts on groundwater resources), to the satisfaction of the Secretary. This program must be prepared in consultation with DRE and be submitted to the Secretary for approval by 30 September 2012 and must include proposals for: (a) testing (including core testing and in situ testing) to further define the mechanical, hydrogeological and geochemical properties of rock strata within each longwall domain, including: • testing and validation of assumptions regarding regional continuity of modelled hydraulic properties (including mass porosity and permeability); • identifying hydraulic properties of rock strata close to water-dependent ecosystems; and • identifying the presence and distribution of iron-bearing minerals that might contribute to surface water quality impairment; (b) installation of a regional network of deep pore pressure monitoring bores with vertical arrays of pore pressure transducers to assess and quantify the height and impacts of subsurface fracturing; (c) a census of boreholes which may be impacted by subsidence, the gathering of relevant borehole and groundwater quality data and a regular monitoring program; (d) regular enhancement, calibration and verification of the project's regional groundwater model, and the further development of this model on a mining-domain scale; and	Non-compliant	The environmental research program was submitted for approval in September 2012 in accordance with the condition, however approval of the plan was not received. IMC are currently reviewing the Plan and research undertaken to date in order to prepare for resubmission to the Department. (Identified in the 2019 IEA and is an historical non-compliance)

<table>
<tr><td>(e) regular recalibration of methodologies and models used for subsidence effect and impact prediction, as they are applied within the project area.

Note: Results of this program are to be incorporated within subsequent Extraction Plans, including the subplans required under condition 5(g)-(l) above.</td><td></td><td></td></tr>
<tr><td colspan="3">Improved Understanding and Prediction of Environmental Consequences on Significant Natural Features</td></tr>
<tr><td>10. The Proponent shall prepare and implement a Research Program to the satisfaction of the Secretary and allocate $1,000,000 in total to this program for expenditure over a period of seven years from the date of the program's approval. This program must be prepared in consultation with OEH, WaterNSW and DRE, be submitted to the Secretary for approval by 30 September 2012, and be:
(a) directed at research into improving the prediction, assessment, remediation and/or avoidance of subsidence impacts and environmental consequences on significant natural features in the Project Area; and
(b) targeted at genuine research, as opposed to implementing the matters required by this approval.</td><td>Non-compliant</td><td>The environmental research program was submitted for approval in September 2012 in accordance with the condition, however approval of the plan was not received. IMC are currently reviewing the Plan and research undertaken to date in order to prepare for resubmission to the Department.

(Historical non-compliance - see comment for Condition 9).</td></tr>
<tr><td colspan="3">SCHEDULE 4 SPECIFIC ENVIRONMENTAL CONDITIONS – GENERAL</td></tr>
<tr><td colspan="3">NOISE</td></tr>
<tr><td colspan="3">Noise impact Assessment Criteria</td></tr>
<tr><td>1. From the end of June 2013, the Proponent shall ensure that the noise generated by the project does not exceed the criteria in Table 1 at any residence on privately-owned land or on more than 25 percent of any privately-owned land.
Table 1: Interim Noise Criteria dB(A)
<table>
<tr><th colspan="2">Location</th><th>Day</th><th>Evening</th><th colspan="2">Night</th></tr>
<tr><th>Area</th><th>Receiver Number</th><th>$L_{Aeq\ (15\ min)}$</th><th>$L_{Aeq\ (15\ min)}$</th><th>$L_{Aeq\ (15\ min)}$</th><th>$L_{A1\ (1\ min)}$</th></tr>
<tr><td rowspan="3">Appin Township</td><td>136, 137, 139, 142, 143</td><td>44</td><td>44</td><td>44</td><td rowspan="3">52</td></tr>
<tr><td>135</td><td>43</td><td>43</td><td>43</td></tr>
<tr><td>100-134, 141, 146-160, 194-197, 200-209, 211, 236-278, 283-284</td><td>42</td><td>42</td><td>42</td></tr>
</table>
Notes to Tables 1, 2 and 3:
• To identify the locations referred to in Table 1, 2 and 3, refer to Appendix 5; and
• Noise generated by the project is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy.

However, these criteria do not apply if the Proponent has a written agreement with the relevant landowner to exceed the criteria, and the Proponent has advised the Department in writing of the terms of this agreement.</td><td>N/A</td><td>This condition has been superseded by Condition 2 of Schedule 4.</td></tr>
<tr><td>2. From the end of December 2014, the Proponent shall ensure that the noise generated by the project does not exceed the criteria in Table 2 at any residence on privately-owned land or on more than 25 percent of any privately-owned land.</td><td>Non-compliant</td><td>Two exceedances and two non-compliances with criteria were recorded at monitoring location AE-NS5 during the reporting period. See Section 11 for more detail.</td></tr>
</table>

Table 2: Noise Criteria dB(A) **Location** / **Day** / **Evening** / **Night** **Area** / **Receiver Number** / $L_{Aeq\ (15\ min)}$ / $L_{Aeq\ (15\ min)}$ / $L_{Aeq\ (15\ min)}$ / $L_{A1\ (1\ min)}$ Appin West Receivers south-west of Appin West — 1-7, 9-11, 13, 184, 188- 189 — 39 — 39 — 35 — 49 Appin West receivers near Hume Highway — 185-187, 190 — 35 — 35 — 35 — 53 All other Appin West Receivers — 14, 26 — 45 — 45 — 35 — 53 All other Appin West Receivers — 15-25, 27-48, 50-56 — 43 — 43 — 35 Appin No. 3 Receivers — 58, 67, 71, 72 — 41 — 41 — 41 — 49 Appin No. 3 Receivers — 68, 74, 75 — 40 — 40 — 40 Appin No. 3 Receivers — 69, 70, 76, — 39 — 39 — 39 Appin No. 3 Receivers — 217, 218, 233, 279-282 — 35 — 35 — 35 Appin No. 1 and No. 2 Receivers — 82, 91, 216 — 42 — 42 — 42 — 50 Appin No. 1 and No. 2 Receivers — 83, 85 — 41 — 41 — 41 Appin No. 1 and No. 2 Receivers — 78, 84, 86-90, 199, — 40 — 40 — 40 Appin No. 1 and No. 2 Receivers — 212-215, 226, 228-230, 232, 234, 235 — 35 — 35 — 35 Appin Township — 136, 137, 139, 142, 143 — 44 — 44 — 44 — 52 Appin Township — 135 — 43 — 43 — 43 Appin Township — Any other privately owned property — 42 — 42 — 42 Douglas Park — All privately-owned residences — 45 — 45 — 39 — 49 **Location** / **Day** / **Evening** / **Night** **Area** / **Receiver Number** / $L_{Aeq\ (15\ min)}$ / $L_{Aeq\ (15\ min)}$ / $L_{Aeq\ (15\ min)}$ / $L_{A1\ (1\ min)}$ All other privately-owned land (excluding receivers in Table 3) — 35 — 35 — 35 — 45 However, these criteria do not apply if the Proponent has a written agreement with the relevant landowner to exceed the criteria, and the Proponent has advised the Department in writing of the terms of this agreement.		
Construction Noise		
2A. The Applicant shall ensure that the noise generated by construction activities relating to the Appin East Mine Safety Gas Management Project is managed in accordance with the requirements of the Interim Construction Noise Guideline (DECC, 2009), as may be updated from time to time.	N/A	No activities relating to this project were conducted during this reporting period.
2B The Proponent shall ensure that the construction noise generated by the Appin Ventilation Shaft No. 6 project, does not exceed the noise impact assessment criteria set out in Table 2A at any residence on privately-owned land, or on more than 25 percent of any privately-owned land. *Table 2A: Construction noise criteria dB(A)* **Location** / **Day** / **Evening** / **Night** $L_{Aeq\ (15\ min)}$ / $L_{Aeq\ (15\ min)}$ / $L_{Aeq\ (15\ min)}$ / $L_{A1\ (1\ min)}$ All privately owned residences – 7.00am to 6.00pm, Monday to Saturday and 8.00 am to 1.00 pm Saturday — 50 — 45 — 39 — 49 All privately owned residences – outside the above hours — 45 — 45 — 39 — 49	N/A	No construction activities relating to this project were conducted during this reporting period.
Noise Mitigation		
3. Upon receiving a written request from the owner of any residence listed in Table 3, the Proponent shall implement noise mitigation measures (such as double-glazing, insulation, and/or air conditioning) at the residence in consultation with the landowner. These measures must be reasonable and feasible. If within 3 months of receiving this request from the owner, the Proponent and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.	N/A	No requests for noise mitigation measures were received during the reporting period.

Table 3: Land where noise mitigation measures are available on request **Receiver Number** 57,60, 63, 64, 66, 79, 80, 138, 140, 144, 165		
Operating Conditions		
4. The Proponent shall: (a) implement best management practice, including all reasonable and feasible noise mitigation measures, to minimise the construction, operational and road traffic noise generated by the project; (b) operate a comprehensive noise management system on site that uses real-time noise monitoring data for mining operations and the implementation of noise mitigation measures to ensure compliance with the relevant conditions of this approval; and (c) regularly assess the real-time noise monitoring to ensure compliance with the relevant conditions of this approval, to the satisfaction of the Secretary.	Compliant	Best practice measures and the monitoring program are detailed in the Noise Management Plan. Real-time noise monitoring was undertaken. The plan is available on the website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents.
Noise Management Plan		
5. The Proponent shall prepare and implement a Noise Management Plan for the project to the satisfaction of the Secretary. This plan must: (a) be prepared in consultation with EPA and WSC, and submitted to the Secretary for approval by 30 September 2012; (b) include provisions to ensure that the road haulage fleet attains and maintains best practices in both equipment and operations; (c) seek to minimise road traffic noise generated by employee commuter vehicles on public roads, particularly Douglas Park Drive and Macarthur Road; (d) describe the measures that would be implemented to ensure compliance with the relevant conditions of this approval; (e) outline procedures to manage responses to any complaints or issues raised by the owners of affected residences; and (f) include a noise monitoring program that: • uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the project; and • includes a protocol for determining exceedances of the relevant conditions of this approval;	Compliant	The Noise Management Plan has been submitted and approved. The plan is available on the website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents. The requirements of the plan are being implemented.
Road Traffic Noise Mitigation		
6. If after the end of June 2013, road traffic noise generated by the project (including employee vehicles) results in an exceedance by more than 2 dB(A) of the NSW criteria for road traffic noise on Douglas Park Drive or Macarthur Road at any residence on privately-owned land, then the Proponent shall, upon receiving a written request from the landowner, implement reasonable and feasible noise mitigation measures (such as double-glazing, insulation, and/or air conditioning) at the residence in consultation with the landowner. If within 3 months of receiving this request from the landowner, the Proponent and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.	N/A	There have been no complaints regarding traffic noise on Douglas Park Drive or Macarthur Road during the reporting period and no written requests for noise mitigation received.

<table>
<tr><td colspan="3">AIR QUALITY & GREENHOUSE GAS</td></tr>
<tr><td colspan="3">Odour</td></tr>
<tr><td>7. The Proponent shall ensure that no offensive odours are emitted from the site, as defined under the POEO Act.</td><td>Compliant</td><td>Odour has not been raised as a wider community concern during the reporting period.</td></tr>
<tr><td colspan="3">Greenhouse Gas Emissions</td></tr>
<tr><td>8. The Proponent shall implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site to the satisfaction of the Secretary.</td><td>Compliant</td><td>The Air Quality and Greenhouse Gas Management Plan has been submitted and approved.

The plan is available on the website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents. See Section 6.17.4 for information on the decarbonisation program.</td></tr>
<tr><td colspan="3">Air Quality Criteria</td></tr>
<tr><td>9. The Proponent shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the particulate emissions generated by the project do not exceed the criteria listed in Tables 4, 5 and 6 at any residence on privately-owned land or on more than 25 percent of any privately-owned land.

