

Subsidence Management Plan Approval

I, the Director General, Department of Trade and Investment, Regional Infrastructure and Services, NSW, having considered the likely environmental impacts of the mining operations identified in the Project Description specified in Schedule 1 and having had regard to the principles of ecologically sustainable development as defined in the *Protection of the Environment Administration Act 1991*, hereby approve the Subsidence Management Plan identified in Schedule 1 for the purposes of the SMP Condition that became effective on 18 March 2004 in Consolidated Coal Lease No 767 and Mining Lease 1433 subject to the conditions set out in Schedule 2.

This Approval only authorises the underground mining operations identified in the Project Description for the Period and Area identified in Schedule 1. Obligations under this Approval regarding rehabilitation, monitoring and impact management continue to apply after the expiry of this period unless otherwise notified in writing by the Director General.

These conditions are required to:

- ensure optimal mineral resource recovery;
- prevent, minimise, manage and/or offset adverse impacts;
- provide for the ongoing environmental management of the project;
- ensure the area disturbed by mining is appropriately rehabilitated.

The rights and duties of a Leaseholder are those prescribed by the *Mining Act 1992*, subject to the terms and conditions of the Lease which include a requirement to carry out operations in accordance with the Subsidence Management Plan conditionally approved by this Approval. This Subsidence Management Plan Approval does not override any obligation on the Leaseholder to comply with the requirements of other legislation and regulatory instruments unless specifically provided in the Mining Act or other legislation or regulatory instruments.

Note: This Approval does not constitute an approval under Section 138 of the Coal Mines Regulation Act 1982 or clause 88 of the Coal Mines Health and Safety Regulation 2006.

SIGNED



Brad Mullard
Executive Director, Mineral Resources
Under delegation for the Director General

Date of Approval 28/2/12 File No: 11/3329

SCHEDULE 1

Description of Approved Activity

Project Description:	Appin Colliery Area 7 Longwalls 705 & 706 only
Subsidence Management Plan:	Appin Colliery Area 7 Longwalls 705 to 710 Subsidence Management Plan dated 30 June 2008, and any supplementary supporting information provided to the Department.
Seam:	Bulli Seam.
Approved Period of Mining:	Date of Approval to 28 February 2019 or the expiry/cancellation of CCL 767 or ML 1433 whichever occurs first.

SCHEDULE 2

Definitions

Activity	The proposed mining described in the and SMP
AEMR	Annual Environmental Management Report
Application Area	The area identified within the SMP.
Bore	Any bore or well connected or proposed to be connected with sources of sub-surface water, and used or proposed to be used or capable of being used to obtain supplies of such water
Cliffs	Continuous rock face, including overhangs, having a minimum height of 10 metres and a minimum slope of 2 to 1, i.e. having a minimum angle to the horizontal of 63°.
Council	Wollondilly Shire Council
Department	Department of Trade and Investment, Regional Infrastructure & Services, Division of Resources & Energy
Director, Environmental Sustainability & Land Use	Director, Environmental Sustainability & Land Use of the Department
Director General	Director General of the Department, or delegate
Director, Mine Safety Operations	Director, Mine Safety Operations of the Department
DP&I	Department of Planning and Infrastructure
EA	Environmental Assessment of the Bulli Seam Operations Project Approval (08_0150) dated 22 December 2011
Environment	includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings
Environmental consequences	The environmental consequences of subsidence impacts, including but not limited to: damage to infrastructure, buildings and residential dwellings; loss of surface flows to the subsurface; loss of standing pools; adverse water quality impacts; development of iron bacterial mats; cliff falls; rock falls; damage to Aboriginal heritage sites; impacts on aquatic ecology; and ponding
EPA	Environment Protection Authority
Inspector of Coal Mines	Inspector of Coal Mines of the Department
IRGI	<i>Independent Review of Groundwater Impacts</i> prepared by Dr F Kalf dated 6 October 2006
Leaseholder	The leaseholder of CCL 767 and ML1433
Longwall Mining	The extraction of the longwall panels covered by the SMP
MSB	Mine Subsidence Board
Minor	Relatively small in quantity, size and degree given the relative context
Negligible	Small and unimportant, such as to be not worth considering
NOW	Department of Trade and Investment – NSW Office of Water
Principal Subsidence Engineer	Principal Subsidence Engineer of the Department
Proposed Mining	The extraction of coal from the proposed panels specified in Schedule 1.
PSMP	Property Subsidence Management Plan
SCA	Sydney Catchment Authority
SMP	Subsidence Management Plan, titled Appin Colliery Area 7 Longwalls 705 to 710 dated 30 June 2008 and supplementary supporting information provided to the Department.
SMP Approved Plan	Plan No. A07-1236 REV 0 titled 'Appin Longwall 705 to Longwall 706 Subsidence Management Plan SMP Approval Plan, signed by the Manager of Mining Engineering on 25 August 2011 and approved by the Director General.
Subsidence Impacts	Direct or indirect impacts resulting from subsidence from the proposed mining
Subsidence	Movement and/or deformation of the ground surface or subsurface strata as a direct and/or indirect result of the longwall mining

