



**ENHANCE PLACE MINE**

**2020**

**ANNUAL ENVIRONMENTAL  
MANAGEMENT REPORT**

**(Small Mine Version)**

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## APPENDIX A

### *ENHANCE PLACE MINE PLANS*

## APPENDIX B

### *REHABILITATION MONITORING REPORT 2020*

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### *STOCK MANAGEMENT PLAN*

## APPENDIX D

### *REHABILITATION AND COMPLETION ASSESSMENT REPORT*

## 1 INTRODUCTION

### 1.1 BACKGROUND

Enhance Place Pty Ltd (Enhance Place) was established in 1997 to recover remnant coal from areas that had been previously mined in the 1950's using open cut mining methods. A principle objective of Enhance Place was to provide the means to improve the appearance and general amenity of the land through the rehabilitation of land previously impacted by mining.

Enhance Place operated the Enhance Place Open Cut Coal Mine (Enhance Place Mine) from 1997 until its closure in June 2005 following the extraction of all economically feasible coal reserves.

The Enhance Place Mine is located in the Western Coalfields of NSW at Blackmans Flat, 15km northwest of Lithgow on the southern side of the Castlereagh Highway. The site is approximately 3km southeast of Mount Piper Power Station (Plan **1a & 1b, Appendix A**).

The Enhance Place Mine extracted coal over the abandoned Eastern Main Underground Mine workings (Eastern Main Mine). The Eastern Main Mine operated as a Bord and Pillar mine until 1975. Mining activities at the Enhance Place Mine were undertaken by six employees, being augmented for short periods by secondment of maintenance, operating or rehabilitation personnel from other areas of the contractor's operations as required.

Since the cessation of open cut operations in June 2005, activities at the Enhance Place Mine have included surface water control, rehabilitation of land-form with seeding and fertilisation, feral animal and weed control programmes have been implemented with final rehabilitation completed.

During the 2020 reporting period, ongoing management of the site was undertaken in the form of targeted weed and livestock management.

### 1.2 MINE PRODUCTION, PRODUCT AND MARKET

The mine ceased production at the end of June 2005 when all coal reserves had been extracted. There was no coal production or active mining operations undertaken at Enhance Place during the 2020 reporting period. Details of production history are detailed in **Table 1**.

**Table 1**      *Production History*

<b>Year</b>	<b>Production Total (Tonnes)</b>
1998	73,632
1999	86,007
2000	77,804
2001	77,579
2002	77,109
2003	101,851
2004	89,000
2005	27,228
Total	609,940

## 2 TITLE BLOCK

<b>Name of Mine</b>	Enhance Place Mine		
<b>Mining Titles/Leases</b>	ML 1458	<b>Expiry Date</b>	28/11/2020
<b>Mining Titles/Leases</b>	ML 1520	<b>Expiry Date</b>	28/08/2023
<b>Historical Mining Titles/Leases</b>	ML 1422	<b>Expiry Date</b>	3/12/2018
<b>Name of Leaseholder</b>	Enhance Place Pty Ltd		
<b>Name of Mine Operator</b>	As above		
<b>Postal Address</b>	Enhance Place Pty Ltd		
	PO Box 202		
	Wallerawang, N.S.W, 2845		
<b>Telephone</b>	(02) 6355 7893		
<b>Fax</b>	(02) 6355 7894		
<b>Email</b>	<a href="mailto:Graham.goodwin@energyaustralia.com.au">Graham.goodwin@energyaustralia.com.au</a>		

### 2.1 LAND OWNERSHIP AND LAND USE BOUNDARIES

Land ownership of the Enhance Place Mine consists of private freehold and crown land. The current status of land ownership, tenure and pre-mining land use at the Enhance Place Mine is summarised in **Table 2**. The landowner and the respective boundaries are shown in **Plan 3, Appendix A**.

**Table 2** Land Ownership

Land Owner/Occupier	Lot/DP	Tenure (freehold leasehold)	Pre-mining land use
Mr & Mrs J. Cherry	301/751636	Freehold	Grazing
Mrs J. Cope	302/751636 303/751636	Perpetual Lease	Grazing
D & J Hunt	370/751651	Freehold	Grazing
State of NSW - Glen Davis Recreation Area (R. 59960)	304/751636 305/751636	Crown Land	Grazing
State of NSW	7004/1026541	Crown Land	Bush/grazing
M & L Morris	101/1145705	Freehold	Grazing

## 2.2 CONSENTS AND LICENCES

**Local Council Area:** Lithgow City Council Development Consent 36/99

**Development Consent:** Granted   
 Required but not granted   
 Not required

**Do licences granted by other agencies apply to the mine activities?** Yes  No

EPL No.6312 surrendered 28/09/2005 after cessation of mining

National Parks and Wildlife Services [N/A]

Dam Safety [N/A]

Other [N/A]

## 2.3 MOP AND AEMR PERIOD

<b>MOP Commencement Date</b>	31 May 2013	<b>Completion Date</b>	16 January 2024
<b>AEMR Start Date</b>	1 January 2020	<b>End Date</b>	31 December 2020

There have been no amendments made to the Enhance Place Care and Maintenance Mining Operations Plan during the 2020 AEMR period.

## 2.4 SIGNATURES

**Leaseholder – Enhance Place Pty Ltd**

**Signature**



**Name** Graham Goodwin

**Date** 12.02.2021

**Environmental Officer**

**Signature**



**Name** Ben Eastwood

**Date** 12.02.2021

### 3 ACTIONS FROM 2019 AEMR

There were no actions noted during the review of the 2019 Enhance Place AEMR.

