

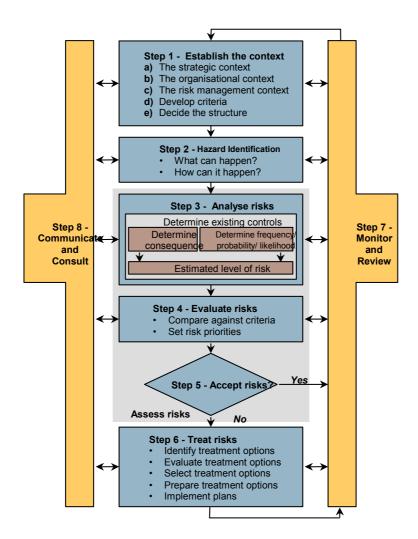


# **Qualitative Risk Assessment**

for

### **CARDNO FORBES RIGBY**

SMP Application
Longwalls 34 - 36 in Area 5 at West Cliff Colliery



Document No: AR0507

Analysis Date: 11th January 2008 Revision No: 1

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## **Section 1. Executive Summary**

This analysis was commissioned by Cardno Forbes Rigby Pty Ltd to determine the risks associated with mining Longwalls 34 to 36 at West Cliff Colliery with the aim of developing the Subsidence Management Plan (SMP) for BHPB Illawarra Coal.

This report details the methods used and the recommendations from the risk assessment which was conducted at the offices of Cardo Forbes Rigby on January 11th of 2008.

Risk ranking was undertaken in accordance the BHP Billiton Enterprise Wide Risk Management (EWRM) Standard.

In accordance with the scope, high level risk issues were considered and recorded by the risk assessment team. The reader should refer to the sections regarding the Objectives, Scope and Assumption and Limitations of this risk assessment.

Attachment 2 (Analysis Worksheets) identifies all of the hazards, existing controls, risk rankings and any new treatment options and the people responsible for their implementation.

Attachment 5 (Risk Treatment Schedule) provides a format of all the new treatment options and the people responsible for their implementation. In addition a required date and sign off is also provided.

Attachment 3 and 4 (Risk Rank Order and Consequence Order) provides all of the identified hazards and treatment options in order of highest risk to lowest risk and from highest consequence to lowest consequence. The BHPB EWRM standard does not require these reports, however to provide compliance to the Department of Primary Industries MDG1010 and MDG1014 standards they are included.

## Section 2. Analysis and Report

This Analysis was facilitated by: Shane Chiddy
The Analysis took place: 11th January 2008

This Analysis has been verified by:

The Verification occured:

This Report has been compiled by: Shane Chiddy

The Report was compiled: 11th January 2008

## Section 3. Participants

The following people participated in the Analysis:

The following people p	articipated in the Analysis.	Relevant
<u>Participant</u>	Participant Role	Experience
Richard Walsh	BHPB Illawarra Coal Manager Approvals	27 Years
Bruce Blunden	BHPB Illawarra Coal Manager Environmental Approvals	15 Years
Chris McEvoy	Cardno Forbes Rigby Senior Manager / Environmental Scieentist	15 Years

## Section 4. Purpose

In January 2008 AXYS Consulting was commissioned to facilitate a risk assessment to assist in the development of the Subsidence Management Plan (SMP) for Longwalls 34 - 36 at West Cliff Colliery, consider the potential risk of impacts to key stakeholders and Illawarra Coal.

This report details the methods used and the recommendations resulting from the risk assessment which was conducted at the Cardno Forbes Rigby offices on the 11th of January 2008.

The aspects included in this SMP includes man made features of importance such as the Upper Canal including the Nepean Tunnel and aqueducts, electricity transmission lines and the Alinta, AGL and Gorodok gas pipelines.

Natural features and heritage structure items within the area are also included .

The mining layout will impact several permanent survey control stations.

Houses are situated within the area and, for the purposes of this assessment, include associated structures, such as on-site septic waste systems, sheds, fences etc.

Rural structures located within the SMP Area include farm buildings, fences, farm dams and water bores.

Subsidence predictions have been completed for the application area and the subsidence model includes vertical and horizontal displacement predictions.

## Section 5. Objectives

The objectives of this assessment is to assist West Cliff Colliery in identification and control of risks associated with Longwalls 34-36 subsidence in accordance with requirements from:

BHPB Policy and Standards;

State and Commonwealth Legislation;

Evaluate and record a formal risk assessment in accordance with the BHP Billiton EWRM Standard.

## Section 6. Scope

The scope of this report is to identify subsidence risks from all potential sources for West Cliff Colliery proposed Longwalls 34-36.

This risk assessment is to assist in the development of the SMP.

Areas for consideration includes surface and sub-surface features as defined by Process Area List based on the NSW Department of Primary Industries - Mineral Resources Guideline for application for Subsidence Management Approvals - Appendix B.

Specifically, this report is to assess the risks associated with mining Longwalls 34-36 at West Cliff Colliery with the aim of developing the SMP, in accordance with the BHP Billiton EWRM Standard in terms of;

- Health and Safety (HS);
- Estimated Shareholder Value / Material Damage / Financial Loss (FL);
- Project Net Present Value (NPV);
- Natural Environment (NE);
- Social / Cultural / Heritage (SC);
- Community / Government Reputation / Media (R);
- Legal (L).

## **Section 7.** Assumptions

The following assumptions and limitations have been applied to this risk assessment:

- 1. Subsidence would generally be in accordance with predictions as identified in the report MSEC326 developed by Mine Subsidence Engineering Consultants.
- 2. Impact would be similar to those previously observed in comparable areas.
- 3. There may be isolated cases where subsidence will not occur as predicted. These cases will be taken into account in the MSEC326 report and the Impact Assessment and the SMP development.
- 4. Rigorous monitoring can identify anomalous subsidence which can be used to manage impacts through early intervention strategies.
- 5. Surface features and land use remains substantially constant during the mining period.
- 6. BHPB IC will initiate consultation procedures to identify any changes to surface infrastructure in the area that may be impacted.
- 7. Focus of this risk assessment is for the development of the SMP.
- 8. Risk evaluation is for the highest most likely impact on the risk being assessed.

## **Section 8. Facilitator Qualifications**

Shane Chiddy holds an Associate Diploma in Engineering (Electrical), is a Graduate Officer of the Institution of Engineers (Australia) and is a member of the Maintenance Engineering Society of Australia (MESA). He has also completed Conveyancing Law through Macquarie University and Establish the Risk Management Systems (Mine 7033 - G3) through Queensland University.

Prior to commencing his consulting career, Shane Chiddy qualified as an electrician and worked underground for 15 years. He then occupied a number of engineering roles within Rio Tinto, including such roles as electrical supervisor, Development Engineer and Senior Production Engineer. This latest role was responsible for the Longwall, underground diesel equipment and conveyors.

Additionally Shane Chiddy has been trained and accredited by John Moubray in the UK as a certified RCM II practitioner, and has conducted a number of extensive Reliability-centred Maintenance II analyses including underground and surface equipment such as Longwalls, Continuous Miners and conveying systems. He has facilitated RCM II analysis and delivered training in the mining, defence and telecommunications industries.

His consulting experience includes the application of Reliability-centred Maintenance II and extensive Risk Management and Project Management assignments. Shane is also experienced in software development and in the development and presentation of training packages.

# Section 9. Sub-Systems Analysed:

	SUB-SYSTEM		STEP IN PROCESS
1	Natural Features	A	1.01 Catchment areas and declared Special Areas
		В	1.02 Rivers and creeks (Georges River, Nepean Creek, Leafs Gully, Mallaty Creek)
		С	1.03 Aquifers, known groundwater resources
		D	1.04 Springs
		E	1.05 Sea/lake
		F	1.06 Shorelines
		G	1.07 Natural dams
		н	1.08 Cliffs / pagodas
		ı	1.09 Steep slopes
		J	1.10 Escarpments
		K	1.11 Land prone to flooding or inundation
		L	1.12 Swamps, wetlands, water related ecosystems
		М	1.13 Threatened and protected species
		N	1.14 National parks
		0	1.15 State recreation areas
		Р	1.16 State forests particularly areas zoned FMZ 1, 2 and 3
		Q	1.17 Natural vegetation
		R	1.18 Areas of significant geological interest
		s	1.19 Any other feature considered significant
2	Public Utilities	A	2.01 Railways
		В	2.02 Roads (all types)
		С	2.03 Bridges
		D	2.04 Tunnels (Nepean Tunnel as part of the Upper Canal System)
		E	2.05 Culverts
		F	2.06 Water/gas/sewerage pipelines
		G	2.07 High pressure gas pipelines (High pressure gas pipelines Alinta, AGL and Gorodok)
		н	2.08 Electricity transmission lines (overhead/underground) and associated plants
		ı	2.09 Telecommunication lines (overhead/underground) and associated plants
		J	2.10 Water tanks, water and sewage treatment works
		K	2.11 Dams, reservoirs and associated works
		L	2.12 Air strips
		М	2.13 SCA infrastructure including Upper Canal, Nepean Tunnel, Aqueducts, Bridges and all associated roads, flumes and culverts
3	Public Amenities	A	3.01 Hospitals
		В	3.02 Places of worship
		С	3.03 Schools
		D	3.04 Shopping centres