Table 4: Long term criteria for particulate matter
<table><tr><th>Pollutant</th><th>Averaging period</th><th>[d] Criterion</th></tr><tr><td>Total suspended particulate (TSP) matter</td><td>Annual</td><td>[a] 90 µg/m³</td></tr><tr><td>Particulate matter < 10 µm (PM_{10})</td><td>Annual</td><td>[a] 30 µg/m³</td></tr></table>Table 5: Short term criterion for particulate matter
<table><tr><th>Pollutant</th><th>Averaging period</th><th>[d] Criterion</th></tr><tr><td>Particulate matter < 10 µm (PM_{10})</td><td>24 hour</td><td>[a] 50 µg/m³</td></tr></table>Table 6: Long term criteria for deposited dust
<table><tr><th>Pollutant</th><th>Averaging period</th><th>Maximum increase in deposited dust level</th><th>Maximum total deposited dust level</th></tr><tr><td>[c] Deposited dust</td><td>Annual</td><td>[b] 2 g/m²/month</td><td>[a] 4 g/m²/month</td></tr></table>Notes for Tables 4-6:
• [a] Total impact (ie incremental increase in concentrations due to the project plus background concentrations due t other sources);
• [b] Incremental impact (ie incremental increase in concentrations due to the project on its own);
• [c] Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003 Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter Gravimetric Method; and
• [d] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illeg activities or any other activity agreed to by the Secretary in consultation with EPA.</td><td>Compliant</td><td>Air quality criteria were achieved during the reporting period. It is noted that exceedances of criteria were recorded during the reporting period as a result of the high bushfire activity in the area (excluded as classified as an extraordinary event).

Air quality data is reported on the South32 website at: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents.</td></tr>
<tr><td colspan="3">Air Quality Acquisition Criteria</td></tr>
<tr><td>10. If the particulate matter emissions generated by the project exceed the criteria in Tables 7, 8 and 9 at any residence on privately-owned land or on more than 25 percent of any privately owned land, then upon receiving a written request for acquisition from the landowner the Proponent shall acquire the land in accordance with the procedures in Conditions 5 - 6 of Schedule 5.</td><td>N/A</td><td>There have been no requests for land acquisition during the reporting period.

It is noted that this condition should refer to Conditions 4 and 5.</td></tr>
</table>

Table 7: Long term acquisition criteria for particulate matter **Pollutant** | **Averaging period** | **[d] Criterion** Total suspended particulate (TSP) matter | Annual | [a]90 µg/m³ Particulate matter < 10 µm (PM_{10}) | Annual | [a]30 µg/m³ *Table 8: Short term acquisition criteria for particulate matter* **Pollutant** | **Averaging period** | **[d]Criterion** Particulate matter < 10 µm (PM_{10}) | 24 hour | [a]150 µg/m³ Particulate matter < 10 µm (PM_{10}) | 24 hour | [b]50 µg/m³ *Table 9: Long term acquisition criteria for deposited dust* **Pollutant** | **Averaging period** | **Maximum increase in deposited dust level** | **Maximum total deposited dust level** [c]Deposited dust | Annual | [b]2 g/m²/month | [a]4 g/m²/month *Notes for Tables 7 - 9:* • *[a]Total impact (ie incremental increase in concentrations due to the project plus background concentrations due other sources);* • *[b] Incremental impact (ie incremental increase in concentrations due to the project on its own);* • *[c] Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:200 Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter Gravimetric Method; and* • *[d] Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illeg activities or any other activity agreed to by the Secretary in consultation with EPA.*		
Operating Conditions		
11. The Proponent shall: (a) implement best practice air quality management on site, including all reasonable and feasible measures to minimise the off-site odour, fume and dust emissions generated by the project, including from any spontaneous combustion on site, (b) minimise any visible air pollution generated by the project; and (c) regularly assess the air quality monitoring and meteorological forecasting data, and relocate, modify and/or stop operations on site to ensure compliance with the relevant conditions of this approval; to the satisfaction of the Secretary.	Compliant	Best practice measures are detailed in the Air Quality and Greenhouse Gas Management Plan. The plan is available on the website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents. The requirements of the plan are being implemented.
Air Quality & Greenhouse Gas Management Plan		
12. The Proponent shall prepare and implement a detailed Air Quality & Greenhouse Gas Management Plan for the project to the satisfaction of the Secretary. This plan must: (a) be prepared in consultation with EPA, and submitted to the Secretary for approval by 30 September 2012; (b) describe the measures that would be implemented to ensure compliance with the relevant conditions of this approval, including consideration of applying a real-time air quality management system that employs both reactive and proactive mitigation measures; (c) describe the measures that would be implemented to minimise the release of greenhouse gas emissions from the site; and (d) include an air quality monitoring program that uses a combination of high volume samplers and dust deposition gauges to evaluate the performance of the project, and includes a protocol for determining exceedances with the relevant conditions of this approval.	Compliant	The Air Quality and Greenhouse Gas Management Plan has been submitted and approved. The plan is available on the website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents. The requirements of the plan are being implemented.
METEOROLOGICAL MONITORING		
13. During the life of the project, the Proponent shall ensure that there is a suitable meteorological station operating in the vicinity of the site that: (a) complies with the requirements in the Approved Methods for Sampling of Air Pollutants in New South Wales guideline; and	Compliant	Weather stations operate in the vicinity of the operation that generally meet these requirements.

(b) is capable of continuous real-time measurement of temperature lapse rate in accordance with the NSW Industrial Noise Policy.		
SOIL & WATER		
Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Proponent is required to obtain the necessary water licences for the project.	Compliant	Water licences have been obtained as required. These are listed in Sections 1 and 3 of the Annual Review.
Compensatory Water Supply		
14. The Proponent shall provide a compensatory water supply to any owner of privately-owned land whose water supply is adversely impacted (other than an impact that is negligible) as a result of the project, in accordance with the approved Surface Water Management Plan. The compensatory water supply measures must provide an alternative long-term supply of water that is equivalent to the loss attributed to the project. Equivalent water supply must be provided (at least on an interim basis) within 24 hours of the loss being identified. If the Proponent and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution. If the Proponent is unable to provide an alternative long-term supply of water, then the Proponent shall provide alternative compensation to the satisfaction of the Secretary.	Compliant	Compensatory water supplies have been provided as required.
Surface Water Discharges		
15. The Proponent shall ensure that all surface water discharges from the site (including from the Brennans Creek Dam) comply with the discharge limits (both volume and quality) set for the project in any EPL.	Non-compliant	Surface water quality and discharge limits in the EPL were exceeded during the reporting period. Refer to Section 11 for details.
Surface Water Management Plan		
16. The Proponent update and implement the Surface Water Management Plan for the project to the satisfaction of the Secretary. This plan must be prepared in consultation with DPI Water and EPA by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary, and submitted to the Secretary for approval by 31 January 2017. This plan must include: (a) a comprehensive water balance for the project, that includes details of: • sources and security of water supply and water make; • water use; and • water discharges; and (b) management plans for the surface facilities sites, that include: • a detailed description of water management systems for each site, including: - clean water diversion systems; - erosion and sediment controls; and - any water storages;		The Surface Water Management Plan has been submitted and approved. The plan is available on the website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents. The requirements of the plan are being implemented. The Water Management Plan was reviewed during the reporting period to incorporate the planned construction of the Appin North Water Treatment Plant.

• measures to minimise potable water use and to reuse and recycle water; • a Water Response Plan, which describes the measures and/or procedures that would be implemented to: - investigate, notify and mitigate any ground or surface water exceedances; - minimise, prevent or offset any adverse impacts to ground or surface water resources; - provide compensatory water supply to any owner of privately-owned land whose water supply is adversely impacted (other than an impact that is negligible) as a result of the project; and • measures to comply with surface water discharge limits; • implementation of any pollution reduction program relating to mine water discharges from Brennans Creek Dam and identification of 5, 7 and 10 year commitments to substantially reduce the impacts on biota of salinity and other pollutants in such discharges; and • monitoring and reporting procedures including: - collection of baseline data on surface water quality in creeks and other waterbodies that could potentially be affected by the project; and - surface water and stream health impact assessment criteria. Note: This plan must be suitably integrated with the Water Management Plans that form part of Extraction Plans.		
WEST CLIFF COAL WASH EMPLACEMENT AREA		
17. The Proponent shall prepare and implement a West Cliff Coal Wash Emplacement Area Management Plan for the project to the satisfaction of the Secretary. This plan must be prepared in consultation with OEH and be submitted to the Secretary for approval by the end of June 2013. This plan must include: (a) detailed design plans which include options for reducing, avoiding and/or managing impacts on Aboriginal heritage sites in and adjacent to the southwestern fringe of the proposed Stage 4 footprint (including sites 52-2-2228/3617, 52-2-1373, 52-2-3533/3613 and 52-2-3506); (b) management strategies to ensure no impacts to Aboriginal heritage site 52-2-3505 other than negligible impacts, including consideration of potential staged development of the emplacement and/or buffer areas; (c) management strategies for the protection and conservation of Persoonia hirsuta; (d) management strategies for the protection and conservation of the Broad-headed Snake and the Southern Brown Bandicoot; (e) a comprehensive water monitoring program for the emplacement; (f) provide for progressive rehabilitation of the emplacement area, including through: • maximising opportunities for natural regeneration; • maximising retention of suitable habitat species; • appropriate weed and pest control strategies; and	Compliant	The Coal Wash Emplacement Area Management Plan has been submitted and approved. The plan is available on the website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents. The requirements of the plan are being implemented.

• planting only endemic species in habitat mixes appropriate for soil, slope and aspect; and		
West Cliff Coal Wash Emplacement Area Biodiversity Offset Strategy		
18. The Proponent shall provide a suitable biodiversity offset strategy to compensate for the impacts of Stage 4 of the West Cliff Coal Wash Emplacement Area, to the satisfaction of the Secretary. This offset strategy must: (a) be prepared in consultation with OEH; (b) be submitted to the Secretary for approval by the end of December 2012, or as otherwise agreed by the Secretary; and (c) fulfil "maintain or improve" and seek to fulfil "like for like or better" conservation outcomes for the vegetation associations and the Persoonia hirsuta impacted by clearing.	Compliant	Throughout the period from 2013-2016, IMC undertook numerous meetings and held discussions with senior officers of the Department of Environment and Planning, Office of Environment and Heritage, relevant Ministerial Offices and Water NSW in relation to the suitability of the proposed offsets. In March 2016, the final Strategic Biodiversity Offset was submitted to the Department of Planning and Environment for approval. The final Strategy was endorsed by OEH.
19. The Proponent shall make suitable arrangements to provide appropriate long-term security for the offset areas by 31 December 2012, or other date agreed by the Secretary, to the satisfaction of the Secretary.	Compliant	
Underground Coal Wash Emplacement Trial		
20. The Proponent shall prepare and undertake an Underground Coal Wash Emplacement Trial for the project to the satisfaction of the Secretary. The design of the trial must: (a) be undertaken in consultation with OEH; (b) be submitted to the Secretary for approval by the end of December 2012; (c) contain a two year program to undertake both pilot scale and demonstration scale trials of underground coal wash disposal; (d) include commitments for ongoing development and/or implementation of underground emplacement options following this two-year trial; and (e) include 6 monthly progress reporting to the Department and OEH.	Compliant	See Section 6.19.4. IMC received advice from DPIE on 3 September 2020 that the Department considers that South32 has met the intent of Condition 20 of Schedule 4.
PROJECT SURFACE INFRASTRUCTURE MANAGEMENT		
Gas Drainage Management Plan		
21. The Proponent shall prepare and implement a Gas Drainage Management Plan in respect of construction and use of future gas drainage infrastructure (ie for any gas drainage not subject to approval at the date of this instrument) to the satisfaction of the Secretary. This plan must be submitted to the Secretary for approval prior to the construction of any future gas drainage infrastructure and must include details of the proponent's commitments regarding: (a) community consultation; (b) landholder agreements; (c) assessment of noise, air quality, traffic, biodiversity, heritage, public safety and other impacts in accordance with approved methods; (d) avoidance of significant impacts and minimisation of impacts generally; (e) flaring or use of drained hydrocarbon gases, wherever practicable; (f) achievement of applicable standards and goals; (g) mitigation and/or compensation for significant noise, air quality and visual impacts; and	Compliant	The Gas Drainage Management Plan has been submitted and approved. The plan is available on the website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents. There was no gas drainage infrastructure installed during the reporting period.

