



LONGWALLS 4 & 5 AND MAINGATES 6, 7 & 8

RESPONSE TO SUBMISSIONS

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ABBREVIATIONS & ACRONYMS

ACARP	Australian Coal Association Research Program
ACH	Aboriginal Cultural Heritage
AEMR	Annual Environmental Environment Report
BHCS	Bald Hill Claystone
BHP	Broken Hill Proprietary Ltd
CCC	Community Consultative Committee
CH ₄	Methane
CRHS1	Cataract River Headwater Swamp 1
CCHS3	Cataract Creek Headwater Swamp 3
CCHS4	Cataract Creek Headwater Swamp 4
CCTV	Closed Circuit Television
DA	Development Application
DCP	Development Control Plan
DECCW	Department of Climate Change and Water
DEH	Commonwealth Department of Environment & Heritage
DoP+I	NSW Department of Planning & Infrastructure
DP&I	NSW Department of Planning & Infrastructure
DRE	Division of Resources & Energy, Department of Trade and Investment, Regional Infrastructure and Services
DSC	NSW Dams Safety Committee
DSEWPaC	Commonwealth Department of Sustainability, Environment, Water, Population and Communities
EA	Environmental Assessment
EDO	Environmental Defenders Office
EEC	Endangered Ecological Community
EP&A Act	Environmental Planning & Assessment Act 1979 (NSW)
EPA	NSW Environment Protection Authority
EPBC	Environmental Protection and Biodiversity Conservation Act 1999 (Cwth)
ERM	Environmental Resources Management Pty Ltd
GHG	Greenhouse Gas
GNRE	Gujarat NRE Coking Coal Ltd
GPS	Global Positioning System
IRRM	Illawarra Residents for Responsible Mining
IUCN	International Union for the Conservation of Nature
LEP	Local Environment Plan
LIDAR	Light Detection And Ranging
LW	Longwall
MG	Maingate
ML	Megalitres (million litres)
MOP	Mine Operations Plan
MP10_0046	Preliminary Works Pt 3A Approval
NGA	National Greenhouse Accounts
NorBE	Neutral or Beneficial Effect test for catchment areas outlined in s34B of the EP&A Act
NPWs	NSW National Parks and Wildlife Service
NRE	Gujarat NRE Coking Coal Ltd
OEH	NSW Office of Environment & Heritage
PAC	NSW Planning Assessment Commission
PIN	Penalty Infringement Notice
PKCT	Port Kembla Coal Terminal
PM _{2.5}	Fine particles in the air that are smaller than 2.5 micrometers (µm) in diameter
PM ₁₀	Fine particles in the air that are smaller than 10 micrometers (µm) in diameter
Pt3A	Part 3A of the EP & A Act 1979
RMS	NSW Roads and Maritime Services
RTO	Reverse Thermal Oxidation
s75W	The section of the EP&A Act that allows modifications of existing Pt3A approvals
SCA	Sydney Catchment Authority
SCT	Strata Control Technologies Pty Ltd
SEPP	State Environmental Protection Policy
SMP	Subsidence Management Plan
SRLUP	Strategic Regional Land Use Policy
TARP	Trigger Action Response Plan
THPSS	Temperate Highland Peat Swamps on Sandstone
TSCA	Threatened Species Conservation Act 1995
TSP	Total Suspended Particulates
VAM	Ventilation Air Methane

EXECUTIVE SUMMARY

Background

On 5 May 2012, NRE lodged an application to modify its Preliminary Works Pt3A approval MP10_0046 to include LW's 4 & 5 and Maingates 6, 7 & 8. The modification was placed on public exhibition from 13 August 2012 to 3 September 2012. A total of 44 separate submissions were received by DP&I over a six week period and forwarded to NRE for response. The final submission was received by NRE on 25 September 2012.

Issues

In the submissions there was a significant amount of concern raised by the community and agencies with regard to the quality, quantity and availability of information. It was felt that there was insufficient data upon which to make assessments of the impacts of the proposal and that some of the information was intentionally misleading.

The majority of issues that were raised were environmental in nature and revolved around the impacts of the extraction of the longwalls on regional and local groundwater and its consequent affects on streams, Upland Swamp EEC's and individual endangered species. A relatively large number of the submissions expressed concern about damage to, or water loss from, the drinking water catchments. In particular, connectivity of the either streams, groundwater or reservoir water to the mine, was raised as a major issue that should preclude any mining in the area. There was also significant focus on pit top activities and their impact on the quality of life of local residents, in particular air quality and noise impacts.

Response

For a variety of reasons, NRE's initially preferred approvals approach of having one approval for its mining for the next 20 years has not eventuated. As a result, for operational viability reasons, NRE has been forced to seek approvals in what has been referred to as a piecemeal fashion. This has resulted in sometimes inadequate or confusing information being included in applications due to its having to be drawn from other applications or sources and integrated into a new application in a short period of time.

The application only applies to LW's 4 & 5 and Maingates 6, 7 & 8 and does not seek to change the activity at the Pit Top from what was approved in the Preliminary Works Pt3A. Despite this, many of the issues raised with regard to environmental impact from the Pit Top have been addressed in detail. NRE acknowledges that it can improve its environmental management systems and processes and is currently undertaking significant efforts to ensure that it both complies with its approvals and addresses the legitimate concerns of the residents.

Recently, NRE engaged an ecological consultant, Biosis, to undertake detailed assessments of Upland Swamps in the NRE lease areas for its Underground Expansion Project covering the entire Wonga East and Wonga West study areas. The assessment followed the OEH Draft Upland Swamp Environmental Impact Guidelines 2012 and involved detailed swamp mapping using LIDAR data and ground truthing. This has significantly improved the significance classification and impact assessment of the swamps. Extracts of the Biosis methodology and findings as relevant to LW 4 & 5 as well as a modified mine plan are included in this Response Report. The full Biosis 2012 report covering the entire Wonga East and West study areas is located in **Attachment B** of this Response Report.

IMPORTANT NOTE: *The reader must be aware that as a result of the swamp assessment Biosis were required to change the swamp designations used in its report from those used in the EA.*

At the same time work has been undertaken to improve NRE's understanding of pillar run issues as well as local groundwater movements and in particular the unknowns surrounding the characteristics and behaviour of the Bald Hill Claystone. The data from the extraction of LW4 has been analysed and NRE's understanding of subsidence related to triple seam mining has significantly increased. The information has been used to update and improve the subsidence prediction model to allow more detailed impact modelling for future Extraction Plans. A more detailed account of recent findings can be found in the SCT 2012 report that addresses these issues is available in **Attachment A** in this Response Report.

Underground geotechnical assessment has verified the need for NRE to propose a relocation of the LW5 start line adjacent to the LW4 start line. This will lead to a reduced subsidence footprint and potentially reduces surface impacts on sensitive features. The proposed new start line for LW5 is shown in **Figure 2** of this Response Report.

As a result, NRE believes that the extraction of LW5 and the driving of Maingates 6, 7 & 8 can be undertaken in a manner that meet its lease requirements to maximise resource recovery but also minimise environmental impacts through informed and well executed management planning under the guidance and control of regulatory authorities.

BACKGROUND

Gujarat NRE Coking Coal Limited (NRE) owns and operates No.1 Colliery at Russell Vale, approximately 8 km North of Wollongong, NSW.

On 13 October 2011, the Project Approval (MP 10_0046) for the No.1 Colliery Preliminary Works Project was granted by the Minister for Planning under Section 75(J) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This approval allows NRE to continue its operations at the mine including the extraction of coal up to 1 million tonnes per annum, upgrade of and improvements to surface facilities, in addition to first workings and transport of coal to the Port Kembla Coal Terminal for shipment as required.

NRE intends to expand its mining operations at No.1 Colliery and has submitted an application for a Major Expansion Project (MP 09_0013) of which the EA is being finalised prior to assessment by the Department of Planning and Infrastructure (DP&I).

In order to ensure the ongoing viability of the mine while awaiting the necessary approvals, NRE lodged a concurrent Subsidence Management Plan (SMP) application for the extraction of Longwalls 4 and 5 to the Department of Trade and Investment, Division of Resources and Energy (referred to herein as DRE). The SMP approval for LW4 was granted on 26 March 2012 by DRE, however, approval for LW5 was not granted.

As a result a section 75W (s75W) Modification Application was lodged with DP&I on 9 May 2012 for extraction of longwall coal from the Wonga East Area of NRE's No.1 Colliery lease area. The proposed extraction is located within the approved Preliminary Works 'Application Area' and the application was prepared to modify the Preliminary Works Approval (MP 10_0046) to include:

- Amending the reference to the use of maingates (MGs) 4 and 5 from exploratory driveages to operational gateroads.
- The extraction of coal using longwall mining techniques from Longwall (LW) 4 in accordance with the approved SMP.
- The extraction of coal using longwall mining techniques from Longwall (LW) 5.
- Development of maingates (MGs) 6, 7 and 8.

The Environmental Assessment was placed on public exhibition from 13 August 2012 to 3 September 2012 and a total of 44 separate submissions were made.

PURPOSE OF THIS RESPONSE TO COMMENTS DOCUMENT

This document forms NRE's official response to comments received after the public exhibition of its Pt3A modification application for Longwalls 4 & 5 and Maingates 6, 7 & 8. NRE has prepared a Response Report based on Areas of Concern expressed in these submissions. Detailed responses to each submission are included as **Attachment C** to the Report.

STRUCTURE OF THIS DOCUMENT

This Response Report has been structured to address numerous issues across twenty identified topics in three Areas of Concern. The Areas of Concern are Process & Information, Environment and Socio-Economic. Responses to the comments received with regard to the Areas of Concern will be addressed by Topic and Issue. The final section of the report will contain a consolidated NRE response to the submissions. Responses to individual submissions are contained in Attachments at the end of the Report.

The Document is structured as follows:

Executive Summary

This gives an overview of the application, submissions and responses

Background (this Section)

Provides the detail and context of the LW4 & 5 and Maingates 6, 7 & 8 modification application

Overview of Submissions

This covers the main Areas of Concern, Topics and Issues raised by the submissions

Process & Information

Addresses the Topics and Issues related to the application process and EA quality

Environment

Addresses the Topics and Issues related to the environmental impacts of the proposal

Socio-Economic

Addresses the Topics and Issues related to the socio-economic impacts of the proposal

Additional Issues

Raises additional issues regarding MP10_0046 that have come to NRE's attention as requiring attention during the public exhibition and response to comments

Attachments

Contains specialist reports that address many of the issues raised in the submissions as well as individual responses to submissions

OVERVIEW OF SUBMISSIONS

NRE has received a total of 44 separate submissions covering 20 topics ranging across the general areas of Process & Information, Environment and Socio-Economic concerns. The individual topics raised are shown in **Table 1**. A summary of the individual issues raised in the submissions as they relate to the topics in **Table 1** can be found in **Table 2**.