Conditions

Limits on Approval

- 1 The Leaseholder must carry out the activity strictly in accordance with SMP Approved Plan.
- 2 The Leaseholder must carry out the activity generally in accordance with the SMP subject to the conditions of this Approval.

In the event of any inconsistency between the conditions of this Approval and the SMP the conditions of this Approval prevail to the extent of any inconsistency.

- 3 Where this Approval requires actions to be undertaken by the Leaseholder, including remediation of subsidence impacts, the obligation continues until the Director General notifies the Leaseholder that the action has been completed to his or her satisfaction.
- 4 The Director General may vary the conditions of this Approval by notice in writing.
- 5 The Director General may, at his or her discretion, suspend or revoke this Approval if:
 - a) the Leaseholder fails to adhere to any condition of the Approval; or
 - b) the head of any other government authority requests suspension or revocation on the basis of the Leaseholder's non-compliance, or potential non-compliance, with legislation administered by that agency in relation to this Approval.

General Obligation to Minimise Harm to the Environment

- 6 The Leaseholder must implement the SMP (as amended by the conditions of this Approval) and carry out any additional practicable measures necessary to prevent any harm to the environment that may result from the construction, operation, or rehabilitation of the activity. Where prevention can not be achieved the leaseholder is to demonstrate minimisation of harm to the environment that may result from the construction, operation, or rehabilitation of the activity.

Notification of Approval


- 7 The Proponent must give notice of this SMP approval within 30 days to the DP&I, NOW, EPA, Council, MSB, the local Aboriginal Land Council/s, the owners/operators of any infrastructure, and landowners in the application area and any other relevant government agencies or stakeholders that the Director General's approval of the SMP has been granted.

Implementation of Approval

- 8 Any plans, programmes, reports or strategies required as a condition of this Approval must be developed having regard to any guidelines adopted by the Director General for the purpose of subsidence management and mine rehabilitation.
- 9 The Leaseholder must implement any plan, programme or strategy required and approved pursuant to this Approval.

Note: *The Leaseholder may, at any time, submit an amended plan, programme or strategy for approval. Once approved, the amended plan, programme or strategy must be implemented, however, up until the date of approval, the Leaseholder must continue to implement the previously approved plan, programme or strategy.*

- 10 Any modifications to plans, programmes or strategies already approved for the purposes of the conditions of this Approval must have regard to the matters set out in condition 8. Amended plans, programmes or strategies submitted for approval must be accompanied by all relevant supporting documentation to assist in the assessment of the amendment or modification.



Note: This condition relates to plans, programmes and strategies required by the conditions of this Approval – it does not apply to variations to the SMP or the SMP Approved Plan which must be done in accordance with the requirements of the Mining Act, the conditions of title and the variation procedures identified in the SMP guidelines.

Directions

- 11 The Leaseholder must comply with any written direction given by the Director General, Director Environmental Sustainability & Land Use, Director Mine Safety Operations or Principal Subsidence Engineer relating to:
- a) the implementation of any aspect of the SMP or an approved plan, programme or strategy;
 - b) assessing or reviewing the adequacy, effectiveness, or coverage of any approved plan, programme or strategy or any aspect of the SMP;
 - c) the type, timing and/or location of monitoring of baseline conditions, subsidence or subsidence impacts;
 - d) any reporting requirement under this Approval;
 - e) the carrying out of works to address subsidence impacts; and/or
 - f) the carrying out of any studies or investigations related to subsidence or subsidence impacts and the reporting of any findings or conclusions.

The obligations under this condition prevail over any other obligation under this Approval.

Note: Compliance with a written direction will not operate as a defence to a breach of any obligation under this Approval that occurred prior to the Direction being given.

