

# Subsidence Management Plan Approval

I, the Director General of the Department of Planning and Infrastructure, under the provisions of the development consent referred to in Schedule 1, approve the development set out in Schedule 2, subject to the conditions set out in Schedule 3.

*S Haddad*  
Sam Haddad  
Director-General

Sydney

*6<sup>th</sup> February*

2013

---

## SCHEDULE 1

Condition 7 of Schedule 3 of the development consent granted by the Minister for Urban Affairs and Planning on 20 November 2001 for the development of the Dendrobium Coal Mine and the construction and operation of associated surface facilities (DA 60-03-2001).

---

## SCHEDULE 2

Underground mining operations, and associated monitoring, management and remediation, in Area 3B of the Dendrobium Coal Mine.

---

## SCHEDULE 3

### Definitions

- |    |                                      |  |
|----|--------------------------------------|--|
| 1. | DRE                                  | Division of Resources and Energy within the Department of Trade and Investment, Regional Infrastructure and Services   |
|    | Department                           | Department of Planning and Infrastructure  |
|    | Director-General                     | Director-General of the Department, or nominee   |
|    | Executive Director Mineral Resources | Executive Director Mineral Resources within DRE  |
|    | Minor                                | Not very large, important or serious   |
|    | Mitigation                           | Activities associated with reducing the impacts of mining operations prior to or during those impacts occurring  |
|    | Negligible                           | Small and unimportant, such as to be not worth considering   |
|    | NSWET                                | NSW Environmental Trust  |
|    | OEH                                  | Office of Environment & Heritage   |
|    | Remediation                          | Activities associated with partially or fully repairing or rehabilitating the impacts of mining operations or controlling the environmental consequences of these impacts  |
|    | Subsidence Management Plan           | The Subsidence Management Plan prepared by BHP Billiton Illawarra Coal Holdings Pty Limited, Review B; including the attached Watercourse Management Plan, Swamp Management Plan, Groundwater Management Plan and SCA Asset Management Plan; as amended until 1 December 2012. |
2. Subject to the definitions above, the definitions in the conditions of consent DA 60-03-2001 apply to this approval.

### Terms of Approval

3. The Applicant shall carry out the development generally in accordance with the:
  - a) conditions of consent DA 60-03-2001;
  - b) conditions of this approval; and
  - c) Subsidence Management Plan.
4. If there is any inconsistency with the Subsidence Management Plan, then the conditions of this approval and/or the conditions of consent DA 60-03-2001 shall prevail to the extent of the inconsistency.

### Limits on Approval

5. The Applicant must obtain the approval of the Director-General prior to the commencement of gateroad development for Longwalls 14 to 19 or the extraction of Longwalls 14 to 19. The Director-General's approval will take into account the:
  - (a) documents required to be reviewed or prepared and other measures (including any environmental offset) required to be developed or implemented under the conditions of this approval; and
  - (b) Applicant's performance under the Subsidence Management Plan, the conditions of this approval and the conditions of consent DA 60-03-2001.

The Director-General's approval under this condition may vary the conditions of this approval or impose additional conditions on this approval.