Table 1 Summary of Submissions by Topic

	Process & Information					Environment											Socio-Economic			
	Approval Process	Information Adequacy	Statutory/Regulatory Issues	Subsidence Management	Subsidence Predictions	Aboriginal Cultural Heritage	Air Quality	Flora & Fauna	Geology	Greenhouse Gas	Groundwater	Noise	Pit Top Rehabilitation	Surface Water	Traffic & Transport	Visual Impact	Community	Drinking Water Supply	Economic	Infrastructure
SUBMITTER																				
Division of Resources & Energy (DRE)		✓	✓	✓			✓													
Dams Safety Committee (DSC)		✓	✓	✓				✓		✓								✓		✓
NSW Heritage				✓																✓
NSW Office of Water (NOW)		✓			✓			✓		✓				✓						
Office of Environment & Heritage (OEH)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓						
Roads and Maritime Services (RMS)				✓											✓					
Sydney Catchment Authority (SCA)	✓	✓		✓	✓		✓	✓		✓				✓				✓		
Wollongong City Council																				
Illawarra Residents for Responsible Mining (IRRM)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
National Parks Association (NPA)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Save Our Water Catchments (SOWC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓		✓	✓	✓	✓
Edwards	✓	✓	✓	✓	✓		✓	✓		✓		✓		✓	✓			✓	✓	
Frank		✓											✓		✓				✓	
Fuller																				
Gallary (F)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	
Heks (F)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	
Huxtable (x2)		✓	✓	✓	✓		✓	✓		✓	✓	✓					✓	✓	✓	
Jacobs (F)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	
Merrin	✓						✓	✓	✓		✓	✓		✓	✓			✓	✓	
Moore			✓		✓													✓		
Parkinson								✓			✓									
Quinn (F + additional comments)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	
Riedl (F + additional comments)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	
Ritchie	✓	✓		✓	✓		✓	✓				✓			✓		✓	✓		✓
Schulz							✓	✓		✓					✓		✓	✓		
Shand															✓		✓	✓		
Sheppard (F)	✓		✓		✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	
Skates (F)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	
Townsley			✓		✓			✓							✓					✓
Turner (x2)	✓	✓	✓	✓			✓			✓				✓				✓		
Williams (F)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	
Young	✓	✓			✓			✓		✓										
Names Withheld 1 (F)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	
Names Withheld 2	✓		✓		✓		✓	✓		✓	✓	✓		✓	✓		✓	✓		
Names Withheld 3 (F)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	
Names Withheld 4 (F)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	
Names Withheld 5	✓						✓					✓						✓	✓	
Names Withheld 6							✓					✓								
Names Withheld 7 (F)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	
Names Withheld 8					✓		✓	✓			✓			✓	✓		✓	✓		
Names Withheld 9	✓		✓				✓					✓					✓		✓	
Names Withheld 10 (F)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	
Names Withheld 11	✓		✓		✓		✓	✓		✓	✓	✓		✓	✓		✓	✓	✓	
Names Withheld 12 (F)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	
Names Withheld 13	✓	✓	✓				✓	✓		✓	✓	✓			✓		✓	✓	✓	

(F) = Form letter or template submission

Table 2 Overview of Issues Raised with Regard to Topics

TOPICS	ISSUES
Approvals Process	1. opposition to NRE's piecemeal approach to gaining approvals avoiding full contextual assessment and the inclusion of gateroads in the proposal to place pressure on authorities to grant future approvals;
	2. perception of NRE's assumption of approval;
	3. perceived proponent bias of DP&I with regard to the relationship between DP&I and the PAC affecting outcomes in favour of proponents and reducing public confidence in PAC;
	4. DP&I strategic assessment on basis of Objects of the EP&A Act leading to dismissal of agency concerns;
	5. general approval process legality including that the proposal not to be accepted as a modification to the existing Pt3A, inadequate Public Exhibition period and modification of application documents during the exhibition period;
	6. consultants not considered neutral when directly employed by mines
Information Adequacy	1. data is inconsistent and the proposal contains insufficient baseline monitoring data;
	2. general lack of clarity in both wording and plans with confusing references to other applications or approval compounded by inconsistent statements and judgements;
	3. Information is not provided in sufficient detail and the information provided contains errors or omissions;
	4. poor justification for proposal;
	5. irrelevant comparisons between different extraction methodologies;
Statutory/Regulatory Issues	6. issues with information availability on DP&I website lack of updated information;
	1. recommendation of EPBC referral and statements made as to future DRE & DSC approval requirements;
	2. allegations of incorrect use of legislation to achieve prior longwall extraction approvals;
	3. failure to consider relevant Guidelines and Policies; NRE not a fit and proper organisation to be allowed to extract coal due to inability to upgrade infrastructure or comply with approvals;
	4. explanations of the basis of SCA NorBE assessment in EP & A Act 1979;
Subsidence Management	5. reference to the imminent listing of Upland Swamps in EPBC Act;
	1. no Extraction Plan available as part of the application;
	2. recommending new or existing subsidence impact performance measures for the project;
	3. concern regarding lack of specific impact monitoring, mitigation, adaptive management and rehabilitation or remediation measures in the application; recommendation of offset requirements for the project;
	4. requirement for continued meeting of current issue based Technical Working Groups;
	5. inadequate management plans as relevant to LW5;
Subsidence Predictions	6. reliance on unsuccessful remediation methods such as Waratah Rivulet grouting not to be considered during assessment of project by DP&I
	1. Concerns regarding the reliability of the subsidence prediction methodology and therefore the dependant subsidence impact predictions;
	2. concern about impacts of a potential Pillar Run;
	3. no prior triple seam extraction undertaken in Australia affecting accuracy and reliability of subsidence predictions;
	4. lack of subsidence model calibration/validation and lack of consideration of cumulative impacts and far field effects such as valley closure;
Aboriginal Cultural Heritage	5. likelihood of under prediction leading to unanticipated impacts; unknown height of goaf impacting prediction accuracy;
	1. protection of axe grinding grooves near swamp CCHS3
Air Quality	1. inadequacy of original air quality modelling in Preliminary Works Pt3A dust impacts from general operations and in particular truck transport of coal;
	2. no approved Air Quality & Greenhouse Gas Management Plan;
Flora & Fauna	3. the location of proposed air quality monitoring is inadequate and monitoring will not capture 2.5 µm particles which have the greatest health impacts;
	2. general comments and concerns regarding biodiversity;
Geology	3. focus on Threatened Species Conservation Act listed swamps, Endangered Ecological Communities and Endangered Species
	1. references to insufficient consideration of the impact of faults, dykes and other geological structures on subsidence and water connectivity;
	2. insufficient description and consideration of geochemistry and geomorphology including cliffline and valleys;
Greenhouse Gas	3. concern regarding impacts on aquicludes and aquitards, as well as subsurface fracturing of creeks and resultant water flow diversion away from the Reservoir or into the mine goaf
	1. general greenhouse gas emissions from Colliery and coal mining;
	2. no approved Air Quality & Greenhouse Gas Management Plan or specific details of Greenhouse Gas reduction goals or activities;
Groundwater	3. gas volumes per tonne of coal extracted too high;
	1. comments focused on aquifer depressurisation and groundwater connectivity to mine goaf and escarpment springs;
Noise	2. impacts to stream baseflow, perched aquifers that are sustaining Upland Swamps as well as the potential for aquifer connectivity and new underground flow paths leading to negative regional groundwater changes
	1. noise issues from Colliery Pit Top operations including ventilation fans, stockpile operations and coal transport;
Pit Top Remediation	2. inadequate location of noise monitors;
	3. noise mitigation measures are inadequate;
Surface Water	1. questions regarding mine life and final rehabilitation of pit top
	2. requirement to update Mine Operations Plan to include LW5 rehabilitation
	1. requiring protection of all streams of any Strahler Stream Classification order;
	2. impacts on Cataract River, Cataract Creek and Cataract Reservoir;
Traffic and Transport	3. impacts on swamp outflows;
	4. general concern about protecting water catchments
	1. no approved Traffic Management Plan and inadequate transport monitoring down Bellambi Lane;
Visual Impact	2. damage to Bellambi Lane and residences as a result of vibrations and general impact from truck movements from the Colliery
	3. appropriateness of the coal transport route to Port Kembla Coal Terminal and allowable coal transport hours
Community	4. general road safety including speeding, non-compliance with self imposed speed limits on Bellambi Lane;
	5. impact on quality of life due to truck compression and normal braking, inadequate covering of loads, general truck noise as well as inadequate dust mitigation including truck washing and covering of loads;
Drinking Water Supplies	1. Pit Top infrastructure design considered insensitive to the escarpment backdrop
	1. both inadequate and uncommitted community consultation;
Economic	2. general quality of life or health impacts due to proximity of community to mine;
	3. poor attitude of mine employees with regard to addressing community concerns
Infrastructure	1. significant focus on the protection of Special Areas with specific regard to protecting the water quality and quantity available to Sydney Water for ongoing provision of supplies;
	2. concern that reduced catchment yield may result from reservoir bed or surface cracking allowing leakage into the mine goaf, subsurface creek flow diversion and swamp impacts;
	1. NSW government focuses on immediate royalties and gives inadequate consideration to ecosystem services and the life cycle impacts of coal mining leading to long term economic impact from the externalisation of mining impact costs on the catchment to the NSW public;
	2. employment and flow on benefits resulting from NRE operations and the coal industry in the Southern Coalfields is small in terms of NSW budget income and jobs created. Statements of economic and social impact of operations by coal companies are overstated particularly in NRE's case where the coal quality is poor;
	3. capital investment only undertaken to allow job shedding and all profits go offshore;
	4. questions around community funding and local benefits beyond community donations and employment;
	5. require changing of mining dimensions or extraction methodology
	1. references made to Cataract Dam wall and Mt Ousley Rd;
	2. damage to Bellambi Lane and residences as a result of vibrations and general impact from truck movements from the Colliery;

Characteristics of the Submissions

At the date of writing NRE had received 44 separate submissions from government agencies, the general public and special interest groups. This number doesn't include two cases where a person made two submissions. The submissions by source are displayed in **Table 3** with the majority being from the general public.

Table 3 Submissions by Source

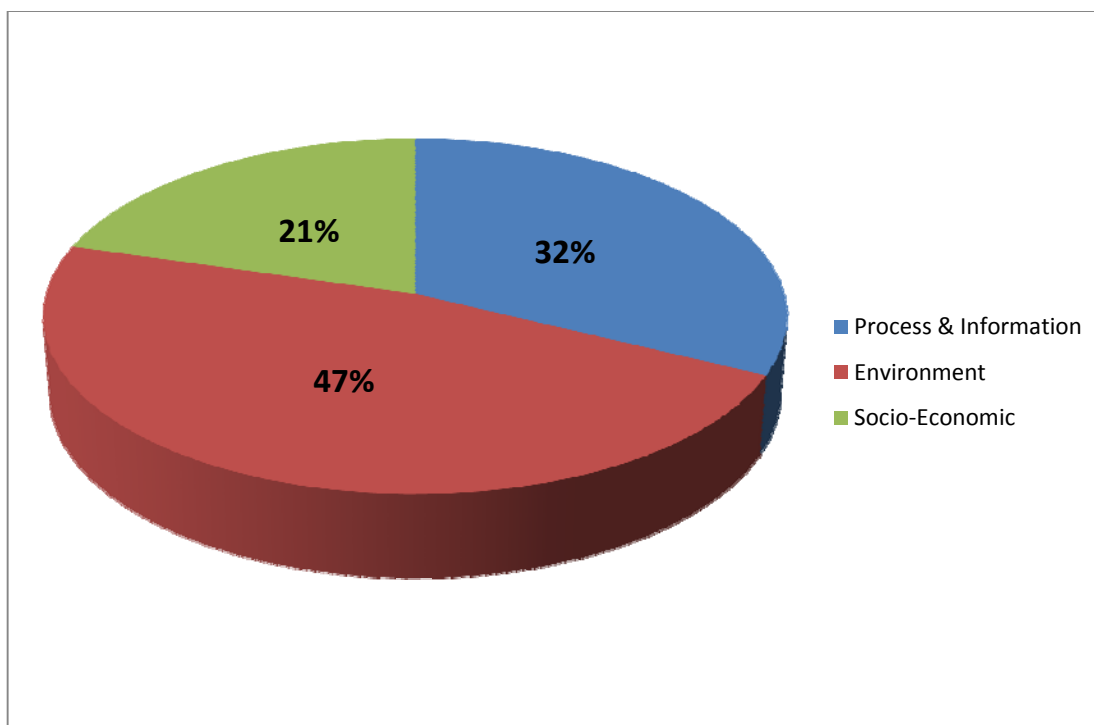
SUBMISSION SOURCE	No. OF SUBMISSIONS
Government Agencies	7
Special Interest Groups	3
General Community	34

A number of the general public and special interest group submissions were either in the form of a standard template or had sections of a standard template within them. Others showed signs of having referred to a standard template or to other submissions. Despite the similar topics, issues, style and layout of many of the submissions NRE has considered each and has made a detailed response to them in **Attachment C**.

Focus of Submissions

NRE has assessed the focus of the submissions by calculating the number of times a particular topic has been raised as shown in **Table 1**. There were over 450 separate references to Areas of Concern with nearly one half focused on the Environment, one third focused on Process and Information concerns and around one fifth of comments addressing Socio-Economic concerns, as shown in **Figure 1**. The Topics and Issues raised in each area of concern are summarized in **Table 2** and will be addressed in detail in separate sections of this Response Report.