(h) rehabilitation of disturbed sites.		
Surface Activities Management Plan		
22. The Proponent shall prepare and implement a Surface Activities Management Plan in respect of construction and use of service boreholes, pipelines, electrical infrastructure, works to public infrastructure, communications equipment and monitoring equipment, to the satisfaction of the Secretary. This plan must: (a) be submitted to the Secretary for approval by 30 April 2017, unless the Secretary agrees otherwise; and (b) include the following: • a community consultation strategy; • a protocol for landholder agreements; • commensurate assessment of noise, air quality, traffic, biodiversity, heritage, public safety and other impacts in accordance with approved methods; • measures to avoid and/or minimise impacts; • measures to achieve performance with applicable standards and goals; • mitigation measures and/or compensation for significant noise, air quality and visual impacts at privately-owned residences; and • measures for the rehabilitation of disturbance.	Compliant	The Surface Activities Management Plan has been submitted and approved. The plan is available on the website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents. There were no surface activities as detailed in the plan undertaken during the reporting period.
Upper Canal		
23. The Proponent shall not cause any damage to the Upper Canal during the construction and operation of the Appin East Mine Gas Safety Management Project.	Compliant	No impacts have been identified to date. This project has been completed.
23A. Prior to construction of the Appin East Mine Gas Safety Management Project, the Proponent shall: (a) undertake a dilapidation survey of the Upper Canal, in consultation with WaterNSW and the Heritage Division; (b) prepare final detailed design plans in consultation with WaterNSW; and (c) undertake vibration monitoring for all earthworks undertaken within 25 metres of the Upper Canal, to the satisfaction of the Secretary.	Compliant	A dilapidation survey of the canal was completed.
23B. Following the completion of construction of the Appin East Mine Gas Safety Management Project, the Proponent shall: (a) undertake a dilapidation survey of the Upper Canal in consultation with WaterNSW and the Heritage Division; and (b) repair, or pay the full costs associated with repairing, any damage to the Upper Canal caused by the project in consultation with WaterNSW and the Heritage Division, to the satisfaction of the Secretary.	Compliant	A dilapidation survey of the canal was completed. No repairs were required.
HERITAGE		
Heritage Management Plan		
24. The Proponent shall update the approved Heritage Management Plan for the project to the satisfaction of the Secretary. This plan must: (a) be prepared in consultation with OEH, the Aboriginal community, Council, any local historical organisations and relevant landowners; (b) be submitted to the Secretary for approval by 31 January 2017;	Compliant	The Heritage Management Plan has been submitted and approved. The plan is available on the website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents.

(c) include the following program/procedures for managing Aboriginal heritage management within the project area: • recording, salvaging, excavating and/or managing the Aboriginal sites and potential archaeological deposits within the site; • conserving, managing, and monitoring the Aboriginal sites outside the site; • managing the discovery of any new Aboriginal objects or skeletal remains during the project; • maintaining and managing access to archaeological sites by the Aboriginal community; and • ongoing consultation and involvement of the Aboriginal communities in the conservation and management of Aboriginal cultural heritage within the project area. (d include the following program/procedures for managing other heritage on site: • preparing conservation management plans and/or photographic and archival recording of potentially affected heritage items; • making the conservation management plans and photographic and archival recording publicly available for buildings or structures of State or National heritage significance once they are completed; • protection and monitoring of heritage items outside the site; • baseline dilapidation surveys of all heritage items potentially affected by subsidence and/or blasting; • monitoring, notifying and managing the effects of subsidence and/or blasting on potentially affected heritage items (including the Mountbatten Group); and • additional archaeological excavation and/or recording of any significant heritage items requiring demolition. Note: This plan must be suitably integrated with Heritage Management Plans that form part of Extraction Plans, and the West Cliff Coal Wash Emplacement Area Management Plan.		The requirements of the plan are being implemented. The Conservation Management Plan for Mountbatten was updated during the reporting period.
TRANSPORT		
Monitoring of Coal Transport		
25. The Proponent shall: (a) keep accurate records of the amount of coal transported from the site (on a daily basis); and (b) make these records publicly available on its website at the end of each financial year.	Compliant	Records of coal transport are maintained. These records are on the South32 website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents
Traffic Management Plan		
26. The Proponent shall update the approved Traffic Management Plan for the project to the satisfaction of the Secretary. This plan must be: (a) prepared in consultation with the RMS, WCC, WSC and the CaCC; (b) submitted to the Secretary for approval by 31 January 2017;	Compliant	The Traffic Management Plan has been submitted and approved. The plan is available on the website: https://www.south32.net/our-business/australia/illawarra-

(c) propose an appropriate program and schedule of works for any intersection upgrades to be undertaken or contributed to by the Proponent over the life of the project, including an upgrade of the intersection of West Cliff Mine Access Road and Appin Road that is generally in accordance with the requirements of the RMS and that is to be completed before the Level of Service at this intersection drops below LOS C; and (d) include strategies to manage construction traffic, including road closure protocols, community consultation and measures to avoid potential road safety conflicts with other road users.		metallurgical-coal/documents. The requirements of the plan are being implemented. The Traffic Management Plan was reviewed during the reporting period to incorporate the planned construction of the Appin North Water Treatment Plant.
26A. The Proponent shall ensure that safe access to Ventilation Shaft No.6 is provided from public roads.	Compliant	The intersection was constructed to ensure safe access to the site.
VISUAL		
Visual Amenity and Lighting		
27. The Proponent shall: a) minimise the visual impacts, and particularly the off-site lighting impacts, of the main infrastructure area and associated ancillary surface works; b) take all practicable measures to further mitigate off-site lighting impacts from the project; and c) ensure that all external lighting associated with the project complies with Australian Standard AS4282 (INT) 1995 - Control of Obtrusive Effects of Outdoor Lighting, to the satisfaction of the Secretary.	Compliant	Lighting requirements has been implemented to minimise off-site impacts.
WASTE		
28. The Proponent shall: (a) minimise the waste (including coal reject) generated by the project; and (b) ensure that the waste generated by the project is appropriately stored, handled and disposed of, to the satisfaction of the Secretary.	Non-compliant	Waste management has generally been undertaken in accordance with the Waste Management Plan. See Section 6.19. There were two instances were hydrocarbon contaminated waste was disposed of at the incorrect disposal location. Refer to Section 11 for more detail.
29. The Proponent shall prepare and implement a Waste Management Plan for the project to the satisfaction of the Secretary. This plan must be submitted to the Secretary by 30 September 2012.	Compliant	The Waste Management Plan has been submitted and approved. The plan is available on the website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents. The requirements of the plan are being implemented.
BUSHFIRE MANAGEMENT		
30. The Proponent shall: (a) ensure that the project is suitably equipped to respond to any fires on site; and (b) assist the Rural Fire Service and emergency services as much as possible if there is a fire in the surrounding area.	Compliant	Sites are equipped to manage bushfires. Asset protection zones are maintained as required.

REHABILITATION

Rehabilitation Objectives

31. The Proponent shall rehabilitate the site to the satisfaction of the Executive Director Mineral Resources. This rehabilitation must be generally consistent with the proposed rehabilitation strategy described in the EA and the PPR, and comply with the objectives in Table 10. *Table 10 Rehabilitation Objectives* **Feature** / **Objective** Mine site (as a whole): Safe, stable & non-polluting Project Surface infrastructure: To be decommissioned and removed, unless the Executive Director Mineral Resources agrees otherwise Portals and vent shafts: To be decommissioned and made safe and stable. Retain habitat for threatened species (eg bats), where practicable Watercourses of 3rd order or above subject to subsidence impacts: Restore pre-mining surface flow and pool holding capacity as soon as reasonably practicable. Hydraulically and geomorphologically stable, with riparian vegetation that is the same or better than prior to mining Other watercourses subject to subsidence impacts: Hydraulically and geomorphologically stable, with riparian vegetation that is the same or better than prior to mining Cliffs: No additional risk to public safety compared to prior to mining Other land affected by the project: Restore ecosystem function, including maintaining or establishing self-sustaining eco-systems comprised of: • local native plant species (unless the Executive Director Mineral Resources agrees otherwise); and • a landform consistent with the surrounding environment Built features damaged by mining operations: Repair to pre-mining condition or equivalent unless • the owner agrees otherwise; or • the damage is fully restored, repaired or compensated for under the *Mine Subsidence Compensation Act 1961*. Community: Ensure public safety. Minimise the adverse socio-economic effects associated with mine closure *Notes:* *1) These rehabilitation objectives apply to all subsidence impacts and environmental consequences caused by mining taking place after the date of this approval; and to all project surface infrastructure part of the project, whether constructed prior to or following the date of this approval.* *2) Rehabilitation of subsidence impacts and environmental consequences caused by mining which took place prio to the date of this approval may be subject to the requirements of other approvals (eg under a mining lease or ar Subsidence Management Plan approval) or the Proponent's commitments.* *3) In the case of the West Cliff Emplacement Area, final landform may be significantly different from that existing pr to mining, but must still be safe, stable and non-polluting and generally consistent with the surrounding landforms*	Compliant	Rehabilitation is conducted in accordance with the Mining Operations Plan/Rehabilitation Management Plan.

Progressive Rehabilitation

32. The Proponent shall carry out the rehabilitation of the site progressively, that is, as soon as reasonably practicable following disturbance.	Compliant	Rehabilitation is conducted in accordance with the Mining Operations Plan/Rehabilitation Management Plan.

Rehabilitation Management Plan

33. The Proponent shall prepare and implement a Rehabilitation Management Plan for the project, with specific reference to all surface facilities sites, to the satisfaction of the Executive Director Mineral Resources. This plan must: (a) be prepared in consultation with the Department, OEH, DPI Water, Council and the CCC; (b) be prepared in accordance with any relevant DRE guideline and be consistent with the rehabilitation objectives in the EA and in Table 11; (c) provide for detailed mine closure planning, including measures to minimise socio-economic effects due to mine closure, to be conducted prior to the site being placed on care and maintenance; (d) build, to the maximum extent practicable, on the other management plans required under this approval; and (e) be submitted to the Executive Director Mineral Resources for approval by 30 September 2012. Note: The Rehabilitation Management Plan should address all land impacted by the project, whether prior to or following the date of this approval.	Compliant	The Mining Operations Plan (MOP) has been submitted and approved. The plan is available on the website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents. The requirements of the plan are being implemented. An extension to the October 2012 to September 2019 plan was sought and approved in FY19. The period of the plan was extended to September 2020. The MOP is currently being reviewed.