### 4 MINING OPERATIONS DURING THE REPORTING PERIOD

There were no mining activities undertaken at the Enhance Place Mine during the reporting period as mining ceased on the 29 June 2005. The production and waste summary for 2020 is presented in **Table 3**.

**Table 3** *Production and Waste Summary*

	Production and Waste (cubic metres)		
	Start of Reporting Period	At end of Reporting Period	End of next reporting(estimated)
<b>Topsoil stripped</b>	Nil	Nil	Nil
<b>Topsoil used/spread</b>	Nil	Nil	Nil
<b>Waste Rock</b>	Nil	Nil	Nil
<b>Ore</b>	Nil	Nil	Nil
<b>Processing Waste</b>	Nil	Nil	Nil
<b>Product</b>	Nil	Nil	Nil

### 5 REHABILITATION DURING THE REPORTING PERIOD

The primary domain at the Enhance Place Mine is the Overburden Emplacement Area, which is subdivided into two secondary domains consisting of rehabilitated pasture areas and rehabilitated woodland (treed) areas. The location of rehabilitation domains are shown in **Plan 2, Appendix A**.

Rehabilitation activities are conducted in accordance with best practice management to ensure the rehabilitation completion criteria for the site is achieved. The rehabilitation activities undertaken during the 2020 AEMR reporting period included weed management and stock management. The recommendations outlined in the 2019 Enhance Place Mine Rehabilitation Monitoring Report (Ref [1]) and the 2020 Enhance Place Mine Rehabilitation Monitoring Report (Ref [2]) were implemented at the site during the 2020 reporting period for both pasture and treed rehabilitation areas.

A summary of the rehabilitation actions undertaken during the 2020 period is presented in **Table 4**. During 2020 a field survey was undertaken on the 2 September, in order to monitor the progress of rehabilitation to agreed performance indicators and completion criteria detailed in the Enhance Place Mine Care and Maintenance Plan MOP (Ref [3]). The survey included visiting four quadrats and two transects representing rehabilitated pasture and treed areas. The location of the quadrats are shown in **Figure 1**. Results of this field survey is detailed in the Enhance Place Mine Rehabilitation Monitoring Report 2020 (Ref [2]) located in **Appendix B**.



**Figure 1** Enhance Place Rehabilitation Survey Quadrat Locations (Ref [2])

## 5.1 EROSION MANAGEMENT

The final landform shaping and drainage control structures have previously been completed at Enhance Place Mine and the potential for major erosion (gully or tunnel erosion; mass movement) is considered to have been mitigated as there is no evidence of significant erosion occurring. However, surface erosion may occur in areas where rehabilitation has not been successful, or as a result of overgrazing. During the 2020 reporting period, minor surface erosion was identified in the pasture rehabilitation areas, with the combined bare surfaces observed to be less than 20m<sup>2</sup> per hectare, which was determined to be satisfactory. Exposed soils within the treed rehabilitation areas were also subject to wind and minor rill erosion.

There was no requirement to undertake any repairs to erosion or drainage control structures during the reporting period.

## 5.2 SOIL STABILISATION

Cracking soils and waterlogging may occur in areas of overgrazing; where rehabilitation has not been successful; or adjacent the highwall as a result of subsidence and soil movement. During the 2020 reporting period, no soil cracking was observed.

There was no requirement to repair soil cracking during the reporting period.

### 5.3 SURFACE DRAINAGE AND STRUCTURE MANAGEMENT

Surface water pooling may occur as a result of inappropriate or inadequate drainage structures. Sediment ponds and contour drains have previously been constructed where appropriate and there is no evidence of failure to date. Sediment ponds and contour drains were noted to be in good operational condition during the survey. No impediments were observed within drainage structures and there was no evidence of erosion or sedimentation associated with drainage structure. There was little evidence of surface water flow occurring outside of established contour drainage lines.

There was no requirement to repair sediment ponds and contour drains during the reporting period.

### 5.4 PASTURE IMPROVEMENT

The rehabilitation assessment area (refer **Figure 1**) is privately owned with stock management being the responsibility of the landowner (Morris), refer to **Plan 3, Appendix A** for the landowner boundaries. Enhance Place has previously installed fencing to create three fenced and watered paddocks to assist the landowner with stock management and consequently assist with rehabilitation of the pasture. A Stock Management Plan (First Field Environmental, April 2016) was implemented during the reporting period to provide guidance in relation to stocking rates and grazing management at the Morris property (refer section 5.2).

Monitoring of pasture conditions was undertaken in September 2020 and detailed in the Rehabilitation Monitoring Report (Ref [2]). Monitoring of pasture conditions is undertaken at quadrats 1, 2, 3 and 4, as shown in **Figure 1**. Groundcover in quadrats 1, 2 and 4 have increased from 85% total living ground cover in 2019 to 90% in 2020. Groundcover during the September 2020 field survey is shown in **Photographs 1 – 4**.





**Photograph 1** *Quadrat 1 from southwest looking northeast*



**Photograph 2** *Quadrat 2 from southwest looking northeast*



**Photograph 3** *Quadrat 3 from southwest looking northeast*



**Photograph 4** *Quadrat 4 from southwest looking northeast*

As groundcover conditions were considered satisfactory, and due to the challenges and restrictions imposed by the Coronavirus Pandemic application of fertiliser was not undertaken during the 2020 reporting period.

## 5.5 TREED AREA IMPROVEMENT

Improvement to the treed area was not required to be undertaken during 2020. No watering occurred during the 2020 reporting period due to restrictions imposed by the Coronavirus Pandemic. Additionally, due to increased rainfall the requirement to water was considered low (refer **Section 9**).