Figure 1 Comments Received by General Area of Concern



PROCESS AND INFORMATION

Approvals Process

Key Issues

1. Piecemeal Approach

There is opposition to NRE's piecemeal approach to gaining approvals thus avoiding full contextual assessment and also to the inclusion of gateroads in the proposal which will place pressure on authorities to grant future approvals;

2. Assumption of Approval

Perception of NRE's assumption of getting the approval it needs or wants;

3. Perceived DP&I Proponent Bias

Perceived proponent bias of DP&I with regard to the relationship between DP&I and the PAC affecting outcomes in favour of proponents and reducing public confidence in PAC; DP&I strategic assessment on basis of Objects of the EP&A Act leading to dismissal of agency concerns. Consultants not considered neutral when directly employed by mines

4. Lawfulness of Approval Process

General approval process legality including that the proposal not to be accepted as a modification to the existing Pt3A, inadequate Public Exhibition period and modification of application documents during the exhibition period

Summary of Submissions

Piecemeal Approach

Submissions refer to previous government agency submissions to the original Preliminary Works Project where they state separation of elements of the proposed new mining area into separate projects is not good practice as it results in the assessment being undertaken in a piecemeal fashion. They also point out that the PAC highlighted its concerns in its Preliminary Works assessment report that "separation of project applications where the primary purpose of the first is to facilitate the second could lead to lack of public confidence in the NSW assessment and regulatory systems and must be considered undesirable". This is reflected in the OEH submission and supported by the SCA submission.

Assumption of Approval

Doubt is cast on the need for the modification for financial viability reasons given that the Preliminary Works Pt3A gives NRE approval to extract other sections of coal using first workings. It is considered that NRE engaging in brinkmanship with DP&I to gain approval for a preferred mining method driven by an underlying assumption of approval.

Questions are raised as to why NRE ordered a new longwall in 2011 when there was no existing approval for longwalling in place at the Colliery but approval exists for first workings extraction.

DP&I Proponent Bias

There appears to be an entrenched culture at the DP&I of compromised priorities and while the DP&I clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. Neither does it actively consider the input of agencies or the PAC. It further encourages this view by allowing proponents to directly engage consultants for the process voiding any neutrality of advice and impact assessment.

Lawfulness of the Approval Process

The submissions consider LW5 as part of the Underground Expansion Project which is currently undergoing Adequacy Response prior to resubmission for Public Exhibition and thus should not be considered as a modification to the Preliminary Works Pt3A.

There are concerns this modification pathway will prevent cumulative impact assessment and avoid deep scrutiny. A number of submissions believe that the process is confusing at best or at worst a deceptive attempt to gain approval for the Underground Expansion Project by stealth. There are numerous references to the original NRE application in 2009 which was withdrawn and split into the Preliminary Works and Underground Expansion Project applications as an example of this. Claims are made that the use of the Pt3A modification process is unlawful given the repeal of Pt3A of the EP&A Act.

Response to Submissions

Piecemeal Approach

There has been no intention by the company to deliberately create a confusing approvals situation. NRE's preference would have been for one application to address the mines future activities.

The original Pt3A application for the development of Wonga East & West and the upgrade of the No.1 Colliery surface infrastructure was submitted by NRE in 2009 but was then withdrawn in liaison with DP&I to be resubmitted as both the Preliminary Works and Major Underground Expansion Pt3A's. This was to facilitate approval of some minor extraction and surface facility preparation while the likely lengthier approval for longwalls was processed and was based upon specific advice from DP&I.

This current approvals approach is not favoured by NRE. It is, however, an unavoidable requirement from the company's commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger Underground Expansion Project Pt3A application. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.

DP&I Proponent Bias

NRE is unable to comment on the perceived DP&I proponent bias or its relationship with agencies and the PAC.

With regard to the use of consultants, NRE is constrained by the requirements of the DP&I application and approvals process. Consultants have professional reputations to protect and advise NRE when a particular course of action cannot be supported.

Assumption of Approval

NRE understands that it requires lawful approval to undertake its operations and that those operations must be managed to minimise environmental impacts. The NSW Planning process does not guarantee approval and that risk is borne by NRE given that it must substantially invest between application and approval (if given), to ensure that it is not faced with the significant operational costs associated with a period of no coal production.

The Preliminary Works Pt3A was approved in October 2011 and NRE has lodged an application for the Underground Expansion Project that includes a proposal for significant longwall operations in the Wonga East and Wonga West areas of its lease. The Underground Expansion Project is currently in the Adequacy Assessment stage with NRE finalising its EA for Public Exhibition. The Underground Expansion Project has been in the planning system for a significant time and when it

was first submitted NRE had reasonable expectations that longwalling operations would be approved in some form before 2012. Even without a current approval, due to the approximate 2 year lead times in designing, tendering, construction, supply and commissioning of a new longwall, NRE had no choice but to start the longwall purchase process in anticipation of future approvals. If the company had waited for approval to longwall mine before starting the longwall purchase process, NRE would have faced up to 2 years of minimal coal production while a longwall was constructed. This would have caused significant financial issues that have, to a degree, been avoided through forward planning of the longwall equipment.

NRE does have current approval to remove remnant coal from both the V-Mains and P & O Panels as part of the Preliminary Works Pt3A approval. Due to current medium and long-term coal pricing, methods of first workings only for coal extraction are uneconomic. V Mains panel is limited in recoverable resource and was originally designed as a transitional mining area until further longwall mining areas were developed. Due to geological constraints, it has serious potential for longwall mining. This extraction is not being progressed due to current coal pricing and the significant and expensive development works needed to allow extraction of the P & O Panels. The coal in these two areas is uneconomic in the present economic climate.

Lawfulness of the Approval Process

While Pt3A of the Environmental Planning and Assessment Act 1979 has been repealed the Pt3A provisions continue to apply to approved Pt3A projects including allowing them to be modified.

The modification application does not expand the operation from either a surface operations or underground coal extraction volume perspective. The Colliery will still be constrained to the 1Mtpa limit approved as part of the Preliminary Works Pt3A.

Information Adequacy

Key Issues

1. Data and Information Quality

Data is inconsistent and the proposal contains insufficient baseline monitoring data. Information is not provided in sufficient detail and the information that is provided contains errors or omissions as well as containing irrelevant comparisons between different extraction methodologies. There is a general lack of clarity in both wording and plans with confusing references to other applications or approval compounded by inconsistent statements and judgements. It was also felt that the justification for the proposal is poor

2. Information Access

There were issues with information availability on DP&I website and a lack of updated information to assist assessment

Summary of Submissions

Data and Information Quality

It was stated that the justification for the proposal was poorly argued and that the EA was biased, incorrect, misleading, lacked logical structure or revised information and referred to documents that were not present or inaccessible. A degree of focus was placed on errors and omissions in the Statement of Commitments and reference to 'approved management plans' that were still under assessment by DP&I. As a result some, including the SCA, found it difficult to appropriately assess the application.

The EA was interpreted as indicating that the recently formed Community Consultative Committee (CCC) would replace existing community consultation undertakings in the Preliminary Works Pt3A. It was also felt that insufficient effort was made to examine other options for coal extraction such as Bord and Pillar.

Impact comparison and mitigation measures had no relationship to each other in terms of mining location (V Panels to LW5), mining methods (pillar extraction to longwall mining) and the affected features are different (Lizard Creek to Cataract Creek). This caused some to assume that NRE was requesting that the new predictions replace the existing ones in the Preliminary Works Pt3A.

Information Access

Information was not located on the DP&I website and modified Statement of Commitments information was made available late in the public exhibition period. The fact that the management plans referred to in the EA were not available to the public during this public exhibition stage of the modification planning process (Noise, Air Quality & Greenhouse Gas, Traffic, Surface Facilities, Water MP's) was considered unacceptable.

Response to Submissions

Data and Information Quality

Information issues related to specific issues or topics will be addressed in the relevant sections of this Response Report and in responses to individual submissions in **Attachment C**.

The main factor that seems to have contributed to the issues described in many of the submissions is that the project is a subset of a proposed much larger project. As such, some of the information that provided context in relation to the larger proposed project was not available. Further, information was integrated from the LW4 & 5 Subsidence Management Plan application. NRE acknowledges that this melding of information and contexts, as well as those who wished to submit not having access to the original EA for the Preliminary Works Pt3A which was being modified by this proposal, has led to the EA causing some confusion. The fact that the EA had to

be prepared and lodged rapidly also contributed to the issues experienced by those who wanted to comment on the application. NRE will aim to improve the quality of its documentation in liaison with DP&I for future applications.

The references made throughout the document to 'approved management plans' were intended to reflect NRE's intent to adhere to future approved Management Plans as required by MP10_0046 Pt3A approval conditions.

This modification proposal will not result in changes to activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. As a result the draft Management Plans for the Russell Vale Pit Top were not included in the application.

Changes were made to the Statement of Commitments for three reasons:

1) The first change was made as a result of interpretation issues surrounding management plan references brought to both NRE and DP&I's attention by one member of IRRM on 22 August 2012. The original text was intended to reflect NRE's intent to adhere to future approved Management Plans as required by MP10_0046 Pt3A approval conditions. These plans have not yet been approved by the DP&I but, when approved, will become a part of the Statement of Commitments and therefore enforceable as such. Members of the IRRM pointed this out and were advised of the intent of the wording. The wording was changed to minimise confusion.

2) There were also errors that were picked up in the Statement of Commitments by IRRM where NRE had failed to highlight in red some additions to the Statements of Commitments. As soon as this was pointed out NRE addressed the errors and reposted the corrected Statement of Commitments.

3) Some of the lines of the original Statement of Commitments were left out of the modification application because there was no intent to change them. The Timings column was similarly omitted so that only Statements that were going to be changed were in the modification. This was explained to a representative of IRRM who indicated to NRE that this may cause some to come to the conclusion that NRE was attempting to hide issues.

As a result of these criticisms, and in liaison with DoPI, NRE updated its Statement of Commitments to address any issues of confusion, or implications of non-transparency. This occurred late in the public exhibition process

With regard to ongoing consultation NRE will continue with informal communications such as email, phone and face to face communications in order to respond to complaints or enquiries. In terms of broader consultation, at a minimum, NRE will utilise the following methods:

1. CCC;
2. Approvals based Community Information Days are undertaken;
3. Two general Community Information Days per year; and
4. Distribution of newsletters to local residents advising of the mines activities

The subsidence impact predictions as well as management and mitigation measures are for the extraction of LW5 only and don't replace or override any of the impact prediction or management measure for V Mains or other extraction mentioned in the Preliminary Works EA.

Information Access

NRE advised DP&I on 23 August 2012 of omitted plans on its website. As stated in Section 1.2 of the EA, Appendix J was included to give an example of what the content and structure of an Extraction Plan might be if the proposal was approved. It was available in electronic form on the NRE website and all hardcopies were printed with Appendix J as a standalone folder containing all the relevant management plans referred to in the EA.

Statutory/Regulatory Issues

Key Issues

1. Additional Approvals

There were recommendations that NRE make an EPBC referral and statements made as to future DRE & DSC approval requirements

2. Misuse of Legislation

Allegations were made regarding incorrect use of legislation by NRE to achieve LW4 extraction approval

3. Compliance

The EA has failed to consider relevant Guidelines and Policies and NRE is not considered a fit and proper organisation to be allowed to extract coal due to a perceived inability to upgrade infrastructure or comply with approvals

4. Relevant Legislative Issues

There was discussion of the basis of SCA Neutral or Beneficial Effect (NorBE) assessment under the EP & A Act 1979 and reference to the imminent listing of Upland Swamps in EPBC Act

Summary of Submissions

Additional Approvals

As minor gateroads fall within the Notification Area, NRE will have to apply to the DSC for approval to drive workings in this area.

OEH believe the upland swamps in the project area are part of the Temperate Highland Peat Swamps on Sandstone EEC listed under the Commonwealth EPBC Act. This EA should be referred to the Australian Government for assessment. It should also be noted that the Commonwealth determination is being reviewed for this community and a new draft determination for 'Peaty Swamps on Sandstone' specifically includes upland swamps on the Woronora Plateau.