### Biodiversity Offset Strategy

6. The Applicant shall prepare and implement a Biodiversity Offset Strategy to the satisfaction of the Director-General. Initially, the Strategy must compensate for the impacts of Longwalls 9 to 13 on upland swamps and must:
  - (a) be prepared in consultation with OEH and SCA;
  - (b) be submitted by 31 October 2013 to the Director-General for approval;
  - (c) provide a suitable offset for all predicted impacts of the project on upland swamps;
  - (d) give priority to like-for-like physical environmental offsets, but also consider:
    - measures that result in beneficial effect on water quality, water quantity, aquatic ecosystems and/or the ecological integrity of SCA's special areas or water catchments;
    - other potential physical environmental offsets; and
    - potential financial environmental offset contributions payable to a relevant public trust or authority (eg the NSWET, OEH or SCA), where physical offsets or other measures are unavailable or insufficient to provide a suitable offset;
  - (e) propose a process whereby the actual impacts of the development on upland swamps are regularly reviewed (at least every 2 years) against predicted impacts and reported on to all affected agencies, including detailed consideration of the:
    - predictions in the SMP;
    - performance measures in Table 1;
    - monitoring results;
    - application, success and predicted success of measures to mitigate or remediate subsidence impacts and/or associated environmental consequences;
    - predicted and actual long-term impacts; and
    - views of OEH and SCA; and
  - (f) propose a process whereby a suitable residual environmental offset is provided where the actual impacts on upland swamps exceed those predicted in the SMP.
7. Following any approval by the Director-General under condition 5 of this approval, the Applicant shall review and update the Biodiversity Offset Strategy (referred to in condition 6) to compensate for any impacts of Longwalls 14 to 19 on upland swamps. This review must be carried out in consultation with OEH and SCA, and to the satisfaction of the Director-General.
8. The Applicant shall pay all reasonable costs incurred by the Department to engage suitably qualified and experienced experts to review adequacy of any component of the Biodiversity Offset Strategy.

### Performance Measures for Area 3B

9. The Applicant shall ensure that the development does not cause any exceedance of the performance measures in Table 1, to the satisfaction of the Director-General.

Table 1: Subsidence Impact Performance Measures

<b>Swamps</b>	
Swamps 1a, 1b, 5, 8, 11, 14 and 23	Minor environmental consequences including: <ul style="list-style-type: none"> <li>• <i>negligible</i> erosion of the surface of the swamps;</li> <li>• <i>minor</i> changes in the size of the swamps;</li> <li>• <i>minor</i> changes in the ecosystem functionality of the swamp;</li> <li>• <i>no significant</i> change to the composition or distribution of species within the swamp; and</li> <li>• <i>maintenance or restoration</i> of the structural integrity of the bedrock base of any significant permanent pool or controlling rockbar within the swamp.</li> </ul>
Swamps 3, 4, 10, 13, 35a and 35b	No significant environmental consequences beyond predictions in the Subsidence Management Plan.
<b>Watercourses</b>	
Waterfall WC-WF54	Negligible environmental consequences including: <ul style="list-style-type: none"> <li>• <i>no</i> rock fall occurs at the waterfall or from its overhang;</li> <li>• <i>no</i> impacts on the structural integrity of the waterfall, its overhang and its pool;</li> <li>• <i>negligible</i> cracking in Wongawilli Creek within 30 m of the waterfall; and</li> <li>• <i>negligible</i> diversion of water from the lip of the waterfall.</li> </ul>
Wongawilli Creek Donalds Castle Creek	Minor environmental consequences including: <ul style="list-style-type: none"> <li>• <i>minor</i> fracturing, gas release and iron staining; and</li> <li>• <i>minor</i> impacts on water flows, water levels and water quality.</li> </ul>
<b>Water storages</b>	
Avon Reservoir	Negligible environmental consequences including: <ul style="list-style-type: none"> <li>• <i>negligible</i> reduction in the quality or quantity of surface water inflows to the reservoir;</li> <li>• <i>negligible</i> reduction in the quality or quantity of groundwater inflows to the reservoir; and</li> <li>• <i>negligible</i> leakage from the reservoir to underground mine workings.</li> </ul>

Notes: These performance measures apply to Longwalls 9 to 13. The Applicant may meet the requirements of this condition either by avoidance, mitigation or remediation. Most swamps and watercourse features are shown on the site and key natural features plan (see Figure 1).

### Rehabilitation

10. If the Applicant does not meet the performance measures in Table 1, then following consultation with OEH, SCA and DRE, the Director-General may issue the Applicant with a direction in writing to undertake actions or measures to mitigate or remediate subsidence impacts and/or associated environmental consequences. The Applicant must implement the direction in accordance with its terms and requirements, in consultation with the Director-General and affected agencies.

