



***Temperate Highland Peat Swamps  
on Sandstone Monitoring and  
Management Plan LW 415 to 417  
Annual Compliance Report***

**Springvale Mine**

**15<sup>th</sup> June 2017**

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# 1. INTRODUCTION

Springvale Coal Pty Ltd (Springvale) is an underground longwall mine located 12km North West of Lithgow in NSW and 3 km south of the Centennial Angus Place Mine. The mine is a joint venture owned in equal share by Centennial Springvale Pty Ltd (a wholly owned subsidiary of Banpu Minerals Ltd) and Springvale SK Kores Pty Limited.

Approval 2011/5949 was issued to Springvale by the Department of Sustainability, Environment, Water, Population and Communities (SEWPAC) on the 14<sup>th</sup> of March 2012. Approval 2011/5949 is related to a controlled action area of the Springvale mine for mining of longwall panels (LW) 415 – 417 as shown in the figure below.



**Figure 1 Controlled Action Area 415 to 417**

EPBC 2011/5949 Condition 29 requires that “Within three months of every 12 month anniversary of the commencement 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, report, strategy etc. 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. The person taking the action must also notify any non-compliance with this approval to the department in writing within two days of becoming aware of the non-compliance”.

This report has been prepared to address the requirements of Condition 29 for the period between the 15<sup>th</sup> of March 2016 and 14<sup>th</sup> of March 2017.

## **2. DETAILS OF COMPLIANCE WITH APPROVAL CONDITIONS**

### **Condition 1**

An application was made on the 27<sup>th</sup> of March 2013 with attached supporting documentation seeking agreement from the Minister to vary condition 1 of the approval (EPBC 2011/5949). Additional information was provided on the 3<sup>rd</sup> and 4<sup>th</sup> of September 2013 as requested by the department officers.

As evidenced by correspondence dated the 21<sup>st</sup> of October 2013 from the Department of Environment, Condition 1 was varied to allow for the mining under Temperate Highland Peat Swamps on Sandstone Ecological Communities (THPSS EC).

### **Condition 2**

On the 8<sup>th</sup> June 2012, a letter was submitted to SEWPaC containing details of proposed buffer zones around known high quality sites of Temperate Highland Peat Swamps on Sandstone in the Controlled Action Area. This was within 3 months of the date of issue of 2011/5949 EPBC (14 March 2012) and was compliant with the requirements of Condition 2 of the EPBC 2011/5949 approval.

The proposed buffer zones were approved on the 14<sup>th</sup> of June 2013. Longwall extraction of 416 and 417 commenced on the 24<sup>th</sup> of September 2013 and on the 11<sup>th</sup> of October 2014 respectively.

### **Condition 3**

Monitoring of subsidence has been conducted in accordance with the Springvale Colliery Subsidence Management Plan: Proposed Subsidence Monitoring and Reporting Program LW415 to 417 as required under Condition 3 of the EPBC 2011/5949 approval.

### **Condition 4**

There has been no anomalous subsidence detected within 200m of any areas of Temperate Highland Peat Swamps on Sandstone Ecological Communities.

There has therefore been no reporting under Condition 4 of the EPBC 2011/5949 approval has been required.

## **Condition 5**

As outlined in the Condition 4 response above, there has been no anomalous subsidence reporting required.

The requirement to submit a report within 10 business days has therefore not been triggered.

## **Condition 6**

EPBC 2011/5949 Condition 6 requires the development of a Temperate Highland Peat Swamps on Sandstone Monitoring and Management Plan (THPSS MMP) within six months of approval (14 March 2012). The THPSS MMP was received by SEWPaC on 14 September 2012 which satisfied the requirements of Condition 6 of the EPBC 2011/5949 approval.

## **Condition 7**

The Temperate Highland Peat Swamps on Sandstone Monitoring and Management Plan (THPSS MMP) which was submitted to SEWPaC included prevention, monitoring, mitigation and management actions for all potential impacts on the Temperate Highland Peat Swamps on Sandstone Ecological Community arising from the action as required under Condition 7 of the EPBC 2011/5949 approval. This is identified in Table 2.1 of the approved THPSS MMP.