Misuse of Legislation

The current proposal seeks to exploit the now repealed but nonetheless persistent 'modification' provisions of Part 3A to establish an expansion project in a piecemeal manner. This avoids cumulative impact assessment and sidesteps the greater scrutiny that an expansion project application would attract. Based on the increased coal volumes and the use of documentation from the (withdrawn) expansion project this longwall application clearly is not preliminary works and should be included in the Expansion Project.

NRE are having the validity of the LW4 SMP approval under clause 8K of the Environmental Planning and Assessment Act challenged in the Land and Environment Court. The outcome of this challenge should be awaited.

Compliance

Since the Preliminary Works Pt3A approval NRE have proved that they are not capable of self-regulation. They have failed to comply with conditions including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved alternative was months overdue. Neither has NRE complied with conditions of their EPA License.

Relevant Legislative Issues

The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test nor its basis in Section 34B of the Environmental Assessment and Planning (EP&A) Act 1979 which requires a consent authority to “refuse to grant consent to a development application relating to any part of the Sydney drinking water catchment unless the consent authority is satisfied that the carrying out of the proposed development would have a neutral or beneficial effect on the quality of water.” Given the role of swamps, damage to swamps inescapably fails the Neutral or Beneficial Effect (NorBE) on water test, in contravention of the EP&A Act.

Response to Submissions

Additional Approvals

Based on a review of the Temperate Highland Peat Swamps on Sandstone (THPSS) listing advice it the opinion of NRE and its consultants that the upland swamps within the project area do not meet the criteria for this Threatened Ecological Community for the following reasons:

- they are outside of the altitudinal range;
- no Woronora swamps are listed as components of the THPSS;
- no Woronora swamps are mapped by DEH (2005) as part of the THPSS; and
- the swamps located above Longwalls 4 and 5 do not generate peat.

Therefore at this time there is no requirement to refer the project to DSEWPaC although NRE understands that this is currently being addressed by DSEWPaC.

Misuse of Legislation

While Pt3A of the Environmental Planning and Assessment Act 1979 has been repealed the Pt3A provisions continue to apply to approved Pt3A projects including allowing them to be modified.

The information in this project has been drawn from both the LW4 SMP and the current Underground Expansion Project Pt3A where NRE is in the process of responding to issues from adequacy review. This modification and approvals approach is not favoured by NRE. It is, however, an unavoidable requirement from the company's commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.

This current project modification application does not expand the operation from either surface facility or underground coal extraction volume perspective. The Colliery will still be constrained to the 1Mtpa limit approved as part of the Preliminary Works Pt3A

Compliance

NRE has had recent historical issues with approval non-compliances for a variety of reasons. The recent non-compliances are outlined below.

Table 4 Non-compliance with EPL Licence Conditions O1, O2 & O3

Date	Details of Non-compliance
8 September 2011	An incident involving a truck leaving the premises with an uncovered load on 8 September 2011.
2 May 2012	Dust being dragged out onto Bellambi Lane by a truck not using the designated wheel wash due to it not being operational caused on 2 May 2012.

Table 5 Non-compliance with MP10_0046 (Preliminary Works Pt3A Approval)

Conditions	Issue	Detail of Non-compliance	Response
Schedule 3, Condition 16(a); 21(a); 28(a) & (b); 29(a) & (b); 32(a) & (b); 35(a) & (b); and 38(a) & (b)	Noise, Air Quality & Greenhouse Gas, Traffic, Biodiversity, Surface Facilities Water, Water, and Heritage Management Plans	Failure to submit the management plans within 6 months of this approval in consultation with various agencies.	Revised management plans were submitted by 31 August 2012 to DP&I in consultation with various agencies.
Schedule 3, Condition 15 (b)	Regularly assess real time noise monitoring data	No real time noise monitoring data available	NRE awaiting approval of the Noise Management Plan by DP&I prior to installing equipment
Schedule 3, Condition 20 (c)	Regularly assess the real time air quality monitoring	No real time air monitoring data available	NRE awaiting approval of the Air Quality & Greenhouse Gas Management Plan by DP&I prior to installing equipment
Schedule 3 Condition 23 (a)	Truck Washing	Failure to submit a report to the DP&I about various truck washing arrangements that have been trialled at the surface facilities site within 6 months of this approval	A revised report submitted to DP&I on 31 August 2012 along with the Air Quality & GHG Management Plan and Traffic Management Plan by 31 August 2012.
Schedule 5 Condition 1 (a)	Environmental Management Strategy	Failure to submit an Environmental Management Strategy (EMS) for the project within 6 months of approval	An EMS was submitted to DP&I on 10 May 2012.
Schedule 5 Condition 5	Establish a Community Consultative Committee	Failure to establish and operate a Community Consultative Committee (CCC) or alternative framework within 6 months of this approval	A CCC was established and began operating by end of July 2012. The first CCC meeting was held on 21 August 2012
Schedule 5 Condition 10 (a)	Access to Information	Failure to make publicly available on NRE 's website: 1. a complaints register, which is to be updated on a monthly basis; and 2. a comprehensive summary of the monitoring results of the project, reported in accordance with the specification in any approved plans or programs required under the conditions of this or any other approval	EPL monitoring results and complaints register is now available on NRE's website.

Table 6 Non-compliance with Mining Lease CCL 745

Approval	Issue	Detail of Non-compliance	Response
Consolidated Coal Lease 745	Condition 4 of SMP Approval -NRE No.1 Colliery LW4 (part) - Subsidence Monitoring Program, dated 17 April 2012.	Failure to install and survey approved monitoring points prior to the commencement of LW4 extraction	NRE received a \$2,500 fine.

Table 7 Non-compliance with SCA Approvals

Condition	Issue	Detail of Non-compliance	Response
Condition 9 of SCA Approval's ref: D2011/55973	Gujarat No.1 Colliery reinstatement of water pipeline MPL 138 and use of pipeline and associated infrastructure dated 20 January 2012.	Failure to install sediment controls as required part of the approved pipeline works had not placed along part of the access track result into pollution to water	NRE has ceased all the activity immediately in this area and call upon expert to have the necessary sediment and erosion controls installed to avoid further non compliances. Fine - \$1500
Condition 2 of SCA Approval's ref: D2011/57917	Installation of Subsidence Monitoring Lines Wongawilli East Longwalls 4 to 8 dated 19/01/12.	The accidental clearing of vegetation within two Upland Swamps has occurred during the clearing of the subsidence monitoring lines	NRE has developed vegetation clearing procedure in Special Area Land to prevent the recurrence of the incident. Fine - \$1500

Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPaC to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward. In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews.

NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause non-compliance. In respect of staff availability issues, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment with the aim of gradually extending the responsibilities to site monitoring if practical. An additional two Environment and Community Officers have also been employed. NRE is also committed to ensuring that going forward, approvals and environmental compliance aim for best practice.

NRE has included an air and noise monitoring program into both its Noise and its Air & Greenhouse Gas Management plans to ensure compliance with their Preliminary Works Project approval conditions for air and noise compliance monitoring requirements. These plans were submitted to DP&I for its approval on 31 August 2012. NRE has also placed an order for real time air and noise monitoring equipment prior to approval of the management plan to reduce lead time for receipt and installation of this equipment. NRE is planning to undertake a noise audit earlier than required by the Preliminary Works Pt3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will be developed to implement the audit recommendations and the Noise Management Plan updated.

NRE have taken additional steps to ensure compliance with their EPL Licence Conditions and improved transport management including:

1. Introduction of a three strike warning system to truck drivers regarding failure to comply with the Code of Conduct;
2. Commencement of an NRE Coal Distribution auditing program;
3. Upgrading of all trucks with flashing dash board warning lights to ensure covering of the load;
4. More signage to remind drivers to ensure covering of their loads;
5. Road sweeping on Bellambi Lane once a week whilst loading trucks from the open stockpile area;
6. Dedicated water pipe line for the truck washing facility;
7. Modification of the existing truck washing facility to provide improved cleaning ;
8. Regular talks to all truck drivers regarding requirements of Driver's Code of Conduct; and
9. All the above measures will be incorporated into NRE's Traffic Management Plan.

During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified as soon as NRE was aware of the nature of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident.

Relevant Legislative Issues

The applicability of the SEPP 58 based NorBE test is a matter for consideration by DP&I and the PAC during assessment of the modification application.

Subsidence Management

Key Issues

1. Management Plans

There were no management plans relevant to LW5 and in particular there was no Extraction Plan available as part of the application

2. Management Measures

A number of agencies recommended offset measures and new or existing subsidence impact performance measures for the project and voiced concern regarding lack of specific impact monitoring, mitigation, adaptive management measures in the application. The RMS required continued meeting of the current RMS Technical Working Group

3. Remediation

There was a lack of specific rehabilitation and remediation measures and opposition was made to reliance on unsuccessful remediation methods such as Waratah Rivulet grouting and requested that it not to be considered during assessment of project by DP&I

Summary of Submissions

Management Plans

The subsidence monitoring plan and extraction plan were missing from the application.

Management Measures

The coal mining industry does not have a good track record of predicting, managing or responding to subsidence, water flow loss or gas leaks.

Virtually no baseline data has been provided in the EA and most baseline data falls short of the two years baseline requirement. Additional baseline monitoring of flora and fauna, groundwater, surface water and geology (e.g. Bald Hill Claystone aquitard) is required to better inform management plans. LIDAR data was not made available.

The key performance measure for swamps is negligible drainage of water from the swamp, or redistribution of water within a swamp. A general approach of negligible impact to features must be implemented as part of any approval.

This application must include a monitoring regime with “before” and “after” measurements that allow objective assessment of the claims of the application. The current regime doesn't proactively identify whether unexpected additional subsidence is occurring or is likely to occur, or whether water flow into cataract dam is being significantly affected. Detailed hydrological monitoring must be implemented at all swamps identified in the project approval. The regime for measuring the impact on water catchment and wetlands is not defined nor are trigger points for contingent action defined.

While an adaptive management approach to mining given the wide variety of unknowns in this area could be contemplated, it potentially introduces a high risk to environmental assets that overly the mining domain. In particular given the lack of baseline monitoring and inadequate details on type and adequacy of this monitoring or clear and effective management feedback loops in the EA, it appears the NRE has adopted a 'trial and error' approach to mining impact management. Triple seam mining introduces concerns about being able to cease mining immediately should a major subsidence issue arise. As such NRE should be required to mine by means that reduce the risk e.g. leave more pillars.

Remediation

The Biodiversity Management Plan (BMP) (Appendix J) states that "if fracturing occurs remediate as soon as possible", and the Trigger Action Response Plan (TARP) states that if predictions are exceeded impact mitigation measures will be implemented. However, there is no detail on what these remediation or impact mitigation measures will be. Given the lack of certainty about the effectiveness of such practices the BMP should also include a discussion of potential offset mechanisms that may be invoked should impact occur and remediation is impractical or unsuccessful.

There is a high (but unquantified) risk to EECs and groundwater aquifers which could lead to major impacts in this area, including a potential loss of water to nearby Cataract Creek. Based on previous experience (Lower Cataract River, Marhnye's Hole, Waratah Rivulet) any proposed remediation of impacts is likely to be small in nature, expensive and difficult to apply in these forested areas. There is also currently no known method of remediating swamps that have been dewatered due to longwall mining fracturing underlying rock strata. Any impacts to EECs are therefore unlikely to be remediated and we are looking at a scenario of loss if significant impacts do eventuate from this mine plan.

Mitigation measures to repair cracking creek beds have had only limited success and are still considered experimental. Some cracking <10mm may reseal in areas of high sediment load. Cracks 10-50 mm wide may be sealed with a grouting compound or bentonite. Cracks wider than 50 mm require concrete.