### Watercourse Impact Monitoring, Management and Contingency Plan

11. By 31 May 2013, the Applicant shall review the Watercourse Impact Monitoring, Management and Contingency Plan for Area 3B prepared under condition 4 of Schedule 3 of DA 60-03-2001 to provide for achievement of the performance measures listed in Table 1, to the satisfaction of the Director-General.

### Swamp Impact Monitoring, Management and Contingency Plan

12. By 31 May 2013, the Applicant shall review the Swamp Impact Monitoring, Management and Contingency Plan for Area 3B prepared under condition 6 of Schedule 3 of DA 60-03-2001 to provide for achievement of the performance measures listed in Table 1, to the satisfaction of the Director-General.

### Groundwater Model

13. By 31 October 2013, the Applicant shall review the Area 3B Groundwater Model to the satisfaction of the Director-General. The revised model must:

- (a) include detailed consideration of surficial aquifers, swamps and watercourses;
- (b) include all available data on groundwater levels; and
- (c) model baseflow contributions for all sub-catchments from baseline (ie prior to the extraction of Longwall 9) until 30 years post-mining, using 5-yearly increments.

#### **Groundwater Monitoring**

14. Prior to the extraction of Longwall 12, the Applicant shall:
- (a) undertake detailed geotechnical and hydrological investigations of the height of cracking in Longwalls 6 to 10; and
  - (b) submit a report to the Department, including:
    - a model describing the measured height of cracking across Longwalls 6 to 10; and
    - detailed predictions of the height of cracking for Longwalls 11 to 19;to the satisfaction of the Director General.

#### **Swamp Rehabilitation Research Program**

15. The Applicant shall prepare and implement a Swamp Rehabilitation Research Program to the satisfaction of the Director-General. This program must:
- (a) be prepared in consultation with OEH, SCA and DRE;
  - (b) be submitted by 31 October 2013 to the Director-General for approval;
  - (c) investigate methods to rehabilitate swamps subject to subsidence impacts and environmental consequences within Areas 3A and 3B, with the aim of restoring groundwater levels and groundwater recharge response behaviour to pre-mining levels;
  - (d) establish a field trial (for a 5-year duration or longer) for rehabilitation techniques at a swamp or swamps that have been impacted by subsidence;
  - (e) provide for the expenditure of at least \$3.5 million over this period; and
  - (f) include a schedule for subsequent trials, development of work plans and ongoing reporting.