# Section 9. Sub-Systems Analysed:

	SUB-SYSTEM		STEP IN PROCESS
3	Public Amenities	Е	3.05 Community centres
		F	3.06 Office buildings
		G	3.07 Swimming pools
		н	3.08 Bowling greens
		ı	3.09 Ovals and cricket grounds
		J	3.10 Race courses
		к	3.11 Golf courses
		L	3.12 Tennis courts
		М	3.13 Any other amenities considered significant
4	Farm Land and Facilities	Α	4.01 Agricultural utilisation or agricultural suitability of farm land
		В	4.02 Farm buildings / sheds
		С	4.03 Gas and / or fuel storages
		D	4.04 Poultry sheds
		E	4.05 Glass Houses
		F	4.06 Hydroponic systems
		G	4.07 Irrigation systems
		н	4.08 Fences
		ı	4.09 Farm dams
		J	4.10 Wells, bores
		K	4.11 Any other feature considered significant
5	Industrial, Commercial and Business Establishments	A	5.01 Factories
		В	5.02 Workshops
		С	5.03 Business or commercial establishments
		D	5.04 Gas and / or fuel storages and associated plants
		E	5.05 Waste storages and associated plants
		F	5.06 Buildings, equipment and operations that are sensitive to surface movements
		G	5.07 Surface mining (open cut) voids and rehabilitated areas
		Н	5.08 Mine infrastructure including tailings dams and emplacement areas
		ı	5.09 Any other feature considered significant
6	Areas of Archaeological and/or Heritage significance	Α	6.01 Areas of Archaeological and/or Heritage Significance
7	Items of Architectural Significance	А	7.01 Items of Architectural Significance
8	Permanent Survey Control Marks	А	8.01 Permanent Survey Control Marks
9	Residential Establishments	Α	9.01 Houses
		В	9.02 Flats / Unit
		С	9.03 Caravan parks

# Section 9. Sub-Systems Analysed:

	SUB-SYSTEM		STEP IN PROCESS
9	Residential Establishments	D	9.04 Retirement/aged care villages
		Е	9.05 Associated structures such as workshops, garages, on-site waste water systems, water or gas tanks, swimming pools and tennis courts
		F	9.06 Any other feature considered significant

## Attachment 1

Definitions and Risk Ranking Methodology

#### Consequence

The size and nature of the impact from an event or occurrence.

#### **Exposure**

The frequency at which BHP Billiton could be exposed to consequences at the specified severity. These consequences may not manifest themselves, but there is a possibility they might.

#### **Exposure factor**

Is a measure of the frequency of occurrence of the risk issue during which BHP Billiton and/or its stakeholders could be exposed to consequences at the specified level of severity.

#### Hazard

A hazard is the intrinsic potential for an agent, activity or process to lead to an incident, or ongoing condition.

**Environment note:** The term 'hazard' is essentially equivalent to 'environmental aspect'.

#### Impact/Effect

Impacts are specific adverse effects resulting from an incident and may be related to people, the environment, plant or property, or a combination of these.

#### Incident (or ongoing condition)

An incident (or ongoing condition) is any occurrence that has the potential to result in adverse consequences to people, the environment, property/plant, or a combination of these.

#### Likelihood

The chance of occurrence per unit time (normally per year) In BHP Billiton this term will be used instead of "Frequency" because it helps the user think "is it likely?"

#### Frequency

The chance of occurrence per unit time (typically, per year).

#### **Probability Factor**

Represents the chance of consequences as the specified level of severity occurring when the risk issue occurs (i.e. during the Exposure).

#### Risk

Risk is defined as the likelihood of an impact on people, the environment, property, or a combination of these.

#### Risk Rating

The numerical rating applied to a risk calculated as the product of a severity factor, a probability factor, and an exposure factor.

#### **Severity factor**

Is a measure of the degree of consequences that are most likely to occur associated with a risk. Those consequences could either negatively impact BHP Billiton, its brand and its stakeholders or be the expected level of unrealised opportunity for gain that could be missed.

#### Risk Control Effectiveness (RCE)

The Risk Control Effectiveness (RCE) is defined as "the actual level of control that is currently present and effective, expressed as a percentage of that reasonably achievable for that particular risk issue" In practice there would always be some room for improvement in the completeness and/or effectiveness of the controls associated with a risk issue. Accordingly, a value of 100% should not normally be claimed for the Risk Control Effectiveness rating.

Description	RCE
"Just getting started" / "A lot of work still to be done"	20 – 30%
"About half way there"	50 – 60%
"Most things in pace and working, but some more still to be done"	75 – 80%
"Nothing more to be done except review and monitor the existing controls"	> 90%

#### **EXPOSURE FACTOR**

Choose a description that best fits the frequency of the "window of opportunity" during which impacts of the selected type and level of severity could be incurred (experienced) by BHP Billiton or its stakeholders, taking into account the existing controls.

Frequency of the "window of opportunity"	Factor
At least once per week	10
One a month or so	3
Once or twice a year	1
One or twice every 10 years	0.3
Once or twice in a 100 years	0.1

#### PROBABILITY FACTOR

Choose a description that best fits the chance of BHP Billiton or its stakeholders actually incurring (experiencing) impacts of the selected type and level of severity during a "window of opportunity", taking into account the existing controls.

Chances of the impact actually being incurred (experienced) during a "window of oportunity"	Factor
Happens often	10
Could easily happen	3
Could happen and has occurred here or elsewhere	1
Hasn't happened yet but could	0.3
Conceivable, but only in extreme circumstances	0.1

#### SEVERITY FACTOR

Choose a description that best fits the most likely degree harm, injury, loss or potential gain. Where there is more than one consequence type possible, look across the table and choose the highest level and corresponding Severity Factor. (Note: ESVA NPV and other terms are as defined in EWRM Standard No. 6)

Severity Level	Change in ESVA	Change in Project return (-NVP)	Health and Safety	Natural environment	Social / Cultural heritage	Community / Govt / Reputation / Media	Legal
1000	>US\$ 1B	>US\$ 5B	> 500 fatalities or very serious irreversible injury to 5000 persons.	Very significant impact on highly value species, habitat or eco system.	Irreparable damage to highly valued items of great cultural significance or complete breakdown of social order.	Prolonged international Condemnation.	Potential jail terms for executives and or very high fines for company. Prolonged, multiple litigation
300	US\$ 100M – US\$ 1B	US\$ 500M – US\$ 5B	>50 fatalities, or very serious irreversible injury to >500 persons	Significant impact on highly valued species, habitat, or ecosystem.	Irreparable damage to highly valued items of cultural significance or breakdown of social order.	International multi- NGO and media condemnation.	Very significant fines and prosecutions. Multiple litigation
100	US\$ 10M – US\$ 100M	US\$ 50M – US\$ 500M	Multiple fatalities, or significant irreversible effects to >50 persons	Very serious, long- term environmental impairment of ecosystem function	Very serious widespread social impacts Irreparable damage to highly valued items.	Serious public or media outcry (international coverage).	Significant prosecution and fines. Very serious litigation, including class actions.
30	US\$ 1M - 10M	US\$ 5M - 50M	Single fatality and/ or severe irreversible disability (> 30%) to one or more persons.	Serious medium term environmental effects.	On- going serious social issues. Significant damage to structures/ items of cultural significance.	Significant adverse national media/ public/ NGO attention.	Major breach of regulation. Major litigation.
10	US\$ 100, 000 - 1M	US\$ 500, 000 - 5M	Moderate irreversible disability or impairment (< 30%) to one or more persons.	Moderate, short- term effects but not affecting ecosystem function.	On going social issues. Permanent damage to items of cultural significants.	Attention from media and/ or heightened concern by local community. Criticism by NGOs	Serious breach of regulation with investigation or report to authority with prosecution and/ or moderate fine possible.
3	US\$ 10, 000 - \$100,000	US\$ 50, 000 - 500,000	Objective but reversible disability requiring hospitalisation	Minor effects on biological or physical environment.	Minor medium- term social impacts on local population. Mostly repairable.	Minor, adverse local public or media attention and complaints	Minor legal issues, non- compliances and breaches of regulation
1	<us\$ 000<="" 10,="" td=""><td><us\$ 000<="" 50,="" td=""><td>No medical treatment required</td><td>Limited damage to minimal area of low significance.</td><td>Low- level repairable damage to commonplace structures.</td><td>Public concern restricted to local complaints.</td><td>Low- level legal issue.</td></us\$></td></us\$>	<us\$ 000<="" 50,="" td=""><td>No medical treatment required</td><td>Limited damage to minimal area of low significance.</td><td>Low- level repairable damage to commonplace structures.</td><td>Public concern restricted to local complaints.</td><td>Low- level legal issue.</td></us\$>	No medical treatment required	Limited damage to minimal area of low significance.	Low- level repairable damage to commonplace structures.	Public concern restricted to local complaints.	Low- level legal issue.