Pattern grouting in the vicinity of Marhnyes Hole in the Georges River has been successful at restoring surface flows and reducing pool drainage following fracturing of the riverbed. Grouting of cracks also appears to have been relatively effective in Wambo Creek in the Hunter Valley. Installation of a grout curtain in the Cataract River, however, has been only partially successful and it was concluded in 2002, after rehabilitation measures had taken place, that the environment flows released from Broughtons Pass Weir by the Sydney Catchment Authority were insufficient to keep the Cataract River flowing or to maintain acceptable water quality.

Mitigation measures themselves may have additional environmental impacts due to disturbance from access tracks, the siting of drilling rigs, removal of riparian vegetation, and unintended release of the grouting material into the water. Furthermore, even measures that are successful in terms of restoring flows involve temporary rerouting of surface flows while mitigation is carried out (generally for 2-3 weeks at each grouting site). Planning for remediation measures may also be hampered by the lack of predictability of some impacts, and difficulties gaining access to remote areas where remedial works are needed. The long-term success of mitigation measures such as grouting is not yet known. It is possible that any ongoing subsidence after grouting may reopen cracks or create new ones. Further, it is not yet known whether the clay substance bentonite, which is often added to the cement in the grouting mix, is sufficiently stable to prevent shrinkage. Grouting under upland and hanging swamps that have no definite channel is probably not feasible.

Impacts deemed not negligible should have mandatory remediation conditions.

Response to Submissions

Management Plans

As stated in Section 1.2 of the EA, the SMP plans in Appendix J of the EA were included as an indication of the content and format of a future Extraction Plan should the current modification application be approved.

This information contained in the SMP plans in Appendix J contains all the monitoring and mitigation measures that were proposed and undertaken for LW4. These measures will be extended and improved for LW5 as part of an Extraction Plan & SMP plan application.

For underground operational reasons, NRE proposes to relocate the start position of LW5 adjacent to the LW4 start line and this change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved.

Management Measures

The use of offsets in NSW is governed by the *Principles for Use of Biodiversity Offsets in NSW* (OEH 2011). OEH outlined 13 principles that provide guidance for the consideration of the use of offsets. The NSW BioBanking scheme provides a framework for the objective determination of offset requirements in NSW. This scheme provides a framework and methodology for determining any offsets that may be required to offset any residual impacts.

If impacts are detected in upland swamps located above Longwalls 4 and 5 the NSW BioBanking scheme can be used to determine any offset requirements. The difficulty will be in sourcing and securing offsets that meet the 'like for like' principle. The majority of upland swamps are located on catchment land, with limited potential offsets sites located on private land.

That said, land managed by Gujarat west of Mt Ousley Road currently supports a number of upland swamps that could provide potential offsets sites. These upland swamps are currently impacted by recreational motor vehicles, particularly motorbikes, and substantial work would be required to adequately protect these sites if required.

Significant effort, time and cost have been spent on monitoring over the last 3 years in the area proposed to be mined. Work continues to further refine and improve both data collection and interpretation. Additional installation of 10 swamp piezometers in the Cataract Creek, Cataract River and Bellambi Creek catchments has occurred. An open standpipe piezometer and an array of vibrating wire piezometers adjacent to LW4 has been installed since March 2012. In addition, 8 stream water level / water quality sites have been installed, with 7 of those installed for around 2 years. Volumetric water flow monitoring has also commenced since March 2012, whilst the previous stream water level data collected prior to the installation of the volumetric monitoring sites will be able to be back calculated to volumetric flows as soon as sufficient flow duration data is attained. Prior to mining LW5, stream, swamp and groundwater management plans will be developed and implemented. This will facilitate the adaptive management of the proposed LW5 extraction so that adverse impacts on these systems will be avoided.

The LIDAR data was used to improve NRE's understanding of the terrain in which it was proposing to mine. The LIDAR data will also provide NRE with baseline topography to compare to post mining topography. Biosis has used LIDAR data to undertake detailed mapping of upland swamps as a part of Gujarat's Major Expansion Project. It has also assisted in clearly defining stream and river courses. NRE is also undertaking significant ecological, surface water, groundwater, visual, survey and archaeological monitoring as part of this proposal and the future Underground Expansion Project Pt3A

Biosis has been undertaking baseline monitoring of upland swamp CRHS1 since Autumn 2011. Monitoring is undertaken in Spring and Autumn. As of the end of Spring 2012 two years baseline data will be available for CRHS1.

Following requests from OEH in early 2012 Biosis commenced monitoring of CCHS3 and CCHS4 (as well as other swamps within Gujarat's lease area) in Autumn 2012. One year baseline data will be available prior to the commencement of mining on LW5. If subsidence effects result in impacts to upland swamps any changes to vegetation composition within upland swamps is likely to lag behind. Biosis uses species richness and diversity indicators to determine whether successional change is occurring. Despite a lack of two years baseline data from CCHS3 and CCHS4, any changes to vegetation composition resulting from changes in hydrology are likely to lag behind any subsidence effects. Data analysis looks for changes in flora species richness and species diversity, as well as looking at indicator species.

In addition, Biosis has undertaken detailed mapping of vegetation sub-communities within CCHS3 and CCHS4. If subsidence effects do result in impacts to vegetation in these upland swamps, impacts can be assessed in the long term by comparing vegetation mapping undertaken just prior to or at the commencement of mining with vegetation mapping post-mining to determine whether impacts to vegetation communities within these upland swamps has resulted from the extraction of coal from Longwalls 4 and 5. Further information is available in **Attachment B** of this Response Report.

On the basis that the 4th order reach of Cataract Creek downstream of the freeway is significant, the development of a stream management plan, with setting of appropriate triggers and adherence to these triggers to avoid the cracking of Cataract Creek will be required through an adaptive management process

Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to:

1. Monitoring intensities increasing as LW5 approaches Cataract Creek;
2. Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact linked to slowing the longwall progress; and
3. Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact linked to stopping and removing the longwall at the nearest Maingate cut through.

NRE believes that a combination of mine layout redesign and adaptive management can be utilised to protect identified sensitive features.

Remediation

NRE agrees that remediation of impacts to upland swamps is likely to be difficult and Biosis is unaware of any attempts, successful or unsuccessful, to remediate upland swamps impacted by subsidence.

Previous activities in the Southern Coalfield in Cataract River and the Georges River have been undertaken to remediate the pool holding capacity and overland stream flow in areas where grouting has been conducted

Should approval be given for this project, the Extraction Plan and SMP will both require contingency plans up to and including offset undertakings to minimise or repair any impacts deemed unacceptable by regulators. Section 239 and Section 265 of the Mining Act will also allow the landholder (in this case SCA) to claim costs for repair, remediation, replacement of damage to land that affects the landowner's capacity to undertake its business. On this basis, within reason, the SCA can require remediation, repair or offset of any impacts beyond those anticipated or approved. In this sense the community is protected from bearing the responsibility of repair or having to put up with detrimental impacts. Further clarification of the protections afforded to the Special Areas is contained in NRE's Mining Leases as follows:

1. ML 1575 conditions 4, 6, 16, 17, 18, 19, 20, 28, 29, 32 and Annexure A
2. MPL271 conditions 2, 7, 12, 13, 14, 15, and 25
3. CCL 745 conditions 2, 7, 8, 12, 13, 14, 22, and 25

These conditions are all enforceable by DRE both through fines and Land & Environment Court action. Further, NRE, like all other mining lease holders is required to maintain a Security with DRE for rehabilitation costs and indemnify the Crown (including the SCA) against any " actions, suits, claims and demands of whatsoever nature and all costs, charges and expense which may be brought against the lease holder or which the lease holder may incur in respect of any accident or injury to any Person or property.

Subsidence Predictions

Key Issues

1. Reliability

Concerns were raised regarding the reliability of the subsidence prediction methodology and therefore the dependant subsidence impact predictions. The issues revolved around lack of subsidence model calibration, validation as well as lack of consideration of cumulative impacts and far field effects such as valley closure. Comments were made as to the likelihood of under prediction leading to unanticipated impacts and the unknown height of goafing and pillar run impacting prediction accuracy.

2. Risk

Lack of precedent caused some to oppose the proposal on the basis that no prior triple seam extraction has been undertaken in Australia thus affecting accuracy and reliability of subsidence predictions;

Summary of Submissions

Reliability

NRE is continuing to promote mining projects based on subsidence predictions that have been heavily criticised by Government agencies, including Infrastructure and Investment's Chief Subsidence Engineer. This appears to be a highly experimental approach to mining in this domain given the extreme lack of information on multi- seam mining.

Given the uncertainties in the subsidence predictions for LW5, the SCA considers that the predictions and assessment of impacts on surface water and associated swamps may not be valid. It also believes that the assessment of surface water and uplands swamps should be revised and be based on revision to the subsidence predictions for LW5. It should include impacts of faults and dykes in the application area and appropriate setbacks from Cataract Creek and Cataract River to ensure the SCA's performance criteria for the Cataract River, Cataract Creek and associated upland swamps and catchment can be met.

Data from the monitoring of LW4 should be used to calibrate the current subsidence model and this should be provided to the public to assist informed decision making. First working subsidence was predicted to be 20mm, whereas the actual subsidence was 28mm; Longwall mining subsidence was predicted to be 200mm, whereas the actual subsidence was 1280mm. So it can be seen that the predictions are clearly unreliable with first workings having a 40% error and in longwall mining a 540% error. We contend that GNRE consultants must now go back to the drawing board and base their predictions on actual results and factor in significantly greater uncertainty to their modelling due to the statistically inadequate sample size. GNRE and DoP+I should postpone this development until the end of panel report has been completed on LW4.

Risk

NRE are proposing an experiment of unknown subsidence outcomes in which unpredictable subsidence is likely. Both Seedsman and Pells reports make it clear that multi seam mining is a new and uncertain process and that subsidence effects will certainly occur. This creates a higher risk of damage to the environment due to the unknown extent and degree of subsidence.

Risk assessment is just an estimate of risk of subsidence based on available information and Phillip Pells acknowledges that there is little precedent of multi seam longwall mining upon which to base this estimate. The precedents cited are only observances of subsidence effects in the short term. The experts don't know what the cumulative effect of undermining of the swamps and watercourses may be in 50, 100 or even 200 years time?

Seedsman agrees there are many uncertainties with the subsidence prediction in the multiple seam layouts. Accurate modelling of pillar stresses in the Bulli and Balgownie Seams is not

possible and the mechanisms of valley closure and upsidence are not fully understood. Therefore it is not appropriate to seek to quantify the subsidence deformations at this time. There will be a need to closely monitor the subsidence that develops as the walls are extracted and use this data to refine the controls.

In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction. The severe damage to two kilometres of the Waratah Rivulet provides another example of modelling and prediction failure. The widths of the longwalls that caused the catastrophic damage to the Waratah Rivulet were much the same as the width of Longwalls 4 and 5. Compounding this uncertainty, there appears to be little precedent for multi-seam mining, for which additional subsidence factors of up to 80% have been suggested. Such risks and uncertainties are unacceptable in relation to our water supplies and the need for biodiversity conservation.

ACARP states that historically the cumulative impacts of multiple panels also appear to have been poorly monitored.

Response to Submissions

Geotechnical consultants SCT have undertaken a subsidence assessment report for the interim results of LW4 subsidence monitoring. A summary is provided in this section. For more detail please refer to SCT 2012 in **Attachment A**.

Reliability

NRE is unable to modify its subsidence model without significant risk to the operation in terms of the time it would take to undertake this task. The model as proposed represented the most appropriate prediction of ground movement based upon the modelling and information at hand. The extraction of LW4 has provided much needed data to allow recalibration of the model to more accurately predict the subsidence from LW5.

Although there are without doubt greater uncertainties associated with prediction of subsidence in multi-seam mining to the same level of confidence as has become customary for subsidence predictions in single seam mining operations, the greater uncertainty of prediction is not of itself necessarily of great consequence in terms of potential impacts or how they are managed. The basic mechanics of ground movement are not expected to change significantly as a result of the interaction of multiple seams. Larger subsidence movements may occur, but these are likely to be similar to the effects that would develop if a thicker seam were mined.

SCT has completed a review of the initial subsidence monitoring data from the extraction of LW4 and this data has been used by Seedsman to validate the subsidence model.