Routine maintenance inspections of the treed rehabilitation area were undertaken to check the condition of trees and for the manual removal of weeds from trees and surrounding tree guards.

Total living groundcover in the treed rehabilitation areas was noted to increase from 80% during 2019 to 90% at transect 8. The total living groundcover at transect 7 has remained stable since 2019 at 80%. Establishment of vegetation in the treed rehabilitation areas is considered good with more than 80% of native forest indicator species represented. A photo of the treed area during October 2020 is shown in Photograph 5

*Transect 8 looking south* **Photograph 5.**



**Photograph 5** *Transect 8 looking south*

## 5.6 WEED MANAGEMENT

Management of noxious weeds at the Enhance Place Mine are controlled in accordance with the Weed Management Plan documented in Appendix C of the Enhance Place Mine Stock Management Plan (Ref [3]). The weed management undertaken during the reporting period consisted of spot spraying for African Lovegrass, Blackberry, St John's Wort and Sweet Briar at the frequencies presented in the management plan.

The 2020 rehabilitation survey undertaken in September 2020 indicated that weeds including African lovegrass comprise <10% of the pasture sward and is considered satisfactory. These outbreaks have been subjected to ongoing chemical control and were not observed to be growing or producing seed.

## 5.7 STOCK MANAGEMENT

A Stock Management Plan was commissioned for the Enhance Place Mine to aid in the management of the rehabilitated pasture areas which were affected by compaction and overgrazing by the landowner's stock (refer **Appendix C**).

The Enhance Place Mine Stock Management Plan (Ref [4]) included the utilisation of the existing fencing layout to assist with time control or rotational grazing to improve pasture within the three paddocks. Appropriate stocking rates for each paddock were determined in accordance with the carrying capacity of the pasture conditions.

A collaboration between Enhance Place Mine Pty Ltd and the landowners, (Morris), led to the exclusion of grazing stock from various paddock areas in late 2016 and throughout 2017 in an effort to improve pasture conditions. The stock exclusion was beneficial for the pasture rehabilitation, with the pasture in each paddock now consisting of a good mix of species which appears to withstand grazing pressure. Pasture conditions during 2020 was considered to be satisfactory with a 5% increase observed in total living cover was when compared to 2019.

## 5.8 REHABILITATION ACTIONS AND RECOMMENDATIONS

A summary of the key findings and recommendations detailed in the Annual Rehabilitation Monitoring Reports are presented in **Table 4**. The completed actions during each AEMR period are also detailed in **Table 4**.

**Table 4** Rehabilitation Works Completed 2016 – 2020 (Ref [1, 2, 5, 6, 7])

EP Commitments as per MOP	Year	Enhance Place Rehabilitation Monitoring Report Recommendations	Rehabilitation Works Completed
<b>Pasture Areas</b>			
Erosion Management; Soil Stabilisation; Weed Management; & Pasture Improvement.	2016	<ul style="list-style-type: none"> <li>Re-sow water logged areas and exposed soils in depressions with rye grass.</li> </ul>	<ul style="list-style-type: none"> <li>Waterlogged areas and depressions did not require re-sowing as water infiltrated quickly and existing pasture was still viable.</li> </ul>
		<ul style="list-style-type: none"> <li>Increase and maintain groundcover in pasture rehabilitation areas to at least 95% to mitigate the potential for soil erosion and to ensure that groundcover is comparable to cover at the pasture analogue site.</li> </ul>	<ul style="list-style-type: none"> <li>Fertiliser (lime &amp; gypsum) applied over pasture areas- success is subject to horse grazing management. Pasture rehabilitation is currently between 75-90%, which satisfies the MOP completion criteria.</li> </ul>
		<ul style="list-style-type: none"> <li>Continue to monitor stocking rates in accordance with the Stock Management Plan (SMP).</li> </ul>	<ul style="list-style-type: none"> <li>SMP implemented - paddock 1 exclusion Sep to Dec 2016.</li> <li>Monitoring and Evaluation of SMP pasture rehabilitation (January 2017) indicated successful rehabilitation of pasture in paddock 1.</li> </ul>
	2017	<ul style="list-style-type: none"> <li>Continue to monitor percentage groundcover.</li> </ul>	<ul style="list-style-type: none"> <li>Field surveys to determine percentage groundcover conducted in March and August 2017</li> </ul>
		<ul style="list-style-type: none"> <li>Continue to monitor stocking rates in accordance with the Stock Management Plan.</li> </ul>	<ul style="list-style-type: none"> <li>Stocking rates were recorded during field surveys in March and August 2017.</li> </ul>
	2018	<ul style="list-style-type: none"> <li>Continue to monitor percentage groundcover.</li> </ul>	<ul style="list-style-type: none"> <li>Field surveys to determine percentage groundcover conducted in September 2018.</li> </ul>
		<ul style="list-style-type: none"> <li>Continue to monitor stocking rates in accordance with the Stock Management Plan.</li> </ul>	<ul style="list-style-type: none"> <li>Stocking rates were recorded during the field survey in September 2018.</li> </ul>
	2019	<ul style="list-style-type: none"> <li>Continue to monitor percentage groundcover.</li> </ul>	<ul style="list-style-type: none"> <li>Field surveys to determine percentage groundcover conducted in September 2019</li> </ul>
		<ul style="list-style-type: none"> <li>Continue to monitor stocking rates in accordance with the Stock Management Plan.</li> </ul>	<ul style="list-style-type: none"> <li>Stocking rates were recorded during the field survey in September 2019.</li> </ul>
	2020	<ul style="list-style-type: none"> <li>Continue to monitor percentage groundcover, species composition and erosion.</li> </ul>	<ul style="list-style-type: none"> <li>Field surveys of pasture area conducted in September 2020.</li> </ul>
		<ul style="list-style-type: none"> <li>Continue to monitor stocking rates in accordance with the Stock Management Plan.</li> </ul>	<ul style="list-style-type: none"> <li>Stocking rates were recorded during the field survey in September 2020</li> </ul>
	<b>Treed Areas</b>		
Erosion Management; Soil Stabilisation; Weed Management; & Treed area Improvement.	2016	<ul style="list-style-type: none"> <li>Increase groundcover of grasses and broadleaf herbs at treed rehabilitation areas to &gt;95% to mitigate the potential for soil erosion and to ensure that groundcover is comparable to cover at the treed analogue site.</li> </ul>	<ul style="list-style-type: none"> <li>Application of organic mulch and seed mix applied. Hydromulch and seed mix of fast growing groundcover herbs and grasses then applied to the treed area.</li> </ul>
		<ul style="list-style-type: none"> <li>Consider planting tree seedlings where soils are exposed (2016).</li> </ul>	<ul style="list-style-type: none"> <li>Planting of deep rooted native tube stock undertaken.</li> </ul>
		<ul style="list-style-type: none"> <li>Place additional coarse woody debris along contours above rills to reduce rate and volume of runoff.</li> </ul>	<ul style="list-style-type: none"> <li>Woody debris and organic matter sprayed over contours of treed area.</li> </ul>
	2017	<ul style="list-style-type: none"> <li>Continue to monitor vegetation health.</li> </ul>	<ul style="list-style-type: none"> <li>Field surveys conducted in March and August 2017. Replanting / replacement of dead Tubestock in January and March.</li> </ul>
		<ul style="list-style-type: none"> <li>Continue to monitor groundcover of grasses and broadleaf herbs.</li> </ul>	<ul style="list-style-type: none"> <li>Field surveys conducted in March and August 2017</li> </ul>