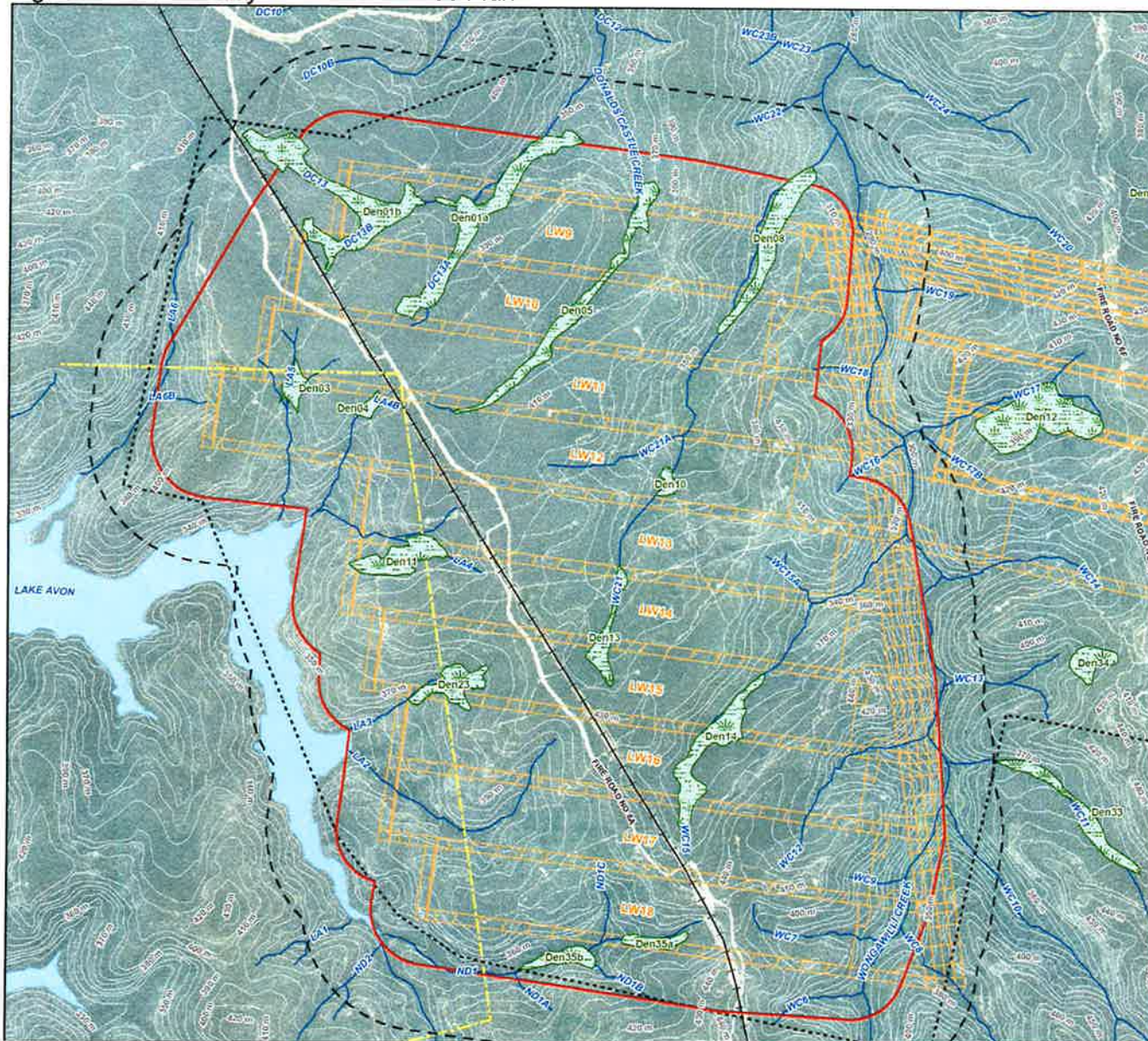
#### **Area 3C Mine Layout and Monitoring Program**

16. By 30 June 2018, and prior to the commencement of any longwall gateroad development in Area 3C, the Applicant shall submit the:
- (a) proposed mine layout and mining geometry for Area 3C; and
  - (b) proposed baseline monitoring program for Area 3C,  
for approval by the Director General and the Executive Director Mineral Resources.

#### **Independent Environmental Audit**

17. The Applicant shall ensure that the audit team for the Independent Environmental Audit, required under Condition 6 of Schedule 8 of the development consent (DA 60-03-2001), includes suitable experts in the fields of mine subsidence impacts and remediation, upland swamps, and stream hydrology and water quality; and carries out an extensive audit of the impacts of mining in Area 3B, and the efficacy of the Biodiversity Offset Strategy.

Figure 1: Site and Key Surface Features Plan



**bhpbilliton**  
**ILLAWARRA COAL**

**Site Plan**

DENDROBIUM AREA 3B SMP

- Legend**
- 600m Study Boundary - Condition B(d)
  - SMP Area
  - - - Dendrobium Area 3
  - - - DSC Notification Zone
  - Maitland to Dombarton Rail
  - Proposed Longwall Layout (BHPBIC, 2012)
  - Stream Features
  - Waterbodies (LP1)
  - Area 3B Swamps (BHPBIC, 2011)



FIGURE 2.1

1:17,500 Scale at A3



Also Produced by Cardno NSWACT Pty Ltd (WGL)  
 Date: 2012-10-05  
 Coordinate System: GDA 1994 MGA Zone 58  
 Project: 11204-01  
 Map: G1029\_S46Plan.mxd 02

DoB supplied by MSEC (2012) unless otherwise stated  
 Approval supplied by BHPBIC (2008)