Subsidence Monitoring Programme

- 12 The Leaseholder must submit to the Principal Subsidence Engineer for approval a subsidence monitoring programme for the longwall panels which are the subject of this Approval. This programme must include:
- a) inspection regimes;
 - b) layout of monitoring points;
 - c) parameters to be measured;
 - d) monitoring methods and accuracy;
 - e) timing and frequencies of surveys and inspections;
 - f) recording and reporting of monitoring results.

The Leaseholder must not commence longwall mining prior to the subsidence monitoring programme being approved.

Note: The programme should be submitted to the Principal Subsidence Engineer at least 30 days prior to the expected commencement of operations to enable sufficient time for the assessment of the programme. The Principal Subsidence Engineer may require the provision of further information to assist in the assessment of the programme or a resubmission of the programme if it is considered inadequate. Complex issues or the need for additional information or a resubmission of the programme may require a longer assessment period.

Environmental Management Plan

- 13 The Leaseholder must submit to the Director Environmental Sustainability & Land Use for approval an Environmental Management Plan (EMP) for the panels which are the subject of this Approval.

This plan must address subsidence impacts on:

- a) surface and groundwater (quality and quantity); including groundwater bores on privately-owned land within a 3 kilometre radius of the limit of mining)
- b) aquatic and terrestrial flora and fauna with special focus on threatened species, populations and their habitats; endangered ecological communities and water dependent ecosystems including additional targeted surveys for threatened species, sufficient to identify any actions required to protect significant populations from potential impacts;
- c) Aboriginal sites and non-Aboriginal heritage items - to include additional investigations sufficient to identify the significance of all sites and items which may be impacted by subsidence and to identify any actions required to ensure that the performance measures in Table 1 are met;
- d) the Nepean River gorge and associated landforms; and
- e) water quality (including ecotoxicology) of the Nepean River.
- f) land in general, with a specific focus on cliffs and steep slopes.

The leaseholder must not operate other than in accordance with an Environmental Management Plan (EMP) approved by the Director Environmental Sustainability & Land Use. This plan must address subsidence impacts above and must include:

- a) a detailed monitoring programme, including groundwater inflows to underground workings;
- b) trigger levels for subsidence impacts that require actions and responses;
- c) the procedures that would be followed in the event that the monitoring indicates an exceedance of trigger levels;
- d) measures to mitigate, remediate and/or compensate any identified impacts;
- e) a protocol for the notification of identified exceedances of the trigger levels; and
- f) a contingency plan.
- g) collection of sufficient baseline data for use in future extraction applications

The leaseholder shall ensure that underground mining does not cause the performance measures in Table 1 to be exceeded.

This plan must be prepared in consultation with relevant landholders and government agencies. The EMP must be consistent with Sydney Catchment Authority's draft guidelines titled "*The design of a hydrological and hydro-geological monitoring programme to assess the impact of longwall mining in SCA catchments July 2007*" and the Department of Water and Energy's "*Draft Guidelines for Groundwater Monitoring*". The plan must be consistent with the recommendations of the IRGI.

The Leaseholder must not cause subsidence impacts prior to the Environmental Management Plan being approved and effectively implemented.

The EMP must be developed in sufficient time to allow at least two years baseline data to be collected prior to extraction commencing, unless otherwise authorised by the Director Environmental Sustainability & Land Use.

Note: *The plan should be submitted to the Director Environmental Sustainability & Land Use at least 30 days prior to the expected commencement of operations to enable sufficient time for the assessment of the plan. The Director Environmental Sustainability & Land Use may require the provision of further information to assist in the assessment of the plan or a resubmission of the plan if it is considered inadequate. Complex issues or the need for additional information or a resubmission of the plan may require a longer assessment period.*



Table 1: Subsidence Impact Performance Measures

Watercourses	
Nepean River	Negligible environmental consequences including: <ul style="list-style-type: none"> • 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.
Other watercourses	No greater subsidence impact or environmental consequences than predicted in the EA or SMP.
Land	
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).
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	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"	Negligible impact or environmental consequence.
Sites determined to hold high or moderate significance	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 Mary's Tower (Douglas Park)	Negligible impact on structural integrity or external fabric.
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.

Infrastructure and Property Management

- 14.1 The Leaseholder must submit to the Director Mine Safety Operations for approval management plans for the following infrastructure that may be affected by subsidence. These plans must be developed in consultation with:
- a) the owners/operators of the infrastructure; and
 - b) any Government Agency with a regulatory role for the infrastructure.