#### PRIORITY GUIDE

Once a risk rating has been calculated, the following scheme should be used to assign priority of action. It should be noted that if action is not taken within the time specified, then the continued toleration of the residual 'downside' risk should be explicitly 'signed-off'. The suggested level of seniority for sign-off is as shown below.

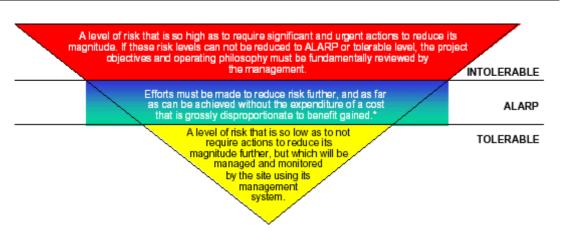
Priority	Risk Rating	Suggested Action	Suggested Timing	Authority for continued toleration of residual risk
1	>300	Cessation until the residual risk is reduced to 300 or below – unless exposure is authorised as indicated.	Immediate	BHP Billiton CEO and Board
2	91 - 300	Take action to reduce residual risk to 90 or below	Short term Normally within 1 month	President CSG
3	31 - 90	Plan to deal with in keeping with business plan.	Medium term, Normally within 3 months	Presidents direct reports
4	11 - 30	Plan in keeping with all other priorities.	Normally within 1 year.	Manager
5	< 10	Low priority. Will still require attention	Ongoing control as part of managment system	Manager direct reports

The decision to tolerate a risk should be based on a consideration of:

- · Whether the risk is being controlled to a level that is reasonably achievable,
- Whether it would be cost-effective to further control risk,
- The tolerability of the organisation (risk appetite) for risks of that type.

For decisions about HSEC Risks, the principles outlines in HSEC Toolkit No. T07 should be followed involving the application of the ALARP criteria given there.

Likelihood or Frequency /	Consequence Severity					
Probability	Low	Minor	Moderate	Major	Critical	
Almost Certain	High	High	Extreme	Extreme	Extreme	
	100	300	1,000	3,000	10,000	
Likely	Moderate	High	High	Extreme	Extreme	
	30	90	300	900	3,000	
Possible	Low	Moderate	High	Extreme	Extreme	
	10	30	100	300	1,000	
Unlikely	Low	Low	Moderate	High	Extreme	
	3	9	30	90	300	
Rare	Low	Low	Moderate	High	High	
	1	3	10	30	100	



# Attachment 2 Analysis Worksheets



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet: 1
SUB SYSTEM:	Natural Features	Verified by:		of.

**No**: 1 Date: 21

	STEP IN PROCESS		CAUSE & IMPACT	EXISTING CONTROLS	RCE	Sev	Ехр	Prob	Rate	TID	TREATMENT OPTIONS	RESPONSIBLE
,	1.01 Catchment areas and declared Special Areas	1	The area of subsidence under analysis does not include any catchment areas and declared special areas and did not require further assessment.									
E	1.02 Rivers and creeks (Georges River, Nepean Creek, Leafs Gully, Mallaty Creek)	1	Water flow and quality changes to ephemeral creeks due to mine subsidence. Flow on environmental impacts result.	Monitoring programs in place Remediation techniques have been developed for ephemeral creeks / rivers Past mining has not lead to any significant impacts on ephemeral creeks in the area. Subsidence predictions have been developed	75 - 80%	3	1	1	3	1	Completed SMP to include consideration of ephemeral creeks and the monitoring programs	BHPB Illawarra Coal - Manager Environment
	2 1.03 Aquifers, known groundwater resources	1	Ground water level and quality changes due to mine subsidence.	Limited use of groundwater resource in the area  There are no ecological communities dependant upon the ground water  Monitoring programs in place  Past mining has not lead to any significant impacts on aquifers in the area.  No recorded inflows to West Cliff Mine in the past 30 years. Successful mining under Brennans Creek Dam  No water inflow along geological features encountered in the workings	75 - 80%	3	1	1	3	1	Completed SMP to include consideration of aquifers and the monitoring programs	BHPB Illawarra Coal - Manager Environment
[	1.04 Springs	1	Existing spring water flow and quality changes, or the creation of new springs due to mine	Base line assessment has been completed, one spring has been identified	75-80%	3	1	1	3	1	Completed SMP to include consideration of springs and the monitoring programs	BHPB Illawarra Coal - Manager Environment



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	2
SUB SYSTEM: No: 1	Natural Features	Verified by: Date:		of:	21

**No**: 1 Date:

Г	STEP IN PROCESS	CAUSE & IMPACT	EXISTING CONTROLS	RCE	Sev	Exp	Prob	Rate	TID	TREATMENT OPTIONS	RESPONSIBLE
	STEP INTROCESS	subsidence.	Monitoring programs in place Subsidence predictions have	KOL	001			Ituto	112	TREATMENT OF HORO	INCOI ONSIDEE
			been developed Impact assessment has been prepared								
	E 1.05 Sea/lake	The area of subsidence under analysis does not include any seas or lakes and did not require further assessment.									
	1.06 Shorelines	The area of subsidence under analysis does not include any shorelines and did not require further assessment.									
	3 1.07 Natural dams	The area of subsidence under analysis does not include any natural dams and did not require further assessment.									
	1.08 Cliffs / pagodas	Rock falls from cliffs due to mine subsidence. Rock fall causes localised damage to environment. (Note: There were no pagodas identified in the area)	Base line assessment has been completed, cliffs are at known locations  Monitoring programs in place  Past mining has not lead to any significant impacts on cliffs in the area.  Subsidence predictions have been developed  Small number of cliffs within the area (less than 100 Metres of cliff line within the area)	75-80%	1	1	0.11	0	1	Completed SMP to include Public Safety and the monitoring programs	BHPB Illawarra Coal - Manager Environment



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	3
SUB SYSTEM: No: 1	Natural Features	Verified by: Date:		of:	21

STEP IN PROCESS	CAUSE & IMPACT	EXISTING CONTROLS	RCE	Sev	Exp	Prob	Rate	TID	TREATMENT OPTIONS	RESPONSIBLE
1.09 Steep slopes	Mass movement of steep slopes due to mine subsidence. Localised damage	Base line assessment has been completed, steep slopes are at known locations	75 - 80%	1		0.1		1	Completed SMP and the monitoring programs	BHPB Illawarra Coal - Manager Environment
	to environment.	Monitoring programs in place								
		Past mining has not lead to any significant impacts on steep slopes in the area.								
		Subsidence predictions have been developed								
		Private land not accessible by the public								
1.10 Escarpments	The area of subsidence under analysis does not include any escarpments and did not require further assessment.									
1.11 Land prone to flooding or inundation	1 The area of subsidence under analysis does not include any land prone to flooding or inundation and did not require further assessment.									
1.12 Swamps, wetlands, water related ecosystems	1 The area of subsidence under analysis does not include any swamps, wetlands, water related ecosystems and did not require further assessment. (Note: Creeks have been analysed in 1.02 Rivers and Creeks)									
1 1.13 Threatened and protected species	Mine subsidence leads to loss of protected species or their habitat.	Base line assessment has been completed, known species within the area Monitoring programs in place	75-80%	1	1	0.1	0	1	Completed SMP to include consideration of Threatened and protected species and the monitoring programs	BHPB Illawarra Coal - Manager Environment

N 1.14 National parks

O 1.15 State recreation areas

P 1.16 State forests particularly

areas zoned FMZ 1, 2 and 3

Q 1.17 Natural vegetation

**STEP IN PROCESS** 



SYSTEM:<br/>AR0507Cardno Forbes Rigby<br/>SMP ApplicationCompiled by:<br/>Date:Shane Chiddy<br/>11th January 2008Sheet:<br/>4

1

RCE Sev Exp

75 -

80%

75-80%

**SUB SYSTEM:** Natural Features

**CAUSE & IMPACT** 

Mine subsidence leads to

Conservation Area

impacts to Dharawal State

The area of subsidence under analysis does not include any State recreation areas and did not require further assessment.

The area of subsidence under

analysis does not include any State forests particularly areas zoned FMZ 1, 2 and 3 and did not require further assessment.