BIODIVERSITY		
Appin East Mine Gas Safety Management Project		
34. By 31 January 2017, the Proponent shall enter into a suitable arrangement to offset the clearing of Cumberland Plain Woodland to develop the Appin East Mine Gas Drainage Project, to the satisfaction of the Secretary.	Compliant	The Appin East Mine Safety Gas Project Biodiversity Management Plan is Attachment 2 in the Biodiversity Management Plan.
Ventilation Shaft No. 6		
35. The Proponent shall prepare and implement a biodiversity offset strategy to compensate for the impact of Ventilation Shaft No. 6 on Cumberland Plain Woodland. The offset strategy must: (a) be prepared in consultation with OEH and to the satisfaction of the Secretary; (b) incorporate at least 8.7 hectares of existing Cumberland Plain Woodland vegetation; and (c) make suitable arrangements to protect and manage this offset area in perpetuity. Note: The 8.7 hectare size for the Biodiversity Offset Area identified above is based on Cumberland Plain Woodland vegetation on shale (HN529) in good condition. An equivalent minimum offset for Cumberland Plain Woodland on flats vegetation (HN528) in good condition is 9.4 hectares.	Non-compliant	The Biodiversity Offset Strategy was submitted to the Department however has not yet been approved. (Historical non-compliance)
Biodiversity Management Plan		
36. The Proponent shall prepare and implement a Biodiversity Management Plan for the Appin East Mine Gas Safety Management Project and Ventilation Shaft No. 6, to the satisfaction of the Secretary. The plan must: (a) be prepared in consultation with OEH, and submitted to the Secretary for approval by 31 January 2017; (b) describe how the implementation of offsets would be integrated with the overall rehabilitation of the site; (c) include: (i) a description of the short, medium and long term measures that would be implemented to: • implement offset strategy; and • manage the remnant vegetation and habitat on the site and in the offset areas; (ii) detailed performance and completion criteria for the implementation of the offset strategy; (iii) details of vegetation clearing protocols, including procedures to: • minimise the amount of the clearing required; • compensate the loss of hollow-bearing trees for the Appin East Mine Gas Safety Management Project; and • translocate the Cumberland Plain Snail (Meridolum corneovirens) affected by the clearing of Cumberland Plain Woodland for the Appin East Mine Gas Safety Management Project; (iv) details of location and timing of tree screenings to minimise visual impacts of the	Compliant	A Biodiversity Management Plans is in place. The plan is available on the website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents.

project; (v) a description of the measures that would be implemented in ongoing 5 year periods, including the procedures to be implemented to: • implement revegetation and regeneration within disturbed areas; • minimise the clearing of native vegetation; • control weeds and feral pests; • manage grazing and agriculture on site; and □ control unauthorised access; (vi) a program to monitor the effectiveness of these measures, and progress against the performance and completion criteria; (vii) a description of the potential risks to successful revegetation, and a description of the contingency measures that would be implemented to mitigate these risks; and (viii) details of who would be responsible for monitoring, reviewing, and implementing the plan.		
SCHEDULE 5: ADDITIONAL PROCEDURES		
NOTIFICATION OF LANDOWNERS		
1. As soon as practicable after obtaining monitoring results showing: (a) an exceedance of any relevant criteria in schedule 4, the Proponent shall notify affected landowners in writing of the exceedance, and provide regular monitoring results to each affected landowner until the project is again complying with the relevant criteria; and (b) an exceedance of any relevant air quality criteria in schedule 4, the Proponent shall send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the affected landowners and/or existing tenants of the land (including the tenants of any mine-owned land).	Compliant	As noted in Section 6.8 two exceedances and two non-compliances of noise impact assessment criteria were recorded in the reporting period at AE-NS5. Notifications have been made to the relevant residents as required.
INDEPENDENT REVIEW		
2. If an owner of privately-owned land considers the project to be exceeding the relevant criteria in Schedule 4, then he/she may ask the Secretary in writing for an independent review of the impacts of the project on his/her land. If the Secretary is satisfied that an independent review is warranted, then within 2 months of the Secretary's decision the Proponent shall: (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to: • consult with the landowner to determine his/her concerns; • conduct monitoring to determine whether the project is complying with the relevant criteria in Schedule 4; and • if the project is not complying with these criteria then identify the measures that could be implemented to ensure compliance with the relevant criteria; and (b) give the Secretary and landowner a copy of the independent review.	N/A	Condition not triggered during reporting period.
3. If the independent review determines that the project is complying with the relevant criteria in Schedule 4,	N/A	Condition not triggered during reporting period.

then the Proponent may discontinue the independent review with the approval of the Secretary. If the independent review determines that the project is not complying with the relevant impact assessment criteria in Schedule 4, and that the project is primarily responsible for this non-compliance, then the Proponent shall: (a) implement all reasonable and feasible mitigation measures, in consultation with the landowner and appointed independent person, and conduct further monitoring until the project complies with the relevant criteria; or (b) secure a written agreement with the landowner to allow exceedances of the relevant criteria, to the satisfaction of the Secretary. If the independent review determines that any relevant acquisition criteria in schedule 4 are being exceeded and that the project is primarily responsible for this non-compliance, then upon receiving a written request from the landowner, the Proponent shall acquire all or part of the landowner's land in accordance with the procedures in Conditions 4-5 below.		
LAND ACQUISITION		
4. Within 3 months of receiving a written request from a landowner with acquisition rights, the Proponent shall make a binding written offer to the landowner based on: (a) the current market value of the landowner's interest in the land at the date of this written request, as if the land was unaffected by the project, having regard to the: • existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and • presence of improvements on the land and/or any approved building or structure which has been physically commenced on the land at the date of the landowner's written request, and is due to be completed subsequent to that date, but excluding any improvements that have resulted from the implementation of any additional noise mitigation measures under Condition 6 of Schedule 4; (b) the reasonable costs associated with: • relocating within the Wollondilly local government area, or to any other local government area determined by the Secretary; and • obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is to be acquired; and (c) reasonable compensation for any disturbance caused by the land acquisition process. If the Proponent and landowner cannot agree on the acquisition price of the land and/or the terms upon which the land is to be acquired within 28 days after the Proponent makes its written offer, then either party may refer the matter to the Secretary for resolution. Upon receiving such a request, the Secretary will request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer to:	N/A	Condition not triggered during reporting period.

• consider submissions from both parties; • determine a fair and reasonable acquisition price for the land and/or the terms upon which the land is to be acquired, having regard to the matters referred to in paragraphs (a)-(c) above; • prepare a detailed report setting out the reasons for any determination; and • provide a copy of the report to both parties. Within 14 days of receiving the independent valuer's report, the Proponent shall make a binding written offer to the landowner to purchase the land at a price not less than the independent valuer's determination. However, if either party disputes the independent valuer's determination, then within 14 days of receiving the independent valuer's report, they may refer the matter to the Secretary for review. Any request for a review must be accompanied by a detailed report setting out the reasons why the party disputes the independent valuer's determination. Following consultation with the independent valuer and both parties, the Secretary will determine a fair and reasonable acquisition price for the land, having regard to the matters referred to in paragraphs (a)-(c) above, the independent valuer's report, the detailed report disputing the independent valuer's determination, and any other relevant submissions. Within 14 days of this determination, the Proponent shall make a binding written offer to the landowner to purchase the land at a price not less than the Secretary's determination. If the landowner refuses to accept the Proponent's binding written offer under this condition within 6 months of the offer being made, then the Proponent's obligations to acquire the land shall cease, unless the Secretary determines otherwise.		
5. The Proponent shall pay all reasonable costs associated with the land acquisition process described in Condition 4 above, including the costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of this plan at the Office of the Registrar-General.	N/A	Condition not triggered during reporting period.
SCHEDULE 6: ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING		
ENVIRONMENTAL MANAGEMENT		
Environmental Management Strategy		
1. The Proponent shall prepare and implement an Environmental Management Strategy for the project to the satisfaction of the Secretary. This strategy must: (a) be submitted to the Secretary for approval by 30 September 2012; (b) provide the strategic framework for environmental management of the project; (c) identify the statutory approvals that apply to the project; (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project;	Compliant	The Environmental Management Strategy has been submitted and approved. The plan is available on the website: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents. The requirements of the plan are being implemented.

(e) describe the procedures that would be implemented to: • keep the local community and relevant agencies informed about the operation and environmental performance of the project; • receive, handle, respond to, and record complaints; • resolve any disputes that may arise during the course of the project; • respond to any non-compliance; • respond to emergencies; and (f) include: • copies of any strategies, plans and programs approved under the conditions of this approval; and • a clear plan depicting all the monitoring required to be carried out under the conditions of this approval.		
Management Plan Requirements		
2. The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include: (a) detailed baseline data; (b) a description of: • the relevant statutory requirements (including any relevant approval, licence or lease conditions); • any relevant limits or performance measures/criteria; • the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures; (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria; (d) a program to monitor and report on the: • impacts and environmental performance of the project; • effectiveness of any management measures (see c above); (e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible; (f) a program to investigate and implement ways to improve the environmental performance of the project over time; (g) a protocol for managing and reporting any: • incidents; • complaints; • non-compliances with statutory requirements; and • exceedances of the impact assessment criteria and/or performance criteria; and (h) a protocol for periodic review of the plan. Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.	Compliant	Management Plans have been prepared in accordance with relevant guidelines. Additional information will be included where identified during the review/approval process.
Adaptive Management		

3. The Proponent must assess and manage project-related risks to ensure that there are no exceedances of the criteria and/or performance measures in Schedules 3 and 4. Any exceedance of these criteria and/or performance measures constitutes a breach of this approval and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation. Where any exceedance of these criteria and/or performance measures has occurred, the Proponent must, at the earliest opportunity: (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur; (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and (c) implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary.	Compliant	Actions have been implemented to address exceedances of criteria. Further detail is provided in Section 11.
Annual Review		
4. By 30 September 2012, and annually thereafter, the Proponent shall review the environmental performance of the project to the satisfaction of the Secretary. This review must: (a) describe the development (including any rehabilitation) that was carried out in the past financial year, and the development that is proposed to be carried out over the next year; (b) include a comprehensive review of the monitoring results and complaints records of the project over the past financial year, which includes a comparison of these results against the: • relevant statutory requirements, limits or performance measures/criteria; • requirements of any plan or program required under this approval; • monitoring results of previous years; and • relevant predictions in the EA; (c) identify any non-compliance over the past financial year, and describe what actions were (or are being) taken to ensure compliance; (d) identify any trends in the monitoring data over the life of the project; (e) identify any discrepancies between the predicted and actual impacts of the project, and analyse the potential cause of any significant discrepancies; and (f) describe what measures will be implemented over the current financial year to improve the environmental performance of the project.	Compliant	This condition has been addressed in this Annual Review.
Revision of Strategies, Plans and Programs		
5. Within 3 months of: (a) the submission of an annual review under Condition 4 above; (b) the submission of an incident report under Condition 7 below; (c) the submission of an audit report under Condition 9 below; and (d) any modification to the conditions of this approval, (unless the conditions require otherwise),	Compliant	Management Plans are reviewed as required by this condition. Improvements identified during the reviews are recorded in the Management Plan Review Log.

the Proponent shall review, and if necessary revise, the strategies, plans, and programs required under this approval to the satisfaction of the Secretary. Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the project.		
Community Consultative Committee		
6. The Proponent shall establish and operate a new Community Consultative Committee (CCC) for the project to the satisfaction of the Secretary. This CCC must be operated in general accordance with the Guidelines for Establishing and Operating Community Consultative Committees for Mining Projects (Department of Planning, 2007, or its latest version), and be operating by 30 September 2012. Notes: • The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Proponent complies with this approval. • In accordance with the guideline, the Committee should be comprised of an independent chair and appropriate representation from the Proponent, Council, recognised environmental groups and the local community.	Compliant	The IMC Community Consultative Committee is in place and operating in accordance with the Department's *Community Consultative Committee Guidelines: State Significant Projects.*
REPORTING		
Incident Reporting		
7. The Proponent shall notify, at the earliest opportunity, the Secretary and any other relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment. For any other incident associated with the project, the Proponent shall notify the Secretary and any other relevant agencies as soon as practicable after the Proponent becomes aware of the incident. Within 7 days of the date of the incident, the Proponent shall provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.	Compliant	No incidents causing or threatening to cause material environmental harm occurred during the reporting period. Exceedances of limits were notified to the Department as required.
Regular Reporting		
8. The Proponent shall provide regular reporting on the environmental performance of the project on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this approval.	Compliant	Monitoring data is reported in the 14-day EPL Report. This data is available on the South32 website at: https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents.
INDEPENDENT ENVIRONMENTAL AUDIT		
9. By the end of December 2013, and every 3 years thereafter, unless the Secretary directs otherwise, the Proponent shall commission and pay the full cost of an Independent Environmental Audit of the project. This audit must: (a) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary; (b) include consultation with the relevant agencies;	Compliant	Environmental Resources Management Australia Pty Ltd (ERM) was engaged by IMC to carry out an Independent Environmental Audit of Appin Mine in FY20 A copy of the Audit findings can be found on South32 Regulatory webpage.