## **Condition 8**

The Temperate Highland Peat Swamps on Sandstone Monitoring and Management Plan (THPSS MMP) was reviewed by two independent reviewers (both approved by the department) prior to submission to the department for approval as required under Condition 8 of the EPBC 2011/5949 approval.

## **Condition 9**

On the 21<sup>st</sup> October 2013 the Federal Department of the Environment (DoE) approved the Springvale THPSS MMP. The plan has been fully implemented as required under Condition 9 of the EPBC 2011/5949 approval.

## **Condition 10**

EPBC 2011/5949 Condition 10 requires a report of the result of actions, as directed by an approved Monitoring and Management Plan, to be prepared and provided to the department annually on the anniversary date of the EPBC 2011/5949 approval. As the Temperate Highland Peat Swamps on Sandstone Monitoring and Management Plan (THPSS MMP) was not approved until the 21<sup>st</sup> of October 2013, the report was not required under Condition 10. A report, however, was submitted to demonstrate that actions were being undertaken in good faith by Centennial based on the draft THPSS MMP on the 14<sup>th</sup> of June 2013 to satisfy the requirements of Condition 10 and Condition 29 of EPBC 2011/5949.

On 28<sup>th</sup> March 2014, 17<sup>th</sup> March 2015, 11<sup>th</sup> March 2016 and 14<sup>th</sup> of March 2017, an Annual Monitoring Report was submitted to the Department as required under Condition 10.

## Condition 11

Condition 11 requires the reporting of impacts to Temperate Highland Peat Swamps on Sandstone and defines the timeframes for reporting of impacts.

Two reporting requirements under this condition were triggered during the reporting period.

As the triggers fell under both the THPSS MMP for longwalls 415 - 417 and THPSS MMP for longwall 418, notification was provided under the more recent EPBC 2013/6881 approval (Condition 17).

In accordance with relevant approval requirements, Centennial notified the Department of Environment and has undertaken investigations into the exceedances. The following sections summarise the actions undertaken in relation to each trigger. Additional detail is included in the reports provided to the Department.

### SSE1 and WC01, WC03 & WC04

#### Initial Notification

Notification of an exceedance of flora performance indicator triggers at monitoring locations SSE1 (Sunnyside East Swamp) and WC03 & WC04 (Carne West Swamp) was received by Centennial from RPS on the 8<sup>th</sup> of November 2016. Notification of the triggers was provided to the Department of Environment on the 10<sup>th</sup> of November 2016, as required under the response protocol in the Longwall 415 – 417 THPSSMP and Longwall 418 THPSS MMP TARP.

#### Investigative Report

A Trigger Investigation Report was submitted to the Department on the 23<sup>rd</sup> of December 2016. The Report outlined a series of checks to discern non-mining impacts from mining related impacts and a proposed action plan.

#### Response Strategy

The following actions were recommended for consideration and are currently being undertaken/investigated by Centennial:

##### SSE1

- Continue to perform monitoring activities in accordance with the THPSSMP for Longwalls 415 – 417.
- Repeat investigations performed in this analysis to evaluate eucalypt recruitment at a swamp scale.
- Instigate a swamp rehabilitation program centering on the removal of eucalypt regrowth throughout the central and lower parts of the swamp.\*

\* Note: this recommendation may necessitate application for a licence under Section 91 of the *Threatened Species Conservation Act* 1995. Consultation is required with the Office of Environment and Heritage to discern this requirement.

### **WC01**

- Continue to perform monitoring activities in accordance with the THPSS MMP for LW418.
- Review recent data collected from monitoring methods applied in accordance with the Swamp Monitoring Program for LW419 (i.e. Brownstein et al 2014).
- Consider options for reducing the amount of entry into Carne West for monitoring purposes and/ or consider alternate access options (e.g. installation of raised boardwalk to piezometer sites).
- Consider construction of a barrier along the swamp margin at the vehicle track elbow to disperse fauna movements thus potentially reduce trampling impacts.