Mine subsidence leads to

vegetation.

damage or loss of Natural

No: 1

**EXISTING CONTROLS** 

Past mining has not lead to impacts on threatened and protected species in this area Subsidence predictions have

been developed

Mine layout avoids the

Area, near the limit of

subsidence effects

All elevent environmental issues are considered under natural features throughout

this assessment

Base line assessment has been completed, Natural

Monitoring programs in place
Past mining has not lead to
any significant impacts on
Natural vegetation

Subsidence predictions have

been developed

vegetation is at known

locations

Dharawal State Conservation

	Dat	С.	Trill January 2006		•
	Ver Dat		d by:		<b>of</b> : 21
Pro	b Rate	TID	TREATMENT OPTIONS	R	ESPONSIBLE
0.1	0	1	Completed SMP to include consideration of Dharawal State Conservation Area	Coa	PB Illawarra al - Manager vironment
0.3	3 0	1	Completed SMP to include consideration of Natural vegetation and the monitoring programs	Coa	PB Illawarra al - Manager vironment



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	5
SUB SYSTEM: No: 1	Natural Features	Verified by: Date:		of:	21

Date:

	- NO: 1					Ш,	Date	<u>.                                    </u>		
STEP IN PROCESS	CAUSE & IMPACT	<b>EXISTING CONTROLS</b>	RCE	Sev	Ехр	Prob	Rate	TID -	TREATMENT OPTIONS	RESPONSIBLE
R 1.18 Areas of significant geological interest	1 The area of subsidence under analysis does not include any areas of significant geological interest and did not require further assessment.									
S 1.19 Any other feature considered significant	The area of subsidence under analysis does not include any other feature considered significant and did not require further assessment.									



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	6
SUB SYSTEM: No: 2	Public Utilities	Verified by: Date:		of:	21

Г			140. 2		RCE Sev Exp Pro			- at			DESDONSIBI E	
L	STEP IN PROCESS		CAUSE & IMPACT	EXISTING CONTROLS	RCE	Sev	Exp	Prob	Rate	TID	TREATMENT OPTIONS	RESPONSIBLE
	2.01 Railways	1	The area of subsidence under analysis does not include any railways and did not require further assessment.									
	2.02 Roads (all types)	1	Damage to roads due to anomilous mine subsidence. Roads require repair.	Monitoring programs in place Subsidence predictions have been developed Public Road Management Plan for West Cliff Longwalls 29-33 Property subsidence management plans includes private and public roads	75-80%	3	1	1	3	2	Completed SMP to include consideration of Roads (all types) and the monitoring programs Impact assessment to be prepared and mitigation and monitoring programs to be developed.  Revise the Road management plan to include Longwalls 34-36	BHPB Illawarra Coal - Manager R&I BHPB Illawarra Coal - Manager R&I BHPB Illawarra Coal - Manager R&I
	2.03 Bridges	1	Damage to bridges due to mine subsidence. Roads require repair.	Base line assessment has been completed, known bridges within the area  Known bridges are associated with the Upper Canal  Only SCA use bridges	75-80%	3	1	1	3	2	Completed SMP to include consideration of bridges (all types) and the monitoring programs Impact assessment to be prepared and mitigation and monitoring programs to be developed.  Revise the Management Plan to include Longwalls 34-36	BHPB Illawarra Coal - Manager R&I BHPB Illawarra Coal - Manager R&I BHPB Illawarra Coal - Manager R&I
	2.04 Tunnels (Nepean Tunnel as part of the Upper Canal System)	1	Damage to tunnel due to mine subsidence. Tunnel requires repair.	Base line assessment has been completed, known tunnels within the area Subsidence predictions have been developed Monitoring programs in place Master agreement has been developed between BHPB IC and SCA	75-80%	3	1	3	9	2	Completed SMP to include consideration of tunnels and the monitoring programs Impact assessment to be prepared and mitigation and monitoring programs to be developed. Revise the Management Plan to include Longwalls 34-36	BHPB Illawarra Coal - Manager R&I  BHPB Illawarra Coal - Manager R&I  BHPB Illawarra Coal - Manager R&I



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SUB SYSTEM	Public Utilities	Verified by:		of:	21

,	CONSULTI	No: 2						Dat	e:		21	
	STEP IN PROCESS		CAUSE & IMPACT	EXISTING CONTROLS	RCE	Sev	Ехр	Prob	Rate	TID	TREATMENT OPTIONS	RESPONSIBLE
E	2.05 Culverts	1	The group considered that Culverts are associated with either roads or the Upper Canal and did not require further analysis (See Roads Section 2.02 and Canals 2.13)									
	2.06 Water/gas/sewerage pipelines	2	Damage to the 1200mm United Utilities water pipe line and associated connections due to mine subsidence.  Damage to the Sydney Water local disrtibution network water pipe line and associated connections due to mine subsidence.	Agreement with Macathur Water  Management Plan for Longwalls 29-33  Monitoring programs in place  Known locations of water pipe lines  Proven mitigation techniques  Agreement with Sydney Water  Management Plan for Longwalls 29-33  Monitoring programs in place  Known locations of water pipe lines  Proven mitigation techniques	75-80% 75-80%	1	1	1	9		Completed SMP to include consideration of water pipe lines and the monitoring programs Impact assessment to be prepared and mitigation and monitoring programs to be developed.  Revise the Management Plan to include Longwalls 34-36  Completed SMP to include consideration of water pipe lines and the monitoring programs Impact assessment to be prepared and mitigation and monitoring programs to be developed.  Revise the Management Plan to include Longwalls 34-36	BHPB Illawarra Coal - Manager R&I  BHPB Illawarra Coal - Manager R&I
		3	There is no public reticulated sewerage and gas pipelines within the area. The sewerage and gas pipelines that are within in the area are those associated with domestic use. See Houses in Section 9.01		75.00%	30	1	0.3	9	1	Completed SMP to include	BHPB Illawarra
G	2.07 High pressure gas pipelines	1	Damage to the Gas Pipelines	Agreement with Infrastructure	75-80%	50	'	10.5	ľ	Ι'	Completed own to medde	Di ii D iiiawaiia



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	STEP IN PROCESS		CAUSE & IMPACT	EXISTING CONTROLS	RCE	Sev	Ехр	Prob	Rate	TID	TREATMENT OPTIONS	RESPONSIBLE
	(High pressure gas pipelines Alinta, AGL and Gorodok)		(Alinta EGP, AGL and Gorodok) due to mine subsidence.	Owners Technical and Steering Committees established Monitoring programs in place Known locations of gas pipe lines Proven mitigation techniques for Longwalls 29-33						2	consideration of gas pipe lines and the monitoring programs Impact assessment to be prepared and mitigation and monitoring programs to be developed.	Coal - Manager R&I BHPB Illawarra Coal - Manager R&I
ŀ	1 2.08 Electricity transmission lines (overhead/underground) and associated plants	1	Damage to Electricity transmission lines due to mine subsidence. Transmission lines requires repair. (Includes Transgrid 330kV, Integral 66kV, 11kV and domestic supplies, the SCA power lines which will be included in the canal assessment 2.13)	Subsidence predictions have been developed  Monitoring programs in place Asset owners develop internal impact assessments	75-80%	3	1	0.3	1	2	Completed SMP to include consideration of Electricity transmission lines and the monitoring programs Impact assessment to be prepared and mitigation and monitoring programs to be developed.	BHPB Illawarra Coal - Manager R&I BHPB Illawarra Coal - Manager R&I
	2.09 Telecommunication lines (overhead/underground) and associated plants	1	Damage to Telstra Local Network and Fibreoptic telecommunication lines due to mine subsidence. Telecommunication lines require repair.	Subsidence predictions have been developed  Monitoring programs in place  Telstra management plan for Longwalls 29-33	75-80%	3	1	0.3	1	2	Completed SMP to include consideration of Telecommunication lines and the monitoring programs Impact assessment to be prepared and mitigation and monitoring programs to be developed. Revise the Management Plan to include Longwalls 34-36	BHPB Illawarra Coal - Manager R&I  BHPB Illawarra Coal - Manager R&I  BHPB Illawarra Coal - Manager R&I
•	J 2.10 Water tanks, water and sewage treatment works	1	There are no public water tanks, water and sewage treatment works within the area. The assets that are within in the area are those associated with domestic use. See Houses in Section 9.01									



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	STEP IN PROCESS		CAUSE & IMPACT	EXISTING CONTROLS	RCE	Sev	Ехр	Prob	Rate	TID	TREATMENT OPTIONS	RESPONSIBLE
ŀ	2.11 Dams, reservoirs and associated works	1	There are no Dams, reservoirs and associated works within the area. The assets that are within in the area are those associated with rural use. See Houses in Section 9.01									
ı	2.12 Air strips	1	The area of subsidence under analysis does not include any air strips and did not require further assessment.									
7	1 2.13 SCA infrastructure including Upper Canal, Nepean Tunnel, Aqueducts, Bridges and all associated roads, flumes and culverts	1	Damage to the SCA infrastructure including Upper Canal due to mine subsidence. Resulting in - reduced or loss of supply - reduced water quality - damage to heritage structures, repairs required	Subsidence predictions have been developed  Master agreement has been developed between BHPB IC and SCA  Management Plan for Longwalls 31-33  Monitoring programs in place  Successful mitigation techniques have been used in the past  Mine layout avoids the Upper Canal	50-60%	30	1	0.3	9	3	Completed SMP to include consideration of SCA infrastructure including Upper Canal and the monitoring programs Impact assessment to be prepared and mitigation and monitoring programs to be developed.  Revise the Management Plan to include Longwalls 34-36	BHPB Illawarra Coal - Manager R&I  BHPB Illawarra Coal - Manager R&I  BHPB Illawarra Coal - Manager R&I