(c) assess the environmental performance of the project and assess whether it is complying with the requirements in this approval and any relevant EPL or Mining Lease (including any assessment, plan or program required under these approvals); (d) review the adequacy of strategies, plans or programs required under the abovementioned approvals; and (e) recommend appropriate measures or actions to improve the environmental performance of the project, and/or any assessment, plan or program required under the abovementioned approvals. Note: This audit team must be led by a suitably qualified auditor and include experts in any field specified by the Secretary.		https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents.
10. Within 6 weeks of the completion of this audit, or as otherwise agreed by the Secretary, the Proponent shall submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report.	Compliant	The audit report, dated December 2019, was provided to the Department within the required timeframe.
ACCESS TO INFORMATION		
11. From 30 June 2012, the Proponent shall: (a) make copies of the following publicly available on its website: • the documents referred to in Condition 2 of Schedule 2; • all current statutory approvals for the project; • all approved strategies, plans and programs required under the conditions of this approval; • a comprehensive summary of the monitoring results of the project, reported in accordance with the specifications in any conditions of this approval, or any approved plans and programs; • a complaints register, updated on a monthly basis; • minutes of CCC meetings; • the annual reviews of the project; • any independent environmental audit of the project, and the Proponent's response to the recommendations in any audit; • any other matter required by the Secretary; and (b) keep this information up-to-date, to the satisfaction of the Secretary.	Non-compliant	It was identified by a community member that the CCC minutes had not been updated on the website as required. Refer to Section 11 for more detail. All approved plans, strategies and monitoring results are on the South32 webpage. https://www.south32.net/our-business/australia/illawarra-metallurgical-coal/documents

Appendix L: Independent Environmental Audit 2019 - Action Response Table

Appendix K: Progress against actions identified in the 2019 Independent Environmental Audit at Bulli Seam Operations (BSO)

Minister's Conditions of Approval PA 08_0150

Item No.	Assessment Requirement	Comment	Audit Classification	Response/Action	IMC Response December 2019	Status as at 30 June 2020
2.1	In addition to meeting the specific performance criteria established under this approval, the Proponent shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.	The audit team observed inadequate storage of chemicals, oils and waste oil including bunds filled with water and other debris, bunds with insufficient capacity and drains to sumps blocked at the maintenance workshops, laydown areas and waste storage areas at Appin East and West. A bund, sump and oily water management procedure has been developed and it is understood a review of facilities has been conducted in accordance with the procedure. Actions are to be prioritised and implemented on a risk basis and capital availability.	Observation – Non Compliance	Implement the actions from the review.	IMC will continue to review and implement hydrocarbon and chemical facility improvement projects on the basis of risk and funding availability. Bunds will continue to be maintained on an ongoing basis.	IMC will continue to review and implement hydrocarbon and chemical facility improvement projects on the basis of risk and funding availability. Bunds will continue to be maintained on an ongoing basis.
2.12	The Proponent shall ensure that all the plant and equipment used on site is: (a) Maintained in a proper and efficient condition; and (b) Operated in a proper and efficient manner.	A SAP maintenance system is in place for preventative maintenance scheduling, execution and close out. A review of scheduled versus completed maintenance is done every Monday and rescheduling undertaken as necessary. Evidence of maintenance of subcontractor vehicles was also sighted by the auditor. New maintenance plans are being developed for bund checks, but have not yet been finalised and added to SAP. New metering at LDP24 is currently undergoing	Observation - Compliant	Ensure maintenance plans and preventative maintenance schedules are set up in SAP for bund checks and new metering at LDP24.	SAP notifications have been set up for checking of bunds at Appin East, Appin West and the West Cliff Coal Preparation Plant. Notifications will be set up for checking of bunds at Appin North by 31 March 2020.	The N2 Notification has been created in SAP for cleaning of the bunds, Sumps and Separators at AN and the Site environmental Specialist has outlined the work instructions for the IMC projects department.

		commissioning and will also need maintenance plans to be developed and added to SAP maintenance system. All personnel have access to system to add maintenance requests. The environment team conduct weekly and monthly inspections at Appin North, East and West. Inspections are recorded in G360. The Environment Specialists can raise maintenance work orders directly from G360 during the inspection.			SAP notifications will be set up for the maintenance of equipment at LDP24 by 31 March 2020.	
3.9	The Proponent shall prepare and implement a program to improve its prediction and understanding of subsidence impacts (in particular sub-surface impacts and impacts on groundwater resources), to the satisfaction of the Secretary. This program must be prepared in consultation with DRE and be submitted to the Secretary for approval by 30 September 2012 and must include proposals for: (a) Testing (including core testing and in situ) to further define the mechanical, hydrogeological and geochemical properties of rock strata within each longwall domain, including: • Testing and validation of assumptions regarding regional continuity of modelled hydraulic properties (including mass porosity and permeability); • Identifying hydraulic properties of rock strata close to water-dependent ecosystems; and • Identifying the presence and distribution of iron-bearing minerals that might contribute to surface water quality impairment; (b) Installation of a regional network of deep pore pressure monitoring bores with vertical arrays of pore pressure transducers to assess and quantify the height and impacts of subsurface fracturing: (c) A census of boreholes which may be impacted by subsidence, the gathering of relevant borehole and groundwater quality data and a regular monitoring program; (d) Regular enhancement, calibration and verification of the project's regional groundwater model, and the further development of this model on a mining-domain scale; and	South32 advised that the Environmental Research Program (ERP) was submitted to the Department on 19 September 2012 but have not received approval to-date. The ERP has been implemented and Extraction Plans updated to include the results.	Administrative Non Compliance	Recommend to confirm with DPIE that the ERP is approved or confirm the actions necessary to obtain approval.	Correspondence will be submitted to DPIE requesting clarification on any actions necessary for approval of the Environmental Research Program by 31 March 2020.	Correspondence noted has not yet been submitted as the ERP required further review/ update. IMC are currently reviewing the ERP and research undertaken to date, in order to prepare for resubmission to the Department for approval.

<table>
<tr>
<td></td>
<td>(e) Regular recalibration of methodologies and models used for subsidence effect and impacts prediction, as they are applied within the project area.
Note: Results of this program are to be incorporated within subsequent Extraction Plans, including the subplans required under condition 5(g)-(l) above.</td>
<td></td>
<td></td>
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<tr>
<td>4.2</td>
<td>From the end of December 2014, the Proponent shall ensure that the noise generated by the project does not exceed the criteria in Table 2 at any residence on privately-owned land or on more than 25 percent of any privately-owned land.
Table2: Noise Criteria dB(A)
<table>
<tr><th colspan="2">Location</th><th>Day</th><th>Evening</th><th colspan="2">Night</th></tr>
<tr><td>Area</td><td>Receiver Number</td><td>LAeq (15min)</td><td>LAeq (15min)</td><td>LAeq (15min)</td><td>LA1 (1min)</td></tr>
<tr><td>Appin West Receivers south-west of Appin West</td><td>1-7, 9-11, 13, 184, 188-189</td><td>39</td><td>39</td><td>35</td><td>49</td></tr>
<tr><td>Appin West receivers near Hume Highway</td><td>185-187, 190</td><td>35</td><td>35</td><td>35</td><td>53</td></tr>
<tr><td rowspan="2">All other Appin West receivers</td><td>14, 26</td><td>45</td><td>45</td><td>35</td><td rowspan="2">53</td></tr>
<tr><td>15-25, 27-48, 50-56</td><td>43</td><td>43</td><td>35</td></tr>
</table>
<table>
<tr><th colspan="2">Location</th><th>Day</th><th>Evening</th><th colspan="2">Night</th></tr>
<tr><td>Area</td><td>Receiver Number</td><td>LAeq (15min)</td><td>LAeq (15min)</td><td>LAeq (15min)</td><td>LA1 (1min)</td></tr>
<tr><td rowspan="4">Appin No. 3 receivers</td><td>58, 67, 71, 72</td><td>41</td><td>41</td><td>41</td><td rowspan="4">49</td></tr>
<tr><td>68, 74, 75</td><td>40</td><td>40</td><td>40</td></tr>
<tr><td>69, 70, 76</td><td>39</td><td>39</td><td>39</td></tr>
<tr><td>217-218, 233, 279-282</td><td>35</td><td>35</td><td>35</td></tr>
<tr><td>Appin No.1 and</td><td>82, 91, 216</td><td>42</td><td>42</td><td>42</td><td>50</td></tr>
</table></td>
<td>Attended noise monitoring is conducted on a quarterly basis. Since 2019 noise monitoring has been conducted by ERM, prior to which it was conducted internally.
Noise levels were above the assessment criteria on three occasions during 2019. Exceedances of assessment criteria were recorded at Appin No. 1 & 2 in June and September and at Vent Shaft 6 in March 2019.
Investigations into the exceedances did not identify and significant issues with the vent fans however there is a plan to replace attenuators and inlet vanes to determine if that will resolve the issue. No regulatory action has been taken.</td>
<td>Non Compliance</td>
<td>Continue to investigate sources of noise exceedances and implement corrective actions.</td>
<td>IMC will continue to investigate sources of noise exceedances and implement corrective actions where appropriate.</td>
<td>IMC will continue to investigate sources of noise exceedances and implement corrective actions where appropriate.</td>
</tr>
</table>

	<table><tr><td>No.2 Receivers</td><td>83, 85</td><td>41</td><td>41</td><td>41</td><td></td></tr><tr><td></td><td>78, 84, 86-90, 199</td><td>40</td><td>40</td><td>40</td><td></td></tr><tr><td></td><td>212-215, 226, 228-230, 232, 234, 235</td><td>35</td><td>35</td><td>35</td><td></td></tr><tr><td>Appin Township</td><td>136, 137, 139, 142, 143</td><td>44</td><td>44</td><td>44</td><td>52</td></tr><tr><td></td><td>135</td><td>43</td><td>43</td><td>43</td><td></td></tr><tr><td></td><td>All other privately owned property</td><td>44</td><td>44</td><td>44</td><td></td></tr><tr><td>Douglas Park</td><td>All privately owned residences</td><td>45</td><td>45</td><td>39</td><td>49</td></tr><tr><td colspan="2">All other privately owned land (excluding receivers in Table 3)</td><td>35</td><td>35</td><td>35</td><td>45</td></tr></table> However, these criteria do not apply if the Proponent has a written agreement with the relevant landowner to exceed the criteria, and the Proponent has advised the Department in writing of the terms of this agreement.					
4.14	The Proponent shall provide a compensatory water supply to any owner of privately-owned land whose water supply is adversely impacted (other than an impact that is negligible) as a result of the project, in accordance with the approved Surface Water Management Plan. The compensatory water supply measures must provide an alternative long-term supply of water that is equivalent to the loss attributed to the project. Equivalent water supply must be provided (at least on an interim basis) within 24 hours of the loss being identified. If the Proponent and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution. If the Proponent is unable to provide an alternative long-term supply of water, then the Proponent shall provide alternative compensation to the satisfaction of the Secretary.	It is understood that BSO receive approximately half a dozen compensatory water requests per year. These have been historically handled through the subsidence advisory board. However, the new process is that the claims are now received directly by BSO. Short term solutions include a water truck taking water to affected landholders. Long term solutions can include new bore/s and drilling deeper at current bore. Claims are reviewed and tracked through the monthly Subsidence Review Meeting.	Observation - Compliant	Ensure BSO continues to work with DPIE to resolve compensatory water dispute.	IMC will continue to work with DPIE to resolve compensatory water requests as applicable.	IMC will continue to work with DPIE to resolve compensatory water requests as applicable.