EP Commitments as per MOP	Year	Enhance Place Rehabilitation Monitoring Report Recommendations	Rehabilitation Works Completed
	2018	<ul style="list-style-type: none"> <li>Continue to monitor vegetation health.</li> </ul>	<ul style="list-style-type: none"> <li>Field surveys conducted in September 2018. Replanting / replacement of dead Tubestock in March 2018.</li> </ul>
	2019	<ul style="list-style-type: none"> <li>Continue to monitor vegetation health.</li> </ul>	<ul style="list-style-type: none"> <li>Field survey conducted in September 2019. Watering of trees undertaken.</li> </ul>
	2020	<ul style="list-style-type: none"> <li>Continue to monitor vegetation health.</li> </ul>	<ul style="list-style-type: none"> <li>Field survey conducted in September 2020,</li> </ul>
<b>All Areas</b>			
Erosion Management; Soil Stabilisation; & Weed Management	2016	<ul style="list-style-type: none"> <li>Continue to spot-spray outbreaks of African lovegrass. Hand pull Wild Radish plants.</li> </ul>	<ul style="list-style-type: none"> <li>Weed control undertaken as per Weed Maintenance Schedule (Table 7).</li> </ul>
		<ul style="list-style-type: none"> <li>Revegetate exposed sediment retention basin walls.</li> </ul>	<ul style="list-style-type: none"> <li>Roll-over drain constructed and maintained to prevent rill erosion.</li> </ul>
		<ul style="list-style-type: none"> <li>Construct a roll-over drain above existing rill erosion on sloping trails to divert water off trail surface more effectively.</li> </ul>	<ul style="list-style-type: none"> <li>No areas of cracking greater than 20cm in depth were observed during 2016.</li> </ul>
		<ul style="list-style-type: none"> <li>Address soil cracking / movement as it occurs.</li> </ul>	<ul style="list-style-type: none"> <li>Soil movement (settling hole) re-filled.</li> </ul>
		<ul style="list-style-type: none"> <li>Monitor pest animal numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Pest monitoring not required as numbers are considered low with no adverse impact on rehabilitation and final land use.</li> </ul>
	2017	<ul style="list-style-type: none"> <li>Address soil cracking / movement as it occurs.</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance of minor cracking occurring in Pasture areas undertaken in May 2017. Grading of access trail to facilitate surface water runoff (August 2017).</li> </ul>
		<ul style="list-style-type: none"> <li>Monitor pest animal numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Pest numbers noted during field surveys in March &amp; August 2017</li> </ul>
		<ul style="list-style-type: none"> <li>Spot-spray outbreaks of African lovegrass (Sept thru to Feb).</li> </ul>	<ul style="list-style-type: none"> <li>Weed control undertaken as per Weed Maintenance Schedule (Table 7).</li> </ul>
	2018	<ul style="list-style-type: none"> <li>Monitor pest animal numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Pest numbers noted during field surveys in September 2018.</li> </ul>
		<ul style="list-style-type: none"> <li>Spot-spray outbreaks of African lovegrass (Sept thru to Feb).</li> </ul>	<ul style="list-style-type: none"> <li>Weed control undertaken as per Weed Maintenance Schedule (Table 7).</li> </ul>
	2019	<ul style="list-style-type: none"> <li>Monitor pest animal numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Pest numbers noted during field surveys in September 2019.</li> </ul>
		<ul style="list-style-type: none"> <li>Spot-spray outbreaks of African lovegrass (Sept thru to Feb).</li> </ul>	<ul style="list-style-type: none"> <li>Weed control undertaken as per Weed Maintenance Schedule (Table 7).</li> </ul>
	2020	<ul style="list-style-type: none"> <li>Monitor pest animal numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Pest numbers considered low and satisfactory September 2020 survey.</li> </ul>
		<ul style="list-style-type: none"> <li>Spot-spray outbreaks of African lovegrass (Sept thru to Feb).</li> </ul>	<ul style="list-style-type: none"> <li>Weed spraying undertaken January 2020.</li> </ul>

## 6 REHABILITATION SUMMARY

A summary of the disturbed and rehabilitated areas at the Enhance Place Mine is summarised in **Table 5**.