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	10
SUB SYSTEM: No: 3	Public Amenities	Verified by: Date:		of:	21

Г	STEP IN PROCESS	CAUSE & IMPACT	EXISTING CONTROLS	RCE	Sav	Evn	Drob	Pate	TID	TREATMENT OPTIONS	RESPONSIBLE
-	31 EF IN PRUCESS	CAUSE & IIVIPACI	EVISTING CONTROPS	KCE	Sev	⊏xp	FIOD	rate	טוו	IREALWENT UPTIONS	KESPUNSIBLE
A	3.01 Hospitals	The area of subsidence under analysis does not include any Hospitals and did not require further assessment.									
В	3.02 Places of worship	The area of subsidence under analysis does not include any Places of worship and did not require further assessment.									
С	3.03 Schools	The area of subsidence under analysis does not include any Schools and did not require further assessment.									
D	3.04 Shopping centres	The area of subsidence under analysis does not include any Shopping centres and did not require further assessment.									
E	3.05 Community centres	The area of subsidence under analysis does not include any Community centres and did not require further assessment.									
F	3.06 Office buildings	The area of subsidence under analysis does not include any Office buildings and did not require further assessment.									
G	3.07 Swimming pools	The area of subsidence under analysis does not include any public swimming pools and did not require further assessment. Any pools that are within in the area are those associated with domestic use. See Houses in Section 9.01									



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SUB SYSTEM:	Public Amenities	Verified by:		of:	21

		STEP	IN PROCESS		CAUSE & IMPACT	EXISTING CONTROLS	RCE	Sev	Ехр	Prob	Rate	TID	TREATMENT OPTIONS	RESPONSIBLE
ŀ	4	3.08 Bowlir	ng greens	1	The area of subsidence under analysis does not include any Bowling greens and did not require further assessment.									
	ı	3.09 Ovals	and cricket grounds	1	The area of subsidence under analysis does not include any Ovals and cricket grounds and did not require further assessment.									
,	J	3.10 Race	courses	1	The area of subsidence under analysis does not include any Race courses and did not require further assessment.									
i	<	3.11 Golf c	ourses	1	The area of subsidence under analysis does not include any Golf courses and did not require further assessment.									
ı	L	3.12 Tennis	s courts	1	The area of subsidence under analysis does not include any Tennis courts and did not require further assessment.									
ľ		3.13 Any of considered s	ther amenities significant	1	No other public amenities were Identified									



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	12
SUB SYSTEM: No: 4	Farm Land and Facilities	Verified by: Date:		of:	21

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L	STEP IN PROCESS		CAUSE & IMPACT	EXISTING CONTROLS	RCE	Sev	Exp	Prot	Rate	TID	TREATMENT OPTIONS	RESPONSIBLE
	4.01 Agricultural utilisation or agricultural suitability of farm land	1	Changes to Agricultural utilisation due to mine subsidence. Subsidence considered highly unlikely to affect grazing in the area. No further analysis required.									
	3 4.02 Farm buildings / sheds	1	Damage to Farm buildings / sheds due to mine subsidence. Farm buildings / sheds require repair.	Subsidence predictions have been developed  Monitoring programs in place  Property subsidence management plans have been developed  Low density of Farm buildings / sheds  Structural inspections have been conducted	75 - 80%	1	1	0.3	0	2 3	Completed SMP to include consideration of Farm buildings / sheds and the monitoring programs Land owner review of Property Subsidence Management Plans (PSMP) and issue final documents Monitoring and manage throughout mining as per the Property Subsidence Management Plans (PSMP)	BHPB Illawarra Coal - Community Relations Coord.  BHPB Illawarra Coal - Community Relations Coord.  BHPB Illawarra Coal - Community Relations Coord.
	4.03 Gas and / or fuel storages	1	The area of subsidence under analysis does not include any significant Gas and / or fuel storages and did not require further assessment. Small gas and / or fuel storage are covered in the Property Subsidence Management Plans (PSMP)									
	4.04 Poultry sheds	1	Damage to Inghams Poultry sheds due to mine subsidence. Poultry sheds require repair.	Inghams Management Plan for Longwalls 29-33 Subsidence predictions have been developed Existing monitoring of Inghams Poultry sheds	75-80%	1	1	0.3	0		Completed SMP to include consideration of Inghams Poultry sheds and the monitoring programs  Revise the Management Plan to include Longwalls 34-36	BHPB Illawarra Coal - Manager R&I BHPB Illawarra Coal - Manager R&I



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SUB SYSTEM:	Farm Land and Facilities	Verified by:		of:	21

		STEP IN PROCESS		CAUSE & IMPACT	EXISTING CONTROLS	RCE	Say	Evn	Brob	Pato	TID	TREATMENT OPTIONS	RESPONSIBLE
$\vdash$		SILP IN PROCESS		CAUSE & IIVIFACI		NOE	364		100	· vale	טוו	INLATIVIENT OF HUNS	RESPONSIBLE
					History of under mining Inghams Poultry sheds has not recorded any impact								
	<b>∃</b> 4.	05 Glass Houses	1	The area of subsidence under analysis does not include any Glass Houses and did not require further assessment.									
	= 4.	06 Hydroponic systems	1	The area of subsidence under analysis does not include any Hydroponic systems and did not require further assessment.									
(	3 4.	07 Irrigation systems	1	The area of subsidence under analysis does not include any Irrigation systems and did not require further assessment.									
	H 4.	08 Fences	1	Damage to fences due to mine subsidence. Fences require repair. This will be analysed under Houses 9.01.									
	4.	09 Farm dams	1	Damage to Farm dams due to mine subsidence. Farm dams require repair. This will be analysed under Houses 9.01.									
	J 4.	10 Wells, bores	1	Damage to Wells, bores due to mine subsidence. Wells, bores require repair. This will be analysed under Houses 9.01.									



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SUB SYSTEM: No: 4	Farm Land and Facilities	Verified by: Date:		of:	21

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	STEP IN PROCESS		CAUSE & IIVIPACI	EXISTING CONTROLS	KCE	Sev	Exp	Fron	rate	טוו	IREALWENT UPTIONS	KESPUNSIBLE
	1 Any other feature nsidered significant	1	No other Farm Land and Facilities were Identified	EXISTING CONTROLS	RCE	Sev	Ехр	Prot	Rate	TID	TREATMENT OPTIONS	RESPONSIBLE



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	15
SUB SYSTEM:	Industrial, Commercial and Business Establishments	Verified by:		of:	21

STEP IN PROCESS	CAUSE & IMPACT	EXISTING CONTROLS	RCE Sev Exp Prob Rate TII	TREATMENT OPTIONS	RESPONSIBLE
A 5.01 Factories	The area of subsidence under analysis does not include any Factories and did not require further assessment.				
B 5.02 Workshops	The area of subsidence under analysis does not include any Workshops and did not require further assessment.				
C 5.03 Business or commercial establishments	The area of subsidence under analysis does not include any Business or commercial establishments and did not require further assessment.				
D 5.04 Gas and / or fuel storages and associated plants	The area of subsidence under analysis does not include any Gas and / or fuel storages and associated plants and did not require further assessment.				
E 5.05 Waste storages and associated plants	The area of subsidence under analysis does not include any Waste storages and associated plants and did not require further assessment.				
F 5.06 Buildings, equipment and operations that are sensitive to surface movements	The area of subsidence under analysis does not include any Buildings, equipment and operations that are sensitive to surface movements and did not require further assessment.				
G 5.07 Surface mining (open cut) voids and rehabilitated areas	The area of subsidence under analysis does not include any Surface mining (open cut) voids and rehabilitated areas and did				



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	16
SUB SYSTEM:	Industrial, Commercial and Business Establishments	Verified by: Date:		of:	21

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ŀ		STEP IN PROCESS		CAUSE & IMPACT	EXISTING CONTROLS	KCE	sev	∣⊏xp	Prop	rate	טוו	TREATMENT OPTIONS	RESPONSIBLE
				not require further assessment.									
		5.08 Mine infrastructure including tailings dams and emplacement areas	1	The area of subsidence under analysis does not include any Mine infrastructure including tailings dams and emplacement areas and did not require further assessment.									
	1	5.09 Any other feature considered significant	1	No other Industrial, Commercial and Business Establishments were Identified									