		Currently there is one case that has been referred to the Secretary for resolution and is currently with the department for consideration.				
4.15	The Proponent shall ensure that all surface water discharges from the site (including from the Brennans Creek Dam) comply with the discharge limits (both volume and quality) set for the project in any EPL.	Refer to EPL P1.3, L2.4, L3.1	Non Compliance	Refer EPL Compliance.	IMC will continue to investigate any exceedances of water quality criteria as they occur and implement corrective actions where identified.	IMC will continue to investigate any exceedances of water quality criteria as they occur and implement corrective actions where identified.
4.23A	Prior to construction of the Appin East Mine Gas Safety Management Project, the Proponent shall: (a) Undertake a dilapidation survey of the Upper Canal, in consultation with WaterNSW and the Heritage Division; (b) Prepare final detailed design plans in consultation with WaterNSW; and (c) Undertake vibration monitoring for all earthworks undertaken within 25 metres of the upper Canal, to the satisfaction of the Secretary.	Consultation of the modification for the pipeline was undertaken with OEH, but nothing specific was conducted with the Heritage Division. OEH made no comments on the Upper Canal in their submission on the MOD. No evidence of further OEH or Heritage Division consultation was provided. Historical Heritage assessment attached to the MOD states that there is only one heritage site at this location and that impacts to this would be minor and that no further heritage assessment is required prior to commencement of the works. Extensive consultation and communication was conducted with WaterNSW during 2017, including discussions in relation to the following: • Dilapidation survey • Detail design plans • Vibration	Administrative Non Compliance	No further action required – historic ANC	No further action	No further action
4.23B	Following the completion of construction of the Appin East Mine Gas Safety Management Project, the Proponent shall:	Extensive consultation and communication was conducted with WaterNSW during 2017, including discussions in relation to the following: • Dilapidation survey	Administrative Non Compliance	No further action required – historic ANC	No further action	No further action

		• Detail design plans • Vibration monitoring • Monitoring results and photos No consultation with Heritage Division on completion of the pipeline was provided.				
4.28	The Proponent shall: (a) Minimise the waste (including coal reject) generated by the project; and (b) Ensure that the waste generated by the project is appropriately stored, handled and disposed of, to the satisfaction of the Secretary.	Two incidents were reported to the EPA related to issues of waste being inappropriately disposed at the site: 1. Contents of reagent bund removed and placed at the slurry ponds 2. Oil separation pit cleaned out and disposed at Appin North pit top. Following the incidents, the WMP has been reviewed but not yet updated. A procedure for bund, sump and oily water maintenance has been developed and includes requirements for inspection and maintenance and assessment of historic bunds for capacity. Waste is managed by Cleanaway and a new contract for Cleanaway to manage the area at Appin East and Appin West has recently been negotiated. Cleanaway will issue a notice if there is contamination of the waste streams. A Cleanaway representative is on site at Appin West full time and another representative will be shared between Appin East and north.	Non Compliance	Ensure Waste Management Plan is updated and approved.	A review of the Waste Management Plan has been undertaken and opportunities for improvement have been identified. Additional review of the Plan is anticipated pending discussions with the EPA. The Plan will be submitted to DPIE for review by 31 December 2020.	The Plan to be submitted to DPIE for review by 31 December 2020.
4.29	The Proponent shall prepare and implement a Waste Management Plan for the project to the satisfaction of the Secretary. This plan must be submitted to the Secretary by 30 September 2012.	BSO has reviewed the current Waste Management plan following recent incidents but	Observation - Compliant	Ensure Waste Management Plan is updated and approved.	As above	As above

		has not yet updated the document.				
6.1	The Proponent shall prepare and implement an Environmental Management Strategy for the project to the satisfaction of the Secretary. This strategy must: (a) Be submitted to the Secretary for approval by 30 September 2012; (b) Provide the strategic framework for environmental management of the project; (c) Identify the statutory approvals that apply to the project; (d) Describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project; (e) Describe the procedures that would be implemented to: • Keep the local community and relevant agencies informed about the operation and environmental performance of the project; • Receive, handle, respond to, and record complaints; • Resolve any disputes that may arise during the course of the project; • Respond to any non-compliance; • Respond to emergencies; and (f) Include: • Copies of any strategies, plans and programs approved under the conditions of this approval; and • A clear plan depicting all the monitoring required to be carried out under the conditions of this approval.	The EMS doesn't include "*copies of any strategies, plans and programs approved under the conditions of this approval*" but does list all relevant plans and these are generally available online with the EMS	Administrative Non Compliance	Suggest request removal or reword of condition 6.1 (f) dot point 1	Administrative Review of Project Approval, including this item, to be submitted to DPIE by 30 June 2020.	Application for administrative modification of Project Approval, including this item, has been submitted to DPIE on 3/6/2020
6.5	Within 3 months of: (a) The submission of an annual review under Condition 4 above; (b) The submission of an incident report under Condition 7 below; (c) The submission of an audit report under Condition 9 below; and (d) Any modification to the conditions of this approval, (unless the conditions require otherwise), the Proponent shall review, and if necessary revise, the strategies, plans and programs required under this approval to the satisfaction of the Secretary. *NOTE: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the project.*	Management plan reviews have generally been conducted on an annual basis however some reviews are overdue. Reviews have not been conducted following submission of incident reports. It is noted that BSO has developed a management plan review log and reviews are now being documented.	Administrative Non Compliance	Ensure management plans are reviewed and revised as required by this condition.	Management Plan Review Log in place and reviews will be undertaken as required.	Management Plan Review Log in place and reviews will be undertaken as required.

6.7	The Proponent shall notify, at the earliest opportunity, the Secretary and any other relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment. For any other incident associated with the project, the Proponent shall notify the Secretary and any other relevant agencies as soon as practicable after the Proponent becomes aware of the incident. Within 7 days of the date of the incident, the Proponent shall provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.	Ferric chloride discharge. Initial notification was to EPA hotline – refer to EPL for details. Letter to EPA (7 day report) was provided on 5/11. Incident occurred on the 18th October. DPIE was notified on Friday 19th October along with other agencies but was not provided with a report until 5 November.	Administrative Non Compliance	Ensure DPIE is provided with a written report within 7 days of the date of the incident.	DPIE will be provided a report within 7 days of any incident that has caused or threatened to cause material harm to the environment.	DPIE will be provided a report within 7 days of any incident that has caused or threatened to cause material harm to the environment.
6.10	Within 6 weeks of the completion of this audit, or as otherwise agreed by the Secretary, the Proponent shall submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report.	The last IEA Audit report was submitted on 27 March 2017, slightly later than the 6 week due-date of 7 March 2017. No evidence was provided that a response plan was submitted as required by the condition. An incorrect response plan is currently published online.	Administrative Non Compliance	No further action, historical ANC. Ensure response plan is developed and submitted with this IEA.	Correct response to recommendations for 2017 IEA is now online. Response to recommendations for 2019 IEA is this document.	Correct response to recommendations for 2017 IEA is now online. Response to recommendations for 2019 IEA is this document.

Environmental Protection Licence 2504

<table>
<tr><th>Item No.</th><th>Assessment Requirement</th><th>Comment</th><th>Audit Classification</th><th>Response/Action</th><th>IMC Response December 2019</th><th>Status</th></tr>
<tr><td>L1.1</td><td>Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.</td><td>Non-compliances with water quality limits were reported to the EPA during the reporting period. Two Penalty notices were issued by the EPA in February 2019 for failing to maintain or operate equipment in a proper and efficient manner and for causing pollution of waters due to discharged of ferric chloride to the Georges River.</td><td>Non Compliance</td><td>No further action required.</td><td>No further action</td><td>No further action</td></tr>
<tr><td>L2.1</td><td>For each monitoring/discharge point or utilisation area specified in the table/s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.</td><td>Non-compliances with water quality limits were reported to the EPA during the reporting period. Two Penalty notices were issued by the EPA in February 2019 for failing to maintain or operate equipment in a proper and efficient manner and for causing pollution of waters due to discharged of ferric chloride to the Georges River.</td><td>Non Compliance</td><td>No further action required.</td><td>No further action</td><td>No further action</td></tr>
<tr><td>L2.4</td><td>Water and/or Land Concentration Limits:</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Point 3
<table>
<tr><th>Pollutant</th><th>Units of Measure</th><th>50 percentile concen-tration limit</th><th>90 percentile concen-tration limit</th><th>3DGM concen-tration limit</th><th>100 percentile concen-tration limit</th></tr>
<tr><td>Biochemical oxygen demand</td><td>Milligrams per litre</td><td>30</td><td></td><td></td><td>50</td></tr>
<tr><td>Oil and Grease</td><td>Milligrams per litre</td><td></td><td></td><td></td><td>10</td></tr>
<tr><td>pH</td><td>pH</td><td>6.5-8.5</td><td></td><td></td><td>6.0-9.0</td></tr>
</table></td><td>Non-compliance with the concentration limits were reported to the EPA on three occasions during the reporting period. All events were investigated, and no further action taken.</td><td>Non Compliance</td><td>No further action required.</td><td>No further action</td><td>No further action</td></tr>
</table>

<table>
<tr>
<td></td>
<td>Point 22
<table>
<tr><th>Pollutant</th><th>Units of Measure</th><th>50 percentile concen-tration limit</th><th>90 percentile concen-tration limit</th><th>3DGM concen-tration limit</th><th>100 percentile concen-tration limit</th></tr>
<tr><td>Biochemical oxygen demand</td><td>Milligrams per litre</td><td>30</td><td></td><td></td><td>50</td></tr>
<tr><td>Oil and Grease</td><td>Milligrams per litre</td><td></td><td></td><td></td><td>10</td></tr>
<tr><td>pH</td><td>pH</td><td>6.5-8.5</td><td></td><td></td><td>6.0-9.0</td></tr>
</table>
</td>
<td>Two exceedances of BOD above the 100 percentile concentration limit were reported during the audit period. The exceedances were investigated, and action taken where appropriate.</td>
<td>Non Compliance</td>
<td>No further action required</td>
<td>No further action</td>
<td>No further action</td>
</tr>
<tr>
<td></td>
<td>Point 23
<table>
<tr><th>Pollutant</th><th>Units of Measure</th><th>50 percentile concen-tration limit</th><th>90 percentile concen-tration limit</th><th>3DGM concen-tration limit</th><th>100 percentile concen-tration limit</th></tr>
<tr><td>Oil and Grease</td><td>Milligrams per litre</td><td></td><td></td><td></td><td>10</td></tr>
<tr><td>pH</td><td>pH</td><td></td><td></td><td></td><td>6.5 – 8.</td></tr>
<tr><td>Total Suspended Solids</td><td>Milligrams per litre</td><td></td><td></td><td></td><td>50</td></tr>
</table>
</td>
<td>One exceedance of TSS concentration limit was reported during the audit period. Action was taken to replace filter media and subsequent samples returned to normal levels.</td>
<td>Non Compliance</td>
<td>No further action required</td>
<td>No further action</td>
<td>No further action</td>
</tr>
<tr>
<td>L3.1</td>
<td>For each discharge point or utilisation area specified below (by a point number), the volume/mass of:
a) Liquids discharged to water, or;
b) Solids or liquids applied to the area;
Must not exceed the volume/mass limit specified for that discharge point or area.
<table>
<tr><th>Point</th><th>Units of Measure</th><th>Volume/Mass Limit</th></tr>
<tr><td>18</td><td>Kilolitres per day</td><td>1000</td></tr>
<tr><td>19</td><td>Kilolitres per day</td><td>2000</td></tr>
<tr><td>22</td><td>Kilolitres per day</td><td>80</td></tr>
<tr><td>24</td><td>KL/month</td><td>93000</td></tr>
<tr><td>24</td><td>Kilolitres per day</td><td>4700</td></tr>
</table>
</td>
<td>One exceedance on Point 24 was reported during the audit period. The exceedance was investigated, and action taken where appropriate</td>
<td>Non Compliance</td>
<td>No further action required</td>
<td>No further action</td>
<td>No further action</td>
</tr>
</table>