**Table 5** Rehabilitation Summary

		Area Affected/Rehabilitated (hectares)		
		To Date	Last Report: 2019	Next Report: 2021 (estimated) <sup>a</sup>
<b>A: MINE LEASE AREA</b>				
A1	ML 1422 (expired: 3/12/2018)	7.0	7.0	0.0
	ML 1458 (expired: 28/11/2020)	14.0	14.0	0.0
	ML 1520	9.6	9.6	0.0
	Total Mine Lease(s) area <sup>b</sup>	30.6	30.6	0.0
<b>B: DISTURBED AREAS</b>				
B1	Infrastructure Area	Nil	Nil	Nil
B2	Active Mining Area	Nil	Nil	Nil
B3	Waste Emplacements	Nil	Nil	Nil
B4	Tailings Emplacements	n/a	n/a	n/a
B5	Shaped Waste Emplacement	Nil	Nil	Nil
<b>ALL DISTURBED AREAS</b>		<b>Nil</b>	<b>Nil</b>	<b>Nil</b>
<b>C: REHABILITATION PROGRESS</b>				
C1	Total Rehabilitated Area	24.2	24.2	24.2
<b>D: REHABILITATION ON SLOPES</b>				
D1	10 to 18 Degrees	1.2	1.2	1.2
D2	Greater than 18 Degrees	0.5	0.5	0.5
<b>E: SURFACE OF REHABILITATED LAND</b>				
E1	Pasture and Grasses	21.0	21.0	21.0
E2	Native Forest / Eucalypt	1.2	1.2	1.2
E3	Plantations and Crops	Nil	Nil	Nil
E4	Other	2.0	2.0	2.0

<sup>a</sup> Enhance Place will seek to relinquish all mining leases to the NSW Government in 2021.

<sup>b</sup> This includes expired mine lease areas as the rehabilitation area encompasses ML 1422, ML 1458 and ML 1520.

Since mining ceased in June 2005 approximately 21 ha of the Enhance Place Mine has been rehabilitated to pasture. Pasture was sown with *Coxs River Mix*, comprising:

- 40% Fescue;
- 25% Cocksfoot;
- 20% Subterranean clover;
- 6% Perennial rye grass;

- 5% White clover; and,
- 4% Phalaris.

An additional 1.2 ha has been planted with trees and shrubs (treed area).

During the 2021 period, Enhance Place are moving towards achieving the agreed rehabilitation completion criteria and relinquishing the mining leases in the pasture (21 ha) and treed area (1.2 ha). A Rehabilitation and Completion Assessment Report (Ref [8]) completed in July 2018, was undertaken to support an application to the NSW Resources Regulator to relinquish mining leases ML 1422<sup>1</sup>, ML 1458<sup>2</sup> and 1520. The report indicates that rehabilitation is considered completed to the standard detailed in the Enhance Place Mine Care and Maintenance Mining Operations Plan (MOP). The Rehabilitation Completion Assessment Report (Ref [8]) is located in **Appendix D**.

## 7 REHABILITATION MONITORING

During the reporting period, rehabilitation monitoring was undertaken against the rehabilitation completion criteria in the MOP.

The 2020 rehabilitation monitoring survey (Ref [2]) made the following observations:

- No significant surface soil erosion has been observed within the treed or pasture area.
- The rehabilitated pasture area is generally consistent with the structure and complexity of pasture at an analogue pasture site.
- An overall increase in pasture total living cover was observed compared to the 2019 reporting period at all four quadrats. The percentage of annual living cover has decreased in favour of perennial species at quadrats 1, 2 and 4. Quadrat 3 has increased due to an increase in the annual species.
- Total living area within the treed area has remained unchanged at transect 7 and has increased at transect 8. Both transects showed an increase in perennial cover.
- African lovegrass is present across the property but remains at less than 10% cover and is not actively growing. No other weeds were observed above 10% cover.
- Vegetation in the treed rehabilitation areas is maturing. Trees are approaching 5m height and shrub growth is increasing in height and spread.
- There is no evidence of second-generation establishment within the treed rehabilitation areas.
- The level of pest activity (rabbits and foxes) was considered low and do not require population reduction measures.
- The treed analogue area has undergone disturbance due to the 2019 bushfires; however there is evidence of regeneration.

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<sup>1</sup> ML 1422 expired on 3<sup>rd</sup> December 2018

<sup>2</sup> ML 1458 expired on 28<sup>th</sup> November 2020.



The recommendations provided in the 2020 Rehabilitation Monitoring Report (Ref [2]) were limited to continued monitoring of performance indicators in relation to MOP completion criteria, spot and spraying African lovegrass. All the performance indicators detailed are completed or satisfactory. The 2020 Rehabilitation Monitoring Report is included in **Appendix B**.

Monitoring and maintenance of the final landform and stability of the site will continue while Enhance Place hold relevant mining authorities over the area; however, Enhance Place will seek to confirm that rehabilitation has been successfully completed to the satisfaction of the Department and relinquish these areas in 2021.