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	17
SUB SYSTEM: No: 6	Areas of Archaeological and/or Heritage significance	Verified by: Date:		of:	21

			110. 0	EXISTING CONTROLS RCE Sev Exp Pr					_	T		DESDONSIBI E	
	STEP IN PROCESS		CAUSE & IMPACT	EXISTING CONTROLS	RCE	Sev	Exp	Prob	Rate	TID	TREATMENT OPTIONS	RESPONSIBLE	
A	6.01 Areas of Archaeological and/or Heritage Significance	1	Damage to Archaeological and/or Heritage Significant sites due to mine subsidence. (Heritage aspects of the Upper Canal are dealt with in Section 2.13)	Base line assessment has been completed, known sites within the area  Subsidence predictions have been developed  Similar mining operations has not lead to any significant impacts in the area.	75-80%	3	1	1	3	2	Completed SMP to include consideration of Areas of Archaeological and/or Heritage Significance and the monitoring programs  Apply for Section 90 'consent to destroy' for 5 Aboriginal sites and implement Management Plan Monitoring European Heritage sites through the Subsidence Management Plans (SMP)	BHPB Illawarra Coal - Manager Environment  BHPB Illawarra Coal - Manager Environment BHPB Illawarra Coal - Manager Environment	



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	18
SUB SYSTEM:	Items of Architectural Significance	Verified by:		of:	21



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	19
SUB SYSTEM	: Permanent Survey Control Marks	Verified by: Date:		of:	21

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STEP IN PROCESS	CAUSE & IMPACT	EXISTING CONTROLS	KCE Sev Exp Pro	DD Rate IID	I REALMENT OPTIONS	KESPONSIBLE
A 8.01 Permanent Survey Control Marks	CAUSE & IMPACT  1 Movement of Permanent Survey Control Marks due to mine subsidence. Surveyors rely on false location of the marks.		RCE Sev Exp Pro 75-80% 1 1 0.3	bb Rate TID 3 0 1	TREATMENT OPTIONS  Completed SMP to include consideration of Permanent Survey Control Marks and the monitoring programs  Liase with Land and Property Information (LPI) untill mining has ceased and Permanent Survey Control Marks can be reestablished	RESPONSIBLE  BHPB Illawarra Coal - Manager R&I  BHPB Illawarra Coal - Manager R&I



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SUB SYSTEM:	Residential Establishments	Verified by:		of:	21

	STEP IN PROCESS		CAUSE & IMPACT	EXISTING CONTROLS	RCE	Sev	Exp	Prob	Rate	TID	TREATMENT OPTIONS	RESPONSIBLE
A	9.01 Houses	1	Damage to Houses and property improvements due to mine subsidence. Houses and	Subsidence predictions and damage assessments have been developed	75 - 80%	30	1	0.3	9	1	Completed SMP to include consideration of Houses and the monitoring programs	BHPB Illawarra Coal - Community Relations Coord.
			property improvements require repair. Owners emotional stress associated with	Monitoring programs in place						2	Complete the Property subsidence management plans (PSMP)	BHPB Illawarra Coal - Community Relations Coord.
			uncertainly of events.	Property subsidence management plans  Low density of Houses and						3	Land owner review of Property Subsidence Management Plans	BHPB Illawarra Coal - Community
				property improvements						4	(PSMP) and issue final documents  Monitoring and manage	Relations Coord. BHPB Illawarra
				Pre mining inspections (if requested by the property owner)							throughout mining as per the Property Subsidence Management Plans (PSMP)	Coal - Community Relations Coord.
				Individual consultation with property owners								
				BHPB IC Social management plan								
				Structural inspections have been conducted								
				Other man made improvements associated with the house/farm are included within the Property Subsidence Management Plan (PSMP)								
В	9.02 Flats / Unit	1	The area of subsidence under analysis does not include any Flats / Units and did not require further assessment. (Granny flats were assumed to be covered under Houses 9.01)									
С	9.03 Caravan parks	1	The area of subsidence under analysis does not include any Caravan parks and did not require further assessment.									

Qualitative Risk Analysis. Analysis Worksheet



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SUB SYSTEM:	Residential Establishments	Verified by:		of:	21

ST	EP IN PROCESS		CAUSE & IMPACT	EXISTING CONTROLS	RCE	Sev	Ехр	Prob	Rate	TID	TREATMENT OPTIONS	RESPONSIBLE
9.04 F villages	tetirement/aged care	1	The area of subsidence under analysis does not include any Retirement/aged care villages and did not require further assessment.									
as work	associated structures such ishops, garages, on-site vater systems, water or ks, swimming pools and courts	1	The area of subsidence under analysis does not include any associated structures such as workshops, garages, on-site waste water systems, water or gas tanks and did not require further assessment. (Assumed to be covered under Houses 9.01)									
F 9.06 A conside	ny other feature red significant	1	No other Residential Establishments features were Identified									

### Attachment 3

Risk Treatment Schedule (Risk Rank Order)

# ANALYSIS NUMBER:

AR0507

# **ANALYSIS SITE AND NAME**Cardno Forbes Rigby

SMP Application

AXYS

Sheet: 1

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of:

#### Risk Rank Order

				CONSULTING
Ref	Risk	Hazard	TID	Treatment Options
2D1	9	Damage to tunnel due to mine subsidence. Tunnel requires repair.	1	Completed SMP to include consideration of tunnels and the monitoring programs
			2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.
			3	Revise the Management Plan to include Longwalls 34-36
2F1	9	Damage to the 1200mm United Utilities water pipe line and	1	Completed SMP to include consideration of water pipe lines and the monitoring programs
		associated connections due to mine subsidence.	2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.
			3	Revise the Management Plan to include Longwalls 34-36
2G1	9	Damage to the Gas Pipelines (Alinta EGP, AGL and Gorodok)	1	Completed SMP to include consideration of gas pipe lines and the monitoring programs
		due to mine subsidence.	2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.
2M1	9	Damage to the SCA infrastructure including Upper Canal due to mine	1	Completed SMP to include consideration of SCA infrastructure including Upper Canal and the monitoring programs
		subsidence. Resulting in - reduced or loss of supply - reduced water quality	2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.
		- damage to heritage structures, repairs required	3	Revise the Management Plan to include Longwalls 34-36
9A1	9	Damage to Houses and property improvements due to mine	1	Completed SMP to include consideration of Houses and the monitoring programs
		subsidence. Houses and property improvements require repair.	2	Complete the Property subsidence management plans (PSMP)
		Owners emotional stress associated with uncertainly of events.	3	Land owner review of Property Subsidence Management Plans (PSMP) and issue final documents
			4	Monitoring and manage throughout mining as per the Property Subsidence Management Plans (PSMP)
1B1	3	Water flow and quality changes to ephemeral creeks due to mine subsidence. Flow on environmental impacts result.	1	Completed SMP to include consideration of ephemeral creeks and the monitoring programs
1C1	3	Ground water level and quality changes due to mine subsidence.	1	Completed SMP to include consideration of aquifers and the monitoring programs
1D1	3	Existing spring water flow and quality changes, or the creation of new springs due to mine subsidence.	1	Completed SMP to include consideration of springs and the monitoring programs
2B1	3	Damage to roads due to anomilous mine subsidence. Roads require	1	Completed SMP to include consideration of Roads (all types) and the monitoring programs
		repair.	2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.
			3	Revise the Road management plan to include Longwalls 34-36
2C1	3	Damage to bridges due to mine subsidence. Roads require repair.	1	Completed SMP to include consideration of bridges (all types) and the monitoring programs
			2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.
			3	Revise the Management Plan to include Longwalls 34-36
6A1	3	Damage to Archaeological and/or Heritage Significant sites due to mine subsidence.	1	Completed SMP to include consideration of Areas of Archaeological and/or Heritage Significance and the monitoring programs
		(Heritage aspects of the Upper Canal are dealt with in Section 2.13)	2	Apply for Section 90 'consent to destroy' for 5 Aboriginal sites and implement Management Plan
			3	Monitoring European Heritage sites through the Subsidence Management Plans (SMP)
	L	<u>i</u>		1

