Narrabri Coal Pty Ltd

ABN: 76 107 813 963

Spontaneous Combustion Management Plan

for the

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ACRONYMS USED THROUGHOUT THIS REPORT

DECC (EPA)	-	Department of Environment and Climate Change (Environment Protection Authority)
DoP	-	Department of Planning
DPI-MR	-	Department of Primary Industries - Mineral Resources
NCPL	-	Narrabri Coal Pty Ltd
PA	-	Project Approval

1 INTRODUCTION

The Spontaneous Combustion Monitoring Program (SCMP) has been developed for the Narrabri Coal Mine ("the mine") to provide a monitoring and detection framework for the prevention or mitigation of spontaneous combustion occurrences in both the underground mine operations and within the coal processing, stockpile and rail loading facilities of the Pit Top Area.

This document supports the mine's Spontaneous Combustion Management Plan and will be replaced by the Mine Monitoring Arrangements Systems Plan to be submitted to the DPI-MR together with the Ventilation Management Systems Plan and the Gas Drainage Management Systems Plan, prior to commencement of underground coal extraction in development headings.

2 PURPOSE

The purpose of the SCMP is to define the system under which the Narrabri Coal Mine will carry out its operations to manage spontaneous combustion risk.

3 SCOPE

The SCMP is authorised by the Manager Mining Engineering and applies to all personnel employed or contracted either directly or indirectly by NCPL at the mine in any capacity.

The SCMP only applies to the approved Stage 1 mine development phase and is restricted to first workings roadways. It does not cover proposed Stage 2 – establishment of a long wall operation scheduled (subject to technical and economic feasibility studies) for 2012.

4 RELATIONSHIP TO OTHER MANAGEMENT PLANS

The SCMP forms a part of the mine's Health & Safety Management System and should be read in conjunction with the following monitoring programs and management plans.

- Environmental Monitoring Program.
- Spontaneous Combustion Management Plan.
- Mine Ventilation Management Plan.
- Hazard Management Plan.
- Emergency Response Plan.
- Trigger Action Response Plan.

5 PROCEDURES

5.1 UNDERGROUND OPERATIONS

5.1.1 Mine Design

Mine layout design, mine development operations and detection/monitoring systems implementation are to be undertaken with due regard to spontaneous combustion risk management.

Mine design and mine development planning are to directly incorporate risk management procedures which:

- set Standards and Specifications for mine design or re-design, specific to Narrabri conditions, that are consistent with and that incorporate all necessary measures to duly prevent or mitigate the risk of spontaneous combustion;
- undertake regular monitoring, audits and gap analyses against those Standards, to ensure correct implementation of those spontaneous combustion related mine design features into the actual mine development; and
- duly considers historic gas monitoring data trends to enable consideration of any changes or re-design to the mine development layout.

5.1.2 Mining Methods

As the Stage 1 mine will be almost all in first development workings, mining methods will be centred on the deployment of three continuous miners only. Development of the West Mains and progressively, the North Main Gate roads will be to a spatial design that incorporates features to manage the risk of spontaneous combustion.

5.1.3 Mine Ventilation Design and Practice

In view of the recognised high to very high propensity for spontaneous combustion in the Hoskissons Coal Seam, considerable emphasis on all aspects of the ventilation system design to prevent or mitigate spontaneous combustion will be paramount.

The Ventilation Management System will be developed and implemented within consideration given to the following factors.

- Extensive modelling of the mine design and the proposed mining schedule to enable optimal designing of the mine ventilation system.
- The establishment of set Standards and Ventilation Design Specifications by the Manager Mine Ventilation which will incorporate all necessary measures to duly prevent or mitigate the risk of spontaneous combustion.
- The development and ongoing refinement of a set of monitoring-based gas concentration triggers that initiate the respective pre-determined response/s and immediate action plans.

- The development of procedures across all design features of the Mine Ventilation System including a comprehensive system of gas monitoring/detection monitoring on both a continuous and discrete locality basis across active and non-active areas of the mine. The procedures must incorporate both reactionary and proactive measures that ensure the risks of spontaneous combustion and the consequential impacts on mine air environment are well managed.
- Areas of the mine that are segregated are to be regularly inspected, gas sampled and infrared surveyed to ascertain:
  - the effectiveness of any seals, balance chamber or neutral road ways;
  - detection of spontaneous combustion within sealed mine areas; and
  - the most effective response to any detected self heating or actual spontaneous combustion.
- The establishment of a trained Spontaneous Combustion Control Group that will be able to implement pre-determined action plans under the control of the Manager Ventilation Systems and the Manager Mining Engineering. The Control Group will be available to also assist with ongoing gas sampling and inspections as required.