## 8 RELINQUISHMENT OF REHABILITATED LAND

In 2014, SLR was engaged by Enhance Place Pty Ltd to inform development of quantitative rehabilitation completion criteria and provide advice and recommendations for pasture improvement strategies, including the addition of soil ameliorants for each of the rehabilitation domains at Enhance Place (Ref [9]). The SLR recommendations were incorporated within the MOP Rehabilitation Completion Criteria. Rehabilitation maintenance undertaken at the Enhance Place Mine has been guided by the SLR report (Ref [9]) and the annual rehabilitation monitoring reports. The annual rehabilitation monitoring reports provide an assessment of the current status of rehabilitation against the MOP rehabilitation completion criteria. The 2020 Rehabilitation Monitoring Report indicated that all completion criteria were considered completed or satisfactory (Ref [2]).

Rehabilitation works at Enhance Place Mine have included:

- Construction of final landform, water management and erosion/sediment control structures;
- Reseeding of 21 ha to pasture and 1.2 ha planted to trees and shrubs;
- Amelioration of pasture and treed areas with compost, lime and gypsum in accordance with recommendations of the 2014 SLR report (Ref [9]).
- Development and implementation of a stock management plan with landowners (presented in **Appendix C**);
- Erosion management, soil stabilisation, surface drainage structure maintenance, pasture improvement, treed area improvement, weed management and stock management; and
- Ongoing feral animal and weed control programs.

A detailed rehabilitation works summary for the period 2016 – 2020 is shown in **Table 4**.

These works have improved soil nutrient parameters, ground cover and pasture composition within the rehabilitation areas, whilst also reducing erosion and weed presence. A detailed inspection and assessment of the rehabilitation areas were undertaken by SLR in March 2018. During the inspection soil samples were also collected and analysed for pH, electrical conductivity, major cations, sulfur and nitrate. All locations showed soil nutrient levels that satisfied the completion target measures (Ref [8]).

The Rehabilitation and Completion Assessment Report indicates that the approved rehabilitation objectives and completion criteria specified in the MOP have been achieved (Ref [8]). As such Enhance Place will seek to confirm that rehabilitation has been successfully completed to the satisfaction of the NSW – Resources Regulator and then relinquish the relevant mining leases covering the pasture and treed rehabilitation areas during the 2021 period. Table 4 of the Rehabilitation and Completion Assessment Report (completed in July 2018) located in **Appendix D** presents the status of each of the MOP completion criteria and references the relevant reports that substantiate the completion criteria status. Since July 2018, rehabilitation monitoring has been undertaken each year. The most recent being the 2020 Annual Rehabilitation Monitoring Report (First Field Environmental) which is provided in **Appendix B**.

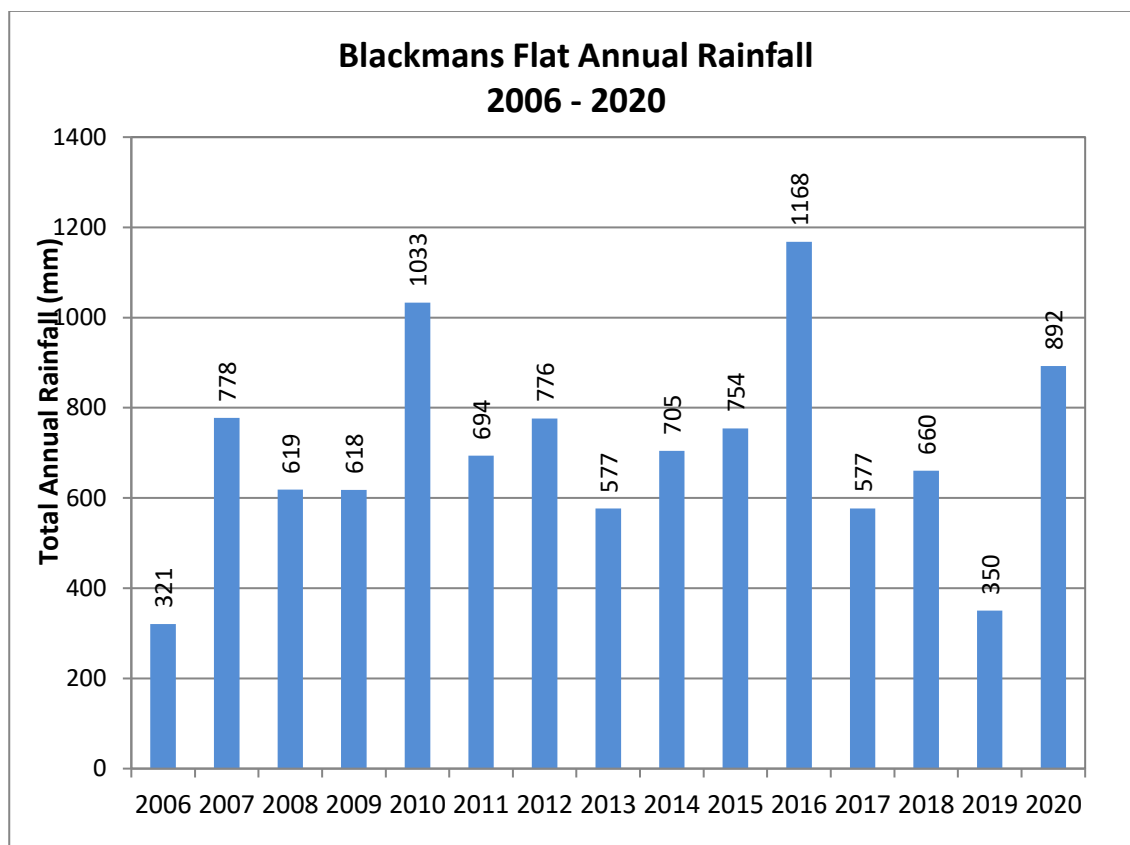
## 9 METEOROLOGICAL DATA

An automatic weather station was installed at the Pine Dale Open Cut Mine project site in 2006 (located in nearby Blackmans Flat). The data is downloaded and reported by RCA Australia.