# ANALYSIS NUMBER:

AR0507

Cardno Forbes Rigby SMP Application

**ANALYSIS SITE AND NAME** 



**Sheet**: 2 **of**: 2

#### Risk Rank Order

			_		CONSULTING			
Ref	Risk	Haza	ard	TID				
2F2	1	Damage to the Sydn disrtibution network vand associated conn	water pipe line	1	Completed SMP to include consideration of water pipe lines and the monitoring programs			
		mine subsidence.	iccions due to	2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.			
				3	Revise the Management Plan to include Longwalls 34-36			
2H1	1	Damage to Electricity	bsidence.	1	Completed SMP to include consideration of Electricity transmission lines and the monitoring programs			
		Transmission lines re (Includes Transgrid 3 66kV, 11kV and dom the SCA power lines included in the canal 2.13)	330kV, Integral nestic supplies, which will be	2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.			
211	1	Damage to Telstra Land Fibreoptic teleco	ommunication	1	Completed SMP to include consideration of Telecommunication lines and the monitoring programs			
		lines due to mine sub Telecommunication l repair.		2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.			
				3	Revise the Management Plan to include Longwalls 34-36			
1H1	0	Rock falls from cliffs due to mine subsidence. Rock fall causes localised damage to environment. (Note: There were no pagodas identified in the area)  1 Completed SMP to include Public Safety and the monitoring programs include Public Safety and the monitoring programs are subsidenced. Rock fall causes localised damage to environment.						
111	0	Mass movement of s due to mine subsider damage to environm	nce. Localised	1	Completed SMP and the monitoring programs			
1M1	0	Mine subsidence lea protected species or		1	Completed SMP to include consideration of Threatened and protected species and the monitoring programs			
1N1	0	Mine subsidence lea to Dharawal State Co Area	•	1	Completed SMP to include consideration of Dharawal State Conservation Area			
1Q1	0	Mine subsidence lea or loss of Natural veg		1	Completed SMP to include consideration of Natural vegetation and the monitoring programs			
4B1	0	Damage to Farm bui	ence. Farm	1	Completed SMP to include consideration of Farm buildings / sheds and the monitoring programs			
		buildings / sheds req	luire repair.	2	Land owner review of Property Subsidence Management Plans (PSMP) and issue final documents			
				3	Monitoring and manage throughout mining as per the Property Subsidence Management Plans (PSMP)			
4D1	0	Damage to Inghams due to mine subsider	nce. Poultry	1	Completed SMP to include consideration of Inghams Poultry sheds and the monitoring programs			
		sheds require repair.		2	Revise the Management Plan to include Longwalls 34-36			
8A1	0	Movement of Permai Control Marks due to	mine	1	Completed SMP to include consideration of Permanent Survey Control Marks and the monitoring programs			
		subsidence. Surveyor false location of the		2	Liase with Land and Property Information (LPI) untill mining has ceased and Permanent Survey Control Marks can be re-established			

### Attachment 4

Risk Treatment Schedule (Consequence Order)

#### **ANALYSIS** NUMBER:

AR0507

Cardno Forbes Rigby

**ANALYSIS SITE AND NAME** 



Sheet: 1

of: 2

### **Consequence Order**

SMP Application

	-	ince Order				CONSULTING	
Ref	Cons	Hazard		TID	Treatment Option	18	
2F1	30	Damage to the 1200mm Utilities water pipe line a	and	1	Completed SMP to include consideration of water monitoring programs	er pipe lines and t	he
		associated connections subsidence.	due to mine	2	Impact assessment to be prepared and mitigation be developed.	on and monitoring	programs to
				3	Revise the Management Plan to include Longwa	alls 34-36	
2G1	30	Damage to the Gas Pipe EGP, AGL and Gorodok		1	Completed SMP to include consideration of gas programs	pipe lines and the	monitoring
		mine subsidence.		2	Impact assessment to be prepared and mitigation be developed.	on and monitoring	programs to
2M1	30	Damage to the SCA infrincluding Upper Canal d	ue to mine	1	Completed SMP to include consideration of SCA Canal and the monitoring programs	A infrastructure ind	cluding Upper
		subsidence. Resulting i - reduced or loss of sup - reduced water quality		2	Impact assessment to be prepared and mitigation be developed.	on and monitoring	programs to
		- damage to heritage str repairs required			Revise the Management Plan to include Longwa	alls 34-36	
9A1	improvements due		ine	1	Completed SMP to include consideration of Houprograms	ises and the moni	toring
		subsidence. Houses an improvements require re		2	Complete the Property subsidence managemen	t plans (PSMP)	
	Owners emotional with uncertainly of			3	Land owner review of Property Subsidence Man issue final documents	agement Plans (F	'SMP) and
				4	Monitoring and manage throughout mining as permanagement Plans (PSMP)	er the Property Su	ıbsidence
1B1	3	Water flow and quality changes to ephemeral creeks due to mine subsidence. Flow on environmental impacts result.		1	Completed SMP to include consideration of eph monitoring programs	emeral creeks and	d the
1C1	3	Ground water level and changes due to mine su		1	Completed SMP to include consideration of aqu programs	ifers and the moni	itoring
1D1	3	Existing spring water flo changes, or the creation springs due to mine sub	of new	1	Completed SMP to include consideration of spri programs	ngs and the monit	toring
2B1	3	Damage to roads due to mine subsidence. Road		1	Completed SMP to include consideration of Roamonitoring programs	nds (all types) and	the
		repair.		2	Impact assessment to be prepared and mitigation be developed.	on and monitoring	programs to
				3	Revise the Road management plan to include L	ongwalls 34-36	
2C1	3	Damage to bridges due subsidence. Roads req		1	Completed SMP to include consideration of brid monitoring programs	ges (all types) and	d the
				2	Impact assessment to be prepared and mitigation be developed.	on and monitoring	programs to
				3	Revise the Management Plan to include Longwa	alls 34-36	
2D1	3	Damage to tunnel due to subsidence. Tunnel req		1	Completed SMP to include consideration of tunr programs	nels and the monit	toring
				2	Impact assessment to be prepared and mitigation be developed.	on and monitoring	programs to
		3 Revise the Management Plan to include Longwalls 34-36					
2H1	3	Damage to Electricity tra	lence.	1	Completed SMP to include consideration of Electhe monitoring programs	ctricity transmissio	on lines and
		Transmission lines requ (Includes Transgrid 330 66kV, 11kV and domest the SCA power lines wh included in the canal as: 2.13)	kV, Integral ic supplies, ich will be	2	Impact assessment to be prepared and mitigation be developed.	on and monitoring	programs to

# ANALYSIS NUMBER:

AR0507

# **ANALYSIS SITE AND NAME**Cardno Forbes Rigby

SMP Application

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Sheet: 2

of: 2

### **Consequence Order**

COII	<del> </del>	ence Oraer 			CONSULTING
Ref	Cons	Haza	rd	TID	Treatment Options
2 1	3	Damage to Telstra Lo and Fibreoptic teleco lines due to mine sub	mmunication	1	Completed SMP to include consideration of Telecommunication lines and the monitoring programs
		Telecommunication I repair.		2	Impact assessment to be prepared and mitigation and monitoring programs t be developed.
				3	Revise the Management Plan to include Longwalls 34-36
6A1	3	Damage to Archaeole Heritage Significant s mine subsidence.		1	Completed SMP to include consideration of Areas of Archaeological and/or Heritage Significance and the monitoring programs
		(Heritage aspects of Canal are dealt with i		2	Apply for Section 90 'consent to destroy' for 5 Aboriginal sites and implement Management Plan
				3	Monitoring European Heritage sites through the Subsidence Management Plans (SMP)
1H1	1	Rock falls from cliffs due to mine subsidence. Rock fall causes localised damage to environment. (Note: There were no pagodas identified in the area)			Completed SMP to include Public Safety and the monitoring programs
111	1	Mass movement of s to mine subsidence. damage to environment	Localised	1	Completed SMP and the monitoring programs
1M1	1	Mine subsidence leads to loss of protected species or their habitat.  1 Completed SMP to include consideration of Threatened and protected special and the monitoring programs			
1N1	1	Mine subsidence leads to impacts t Dharawal State Conservation Area		1	Completed SMP to include consideration of Dharawal State Conservation Are
1Q1	1	Mine subsidence leads to damage or loss of Natural vegetation.		1	Completed SMP to include consideration of Natural vegetation and the monitoring programs
2F2	disrtibution r	disrtibution network v	o the Sydney Water local n network water pipe line stated connections due to		Completed SMP to include consideration of water pipe lines and the monitoring programs
		mine subsidence.	ections due to	2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.
				3	Revise the Management Plan to include Longwalls 34-36
4B1	1	Damage to Farm buildue to mine subsider	nce. Farm	1	Completed SMP to include consideration of Farm buildings / sheds and the monitoring programs
		buildings / sheds req	uire repair.	2	Land owner review of Property Subsidence Management Plans (PSMP) and issue final documents
				3	Monitoring and manage throughout mining as per the Property Subsidence Management Plans (PSMP)
4D1	1	Damage to Inghams due to mine subsider sheds require repair.	nce. Poultry	1	Completed SMP to include consideration of Inghams Poultry sheds and the monitoring programs
		sneus require repair.		2	Revise the Management Plan to include Longwalls 34-36
8A1	1	Movement of Permar Control Marks due to	mine	1	Completed SMP to include consideration of Permanent Survey Control Marks and the monitoring programs
		subsidence. Surveyor location of the marks		2	Liase with Land and Property Information (LPI) untill mining has ceased and Permanent Survey Control Marks can be re-established
	1	I		I	