### **WC03 & WC04**

- Continue to perform monitoring activities in accordance with the THPSS MMP for LW418.
- Review recent data collected from monitoring methods applied in accordance with the Swamp Monitoring Program for LW419 (i.e. Brownstein et al 2014).

## **Investigative Outcomes**

### **SSE1**

The drying effect of the incision feature (an aged and previously documented erosion feature within Sunnyside East Swamp that pre-dates mining) and the recent prolonged period of dry weather provide an alternative hypothesis for the emergence of eucalypt recruitment. Contrary to other monitored swamps, it is also noteworthy to mention the extensive eucalypt canopy overhang within Sunnyside East Swamp, thus its increased exposure to eucalypt seed accumulation.

Unseasonably dry warm conditions were also prevalent in the preceding months adding further pressure on water availability in the upper peat layers. The combined influence of the incision feature and weather conditions could explain the emergence of eucalypt regeneration within the swamp.

Other measures monitored at SSE01 remain within the expected range and have not resulted in a trigger event. While inconclusive, it is reasonable to speculate that the eucalypt trigger is not necessarily related to mining, rather may be a function of weather and opportunity (i.e. a considerable proportion of Sunnyside East Swamp has overhanging eucalypt cover).

### **WC01, WC03 & WC04**

Coral Fern is a characteristic species in THPSS of the Newnes Plateau area. At Carne West this species forms dense aggregations on the swamp margins decreasing to dense patches in the central parts. Being a fern, this species generally develops a shallow root system in the upper parts of the peat profile and is reliant on constant high soil moisture for growth and vigour. These two factors make this species particularly susceptible to water loss and/ or fluctuation.

According to Hose et al. (2014), Coral Fern is characteristic of the wetter parts of the 'Budderoo' THPSS where it associates with sedge (i.e. *Gymnoschoenus sphaerocephalus*) and tussock (*Xyris operculata*) species. Zonation of this nature in Carne West is not exactly the same as described by Hose et al. (2014), however is broadly similar with *Xyris ustulata*

substituting *X. operculata* and the sedge *Lepidosperma limicola* substituting *G. sphaerocephalus* on the swamp margins.

Centennial (2016) provides insight into the recent hydrological regime of Carne West indicating a shift in 2014 from a groundwater to rainfall dependent swamp. Ongoing groundwater investigations are currently being performed to determine if this shift in water reliance is mining induced or is a delayed response to longer term climatic influences.

In consideration of Hose et al. (2014) and Centennial (2016), the exclusion of mining as a possible cause for the decline in Coral Fern condition is a feasible conclusion given that recent dry warm weather conditions may represent a plausible reason for the observed change. If Carne West is rainfall dependent then it is reasonable to assume that the swamp margins will experience the greatest water stress and do so earlier than the swamp axis. Other anthropogenic and natural influences may also have contributed to the sharp decline in Coral Fern condition. Therefore, without clarity on the reason for change in water dependency, it is premature to conclude if the change in Coral Fern condition is mining related or not.

## **WC02 and CW04**

### **Initial Notification**

Notification of an exceedance of flora performance indicator triggers at monitoring locations WC02 and CW04 (Carne West Swamp) was received by Centennial from RPS on the 8<sup>th</sup> of March 2017. Notification of the triggers was provided to the Department of Environment on the 10<sup>th</sup> of March 2017, as required under the response protocol in the Longwall 415 – 417 THPSSMP and Longwall 418 THPSS MMP TARP.

### **Investigative Report**

A Trigger Investigation Report was submitted to the Department on the 3<sup>rd</sup> of May 2017. The Report outlined a series of checks to discern non-mining impacts from mining related impacts and a proposed action plan.

### **Response Strategy**

#### **WC02**

The following actions are recommended for consideration:

- Continue to perform monitoring activities in accordance with the THPSS MMP for LW418;
- Transition to lower impact monitoring practices as soon as possible to reduce any exacerbating deleterious impacts on the swamp (i.e. Brownstein et al 2014 and RAM (Goldney et al 2009) as specified under SMP for LW419);
- Consider options for reducing the amount of entry into CW for monitoring purposes and/ or consider alternate access options (e.g. installation of raised boardwalk to piezometer sites); and
- Consider construction of a barrier along the swamp margin to disperse fauna movements thus potentially reduce trampling impacts.