5.1.4 Mine Environment Condition Monitoring and Change Detection

The Manager - Mine Ventilation in consultation with the Manager - Mining Engineering will design, implement and maintain comprehensive gas monitoring and change detection systems to monitor for indicators and set triggers of spontaneous combustion.

These monitoring and inspection systems will be linked to a Trigger Action Response Plan to be developed by the Manager - Mining Engineering in consultation with the Manager - Mine Ventilation.

The Trigger Action Response Plan will detail the roles and responsibilities of the Spontaneous Combustion Control Group and the roles of each individual member.

The process of setting trigger levels is to be based on the historic baseline mine environment conditions as continually recorded by on-line monitoring at all established gas monitoring points. As the Narrabri Coal Mine is a new mine, trigger levels will initially be conservatively set, on the basis of modelling and initial pit bottom gas sampling.

Gas monitoring and change detection systems to be implemented will be centred on the following:

Continuous Gas Monitoring	- Real time (telemetric) system
Bag Sampling Regime	- Discrete gas sampling and external laboratory Analyses
Portable Gas Detectors	- Handheld detectors to measure CH_4, CO_2, CO and Nitrogen
Portable Infrared Detectors	- Handheld “gun” to inspect permanent pillars, cut throughs and road ways etc.
Temperature Monitoring	- Temperature probes installed into pillars as deemed appropriate at key locations

Details of continuous gas monitoring point locations, sampling frequencies and calibration/re-calibration requirements will be established and outlined in Monitoring Arrangements Management System Plan to be developed and submitted.

The mine's SCADA system will enable real time display of results and will be programmed with alarm (trigger) levels for each gas monitoring location. Audible alarms will sound for each gas type and require typed acknowledgement by Pit Controller.

The SCADA System will enable all gas monitoring data to be trended and analysed for any designated period.

Initially weekly, then monthly, the Manager - Mine Ventilation will review, account for and then sign off all alarms recorded for the period. Any actions resulting from the data analysis will be implemented with the approval of the Manager - Mining Engineering.

6 INSPECTION PROGRAM

The mine will develop an inspection program which will include the following elements.

- General inspections and observations for spontaneous combustion indicators which are carried out by Mining Supervisors during their statutory inspections and normal duties. Results of these inspections are recorded on statutory reports and filed within the mine's record system.
- During the course of normal work underground all personnel should monitor the environment for indications of spontaneous combustion and report any indicators to a Mining Supervisor as per the Trigger Action Response Plan.
- The mine will install temperature monitoring points into pillars at the designated locations, if deemed appropriate, to monitor for any temperature increase that may indicate self heating.
- Each month after the commissioning of the mines main ventilation system, the Ventilation Officer will take temperature readings at key locations throughout the mine, including the drift conveyor (spillage) underground ROM Coal Bin, using an infrared heat gun. Results of these inspections shall be recorded in the Ventilation Officer's monthly report.

6.1 SURFACE STOCKPILE OPERATIONS

6.1.1 Stockpile Layout

NCPL will construct and operate two surface stockpile facilities to accommodate ROM and product coal and will have capacities of 100 000 and 130 000 tonnes respectively.

Coal reclaimed via tunnel reclaim system from the ROM coal stockpile will be subject two stage crushing to achieve 50mm topsize before stockpiling onto the Product Stockpile.

At 2.5Mtpa maximum production rate, it is expected that approximately 10 trains per week (5500 tonne unit train basis) will enable short term turnover of coal stocks on both stockpiles thereby reducing the risk of spontaneous combustion.

6.1.2 ROM Coal Stockpile

ROM coal, nominally minus 200mm, will be stockpiled to a maximum height of 12 metres. Given the low bulk density and the high air void to mass ratio (porosity) of the coal it is intended to keep stockpile slope angles to less than angle of repose, particularly on the prevailing wind side to reduce air flow. A D10 carry dozer will assist with stockpile management, as well as profile shaping stockpile/s as required, to maintain a practicable stockpile shape that reduces air flow through the coal.

A wind anemometer activated stockpile dust suppression system will operate to manage fugitive dust emissions. To that end, total moisture levels will be monitored to ensure moisture addition is not excessive and which may enhance the potential for spontaneous combustion.

Both regular visual inspections and temperature testing will be undertaken as a requirement of the inspection provisions of the Spontaneous Combustion Management System. Temperature probes and hand held infrared detectors will be used to periodically monitor the stockpiled coal, initially, on a weekly basis until a self heating tendency over time if any, can be discerned. A permanent record including date, current and past weather conditions, coal source, temperature readings, estimated duration of coal on stock etc., will be maintained from all monitoring inspections. Should any self heating be detected, procedures therein the Spontaneous Combustion Management System will be instigated.