# Attachment 5 Risk Treatment Schedule and Action Plan



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	1
SUB SYSTEM: No: 1	Natural Features	Verified by: Date:		of:	7

			No: 1	Date:		•
ID	HAZARD & EFFECTS	TID	TREATMENT	DATE REQUIRED	RESPONSIBLE OFFICER	DATE COMPLETED
1B1	Water flow and quality changes to ephemeral creeks due to mine subsidence. Flow on environmental impacts result.	1	Completed SMP to include consideration of ephemeral creeks and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager Environment	
1C1	Ground water level and quality changes due to mine subsidence.	1	Completed SMP to include consideration of aquifers and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager Environment	
1D1	Existing spring water flow and quality changes, or the creation of new springs due to mine subsidence.	1	Completed SMP to include consideration of springs and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager Environment	
1H1	Rock falls from cliffs due to mine subsidence. Rock fall causes localised damage to environment. (Note: There were no pagodas identified in the area)	1	Completed SMP to include Public Safety and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager Environment	
111	Mass movement of steep slopes due to mine subsidence. Localised damage to environment.	1	Completed SMP and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager Environment	
1M1	Mine subsidence leads to loss of protected species or their habitat.	1	Completed SMP to include consideration of Threatened and protected species and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager Environment	
1N1	Mine subsidence leads to impacts to Dharawal State Conservation Area	1	Completed SMP to include consideration of Dharawal State Conservation Area	Friday, 11 January 2008	BHPB Illawarra Coal - Manager Environment	
1Q1	Mine subsidence leads to damage or loss of Natural vegetation.	1	Completed SMP to include consideration of Natural vegetation and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager Environment	



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	2
SUB SYSTEM: No: 2	Public Utilities	Verified by: Date:		of:	7

			NO. Z	Date.		
ID	HAZARD & EFFECTS	TID	TREATMENT	DATE REQUIRED	RESPONSIBLE OFFICER	DATE COMPLETED
2B1	Damage to roads due to anomilous mine subsidence. Roads require repair.	1	Completed SMP to include consideration of Roads (all types) and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager R&I	
		2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
		3	Revise the Road management plan to include Longwalls 34-36	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
2C1	Damage to bridges due to mine subsidence. Roads require repair.	1	Completed SMP to include consideration of bridges (all types) and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager R&I	
		2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
		3	Revise the Management Plan to include Longwalls 34-36	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
2D1	Damage to tunnel due to mine subsidence. Tunnel requires repair.	1	Completed SMP to include consideration of tunnels and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager R&I	
		2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
		3	Revise the Management Plan to include Longwalls 34-36	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
2F1	Damage to the 1200mm United Utilities water pipe line and associated connections due to mine subsidence.	1	Completed SMP to include consideration of water pipe lines and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager R&I	
		2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
		3	Revise the Management Plan to include Longwalls 34-36	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
2F2	Damage to the Sydney Water local disrtibution network water pipe line and associated connections due to mine subsidence.	1	Completed SMP to include consideration of water pipe lines and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager R&I	
		2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
		3	Revise the Management Plan to include Longwalls 34-36	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
2G1	Damage to the Gas Pipelines (Alinta EGP, AGL and Gorodok)	1	Completed SMP to include consideration of gas pipe lines and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager R&I	



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	3
SUB SYSTEMS	Public Utilities	Verified by: Date:		of:	7

	CONSULTING		No: 2	Date:		· · · · · · · · · · · · · · · · · · ·
ID	HAZARD & EFFECTS	TID	TREATMENT	DATE REQUIRED	RESPONSIBLE OFFICER	DATE COMPLETED
	due to mine subsidence.					
		2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
2H1	Damage to Electricity transmission lines due to mine subsidence. Transmission lines requires repair. (Includes Transgrid 330kV, Integral 66kV, 11kV and domestic supplies, the SCA power lines which will be included in the canal assessment 2.13)		Completed SMP to include consideration of Electricity transmission lines and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager R&I	
		2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
211	Damage to Telstra Local Network and Fibreoptic telecommunication lines due to mine subsidence. Telecommunication lines require repair.		Completed SMP to include consideration of Telecommunication lines and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager R&I	
		2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
		3	Revise the Management Plan to include Longwalls 34-36	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
2M1	Damage to the SCA infrastructure including Upper Canal due to mine subsidence. Resulting in - reduced or loss of supply - reduced water quality - damage to heritage structures, repairs required		Completed SMP to include consideration of SCA infrastructure including Upper Canal and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager R&I	
		2	Impact assessment to be prepared and mitigation and monitoring programs to be developed.	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
		3	Revise the Management Plan to include Longwalls 34-36	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	4
SUB SYSTEM: No: 4	Farm Land and Facilities	Verified by: Date:		of:	7

	CONSULTING		No: 4	Date:		/
ID	HAZARD & EFFECTS	TID	TREATMENT	DATE REQUIRED	RESPONSIBLE OFFICER	DATE COMPLETED
4B1	Damage to Farm buildings / sheds due to mine subsidence. Farm buildings / sheds require repair.	1	Completed SMP to include consideration of Farm buildings / sheds and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Community Relations Coord.	
		2	Land owner review of Property Subsidence Management Plans (PSMP) and issue final documents	Sunday, 1 June 2008	BHPB Illawarra Coal - Community Relations Coord.	
		3	Monitoring and manage throughout mining as per the Property Subsidence Management Plans (PSMP)	Sunday, 1 June 2008	BHPB Illawarra Coal - Community Relations Coord.	
4D1	Damage to Inghams Poultry sheds due to mine subsidence. Poultry sheds require repair.	1	Completed SMP to include consideration of Inghams Poultry sheds and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager R&I	
		2	Revise the Management Plan to include Longwalls 34-36	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	5
SUB SYSTEM: No: 6	Areas of Archaeological and/or Heritage significance	Verified by: Date:		of:	7

			No: 6 Date:					
ID	HAZARD & EFFECTS	TID	TREATMENT	DATE REQUIRED	RESPONSIBLE OFFICER	DAT	E COMP	LETED
6A1	Damage to Archaeological and/or Heritage Significant sites due to mine subsidence. (Heritage aspects of the Upper Canal are dealt with in Section 2.13)	1	Completed SMP to include consideration of Areas of Archaeological and/or Heritage Significance and the monitoring programs	Friday, 11 January 2008	BHPB Illawarra Coal - Manager Environment			
		2	Apply for Section 90 'consent to destroy' for 5 Aboriginal sites and implement Management Plan	Monday, 1 June 2009	BHPB Illawarra Coal - Manager Environment			
		3	Monitoring European Heritage sites through the Subsidence Management Plans (SMP)	Monday, 1 June 2009	BHPB Illawarra Coal - Manager Environment			



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	6
SUB SYSTEM: No: 8	Permanent Survey Control Marks	Verified by: Date:		of:	7

		No. 6		<u> </u>		
	ID HAZARD & EFFECTS	TID		DATE REQUIRED	RESPONSIBLE OFFICER	DATE COMPLETED
8/	A1 Movement of Permanent Survey Control Marks due to mine subsidence. Surveyors rely on false location of the marks.	1	Completed SMP to include consideration of Permanent Survey Control Marks and the monitoring programs	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	
		2	Liase with Land and Property Information (LPI) untill mining has ceased and Permanent Survey Control Marks can be re-established	Sunday, 1 June 2008	BHPB Illawarra Coal - Manager R&I	



SYSTEM: AR0507	Cardno Forbes Rigby SMP Application	Compiled by: Date:	Shane Chiddy 11th January 2008	Sheet:	7
SUB SYSTEM:	Residential Establishments	Verified by:		of:	7

		TID DATE DECLUSION DESCRIPTION DE LA CONTRACTION DEL CONTRACTION DE LA CONTRACTION D			D. T. COLC.:	
ID	HAZARD & EFFECTS	TID	TREATMENT	DATE REQUIRED	RESPONSIBLE OFFICER	DATE COMPLETED
9A1	Damage to Houses and property improvements due to mine subsidence. Houses and property improvements require repair. Owners emotional stress associated with uncertainly of events.	1	Completed SMP to include consideration of Houses and the monitoring programs	Sunday, 1 June 2008	BHPB Illawarra Coal - Community Relations Coord.	
		2	Complete the Property subsidence management plans (PSMP)	Sunday, 1 June 2008	BHPB Illawarra Coal - Community Relations Coord.	
		3	Land owner review of Property Subsidence Management Plans (PSMP) and issue final documents	Sunday, 1 June 2008	BHPB Illawarra Coal - Community Relations Coord.	
		4	Monitoring and manage throughout mining as per the Property Subsidence Management Plans (PSMP)	Monday, 1 June 2009	BHPB Illawarra Coal - Community Relations Coord.	

# Attachment 9 Revisions

### **Document Revision History**

Revision	Date	Modification Decription	
1	11-Jan-08	Release	