



MANNERING COLLIERY

ENVIRONMENTAL ASSESSMENT

APPENDIX D **PRELIMINARY HAZARD ANALYSIS**

CENTENNIAL COAL COMPANY LIMITED

**MANNERING COLLIERY
CONTINUATION OF MINING**

ENVIRONMENTAL ASSESSMENT

PRELIMINARY HAZARD ANALYSIS

Prepared by:

HANSEN BAILEY
6/127-129 John Street
SINGLETON NSW 2330

March 2007

Centennial Coal Company Limited
PO Box 1000
TORONTO NSW 2283

TABLE OF CONTENTS

1.0 BACKGROUND	1
2.0 IMPACT ASSESSMENT	1
2.1 RISK CRITERIA	1
3.0 MITIGATION AND MANAGEMENT	6
3.1 CONCLUSION	6
4.0 REFERENCES.....	7

LIST OF TABLES

Table 1 Qualitative Consequence Scale	2
Table 2 Qualitative Likelihood Scale	2
Table 3 Qualitative Risk Matrix.....	3
Table 4 Qualitative Risk Assessment.....	4

PRELIMINARY HAZARD ANALYSIS

for **Centennial Coal Company Limited**

1.0 BACKGROUND

A Preliminary Hazard Analysis (PHA) has been undertaken by Hansen Bailey to evaluate the likely risks associated with the Project in accordance with the *Hazardous Industry Planning Advisory Paper (HIPAP) No. 6 – Guidelines for Hazard Analysis* (DUAP, 1992).

The need for a PHA to be prepared was determined through the application of ‘*Applying SEPP 33 – Hazardous and Offensive Development Application Guidelines*’ (DUAP, 1994) to the Project. These guidelines provided a process for evaluating whether proposed developments will be potentially hazardous or offensive and hence whether some form of hazard analysis is required.

2.0 IMPACT ASSESSMENT

A qualitative PHA has been undertaken for the Project due to the fact that the materials present on-site are relatively non-hazardous, there are no major worst case consequences, appropriate management safeguards are readily implemented and the surrounding land uses are relatively non-sensitive.

2.1 RISK CRITERIA

The potential hazards and risks identified during the hazard identification process for the Project were assessed with the qualitative risk assessment criteria provided in *AS/NZS 4360:2004 Risk Management* and accompanying guidelines *HB 436 Risk Management Guidelines – Companion to AS/NZS 4360* and considers the following qualitative criteria:

- All ‘avoidable’ risks associated with the Project should be avoided. This may require the investigation of alternative locations and technologies;
- The level of risk from a significant hazard should be reduced wherever possible, irrespective of the level of cumulative risk from the Project as a whole; and
- The consequences of the more likely hazardous events should, wherever possible be contained within the Project Area boundaries.

In order to carry out the assessment of risks in a qualitative manner, it is advantageous to define the various levels of consequences of an event and the likelihood of such an event occurring. *AS/NZS 4360:2004 Risk Management* and *HB 436:2004 Risk Management Guidelines – Companion to AS/NZS 4360:2004* provide qualitative scales of consequences and likelihood for potential hazardous events and are provided below in **Table 1** and **Table 2**.

The level of risk was determined using the risk levels provided below by combining the consequence and likelihood of the event from **Table 1** and **Table 2** and identifying what level of risk the event would be from **Table 3**.

The levels of risk include:

- Low – Manage by routine procedures, unlikely for any specific application of resources;
- Medium – Manage by specific monitoring, or response procedures, with management responsibility specified;
- High – Senior management attention required. Action plans and responsibility specified; and
- Very High – Same as High category. However, immediate action required.

The qualitative PHA for the Project is presented in **Table 4**.

Table 1
Qualitative Consequence Scale

Descriptor	Definition
Negligible	Insignificant impact. No injury, minimal financial loss.
Minor	Minor effect that are easily repaired. First-aid treatment required, release contained on-site, medium financial loss.
Moderate	Some significant impact. Medical treatment required, release contained on-site with outside assistance, high financial loss.
Major	Extensive injuries, loss of operation capability, off-site release with no detrimental effects, major financial loss.
Severe	Fatality, offsite release with significant effect, severe financial loss.

Source: AS/NZS 4360:2004 and HB 436:2004

Table 2
Qualitative Likelihood Scale

Descriptor	Definition
Almost Certain	Event will occur frequently. On an annual basis.
Likely	Probably occur in most circumstances. Once every three years.
Possible	Might occur at some time. Once every ten years.
Unlikely	Could occur at some time. Once every thirty years.
Rare	May occur in exceptional circumstances. Once every 100 years.