The subsidence monitoring was two rather than three dimensional so unfortunately the available monitoring data is therefore not suitable to determine far-field horizontal movements or movements in a downslope direction associated with valley closure.

The level of vertical subsidence is significantly higher than would be expected above a single panel in undisturbed strata but the subsidence footprint is tightly constrained within the plan geometry of LW4.

The 1.3m of vertical subsidence observed in the centre of LW4 is well above the less than 100mm that would be expected in the centre of a similar width panel in strata that was undisturbed by previous mining. A similar response was observed above the Balgownie Seam longwall panels where 1.4m of subsidence was observed above panels that, with similar geometry, in undisturbed strata would be expected to show less than 100mm of subsidence.

Total cumulative subsidence in the centre of the panel is estimated to be about 1m from mining the Bulli Seam, 0.5-1.3m from mining in the Balgownie Seam depending on location, and 1.3m from mining in the Wongawilli Seam giving a total subsidence of 2-3m.

There is no evidence of pillar instability (pillar run) in the monitoring results to date or even any evidence of the influence of the mining geometry in the Balgownie Seam.

There are some examples of unusual subsidence that can be related to geological structures, mainly dykes, but these examples are relatively rare. In general, geological structures such as faults and dykes do not significantly change surface subsidence behaviour. There has been previous mining adjacent to the Rixons Pass Fault, which is actually a dyke within the Wonga East mining area, on two levels. There is no evidence in the measured subsidence profiles of this feature having any influence on surface subsidence behaviour.

The concept that geological fault structures may become reactivated as hydraulic pathways has been advanced in some of the submissions. In Geoterra and SCT's experience, there is no evidence to confirm that geological faults in the Southern Coalfield are either more conductive or less conductive than the surrounding strata. Dykes inspected at surface and in the workings are all highly weathered to montmorillonitic and illitic clays, and as such would deform plastically, which reduces the potential increase in hydraulic conductivity after subsidence, compared to the potential changes that would occur if they underwent brittle failure in an unweathered state.

When mining under terrain where there is some variation in landscape, or where the strata is dipping relative to the surface, there is a tendency for subsiding strata to cause an outward movement of the valley sides towards low points. This movement is a result of expansion of natural joints and mining induced fractures and relative rotation of the land in response to ongoing subsidence. The effect of these horizontal movements is stretching at high points and compression (valley closure) at low points.

Minor tensile surface cracking has been observed at the top of the hill on Mt Ousley Road and over the panel during the period of mining LW4. This observation is consistent with general experience of mining below steep terrain and is likely to be associated with an equal amount of compression across Cataract Creek, with the movement likely to have been taken up on a horizontal shear plane at or just below the base of the valley.

Despite some comments in the submission to the contrary, the mechanics of this process have been relatively well understood for some time (Mills 2001 see *Mills 2012*). The impacts on Marhnyes Hole and the Waratah Rivulet, for example, were predicted and the potential for impacts such as damage to rock bars was recognised well before mining approached either site.

Risk

With regard to the risk associated with multi-seam mining particularly for a third level of mining. SCT is not aware of any previous mining in the Southern Coalfield where three seams have been mined directly above one another, except now from LW4 at NRE. There has been previous multi-seam mining in three seams in the Newcastle Coalfield at Wyee and Myuna (in the Wallarah, Great Northern, and Fassifern coal seams) and there may have been other sites in some of the older mines. The practice of multi-seam mining is quite common in the United Kingdom where SCT are aware of one site where up to nine seams were mined at the same colliery and in other countries such as China, Poland, Russia, and Germany.

There does not appear to be any significant practical impediment to successfully conducting multi-seam mining and managing the resulting subsidence impacts.

A risk based approach is an appropriate way to manage any uncertainties.

ENVIRONMENT

Aboriginal Cultural Heritage

Key Issues

1. Axe Grinding Grooves

Many submissions required ongoing protection of axe grinding grooves near swamp CCHS3

Summary of Submissions

The assessment report indicated that based on previous experience there would be no impact on the axe grinding grooves despite potential impacts on the surroundings. It states that as a result of previous monitoring of axe grinding grooves and engravings on sandstone rock platforms/outcrops, changes in site conditions have only been recorded at one site, where cracking occurred to the platform, but not to the axe grinding grooves or engraving

OEH had a meeting with NRE where it was confirmed that monitoring of Aboriginal objects will continue to identify if there will be impact to them as a result of mining activities.

Previous comments by OEH/EPA regarding the protection of Aboriginal Cultural Heritage are still relevant, namely, that the performance measures for ACH are aligned with the Bulli Seam Project PAC recommendations, particularly with regard to the quantification of impacts/potential impacts to ACH as a result of mining. Further, the monitoring programme must include any Aboriginal objects that may be impacted by mining activities and that the mining footprint for these purposes includes the maximum extent of predicted subsidence.

Response to Submissions

The impact identified in the submissions was located in Metropolitan Colliery's lease area and involved cracking to a rock platform on which the Aboriginal site 52-02-0258, Flat Rock Creek 57 (axe grinding grooves) were located. There was no damage to the site itself.

With regard to this application, Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site 52-2-0320 could not be confirmed by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4 and will continue to be monitored if LW5 is approved. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.

The monitoring and management of any cultural heritage sites identified as potentially at risk of impact from subsidence effects will be monitored in accordance with an approved Extraction Plan & SMP.

Air Quality

Key Issues

1. Adequacy of Modelling

The original air quality modelling in Preliminary Works Pt3A was inadequate

2. Management Plans

There is no approved Air Quality & Greenhouse Gas Management Plan

3. Monitoring

The location of proposed air quality monitoring is inadequate and monitoring will not capture 2.5 µm particles which have the greatest health impacts

4. Dust

Unacceptable dust impacts from general operations and in particular truck transport of coal and inadequate mitigation processes

Summary of Submissions

Adequacy of Modelling

The ERM (2009) Air Quality Assessment for the original Preliminary Works Pt3A application was inadequate as it was based on data gathered 6km from Gujarat NRE No.1 Colliery Mine site and no local monitoring was undertaken to make an accurate assessment. Modelling on this basis cannot be considered representative. The modelling did not consider PM2.5 which is widely recognised as the particle size most likely to cause health impacts.

Management Plans

The EA states the air quality will be monitored in accordance with NRE's approved Air Quality & Greenhouse Gas Management Plan which has not been approved and is in fact over four months overdue, rendering the current project non-compliant

Monitoring

Implementing of real time air quality monitoring equipment has still not been put into place as per approval requirements. Only when real time air quality monitoring is implemented can accurate relevant air quality monitoring data be presented. It will show that NRE exceeds its predictions in the local community. The monitoring must measure down to PM2.5.

Dust

Dust has always been problematic at this mine (probably due to the close proximity to residential areas that GNRE bought into and to the fact that they bought antiquated infrastructure) and GNRE need to demonstrate that they have the ability to operate this mine under 2012 regulations and afford an acceptable amenity to the surrounding community.

Residential impacts from dust include layers of fine black dust coating surfaces. Sources of the dust are attributed to coal stockpile operations; brake pad wear and clutch wear in site heavy machinery and trucks; inadequate washing and tarping of trucks transporting coal and dust in ventilation fan exhaust. Diesel emissions from heavy equipment operation and truck transport of coal to Port Kembla Coal Terminal are a major contributor to PM2.5 pollution.

NRE have not demonstrated a capacity to self regulate with regard to managing dust mitigation measures. An example of this is one incident in which coal trucks ran out from the mine while the truck washing facility was out of order making dust issues worse. Nothing was done about this issue, until one member of the public reported it to the EOH and GNRE continued to operate in non-compliance with regulations when the deficiency was reported to the EPO by the public.

Response to Submissions

Adequacy of Modelling

This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria.

Management Plans

In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11 May 2012. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31 August 2012. It was resubmitted on 31 August 2012.

The intention of the statement in the modification application regarding the 'approved management plan' was to indicate that the ongoing operation of the Colliery would be managed in accordance with the DP&I mandated Air Quality & Greenhouse Gas management plan as approved. It was not meant to infer that the plan had been approved at the time of the lodgement of the EA.

Monitoring

In order to gain a better understanding of the local dust issues, NRE has placed some depositional dust gauges in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m² visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations).

NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5µm. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review.

NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. New data acquired will be professionally interpreted to allow NRE to develop a more targeted air quality management program based on clearer comparisons with Colliery dust vs. local and regional non-point source dust.

Dust

Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to in the comments was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue.

1. Introduced a three strike warning system to truck drivers regarding failure to comply with Code of Conduct;

2. Commencement of an NRE Coal Distribution auditing program;
3. Upgrading all the trucks with a dash board warning light to ensure covering of the load;
4. More signage to ensure covering of the load;
5. Road Sweeping on Bellambi Lane once a week whilst loading from the open stockpile area;
6. Dedicated water pipe line for the truck washing facility;
7. Modification of the existing truck washing facility to provide improved cleaning ;
8. Regular talks to all truck drivers regarding requirements of Driver's Code of Conduct; and
9. All the above measures will be incorporated into NRE's Traffic Management Plan.

New trucks compliant with the Euro 5 standard for emissions control are being purchased by NRE's trucking contractor. Euro 5 regulatory standard regulates emissions from all combustion engines with the goal to limit as much as possible the negative impact of road vehicles on the environment and health. The Regulation covers a wide range of pollutant emissions such as carbon monoxide (CO), non-methane hydrocarbons and total hydrocarbons, nitrogen oxides (NO_x) and particulates (PM). It covers tailpipe emissions, evaporative emissions and crankcase emissions. It sets limits for emissions from diesel vehicles as follows:

- carbon monoxide: 500 mg/km;
- particulates: 5 mg/km (80 % reduction of emissions in comparison to the Euro 4 standard);
- nitrogen oxides (NO_x): 180 mg/km (20 % reduction of emissions in comparison to the Euro 4 standard);
- combined emissions of hydrocarbons and nitrogen oxides: 230 mg/km.

Details of recent NRE non-compliance issues are summarised in the Statutory/Regulatory Issues section of this Response Report.

Flora & Fauna

Key Issues

1. Biodiversity

Numerous comments were made about the potential for impacts from the proposal on biodiversity in general and insufficient baseline monitoring

2. Threatened Species & Communities

There was significant focus on the potential impacts to Threatened Species Conservation Act (TSCA) listed swamps, Endangered Ecological Communities and Endangered Species under both the TSCA & EPBC Acts. Concern was raised with regard to impacts to swamps as part of current mining activities in the Southern Coalfield and that remediation is difficult if not impossible. There is misleading and inadequate information regarding swamp characteristics and potential impacts

3. Management

Remediation of swamps is considered impossible and therefore avoiding impact by not approving subsidence impacts is the only viable management option. Cataract Creek impacts must be limited to prevent any loss of habitat for endangered species in its reach. NRE has already demonstrated inability to self regulate with impacts to swamps from the establishment of subsidence survey lines

Summary of Submissions

Biodiversity

Concerns were raised about general habitat impacts potentially resulting from mine subsidence including increased frequency, duration and magnitude of aquatic and wetland habitat drying; loss of in-stream and wetland habitats; simplification of remaining in-stream habitat as a result of the growth of iron-oxidising bacteria evident as a rusty-coloured mass in the water; release of gas into the water column and out into the atmosphere and oxidation of gas leading to the death of riparian vegetation and in-stream fauna.

It was recommended that a further period of background flora and fauna monitoring be undertaken before the commencement of mining of LW5 to achieve 2 years of background monitoring.

Threatened Species and Communities

A review was provided of the listing Coastal Upland Swamps of the Sydney Basin Bioregion as an Endangered Ecological Community (EEC) under the NSW Threatened Species Conservation (TSC) Act in March of this year. Longwall coal mining was listed as a Key Threatening Process under the TSC Act and a listing was provided of all known potentially threatened, actually threatened or endangered species listed as occurring in areas subjected to mine subsidence. The current listing of the Temperate Highland Peat Swamps on Sandstone (THPSS) and the proposed listing of the swamps under the Commonwealth Environmental Protection and Biodiversity Conservation (EPBC) Act were mentioned as requiring attention. NPANSW considers the swamps to be sufficiently important that it is applying for Ramsar listing. (Ramsar is an international treaty for the conservation and sustainable utilisation of wetlands). The Stuttering Barred Frog, Giant Burrowing Frog and Macquarie Perch are listed under the TSC Act and EPBC Act.