**CW04**

The following actions are recommended for consideration:

- Continue to perform monitoring activities in accordance with the THPSS MMP for LW418; and
- Transition to lower impact monitoring practices as soon as possible to reduce any exacerbating deleterious impacts on the swamp (i.e. Brownstein et al 2014 and RAM (Goldney et al 2009) as specified under SMP for LW419).

**Investigative Outcomes****WC02**

Coral Fern is a characteristic species in THPSS of the Newnes Plateau area. At Carne West this species forms dense aggregations on the swamp margins decreasing to dense patches in the central parts. This species generally develops a shallow root system in the upper parts of the peat profile and is reliant on constant high soil moisture for growth and vigour. These two factors make this species particularly susceptible to water loss and/ or fluctuation.

According to Hose et al. (2014), Coral Fern is characteristic of the wetter parts of the Budderoo' THPSS where it associates with sedge (i.e. *Gymnoschoenus sphaerocephalus*) and tussock (*Xyris operculata*) species. Floristic zonation in Carne West is not exactly the same as described by Hose et al. (2014); however is functionally similar with *Xyris ustulata* substituting *X. operculata* and the sedge *Lepidosperma limicola* substituting *G. sphaerocephalus* on the swamp margins.

Centennial (2016) indicates the recent hydrological regime of Carne West shifted in 2014 from a groundwater fed system to one predominantly reliant on rainfall events. Under this regime it is considered that abnormal weather conditions are likely to have exacerbated the altered bioavailability of groundwater resources, particularly along the eastern swamp margin for the following reasons:

- Reduced water saturation of upper peat layers in the central parts of the swamp (i.e. groundwater related) is likely to have reduced water availability at the swamp margins (i.e. drawdown of rainfall related contributions to the central parts of the swamp); and
- High evapotranspiration stress in the 2016 summer autumn period with the most pronounced effect being on west facing aspects.

In consideration of Hose et al. (2014), Centennial (2016) and analysis conducted as part of the RPS Trigger Investigative Report, it is considered that mining may be the primary cause for the observed decline in Coral Fern condition (i.e. prolonged reductions in the bioavailability of groundwater resources). In this respect the most pronounced effects of reduced groundwater bioavailability will be at the swamp margins rather than the swamp axis. Site observations indicate that other anthropogenic and natural influences have exacerbated the sharp decline in Coral Fern condition to an extent where a trigger event has occurred.

**CW04**

The 'non-live groundcover' trigger is considered to be a trigger co-correlating with prolonged condition loss of Coral Fern, abnormal weather conditions (i.e. drying of the peat at the swamp margins with the highest evapotranspiration stress resulting in reduced regenerative

potential), fauna activity (i.e. high rodent activity) and swamp monitoring (i.e. routine trafficking of within swamp tracks). While the primary causation is likely to be a loss of bioavailable groundwater resources, it is not clear from site inspections that this causation is responsible for the trigger event (i.e. monitoring data has intersected with secondary impacts such as anthropogenic and fauna activity).

### **Condition 12**

Condition 12 allows the Minister to determine that a severe impact to a Temperate Highland Peat Swamps on Sandstone Ecological Community (THPSS EC) has occurred based on reports submitted under Condition 10 and 11.

No severe impacts to THPSS EC have been detected or reported and no severe impact notification letters have been issued by the department under Condition 12 of the EPBC 2011/5949 approval.

### **Condition 13**

No severe impact notification letters have been received and no Temperate Highland Peat Swamps on Sandstone Response Strategy has been required under Condition 13 of the EPBC 2011/5949 approval.

### **Condition 14**

No Temperate Highland Peat Swamps on Sandstone Response Strategy has been required under Condition 14 of the EPBC 2011/5949 approval.

### **Condition 15**

No peer review of a Temperate Highland Peat Swamps on Sandstone Response Strategy has been required under Condition 15 of the EPBC 2011/5949 approval.

### **Condition 16**

No Ministerial approval or implementation of a Temperate Highland Peat Swamps on Sandstone Response Strategy has been required under Condition 16 of the EPBC 2011/5949 approval.