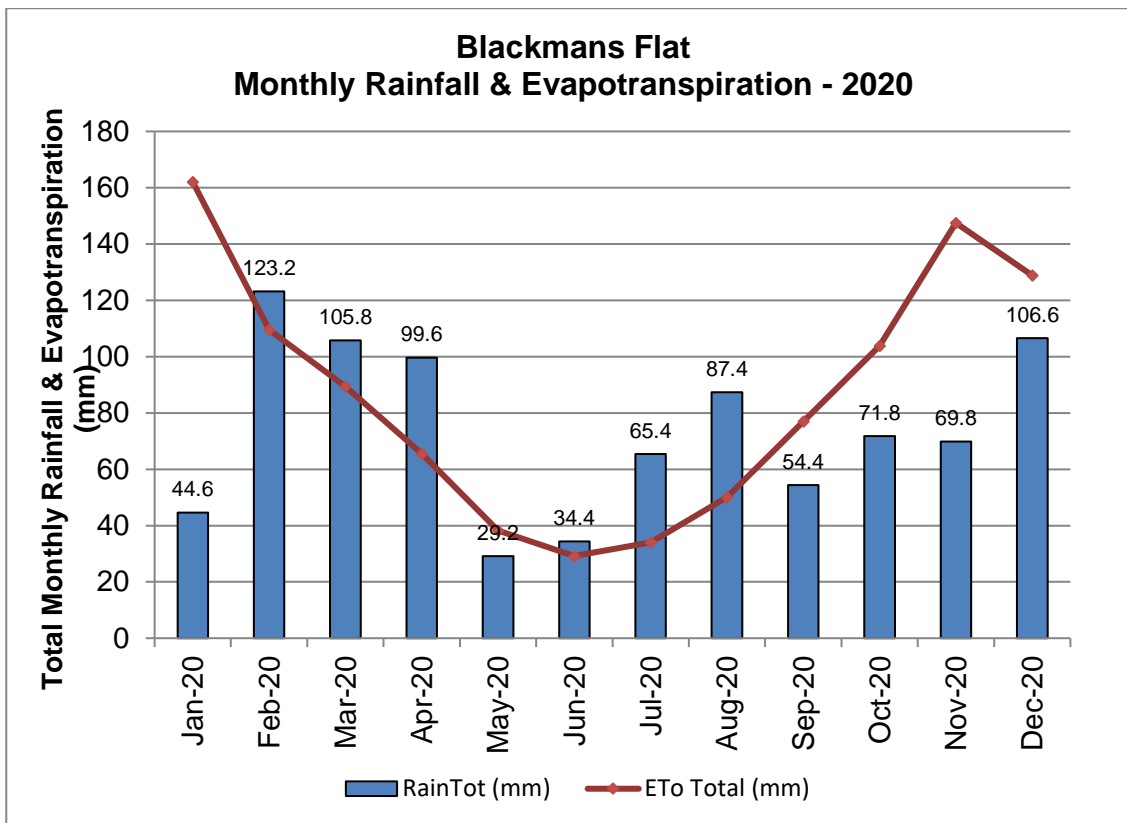
Meteorological monitoring parameters recorded at the Pine Dale Mine meteorological monitoring station include wind speed, wind direction, temperature at 10m height, temperature at 2m height, rainfall, humidity, solar radiation, sigma theta and evapotranspiration. Details of weather data recorded for the period January to December 2020 are summarised in **Table 6**.

The average annual rainfall for the area is 774mm recorded at the Lithgow (Coerwull) Station, situated approximately 15km to the south east of the Enhance Place Mine (Source: Bureau of Meteorology, based on the rainfall period 1878 – 2019).

Rainfall during the 2020 period (892mm) was observed to be greater than the rainfall recorded during 2019 (350mm), 2018 (660mm) and 2017 (577mm), although less than the rainfall recorded during 2016 (1168mm). The annual rainfall recorded at the Pine Dale Mine meteorological monitoring station for the period 2006– 2020 is shown in **Figure 2**. The monthly rainfall and evapotranspiration for the 2020 period is shown in **Figure 3**.



**Figure 2** *Blackmans Flat Annual Rainfall: 2006 – 2020*



**Figure 3** *Blackmans Flat Monthly rainfall and evapotranspiration: 2020*

The maximum temperature recorded during the reporting period was 41.8°C at the 2m sensor and 40.1°C at the 10m sensor, during February. The lowest temperatures occurred in July and August, with a recording of -5.8°C at both 2m and 10m. A summary of monthly temperatures for 2020 is included in **Table 6**.

The predominant wind direction during 2020 were observed to be from the north-westerly quadrant. Wind directions were also observed from an easterly direction during January – March 2020 and December 2020. The maximum wind speed measured at the site was 20.6m/s during January 2020 from a west-north-westerly direction. Sigma theta data was measured continuously throughout the entire 2020 monitoring period. A summary of monthly wind speed, predominant directions and sigma theta recordings in 2020 is included in **Table 6**.