Swamps CRHS1, CCHS3 and CCHS4 in this proposal have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. CCHS3 and CCHS4 overly LW5 and CRHS1 is within the subsidence zone of LW5. Swamp CRHS1 is about 75 metres from the end of LW5 and within the impact zone defined by the 35 degree angle of draw accepted for the Southern Coalfield. OEH noted discrepancies in the areas of upland swamp referred to in the Main Report for CCHS3 (1.7 ha in size) versus the ERM (Appendix H) reference (2.6 ha in size) that should be addressed.

The Gujarat EA was felt to be misleading as it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. The Geoterra report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls.

Management

With regard to potential impacts to Upland Swamps the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reported serious impacts on swamps 12, 15b and 16. This example was put forward as evidence that swamps cannot be safely undermined. It was felt that approving Longwalls 4 and 5 would approve the loss of swamps CCHS3, CCHS4, CRHS1 and other nearby swamps. If there is any uncertainty, it is the question of how long it will take for these swamps to be lost. The DRE performance criteria for swamps cannot be satisfied and therefore mining near the swamps should not be permitted.

If the relatively impermeable base of upland swamps is fractured, then any perched aquifer is likely to drain downwards into the fracture network, thereby altering natural groundwater levels within the swamp and leading to increased desiccation. The similarity of impacts in Dendrobium Swamps 12 and 15b to impacts measured in Kangaroo Creek swamp on the Newnes Plateau as a result of longwall mining (DECCW 2010) reveal some consistent patterns of longwall mining impacts on swamps. Not only is the absolute level of the aquifer being affected (i.e. loss of permanent perched aquifer), but the groundwater level recessions in response to rainfall after undermining are very abrupt when compared to recessions prior to undermining.

The swamps not damaged or lost as a result of subsidence impacts will be vulnerable to the drawdown/depressurisation effects that Professor Philip Pells has shown to be a contributing factor to the drying of the Thirlmere Lakes. Pells has shown that the Bald Hill claystone cannot be counted upon to protect surface and near surface waters from drawdown impacts.

Monitoring results from the 6 piezometers installed in late 2009 would have been helpful. The EA comments briefly that levels fluctuate between 'no standing water after extended dry periods to approximately 1.8m below ground surface'. This suggests that they are already damaged swamps.

These swamps house numerous threatened species, such as the red-crowned toadlet, ground parrot and eastern pygmy-possum.

The EA provides essentially no mitigation information and does not consider the issue remediation of swamps is not possible and there are no examples of 'self-healing'. One of the upland swamps has been damaged due to inadvertent clearing and NRE has been fined \$1500 by the SCA as a result. This type of damage is considered unacceptable.

Response to Submissions

Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA. Upland Swamp related issues raised in this Section are dealt with in detail in **Attachment B** of this Response Report. **IMPORTANT NOTE:** The reader must be aware that as a result of the swamp assessment Biosis were required to change the swamp designations used in its report from those used in the EA.

Biodiversity

While some of the endangered or vulnerable species listed as occurring in areas affected by mining occur in the subsidence area, not all do. NRE has undertaken an intensive ecological study of the area and continues to improve both the quality and quantity of its information to guide future decision making. Focus in the EA is only on flora and fauna that may be impacted as the result of subsidence induced changes to the landscape.

NRE's ecological consultant, Biosis, has been undertaking baseline monitoring of upland swamp CRHS1 since Autumn 2011. Monitoring is undertaken in Spring and Autumn. As of the end of Spring 2012 two years baseline data will be available for CRHS1. Following requests from OEH in early 2012 Biosis commenced monitoring of CCHS3 and CCHS4 (as well as other swamps within Gujarat's lease area) in Autumn 2012. One year baseline data will be available prior to the commencement of mining on LW5.

Despite a lack of two years baseline data from CCHS3 and CCHS4, any changes to vegetation composition resulting from changes in hydrology are likely to lag behind any subsidence effects. Data analysis looks for changes in flora species richness and species diversity, as well as looking at indicator species. In addition, Biosis has undertaken detailed mapping of vegetation sub-communities within CCHS3 and CCHS4. If subsidence effects do result in impacts to vegetation in these upland swamps, impacts can be assessed long term by comparing vegetation mapping undertaken just prior to or at the commencement of mining with vegetation mapping post-mining to determine whether impacts to vegetation communities within these upland swamps has resulted from the extraction of coal from Longwalls 4 and 5.

The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for LW4. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B

The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document.

Threatened Species and Communities

NRE is aware of all the TSC Act and EPBC listings mentioned and has incorporated this into its ecological assessments. Based on a review of the EPBC Act listing advice, Temperate Highland Peat Swamps on Sandstone (THPSS) it is the opinion of NRE's and its consultants that the upland swamps within the project area do not meet the criteria for this threatened ecological community as follows.

- they are outside of the altitudinal range;
- no Woronora swamps are listed as components of the THPSS;
- no Woronora swamps are mapped by DEH (2005) as part of the THPSS; and
- the swamps located above Longwalls 4 and 5 do not generate peat. Upland swamp CCHS3 is shallow in nature, with little peat development or organic material. Soils are shallow. CRHS1 and CCHS4 have deeper soils with increased organic content, although soils are predominantly mineral sands.

We understand that this is currently being addressed by the DSEWPac.

With regard to international standing of upland swamps and associated biodiversity, the application of IUCN criteria to the study area is not relevant, nor based in Australian biodiversity legislation.

SCT 2012 states that different types of swamps may be more or less vulnerable to particular types of ground disturbance. In swamps that are not located across valley floors, a high level of protection is provided if the swamps are not directly mined under. Higher protection is provided with increased distance between the swamp and the edge of the nearest longwall panel. In swamps located across low points, there is potential for valley closure impacts whenever mining occurs below the slopes that lead down to the swamp, although there does appear to be some tolerance to valley closure before impacts become significant.

If mining is allowed to proceed directly under a swamp (or the slopes leading down to a swamp where valley closure is expected to be sufficient to have an impact) there is a high potential for impacts to occur, not necessarily immediately, but potentially over time as readjustments are necessary to accommodate changes to the balance between recharge and flow through newly created fractures.

NRE accepts that the information in the EA regarding swamp mapping and characterisation are confusing. Previous mapping of CCHS3 undertaken by ERM included areas of Fringing Eucalypt Woodland and Sandstone Scribbly Gum Woodland which don't form part of the Upland Swamp listing. This mapping relied, in part, on mapping by NPWS (2003), which provides indicative mapping of upland swamps only. The ERM mapping was initially refined by Biosis when attempting to establish monitoring points within this upland swamp, and areas of Fringing Eucalypt Woodland and Sandstone Scribbly Gum Woodland at the downstream extent of CCHS3 were removed.

Detailed and accurate mapping of upland swamps has now been undertaken. This mapping has identified that CCHS3 is 0.48 hectares. Areas of upland swamp previously identified as CCHS3, but within a separate catchment area, total 1.43 hectares.

Biosis has just completed a comprehensive assessment of all upland swamps as a part of Gujarat's Underground Expansion Project, including upland swamps located above Longwalls 4 and 5. This included the use of LIDAR data to identify upland swamps, detailed ground-truthing and mapping of all vegetation sub-communities within upland swamps.

The revised Upland Swamp Environmental Impact Assessment Guidelines (OEH 2012) which require mining projects to result in no negative environmental outcomes for upland swamps of 'special significance' were used to identify upland swamps of 'special significance' within the study area. 'Special significance' criteria are defined in OEH (2012).

An impact assessment was undertaken using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock.

This assessment identified that CCHS3 which was previously mapped as one larger upland swamp, actually consists of two upland swamps that are reliant on divergent flow pathways, and are contained within different catchments. Detailed assessment of these upland swamps also identified that neither supports Tea-tree Thicket (MU43). Therefore neither upland swamp meets criteria for special significance as defined by OEH (2012).

In addition, groundwater monitoring of CCHS3 has recorded short term, ephemeral groundwater level recharge events (<10cm over 3 weeks), however, the swamp predominantly has no groundwater contained in its shallow alluvium. It has been determined that CCHS3 is largely reliant on surface water flows and rainfall. Groundwater monitoring data from CCHS3 has indicated that this upland swamp is unlikely to be reliant on perched ephemeral groundwater so the impacts of fracturing of the bedrock below this upland swamp are unlikely to result in the loss of groundwater.

CCHS4 contains Banksia Thicket (MU42), Tea-tree Thicket (MU42) and Cyperoid Heath (MU44c) and is considered to be of 'special significance'. A detailed impact assessment was undertaken that identified the predicted subsidence associated with the overall project would be unlikely to result in significant changes to the swamp. The rockbar associated with this upland swamp is located outside of the predicted limits of subsidence for LW5 and is unlikely to be impacted as a result of the extraction of coal from LW4 or 5.

Biosis has undertaken detailed mapping of frog habitat within Wonga East, including mapping of breeding pools and potential breeding habitat. This detailed assessment has identified that potential breeding habitat within the area of potential impact is limited in extent.

Cataract Creek does not provide suitable breeding habitat for the Giant Burrowing Frog. In addition, monitoring to date has not recorded the Stuttering Barred Frog within Cataract Creek, although suitable habitat is present. Given the limited number of known contemporary records for this species, if it was recorded within Cataract Creek it will be afforded all protection.

Reductions in groundwater at a number of piezometers in proximity to Swamps 12 and 15b have been recorded in Dendrobium Area 3A, as reported in the end of panel report. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts as no impacts to the vegetation composition within these upland swamps has been recorded to date. In summary the report indicates that impact on swamps was assessed as follows, *"the mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in:*

1. *the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or*
2. *just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or*
3. *the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and*
4. *at Lower Sandy Creek site SCL for the greater Sandy Creek catchment.*

Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C."

Management

For underground operational reasons, NRE propose to relocate the start position of LW5 adjacent to the LW4 start line. This will minimise potential impacts to the swamp CCHS4. CCHS3 will potentially be affected by tensile and compressive strains, however, as all monitoring to date has established that it is not a groundwater dependent swamp, this limits the potential risk of subsidence adversely affecting its groundwater supply or storage capacity, as it is predominantly reliant on overland surface flow recharge. CRHS1 is outside the predicted limits of subsidence resulting from extraction. This change will be reflected in modified longwall layout plans, subsidence impact predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved.

Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J.

In response to recommendations from OEH, SCA, NOW and DRE, NRE has installed two piezometer boreholes to the east of LW4 with the specific intent of assessing the characteristics of near surface groundwater in the vicinity of Cataract Creek.

Detailed monitoring of vegetation composition within CCHS3, CCHS4 and CRHS1 will be undertaken throughout the life of the mine. NRE recognises that remediation of swamps is considered difficult but is unaware of any literature that states that remediation is impossible or

that there is no evidence of swamps self healing and would welcome the forwarding of any expert opinions and scientific papers that advocate this point of view.