The Leaseholder must not cause any subsidence impacts to the following infrastructure prior to the required infrastructure management plans being approved and effectively implemented:

- a) Main Southern Railway and associated structures / infrastructure that may be affected by subsidence;
 - b) Hume Highway and associated structures, including any associated bridges, which may be affected by subsidence;
 - c) Public roads and associated structures that may be affected by subsidence;
 - d) Electricity transmission lines that may be affected by subsidence;
 - e) Telecommunication infrastructure and associated structures that may be affected by subsidence, and
 - f) The Upper Canal and associated structures/infrastructure that may be affected by subsidence.
- 14.2 The Leaseholder must submit to the Director Mine Safety Operations for approval management plans to address the safety and serviceability of buildings and man-made structures potentially affected by subsidence. These plans must be developed in consultation with the owner of the properties and Mine Subsidence Board.

The Leaseholder must not cause subsidence impacts upon the said buildings and man-made structures prior to the required management plans being approved and effectively implemented.

- The said management plans must be developed based on data from:
- i. structural inspections of buildings and structures (where access is allowed) undertaken by a suitably qualified person; and
 - ii. a geotechnical investigation of the stability conditions of cliffs formations or sloping ground (where access is allowed), which may affect the safety and serviceability of the buildings and man-made structures within the SMP application area. The said investigation must be undertaken by a suitably qualified person.

- 14.3 The leaseholder shall ensure that underground mining does not cause the performance measures in Table 2 to be exceeded.

Table 2: Subsidence Impact Performance Measures

Built features	
Key public infrastructure: <ul style="list-style-type: none"> • Main Southern Railway; • Hume Highway; and • The SCA Upper Canal 	Always safe and serviceable. Damage that does not affect safety or serviceability must be fully repairable, and must be fully repaired.
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). Houses, industrial premises, swimming pools, farm dams and other built features or improvements	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 infrastructure component must be replaced.

Public Safety

- 15 The Leaseholder must prepare and implement a public safety management plan to ensure public safety in any structures, houses and surface areas that may be affected by subsidence, to the satisfaction of the Director, Mine Safety Operations. The plan must include, but not be limited to:
- a) identification of any areas, man-made structures, facilities and infrastructure, which are hazardous or could become hazardous due to subsidence impacts;
 - b) regular monitoring of areas or infrastructure/structures posing safety risks if they are affected by subsidence;
 - c) regular monitoring of stability of any areas with cliff formations and/or steep slopes that may be affected by subsidence;
 - d) measures to prevent, mitigate or promptly remediate hazards and safety risks referred to in a) to c) above;
 - e) erection of warning signs;
 - f) entry restrictions;
 - g) backfilling of dangerous surface cracks;
 - h) securing of unstable built structures or rockmass where required and appropriate, and
 - i) provision of timely notification of mining progress to the community and any other relevant stakeholders where management of public safety is required.

Incident and Ongoing Management Reporting

- 16 The Leaseholder must, within 24 hours of becoming aware of the occurrence, notify:
- i. the Principal Subsidence Engineer;
 - ii. Director, Environmental Sustainability & Land Use;
 - iii. The Mine Subsidence Board;
 - iv. NSW Office of Water;
 - v. the operators of all infrastructure covered by condition 14.1; and
 - vi. other relevant stakeholders or Government Agency with a regulatory role if they request such notification, of the following:
 - a) Any significant unpredicted and/or higher-than-predicted subsidence and/or abnormalities in the development of subsidence;
 - b) Any exceedance of predicted impacts on groundwater resources and/or the natural environment that may have been caused (whether partly or wholly) by subsidence;
 - c) Any observed subsidence impacts adverse to the serviceability and/or safety of infrastructure and other built structures that may be affected by longwall mining;
 - d) Any significant subsidence-induced cracking and/or ground deformations observed in any surface areas within the SMP application area;
 - e) Any observed rock falls or instability of cliff formations/steep slopes along the Nepean River Gorge that may have been caused (whether partly or wholly) by subsidence. Any observed rock falls or instability of cliff formations/steep slopes along the section of the Nepean River Gorge that may be affected by subsidence;
 - f) Any observed instability of sloping ground within the SMP application area;
 - g) Any subsidence impacts to dwellings and other civil structures greater than Damage Category 3 in accordance with Table C1, AS 2870-1996;
 - h) Any areas, man-made structures, facilities and infrastructure within the SMP application area, which have become or are likely to become hazardous as a result of subsidence, and
 - i) Any adverse subsidence impacts reported by relevant stakeholders.