O1.1	Licensed activities must be carried out in a competent manner. This includes: a) The processing, handling, movement and storage of materials and substances used to carry out the activity; and b) The treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.	A formal warning letter was issued by the EPA in March 2019 for failure to bund a flocculant tank at Appin North. A temporary bund was placed at the tank. The tank has since been decommissioned. The audit team observed potentially inadequate storage of chemicals, oils and waste oil including bunds filled with water and other debris, bunds with insufficient capacity and drains to sumps blocked by mud at the maintenance workshops, laydown areas and waste storage areas at Appin East and West. A bund, sump and oily water management procedure has been developed and it is understood a review of facilities has been conducted in accordance with the procedure. Actions are to be prioritised and implemented on a risk basis and capital availability. Two incidents were reported to the EPA related to issues of waste being inappropriately disposed at the site: 1. Contents of reagent bund removed and placed at the slurry ponds 2. Oil separation pit cleaned out and disposed at Appin North pit top No further action was taken by the EPA.	Non Compliance	Implement the actions of the review	IMC will continue to review and implement hydrocarbon and chemical facility improvement projects on the basis of risk and funding availability. Bunds will continue to be maintained on an ongoing basis.	IMC will continue to review and implement hydrocarbon and chemical facility improvement projects on the basis of risk and funding availability. Bunds will continue to be maintained on an ongoing basis.
O2.1	All plant and equipment installed at the premises or used in connection with the licensed activity: a) Must be maintained in a proper and efficient condition; and b) Must be operated in a proper and efficient manner	BSO reported a non-compliance with condition O2.1 relating to the discharge of ferric chloride into the Georges River in October 2018. The incident resulted from replacement of a pump	Non Compliance	Ensure maintenance plans and preventative maintenance schedules are set up in SAP for	SAP notifications have been set up for checking of bunds at Appin East, Appin West and the West Cliff	Maintenance plan numbers as follows: 1. 1W production inspection is active – 30825803

<table>
<tr><td></td><td></td><td>taken out of service for maintenance with a pump that discharged at a higher rate and caused overdosing of the sediment dam at point 19.
A SAP maintenance system is in place for preventative maintenance scheduling, execution and close out. A review of scheduled versus completed maintenance is done every Monday and rescheduling undertaken as necessary.
Evidence of maintenance of subcontractor vehicles was also sighted by the auditor.
New maintenance plans are being developed for bund checks, but have not yet been finalised and added to SAP.
New metering at LDP24 is currently undergoing commissioning and will also need maintenance plans to be developed and added to SAP maintenance system</td><td></td><td>bund checks and new metering at LDP24.</td><td>Coal Preparation Plant.

Notifications will be set up for checking of bunds at Appin North by 31 March 2020.

SAP notifications will be set up for the maintenance of equipment at LDP24 by 31 March 2020.</td><td>2. 1W electrical work order is active – 30825763
3. 4W instrument calibrations work order is active – 30825766***
4. 52W instrument work order, if this is not active it is in the process of being created - 30825773***

*** denotes maintenance plans that relate to LDP24 instrumentation calibration and replacement. the remainder are part of ongoing maintenance for electrical faults etc.</td></tr>
<tr><td rowspan="2">M6.1</td><td>For each discharge point or utilisation area specified below, the licensee must monitor:
a) The volume of liquids discharged to water or applied to the area;
b) The mass of solids applied to the area;
c) The mass of pollutants emitted to the air;
At the frequency and using the method and units of measure, specified below.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Point 4<table><tr><th>Frequency</th><th>Unit of measure</th><th>Sampling method</th></tr><tr><td>Continuous</td><td>Kilolitres per day</td><td>In line instrumentation</td></tr></table></td><td>Monitoring report indicates manual readings taken from January to December 2017 as flow meters were being replaced. EPA was not notified of the change of sampling method.
Illawarra Coal now maintains a Correspondence Register to record all correspondence with regulators and it was sighted that issues with monitoring</td><td>Administrative Non Compliance</td><td>Ensure issues with sampling equipment are notified to the EPA.</td><td>EPA will be notified as required where there are any changes to the sampling method as specified in the EPL.</td><td>EPA will be notified as required where there are any changes to the sampling method as specified in the EPL.</td></tr>
</table>

		equipment was now being notified to the EPA.				
	Point 19 **Frequency** / **Unit of Measure** / **Sampling Method** Continuous during discharge / Kilolitres per day / In line instrumentation	Monitoring report indicates manual readings taken from February to December 2017 as flow meters being replaced. Refer above	Administrative Non Compliance	Ensure issues with sampling equipment are notified to the EPA.	EPA will be notified as required where there are any changes to the sampling method as specified in the EPL.	EPA will be notified as required where there are any changes to the sampling method as specified in the EPL.
	Point 24 **Frequency** / **Unit of Measure** / **Unit of Measure** / **Sampling Method** Continuous during discharge / Kilolitres per day / KL/month per day / Flow meter and continuous logger	Monitoring report indicates manual readings taken from January to December 2017 as flow meters being replaced. Refer above	Administrative Non Compliance	Ensure issues with sampling equipment are notified to the EPA.	EPA will be notified as required where there are any changes to the sampling method as specified in the EPL.	EPA will be notified as required where there are any changes to the sampling method as specified in the EPL.
R2.2	The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred. Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.	Refer to condition L1.1 re ferric chloride incident. The incident occurred on 18/10 and the 7 day written notification was provided on 5/11.	Administrative Non Compliance	Ensure notification is undertaken as required.	The EPA will be provided a report within 7 days of any incident that has caused or threatened to cause material harm to the environment.	The EPA will be provided a report within 7 days of any incident that has caused or threatened to cause material harm to the environment.
U1.1	AIM: The aim of this Environment Improvement Program (EIP) is to improve water quality and aquatic health in the Georges River downstream of licenced discharge point 10 (Brennans creek discharge). WORKS: The licensee must undertake its commitments to works and activities described in the latest controlled version of the document titled “Illawarra Coal, Bulli Seam Operations, Georges River Environmental Improvement Program”. The latest version of the document must be displayed on the licensee’s website. In addition to the reporting and consultation commitments in document, the licensee must submit a report to the EPA by the due date recommending licence limits for discharge point 10. DUE DATE: 31 December 2018 DUE DATE: 30 June 2019	The EIP document is available on the company website. No report has been submitted for 2019. Reports for 2017 and 2018 reviewed. Monitoring of macroinvertebrates and ecotoxicity is continuing. BSO is in discussion with the EPA as to next steps to enable proposed discharge limits at Point 10 to be achieved. It is expected that another water filtration plant will be constructed at Appin North.	Non Compliance	No further action – dependent on outcome of negotiation with EPA.	IMC is continuing to engage with the EPA on the project to improve water quality in the Georges River.	IMC is continuing to engage with the EPA on the project to improve water quality in the Georges River.

	Note: This EIP follows from Pollution Reduction Programs 19 and 20.					

Consolidated Coal Leases 724 and 767

Item No.	Assessment Requirement	Comment	Audit Classification	Response/Action	IMC Response December 2019	Status
2. CCL 724 and 767	**Environmental Harm** a) The lease holder must implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation or rehabilitation of any activities under this lease. b) For the purposes of this condition: i. Environment means components of the earth, including: • Land, air and water, and • Any layer of the atmosphere, and • Any organic or inorganic matter and any living organism, and • Human-made or modified structures and areas, and includes interacting natural ecosystems that include components referred to in paragraphs (A)-(C). ii. Harm to the environment includes any direct or indirect alteration of the environment that has the effect of degrading the environment and, without limiting the generality of the above, includes any act or omission that results in pollution, contributes to the extinction or degradation of any threatened species, populations or ecological communities and their habitats and causes impacts to places, objects and features of significance to Aboriginal people.	Refer to CoA and EPL for air and water quality non-compliances. Erosion and sediment control was noted around construction works. Pit top areas run into stormwater management system.	Non Compliance	Refer to CoA and EPL for air and water quality non-compliances.	No further action.	No further action.

EPBC Approval 2010/5350

Item No.	Assessment Requirement	Comment	Audit Classification	Response/Action	IMC Response December 2019	Status
5	**Shale Sandstone Transition Forest** The person taking the action must provide to the Minister for approval within 1 year of the date of this approval, a plan for the management of the Shale / Sandstone Transition Forest offset. The approved Shale / Sandstone Transition Forest offset Management Plan (the Forest plan) must include but not be limited to: a. Specific management measures to control weed species, pest animals, public access and otherwise manage the Shale / Sandstone Transition Forest offset so that the ecological condition of the Shale / Sandstone Transition Forest is maintained or enhanced to a higher condition than that being lost as a result of this action; i. This may be demonstrated through comparisons of floristic diversity and structure, vegetation health and/or percentage cover of introduced or weed plants; b. An outline of key milestones and performance objectives; c. Measures for annual monitoring of the ongoing quality (as measured against the ecological survey information referred to at Conditions 4 a) of the Shale / Sandstone Transition Forest Offset and the effectiveness of management actions. Reports containing the monitoring results must be submitted to the department within 30 days of every 12 month anniversary of the date the Shale / Sandstone Transition Forest offset is protected in perpetuity; and d. Corrective actions and contingency measures to be implemented should monitoring indicate a decrease in the quality of the Shale / Sandstone Transition Forest conservation offset. The approved Forest plan must be implemented within 2 years of the date of this approval.	Approval of the original plan outside audit period. Monitoring Report 2017 (covering once a year monitoring in November 2016), submitted 23 March 2017 Monitoring Report 2018 (covering monitoring October 2017 to June 2018 under BioBanking), submitted 31 May 2018. Monitoring Report 2019 (covering April 2018-May 2019 under BioBanking) submitted 9 august 2019 The submission email for the 2018 monitoring Report was accompanied by a note explaining why this report was submitted later than "*30 days every 12 month anniversary of the date the Offset is protected in perpetuity*" as a requirement of Condition 5c (which therefore required submission by 2-3 March 2018). South32 had been holding off sending the report until they received the Departments decision to revise Condition 5 in May 2018. Submission of the 2017 and 2019 reports were also outside of the requirements of 5c and no explanations for the late submission were provided in the submission emails. It is noted that condition 5A states that "*annual reporting required under that (BioBanking) scheme may be provided to the department in place of the reports containing monitoring results required under Condition 5C*", thereby implying that the time of submission would also be according to the BioBanking scheme requirements, notwithstanding the final clause of	Administrative Non Compliance	It is recommended that confirmation be sought from the Department that the required timing for submission of monitoring report in Condition 5c be changed to that required under the BioBanking scheme.	Correspondence will be provided to DotEE requesting a revision to report submission dates by 30 June 2020.	Request submitted.

		this Condition 5c ("*on the proviso that all measures specified in Condition 5 are covered*"). Monitoring reports provide evidence of corrective actions. Photographs of photo points are compared to 2017 photo points, indicating changes in quality.				
18	The audit must be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Minister.	The endorsement of the audit team was not received from the Minister prior to conducting the audit on 24 October 2019, but until 9 December 2019.	Administrative Non Compliance	No further action required.	No further action.	No further action.