The carry dozer will be deployed to ensure all coal at the extremities of the ROM stockpile are reclaimed and crushed to avoid remnant coal self heating and to generally ensure thorough coal stocks turnover.

6.1.3 Product Coal Stockpile

Product coal, nominally minus 50mm, will be stockpiled to a maximum height of 12 metres. As with the ROM coal stockpile, it is intended to keep stockpile slope angles to less than angle of repose where possible, particularly on the prevailing wind side to reduce air flow into and through the stockpile mass. A D10 carry dozer will again be deployed to assist with stockpile management and with profile shaping of stockpile/s as required.

A wind anemometer activated stockpile dust suppression system will operate to manage fugitive dust emissions. To that end, total moisture levels will be monitored via regular train analysis testing to ensure moisture addition is not excessive and which may enhance the potential for spontaneous combustion.

Both regular visual inspections and temperature testing will be also be undertaken on the Product Stockpiles as a requirement of the inspection provisions of the Spontaneous Combustion Management System. Temperature probes and hand held infrared detectors will be used to periodically monitor the stockpiled coal, initially, on a weekly basis until a self heating tendency over time if any, can be discerned. A permanent record including date, current and past weather conditions, coal source, temperature readings, estimated duration of coal on stock etc. will be maintained from all monitoring inspections. Should any self heating be detected, procedures therein the Spontaneous Combustion Management System will be instigated.

All coal affected by self heating or actually showing signs of combustion will be separated, spread out and water saturated, in line with the appropriate action response plan to ensure self heating coal or burning coal is not reclaimed and conveyed to the train load-out facility. Once treated, this coal will be monitored for any resumption of heating before being reclaimed and conveyed to the train load-out facility.

The carry dozer will be deployed to ensure all coal at the extremities of the ROM stockpile are reclaimed and crushed to avoid remnant coal self heating and to generally ensure thorough coal stocks turnover.

Any subsequently treated coal reclaimed to the train load-out facility will be monitored by the NCPL appointed Superintendence Company, once delivered to Port Newcastle, if deemed necessary.

6.2 EXPLORATION BOREHOLES

The NCPL Manager - Mining Engineering, in consultation with the Whitehaven Resource Development Group is to ensure that all exploration boreholes are to be fully cemented as soon as practicable after completion of drilling. The Manager will periodically request an update of exploration borehole cementing records from the field geologist responsible as proof of that the hole cementing program is complete.

7 RESOURCES

A suitable number of competent and, where relevant, qualified persons are to be available and duly appointed to meet the commitments and obligations of the Spontaneous Combustion Monitoring Program and all relevant provisions of the NSW Coal Mine Health & Safety Act 2002 and Regulation 2006. These persons are to also be familiar with MDG 1006.

8 CONSULTATION AND COMMUNICATION

All persons affected by or have a role in administrating the requirements of the Spontaneous Combustion Monitoring Program shall:

- have both print and electronic access to a copy of this document (latest revision) and all associated documents via the Mine's document control system and the NCPL Integrated Management System for review purposes;
- attend regular review meetings in relation to air quality and spontaneous combustion monitoring; and
- attend periodic competency based training programs and refresher courses in relation to all aspects of the implementation of the both the Spontaneous Combustion Management and Monitoring Plans.

9 ROLES & RESPONSIBILITIES

Manager - Mining Engineering

The Manager - Mining Engineering shall:

- Ensure equipment and services integral to the Spontaneous Combustion Monitoring Program.

Ventilation Officer

The Ventilation Officer shall:

- undertake ventilation design and planning at the mine, utilising ventilation simulations;
- manage ventilation changes;
- review and sign off the previous month's alarms from the Citect system; and
- take monthly temperature readings of the pillars/chain pillars thoughout the Pit Bottom Area, West Mains and Gate Roads.

Managers, Electrical and Mechanical Engineering

The Managers of Electrical and Mechanical Engineering shall:

- ensure all systems at the mine are designed and maintained for maximum operational utilization and reliability;
- all conveyors are maintained accordingly to minimise spillage of coal; and
- all monitoring systems are well maintained and regularly checked.

Mining Supervisors

Mining Supervisors shall:

- carry out general inspections, observations and measurements for spontaneous combustion indicators during their statutory inspections and normal duties; and
- carry out inspections and observations for coal spillage as part of their statutory inspections and normal duties.

Operators

Operators shall:

- monitor the environment for indications of spontaneous combustion and report any indicators to a mining supervisor and participate in trigger action response plans when initiated; and
- participate in Tool Box Meetings and training sessions in relation to awareness of and the detection/observations for spontaneous combustion.

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