**Table 6** Meteorological Monitoring Summary: 2020

Month	Rainfall (mm)	Cumulative Rainfall (mm)	No of Rain Days/ Month	Air Temp. @ 2m (°C)			Air Temp. @ 10m (°C)			Sigma theta (°)			Relative Humidity (%)			Wind Speed (m/s)			Modal Wind Direction
				Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	
Jan	44.6	44.6	15	21.8	10	40.1	21.3	10	37.9	35.7	4.5	101.2	67.3	11.0	101.6	1.9	0.0	20.6	E
Feb	123.2	167.8	18	18.9	4.3	41.8	18.5	4.9	40.1	37.9	6.8	103.2	77.2	11.6	101.9	1.7	0.0	14.7	E
Mar	105.8	273.6	15	15.5	5.2	32.2	15.2	5.6	30.9	38.7	4.0	101.4	80.0	13.0	101.9	1.5	0.0	13.8	ESE
April	99.6	373.2	7	12.4	-0.6	25.8	12.3	-0.8	24.4	33.3	3.7	103.2	79.3	13.4	101.9	1.9	0.0	20.0	WNW
May	29.2	402.4	17	7.3	-4.5	20.8	7.3	-4.7	19.4	35.8	3.6	103.1	86.5	24.8	101.9	1.7	0.0	16.6	WNW
June	34.4	436.8	12	6.5	-5.3	17.8	6.6	-5.3	17.1	36.9	5.1	103.5	87.1	35.8	101.9	1.5	0.0	15.9	WSW
July	65.4	502.2	15	5.5	-5.8	17.3	5.6	-5.8	16.6	38.7	4.0	102.9	87.4	25.9	101.9	1.3	0.0	15.0	WNW
Aug	87.4	589.6	13	5.8	-5.8	20.5	5.7	-5.8	20	30.8	3.3	102.3	81.0	14.2	101.9	2.3	0.0	18.0	W
Sept	54.4	644	11	10.2	-1.9	24.4	10.0	-2	23.2	33.3	4.7	102.5	77.5	21.7	101.9	2.1	0.0	17.5	NW
Oct	71.8	715.8	15	13.6	0.2	27.1	13.3	0.5	25.1	35.6	4.3	102.9	76.8	11.6	101.9	1.8	0.0	14.0	WNW
Nov	69.8	785.6	12	16.7	3.1	34.4	16.3	2.9	33	37.5	2.8	103.6	71.3	12.1	101.9	1.8	0.0	17.4	NW
Dec	106.6	892.2	15	17.0	3.4	36.3	16.6	3.4	35.3	36.0	6.2	103.2	77.1	13.1	101.9	2.0	0.0	15.0	E
Total	892.2	-	165	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Min	29.2	-	7	-	-5.8	-	-	-5.8	-	-	2.8	-	-	11.0	-	-	0.0	-	-
Max	123.2	-	18	-	-	41.8	-	-	40.1	-	-	103.6	-	-	101.9	-	-	20.6	-

## 10 ENVIRONMENTAL PERFORMANCE

The final landform and water management structures have been completed at Enhance Place (refer **Plan 3, Appendix A**). These areas and structures are inspected on a monthly basis by the Mining Engineering Manager.

It should be noted that the majority of land within the leases of Enhance Place Mine is privately owned and landowner permission is required to access the site. The land is predominately used for grazing horses year-round.

There were no environmental incidents reported during the 2020 reporting period.

The report required under the Enhance Place Mine Consent that presented options on the final land use and ownership of the Glen Davis Recreation Trust area at the Enhance Place Mine has been presented to the Lithgow City Council and other relevant stakeholders. This Consent Condition is now satisfied, and the final decision on land use rests with the relevant authorities.

During 2021, Enhance Place intend to lodge an application to the NSW Resources Regulator to relinquish of mining lease (ML) 1520 noting that ML 1458 expired on 28/11/2020 and ML 1422 has already expired. This will follow confirmation that the rehabilitation has been successfully completed to the satisfaction of the NSW Resources Regulator. The results of the Rehabilitation and Completion Assessment report (Ref [8]) confirms that the rehabilitation objectives under the MOP have been achieved.

### 10.1 COMPLAINTS AND LIAISON

There were no environmental complaints recorded during the reporting period from the general public or near neighbours.

Discussions with key landholders were ongoing during the reporting period to ensure dialogue was maintained regarding land management matters.

## REFERENCES

- [1] FirstField Environmental, *Enhance Place Mine Rehabilitation Monitoring Report*, 30 October 2019.
- [2] FirstField Environmental, *Enhance Place Mine Rehabilitation Monitoring Report*, 9 November 2020.
- [3] Enhance Place Pty Limited, *Enhance Place Mine Care and Maintenance Mining Operations Plan*, December 2016.
- [4] FirstField Environmental, *Enhance Place Mine Stock Management Plan*, April 2016.
- [5] FirstField Environmental, *Enhance Place Mine Rehabilitation Monitoring Report*, 23 October 2018.
- [6] FirstField Environmental, *Enhance Place Mine Rehabilitation Monitoring Report*, 15 September 2017.
- [7] FirstField Environmental, *Enhance Place Mine Rehabilitation Monitoring Report*, 10 November 2016.
- [8] SLR, *Pine Dale Mine Rehabilitation Completion Assessment*, SLR ref 630.12362-R01, 2018.
- [9] SLR, *Soil Assessment and Recommendations for Rehabilitated Areas: Pine Dale Mine and Enhance Place*, November 2014.

# Appendix A

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Enhance Place Mine Plans



# Appendix B

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Rehabilitation Monitoring Report 2020

# Appendix C

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## Stock Management Plan

# Appendix D

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## Rehabilitation and Completion Assessment Report