Note: Under Condition 11, the Leaseholder can be directed to, among other things, prepare a report on an incident reported under this condition. A report on the details of the incident, including likely or known causes, response action and proposed response measures will generally be required for incidents that involve material property or environmental damage or have the potential to cause such damage.



Status Report

- 17 The Leaseholder must prepare and maintain a Subsidence Management Status Report which must include but not be limited to:
- a) the current face position of the panel being extracted;
 - b) a summary of any subsidence management actions undertaken by the Leaseholder in the period subsequent to the last regular submission of the Status Report;
 - c) a summary of any comments, advice and feedback from consultation with stakeholders in relation to the implementation of this Approval (including the preparation, implementation and review of plans, programmes, reports or strategies required by this approval) undertaken or received in the period subsequent to the last regular submission of the Status Report and a summary of the Leaseholder's response to the comments, advice and feedback given by the stakeholders;
 - d) a summary of the observed and/or reported subsidence impacts, incidents, service difficulties, community complaints, and any other relevant information reported to the Leaseholder in the period subsequent to the last regular submission of the Status Report and a summary of the Leaseholder's response to these impacts, incidents, service difficulties and complaints;
 - e) a summary of subsidence development based on monitoring information compared with any defined triggers and/or the predicted subsidence to facilitate early detection of potential subsidence impacts;
 - f) a summary of the adequacy, quality and effectiveness of the implemented management processes based on the monitoring and consultation information summarised above; and
 - g) a statement regarding any additional and/or outstanding management actions to be undertaken or the need for early responses or emergency procedures to ensure adequate management of any potential subsidence impacts due to longwall mining.

The Subsidence Management Status Report must be updated at least every 14 days to reflect any changes in the information required to be included in the Report. The Status Report must be regularly submitted to the Principal Subsidence Engineer, NSW Office of Water, EPA and each operator of infrastructure referred to in condition 14 every four (4) months from the date of this Approval. In addition, the Status Report (as updated from time to time) must be provided, upon request, to the Mine Subsidence Board, the Director of Environmental Sustainability & Land Use, the Principal Subsidence Engineer, owners/operators of any infrastructure within the application area and any other relevant stakeholders.

End of Panel Report

- 18 Within 4 months of the completion of each longwall panel, an end of panel report must be submitted to the Director General. The end of panel report must:
- a) include a summary of the subsidence and environmental monitoring results for the applicable longwall panel;
 - b) include an analysis of these monitoring results against the relevant;
 - impact assessment criteria;
 - monitoring results from previous panels;
 - predictions in the SMP; and
 - performance measures specified in Table 1 and Table 2
 - c) identify any trends in the monitoring results over the life of the activity; and
 - d) describe what actions were taken to ensure adequate management of any potential subsidence impacts due to longwall mining.

Access to Information

- 19 Within 3 months of the submission of an End of Panel Report (as required by Condition 18) or the approval of a plan, programme or strategy required under this Approval or the SMP (or any subsequent revision of these documents), the Leaseholder must, to the satisfaction of the Director General:
- a) provide a copy of these document/s to all relevant agencies;
 - b) ensure that a copy of the relevant documents is made publicly available at the Leaseholder's regional office; and
 - c) put a copy of the relevant document/s on the Leaseholder's website.

Note: Relevant agencies currently include MSB, EPA, NOW and DP&I.

Survey Marks

- 20 At the completion of subsidence, or otherwise as required by the Land and Property Management Authority, the functionality of any survey marks affected by subsidence must be fully restored to the satisfaction of the Land and Property Management Authority.

Water Supply

- 21 In the event of interruptions to potable water supplies (water quality and/or quantity) due to subsidence impacts on water supply systems and/or sources caused by longwall mining, the Leaseholder must provide, without delay, water supplies of equivalent quality and quantity to locations convenient to those affected within the SMP Application Area until such time that the affected water supply systems and/or sources are restored.

Special Conditions

Cliff Safety Management Plan

- 22 The Leaseholder must develop and implement a management plan to ensure the safety of any persons frequenting in any areas in the vicinity of the Nepean River Gorge that may be affected by subsidence. The Leaseholder must obtain Director Mine Safety Operations' approval of this management plan prior to the commencement of Longwall 705.

Regional Seismic Event Monitoring Programme

- 23 The Leaseholder must prepare and implement a regional seismic event monitoring programme, to the satisfaction of the Director Environmental Sustainability & Land Use. The programme is to include analysis of outcomes and proposed triggers for review of potential correlations with mining operations