### **Condition 17**

No reporting of the results of actions carried out under a Temperate Highland Peat Swamps on Sandstone Response Strategy has been required under Condition 17 of the EPBC 2011/5949 approval.

### **Condition 18**

No stopping of work has been directed by the Minister under Condition 18 of the EPBC 2011/5949 approval.

### **Condition 19**

No financial arrangement (bond) related to implementation of a Temperate Highland Peat Swamps on Sandstone Response Strategy has been directed by the Minister under Condition 19 of the EPBC 2011/5949 approval.

### **Condition 20**

No financial arrangement (bond) related to implementation of a Temperate Highland Peat Swamps on Sandstone Response Strategy has been required under Condition 20 of the EPBC 2011/5949 approval.

### **Condition 21**

No financial arrangement (bond) related to implementation of a Temperate Highland Peat Swamps on Sandstone Response Strategy has been required under Condition 21 of the EPBC 2011/5949 approval.

### **Condition 22**

No financial arrangement (bond) related to implementation of a Temperate Highland Peat Swamps on Sandstone Response Strategy has been required under Condition 22 of the EPBC 2011/5949 approval.

### **Condition 23**

No financial arrangement (bond) related to implementation of a Temperate Highland Peat Swamps on Sandstone Response Strategy has been required under Condition 23 of the EPBC 2011/5949 approval.

### **Condition 24**

No financial arrangement (bond) related to implementation of a Temperate Highland Peat Swamps on Sandstone Response Strategy has been required under Condition 24 of the EPBC 2011/5949 approval.

### **Condition 25**

Centennial Coal has met all costs related to independent review of documentation required under Condition 25 of the of the EPBC 2011/5949 approval.

### **Condition 26**

All documents related to EPBC 2011/5949 have been published on the Centennial Coal website as required under Condition 26 of the EPBC 2011/5949 approval.

### **Condition 27**

The action was commenced on 15 March 2012 and advice was provided to the department in writing of commencement of the action on 29 March 2012, satisfying the requirements of Condition 27 of the EPBC 2011/5949 approval.

### **Condition 28**

Records have been kept of all activities related to the conditions of approval as required under Condition 28 of the EPBC 2011/5949 approval.

### **Condition 29**

EPBC 2011/5949 Condition 29 requires the preparation and publishing on the Centennial Coal website of a report detailing compliance with each of the conditions of the EPBC 2011/5949 approval within three months of each 12 month anniversary of the commencement of EPBC 2011/5949 approval.

Throughout 2013 there was extensive consultation with the Commonwealth Department of Environment (DoE), formerly SEWPaC, regarding compliance with all conditions of EPBC 2011/5949. A report was provided to SEWPaC to address the requirements of Condition 10 and 29 of EPBC 2011/5949 on the 14<sup>th</sup> of June 2013. In 2014 a Compliance Report was submitted on the 11<sup>th</sup> of March 2014. In 2015 a Compliance Report was submitted on the 15<sup>th</sup> of June 2015. In 2016 a Compliance Report was submitted on the 15<sup>th</sup> of June 2016. This document represents the 2017 Compliance Report.

### **Condition 30**

There has been no request from the minister to conduct an independent audit against the conditions of EPBC approval 2011/5949.

### **Condition 31**

All activities related to the action have been conducted in accordance with the conditions of the EPBC 2011/5949 approval and associated reports, management plans and strategies. No approvals of revised reports, management plans or strategies have been required under Condition 31 of the EPBC 2011/5949 approval.

### **Condition 32**

There have not been any Ministerial requests for revisions to reports, management plans or strategies under Condition 32 of the EPBC 2011/5949 approval.

### **Condition 33**

The action was commenced immediately after the issue of the EPBC 2011/5949 approval. Condition 33 of the EPBC 2011/5949 approval is not relevant.

### **Condition 34**

All documents related to EPBC 2011/5949 (including reports, management plans and strategies) have been published on the Centennial Coal website as required under Condition 34 of the EPBC 2011/5949 approval.



# Centennial Coal

Springvale