Source: AS/NZS 4360:2004 and HB 436:2004

Table 3
Qualitative Risk Matrix

Likelihood	Consequence				
	Negligible	Minor	Moderate	Major	Extreme
Almost Certain	Medium	High	High	Very High	Very High
Likely	Medium	Medium	High	High	Very High
Moderate	Low	Medium	High	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

Source: AS/NZS 4360:2004 and HB 436:2004

Table 4
Qualitative Risk Assessment

Operational Area	Incident Type	Scenario	Management Measures	Likelihood	Consequence	Risk
Transport to Site (Diesel, Chemicals and General Goods)	Spill	Vehicle collision, poor maintenance, or human error leading to off-site impacts. Material ignited following spill	- Licensed contractors to transport and operate in accordance with Australian Standards (AS) and NSW Legislation - Fire fighting equipment to be stored with vehicle - Transport vehicles to have communication (e.g. mobile, radio) - Spill kit stored on transport vehicles	Rare	Minor	Low
	Fire					
	Theft	Theft of dangerous goods during transport, leading to offsite impacts	- Transport vehicles to have communication (e.g. mobile, radio) - Follow specified route as per procedure	Rare	Minor	Low
On-Site Storage (Diesel, Chemicals, and Water)	Leak/Spill	Failed tank or pipe with possible off-site impacts including chemical or diesel contamination	- All Storage containers, bunding, drainage and pipelines designed to AS - All re-fills conducted by fully licensed contractor, who is inducted and familiarised - Operators using the facility to be inducted and familiarised - Regular staff training - Regular inspections of facilities - Maintenance when required - Operating procedures followed	Rare	Minor	Low
		Failed dam leading to off-site contamination	- Design of dam structures to relevant standards - Regular inspections and maintenance where required - Manning's EPL 191 allows up to 4ML/day to be discharged off-site via LDP1	Rare	Minor	Low
	Theft	Unauthorised personnel removing products,	All Storage containers, bunding, drainage and pipelines designed to NSW legislation	Rare	Minor	Low

Operational Area	Incident Type	Scenario	Management Measures	Likelihood	Consequence	Risk
General Operations (CCF, Workshop)		which could result on offsite impact	- Security fencing, and security services in operation - All re-fills conducted by fully licensed contractor, who is inducted - Operators using the facility to be inducted and familiarised - Regular inspections of facilities			
	Fire	Flammable or combustible materials ignited causing a fire which has potential to spread	- All Storage containers, bunding, drainage and pipelines designed to AS - Regular inspections of facilities - Maintenance when required - Operators using the facility to be inducted and familiarised - Fire fighting equipment available on-site - All spillage cleaned up and operating procedures.	Rare	Minor	Low
	Spill	Vehicle collision on-site, poor maintenance, procedures absent, leading to off-site impacts	- Storage containers, bunding, drainage and pipelines designed to AS - Regular inspections of facilities - Maintenance when required - Operators using the facility to be inducted and familiarised - Operating procedures followed	Rare	Minor	Low
	Fire	Mobile plant, fixed plant, human action leading to off-site fire related impacts	- Regular maintenance of mobile plant and fire fighting equipment - Development and maintenance of appropriate fire breaks (i.e. regular mowing around the Manning Surface Facilities) - Regular inspections of mobile and fixed plant, fire fighting equipment and fire breaks - Training and competency assessment of plant operators and fire fighting equipment	Rare	Minor	Low
Underground Mining	Subsidence	Damage caused to surface features due to mining induced ground subsidence	The conceptual mine plan has been designed to ensure no noticeable surface impacts	Rare	Negligible	Low

3.0 MITIGATION AND MANAGEMENT

3.1 CONCLUSION

The PHA was undertaken for the Project based on the guidelines provided in *Applying SEPP 33*. The findings from the qualitative risk assessment in **Table 4** indicate that the Project is not considered hazardous or offensive. As a consequence, it is considered that no further mitigation measures, in addition to those already implemented, are proposed as a result of the Project.

*

*

*

for

HANSEN BAILEY



Daniel Sullivan
Environmental Scientist



James Bailey
Principal Environmental Consultant

4.0 REFERENCES

- DUAP (1992) *Hazardous Industry Planning Advisory Paper (HIPAP) No. 6 – Guidelines for Hazard Analysis*
- DUAP (1994) *Applying SEPP 33 – Hazardous and Offensive Development Application Guidelines*
- Standards Australia (2004a) *AS/NZS 4360:2004 Risk Management*
- Standards Australia (2004b) *HB 436:2004b Risk Management Guidelines – Companion to AS/NZS 4360:2004*