EPBC Approval 2010/5722

Item No.	Assessment Requirement	Comment	Audit Classification	Response/Action	IMC Response December 2019	Status
3	The person taking the action must submit a Vegetation Management plan to the Minister for approval. The plan must address the following requirements: (a) Make reference to the Biodiversity Offset strategy as outlined in condition 2; (b) Measures to protect the population of *Pimelea spicata* found in the area proposed for protection through condition 2. These must: i. Monitor the *Pimelea spicata* population to determine the success of management or the need for intervention; ii. Include the establishment of thresholds that if reached would require intervention measures; and iii. Identify what further management measures must be implemented of a threshold is reached (c) Rehabilitate MZ2, MZ3 and MZ4 (Annexure B) using appropriate native species with input from a suitably qualified CPW expert; and (d) The plan must include key milestones, performance indicators, corrective actions and timeframes for the completion of all	Monitoring reports cover the offset area, but there is no evidence of monitoring or maintenance within rehabilitated vegetation within MZ2-4. During field inspection, it appeared that only the noise mitigation bund/wall had been planted with trees. Several areas were observed to be un-related (e.g. MZ 2 and parts of MZ 4) or exhibited rehabilitation failure, as evidenced by the numerous old plastic protective sleeves without plants growing within. Areas of weeds were also observed.	Non Compliance	Survey to be undertaken by a suitably qualified expert of plant density/composition/survival in rehabilitated zones, and corrective measures to be taken where required.	Recommendation noted however IMC has a requirement to maintain an asset protection zone around the Ventilation Shaft 6 fan site. Weed control works will be undertaken as required.	Recommendation noted however IMC has a requirement to maintain an asset protection zone around the Ventilation Shaft 6 fan site. Weed control works will be undertaken as required.

	actions outlined in the plan for the life of the project. The approved plan must be implemented. The person taking the action must not clear any CPW until the Minister approves the plan.					

Noise Management Plan

Item No.	Assessment Requirement	Comment	Audit Classification	Response/Action	IMC Response December 2019	Status
4.5	The Proponent shall prepare and implement a Noise Management Plan for the project to the satisfaction of the Secretary. This plan must: a) be prepared in consultation with EPA and WSC, and submitted to the Secretary for approval by 30 September 2012; b) include provisions to ensure that the road haulage fleet attains and maintains best practices in both equipment and operations; c) seek to minimise road traffic noise generated by employee commuter vehicles on public roads, particularly Douglas Park Drive and Macarthur Road; d) describe the measures that would be implemented to ensure compliance with the relevant conditions of this approval; e) outline procedures to manage responses to any complaints or issues raised by the owners of affected residences; and f) include a noise monitoring program that: • uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the project; and • includes a protocol for determining exceedances of the relevant conditions of this approval.	It is understood the date of the NMP was updated by the document controller prior to publishing to the system – the actual date of the document pre-dates the Department approval.	Administrative Non Compliance	Ensure those responsible for publishing documents are aware that they are approved documents.	Document Controllers have been advised of this requirement.	Document Controllers have been advised of this requirement.

Air Quality & Greenhouse Management Plan

Item No.	Assessment Requirement	Comment	Audit Classification	Response/Action	IMC Response December 2019	Status
4.12	The Proponent shall prepare and implement a detailed Air Quality & Greenhouse Gas Management Plan for the project to the satisfaction of the Secretary. This plan must: a) be prepared in consultation with EPA, and submitted to the Secretary for approval by 30 September 2012; b) describe the measures that would be implemented to ensure compliance with the relevant conditions of this approval, including consideration of applying a real-time air quality management system that employs both reactive and proactive mitigation measures; c) describe the measures that would be implemented to minimise the release of greenhouse gas emissions from the site; and d) include an air quality monitoring program that uses a combination of high volume samplers and dust deposition gauges to evaluate the performance of the project, and includes a protocol for determining exceedances with the relevant conditions of this approval.	Consultation was not undertaken in accordance with the condition when the plan was revised. It was advised that consultation for the plan was completed at the time the plan was originally developed. The Air Quality, Greenhouse Gas & Energy Management Plan contains a commitment to undertake routine sensory odour assessments however it was confirmed that these are no longer conducted.	Administrative Non Compliance	Ensure that revised management plans are provided to relevant stakeholders for consultation prior to submission for approval. The process for assessing odour should be reviewed and the plan updated accordingly.	Management Plans will be provided to relevant stakeholders and other regulatory agencies for review as required. It is noted that stakeholder consultation is a requirement when the management plan is first developed, and not a requirement of the condition for each review of management plans. Any odours identified during inspections by environmental personnel will be investigated. This will be reflected in the next review of the Air Quality and Greenhouse Gas Management Plan, to be completed by 31 December 2020.	Review of Air Quality and Greenhouse Gas Management Plan to be completed by 31 December 2020.

Surface Water Management Plan

Item No.	Assessment Requirement	Comment	Audit Classification	Response/Action	IMC Response December 2019	Status
4.16	The Proponent [must] update and implement the Surface Water Management Plan for the project to the satisfaction of the Secretary. This plan must be prepared in consultation with DPI Water and EPA by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary, and submitted to the	The SWMP was approved by the secretary on 27 June 2018. The SWMP generally addresses the requirements of the condition, excluding the issues identified below.	Administrative Non Compliance	The SWMP needs to be updated to include potable water minimisation controls in SWMP.	There are significant changes planned to surface water management	Surface Water Management Plan to be reviewed by 31

	Secretary for approval by 31 January 2017. This plan must include: a) a comprehensive water balance for the project, that includes details of: • sources and security of water supply and water make; • water use; and • water discharges; and b) management plans for the surface facilities sites, that include: • a detailed description of water management systems for each site, including: – clean water diversion systems; – erosion and sediment controls; and – any water storages; • measures to minimise potable water use and to reuse and recycle water; • a Water Response Plan, which describes the measures and/or procedures that would be implemented to: - investigate, notify and mitigate any ground or surface water exceedances; - minimise, prevent or offset any adverse impacts to ground or surface water resources; - provide compensatory water supply to any owner of privately-owned land whose water supply is adversely impacted (other than an impact that is negligible) as a result of the project; and • measures to comply with surface water discharge limits; • implementation of any pollution reduction program relating to mine water discharges from Brennans Creek Dam and identification of 5, 7 and 10 year commitments to substantially reduce the impacts on biota of salinity and other pollutants in such discharges; and • monitoring and reporting procedures including:	The SWMP does not include a Water Response Plan however the plan refers to the relevant extraction and subsidence management plans which include Trigger Action Response Plans (TARP) for water impacts. Spill response procedures and emergency response plan were sighted by the auditor that address the requirements of a Water Response Plan, these are not captured in the SWMP and these documents are not referred to in the SWMP. Through discussions it is understood that in the event of a risk to impacting the surface water management system, BSO have the ability to interlock dams, and move water around site as needed, but this is not a documented process. Recently completed Appin North water movement/management figure has been completed. An opportunity to include this in the SWMP to demonstrate how surface water can be controlled around the site. Appin West also have a figure. Appin East doesn't have this plan. The SWMP does not adequately address "potable water minimisation controls". Controls are in place, such as the water filtration plant at Appin West, replaces Sydney Water use. Plans for Appin North to also have filtration plant that will also reduce need for Sydney Water use. The PRP relating to the semi-closed loop system for washery water is ongoing. Refer to EPL condition U1.1.		Update the SWMP to include details of interlocking of dams to control water.	at Appin North in 2020. These requirements will be incorporated in the next review of the Surface Water Management Plan by 31 December 2020.	December 2020.

	– collection of baseline data on surface water quality in creeks and other waterbodies that could potentially be affected by the project; and – surface water and stream health impact assessment criteria. *Note: This plan must be suitably integrated with the Water Management Plans that form part of Extraction Plans.*					

West Cliff Coal Emplacement Management Plan

Item No.	Assessment Requirement	Comment	Audit Classification	Response/Action	IMC Response December 2019	Status
4.17	The Proponent shall prepare and implement a West Cliff Coal Wash Emplacement Area Management Plan for the project to the satisfaction of the Secretary. This plan must be prepared in consultation with OEH and be submitted to the Secretary for approval by the end of June 2013. This plan must include: a) detailed design plans which include options for reducing, avoiding and/or managing impacts on Aboriginal heritage sites in and adjacent to the southwestern fringe of the proposed Stage 4 footprint (including sites 52-2-2228/3617, 52-2-1373, 52-2-3533/3613 and 52-2-3506); b) management strategies to ensure no impacts to Aboriginal heritage site 52-2-3505 other than negligible impacts, including consideration of potential staged development of the emplacement and/or buffer areas; c) management strategies for the protection and conservation of *Persoonia hirsuta*; d) management strategies for the protection and conservation of the Broad-headed Snake and the Southern Brown Bandicoot; e) a comprehensive water monitoring program for the emplacement; f) provide for progressive rehabilitation of the emplacement area, including through: • maximising opportunities for natural regeneration; • maximising retention of suitable habitat species; appropriate weed and pest control strategies; and	As required by 4.17(a) and as stated in the WCCWEAMP, detailed design plans for Stage 4 are not included in the plan. It is understood that these plans are still being developed, as Stage 4 has yet to commence. As per figure Plan 5 – Cultural Heritage Plan site 52-2-3505 is currently proposed to be avoided, along with 52-2-2228/3617 and 52- 2-3506. It is understood that the plan was submitted and approved by the Secretary in 2016. The plan was then submitted to the Federal Government for approval under EPBC and due to the length of time taken to review asked for the date to be updated to 2017. The revision number remained the same and no updates to the plan were made. The plan otherwise addresses the requirements of this condition.	Observation - Compliant	Ensure that detailed design plans for Stage 4, when developed, are included in the WCCWEAMP.	Detailed design plans for Stage 4 will be included in the WCCWEAMP prior to commencing Stage 4.	Detailed design plans for Stage 4 will be included in the WCCWEAMP prior to commencing Stage 4.

	• planting only endemic species in habitat mixes appropriate for soil, slope and aspect					

Traffic Management Plan

Item No.	Assessment Requirement	Comment	Audit Classification	Response/Action	IMC Response December 2019	Status
4.26	The Proponent shall update the approved Traffic Management Plan for the project to the satisfaction of the Secretary. This plan must be: a) prepared in consultation with the RMS, WCC, WSC and the CaCC; b) submitted to the Secretary for approval by 31 January 2017; c) propose an appropriate program and schedule of works for any intersection upgrades to be undertaken or contributed to by the Proponent over the life of the project, including an upgrade of the intersection of West Cliff Mine Access Road and Appin Road that is generally in accordance with the requirements of the RMS and that is to be completed before the Level of Service at this intersection drops below LOS C; and include strategies to manage construction traffic, including road closure protocols, community consultation and measures to avoid potential road safety conflicts with other road users.	The TMP was approved by the Secretary on 26 July 2018. It was advised that consultation for the plan was completed at the time the plan was originally developed. No material changes were made to the 2017 update and the plan was approved without request for further consultation. The TMP does not include a/any schedule of works for intersection upgrades. States "*The program and schedule of upgrade works for the intersection will be prepared by RMS*", and it is understood that no intersection works were undertaken for the period, none proposed currently. The plan does not include details of the upgrade of the intersection of West Cliff Mine Access Road and Appin Road. This work was completed prior to the audit period, and therefore no longer relevant. It is suggested this condition is updated to remove this requirement. The TMP does not adequately address construction traffic requirements. It was advised this is generally captured by a construction management plan developed for any relevant construction activities.	Observation - Compliant	Suggested that condition 4.26 is updated to remove the requirement around details for upgrade "*of the intersection of West Cliff Mine Access Road and Appin Road*", as this has been completed and is no longer relevant. Suggest TMP is updated to include a commitment to develop and detail construction traffic requirements for each construction project.	These requirements will be incorporated in the next review of the Traffic Management Plan by 31 December 2020.	Traffic Management Plan currently under review.