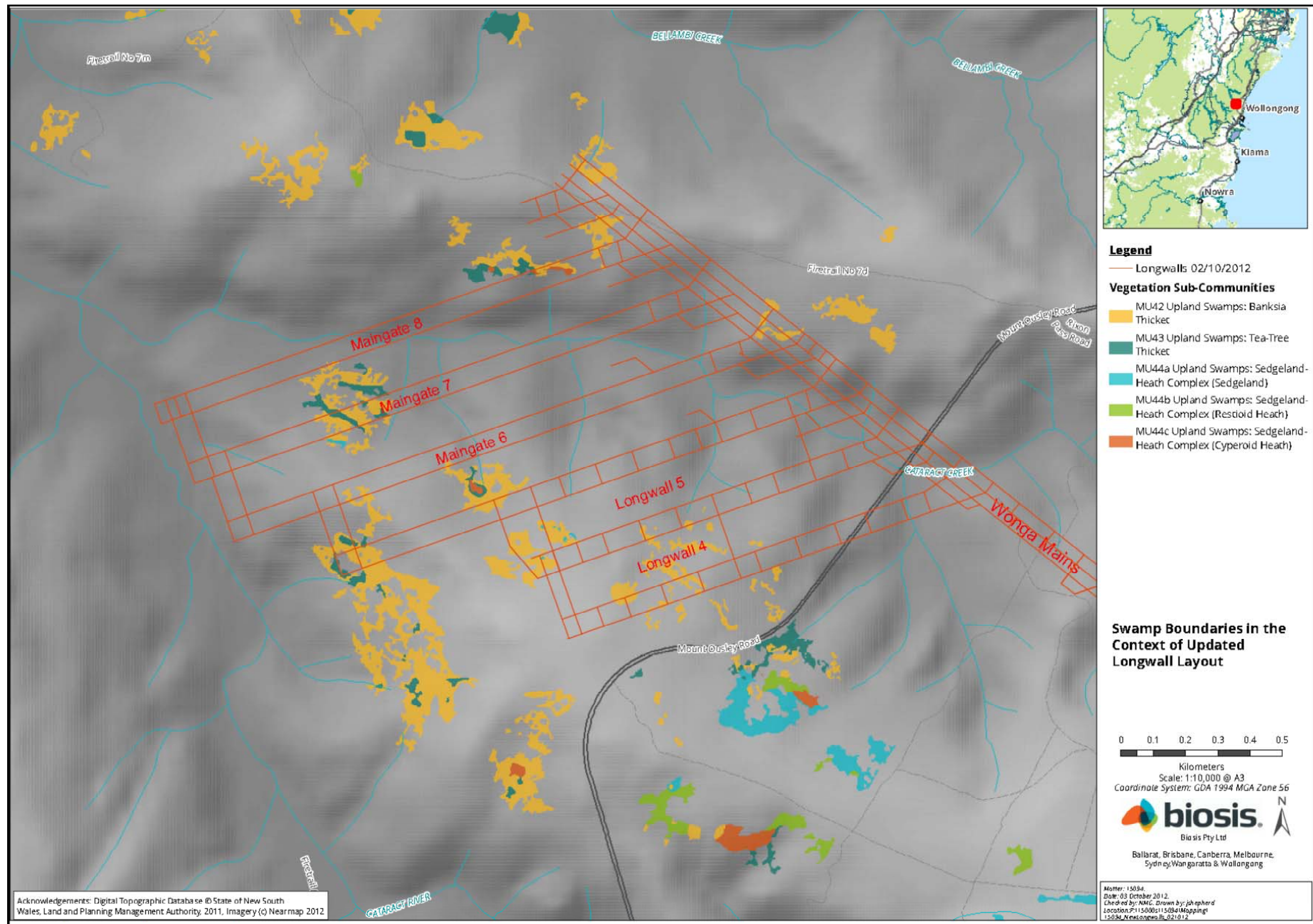
Based on SCT 2012, NRE understands that any impacts to swamps are unlikely to become apparent until well after mining is complete which doesn't allow NRE time to make any significant change to the mining process. Trigger Action Response Plans (TARP) as a method of protecting swamps is not considered overly useful because many of the impacts are likely to be long term and difficult to detect without extended monitoring. A judgement call by NRE and state agencies based on the significance or otherwise of individual swamps and the flora and fauna associated with them is required to be made ahead of mining as part of Extraction Plan and SMP approvals.

SCT 2012 notes that the Bald Hill Claystone has relatively low permeability compared to other stratigraphic units because of its fine grained claystone and shale based lithologies. SCT is not aware of any evidence that the Bald Hill Claystone is somehow self-healing as a consequence of its so called "claystone" characteristics. Indeed natural joints are relatively common including joints that have remained open long enough over geological time to become infilled by calcite mineralisation or similar deposited by groundwater percolating through the fracture network within the rock mass. The notion that the Bald Hill Claystone is an effective aquitard either prior to or post mining needs to be explored on a site by site basis. There is preliminary evidence from recent drilling near LW 4 & 5 that the Bald Hill Claystone is acting as an aquitard to some degree.

During the establishment of subsidence survey lines for the LW4, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident.

The establishment of subsidence monitoring lines has resulted in damage to 0.685 hectares of Banksia Thicket (MU42) as well as approximately 50 *Pultenaea aristata*. No ground disturbance has occurred and the vegetation will regenerate naturally over time. This area is being monitored by NRE.

Figure 2 Upland Swamps with Revised LW5 Layout



Geology

Key Issues

1. Insufficient Information

Concerns regarding insufficient consideration of the impact of faults, dykes and other geological structures on subsidence and water connectivity as well as insufficient description and consideration of geochemistry and geomorphology including cliffline and valleys

2. Impacts

Numerous comments regarding potential impacts on aquicludes and aquitards, as well as subsurface fracturing of creeks and resultant water flow diversion away from the Reservoir or into the mine goaf

Summary of Submissions

Insufficient Information

It is stated that the mechanisms for valley closure and upsidence are not fully understood and are hence not amenable to an analytical engineering prediction. The raw data is not available in the public domain and only modified incremental data is presented

The modification EA does not provide revised estimates for subsidence, strains, tilts, valley closure and upsidence for Cataract River, Cataract Creek and upland swamps CCHS3 and CCHS4 or considered the presence of dyke, igneous intrusions and faults (the Rixons Pass fault and an unnamed fault lying near or under Cataract Creek) in the application area.

Extraction of LW5 located under earlier Bulli and Balgownie extractions involve the risk of Pillar Run due to heightened stresses on potentially still standing Bulli Seam pillars. There is limited empirical subsidence data relating to multi-seam longwall mining, coupled with a network of NW-SE trending faults and dyke features in the Wonga East Area, this is likely to result in variable and complex degrees of interaction across the mining area.

There is a lack of information on confining aquicludes / aquitards in important areas (i.e. eroded Bald Hill claystone layer within nearby Cataract Creek).

Impacts

The EA identify predicted strains from the current mine plan that exceed threshold levels likely to fracture rock strata and potentially have negative environmental consequences for upland swamp EECs, streams and groundwater aquifers. These adverse environmental consequences could be exacerbated due to the presence of faults. In particular the presence of the Rixons Pass fault and an unnamed fault lying near or under Cataract Creek could exacerbate regional groundwater aquifer depressurization both to the north and south of the proposed Longwalls 4 and 5. These faults could also lead to wide variations in subsidence and its related impacts.

Subsidence induced cracking could potentially affect stream flow in the reaches overlying and downstream of the proposed workings, although the anticipated stream flow losses would have little impact on the Cataract Reservoir water storage volume. Professor Philip Pells shows that the Bald Hill claystone layer cannot be relied upon to protect surface and near surface waters from depressurisation and water loss.

Response to Submissions

SCT have undertaken a subsidence assessment report based on the interim results of LW4 subsidence monitoring and a response to geotechnical issues that arose in the submissions. Please refer to SCT 2012 in **Attachment A** for the response to this section.

Greenhouse Gas

Key Issues

1. General Issues

Some issues were raised around general greenhouse gas emissions from the Colliery and coal mining as well as concerns regarding the potential gas volumes from the extraction of the longwalls and gateroads associated with the proposal

2. Greenhouse Management Plans

The EA doesn't address greenhouse gas issues, there is no approved Air Quality & Greenhouse Gas Management Plan nor are there any specific details of Greenhouse Gas reduction goals or activities

Summary of Submissions

General Issues

Illawarra coal seams typically release 10 or more cubic metres of gas for each tonne of coal extracted. Assuming all gas is carbon dioxide the coal extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project.

The proposed mining is very close to Cataract dam. The maps showing mining extent do not show the extent of any methane depressurisation. The depressurisation would almost certainly extend under the dam.

Irrespective of the fact that NRE's supply of coal to the global market would be replaced by another company if this proposal is not approved, submissions maintain that the existence of other suppliers should not absolve a corporation from its environmental responsibilities to do what it can to reduce Greenhouse Gas emissions from their operations, leases and products.

Management Plans

The EA states Greenhouse Gas will be monitored in accordance with NRE's approved Air Quality & Greenhouse Gas Management Plan. However at the time of this Mod the management plan has not been approved.

NRE have stated in their Mod EA that they will investigate opportunities to capture and/or reuse ventilation gases but gives no time frame or any tangible commitment. Their Preliminary Works DA mentioned the same statement but put a 2015 timeframe on it, one year after the expiration of this DA.

NRE state that it is developing new underground roadways separate from the old and existing mine workings which supports the sealing off of these old workings preventing waste gases from being included in the ventilation system to reducing their total GHG emissions.

Response to Submissions

General Issues

Greenhouse Gas emissions have not changed from the predicted Scope 1 & 2 emissions in the Preliminary Works Pt3A. The methodology utilised in the estimation of emissions for the original Pt3A were calculated according to approved process and emissions factors from the following documents:

1. Commonwealth Department of Climate Change. National Greenhouse and Energy Reporting (Measurement) Technical Guidelines 2008
2. Commonwealth Department of Climate Change. National Greenhouse Accounts (NGA) Factors 2009

The NGA Factors are designed to be consistent with the emissions estimates reported in Australia's National Greenhouse Gas Inventory.

This modification application did not remodel greenhouse gas impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A assessment was based.

The measured volume of gas in the area of LW4 and 5 and MG 6, 7 & 8 is round 3m³/tonne in-situ rather than the 10m³/tonne quoted in the comments. Depressurisation of unmined areas has not been raised as a concern by agencies or other expert consultants.

Management Plans

The intention of the statement in the modification application regarding the 'approved management plan' was to indicate that the ongoing operation of the Colliery would be managed in accordance with the DP&I mandated Air Quality & Greenhouse Gas management plan as approved. It was not meant to infer that the plan had been approved at the time of the lodgement of the EA.

In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11 May 2012. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31 August 2012. It was resubmitted on 31 August 2012.

As the majority of greenhouse gas emissions from the mines operations come from gas liberated from coal seams during and after mining NRE will seal off the old working areas of the mine to allow the seam gas to equalise in the old goafs, and be contained separate to the new workings. This undiluted seam gas can then be captured in underground pipe ranges under negative, or suction, pressure to be directed to a surface plant for treatment by converting the methane to carbon dioxide. Any leakage underground around the seals, or through goafs and overlaying workings, will form only a small percentage of our normal mine ventilation air and be recorded as part of our Green House Gas mine emissions.

With regard to converting methane to carbon dioxide there is currently no full capacity Reverse Thermal Oxidation (RTO) plant for underground coal mines in Australia. The BHP pilot plant at Westcliff Colliery draws only 10% of ventilation air capacity through a fresh air interface, and is being used to determine if the process is viable due to the large ventilation volumes, and consequently relatively small percentage of CH₄, required for underground coal mining. There is no approved design for connecting the mine ventilation air directly to an RTO plant that will mitigate potential risks from a heat source at 960°C.

The percentage of CH₄ in the ventilation must exceed 0.2% in order to commence the oxidation process, and ideally needs to be in the order of 1% to be able to generate electricity. Currently NRE No.1 Mines Ventilation Air Methane (VAM) is in the order of 0.3% CH₄, which is marginal for a sustained RTO process and impractical for power generation. It is not until NRE mines west of fault adjacent LW11 that the in seam CH₄ concentration is predicted to increase. In seam drilling, currently planned for later next year when the mains have advanced towards the fault, will quantify the in seam gas make and concentration to determine the suitability of an RTO process. Hence the current 2015 target date for actioning control measures for VAM. NRE have commenced discussions with an RTO supplier to trial their mini 2m³/s unit to test if it can sustain the RTO process at current emission levels.

Groundwater

Key Issues

1. Catchment Water Loss

Comments focused on aquifer depressurisation and groundwater connectivity to mine goaf and escarpment springs

2. Impacts on Dependent Systems

Concerns were raised around impacts to stream baseflow, perched aquifers that are sustaining Upland Swamps as well as the potential for aquifer connectivity and new underground flow paths leading to negative regional groundwater changes

Summary of Submissions

Catchment Water Loss

Longwall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply. Subsidence within Cataract catchment increases risk of loss of surface and ground water through increased strata permeability and strata depressurization and risks redirection and loss of surface and ground water from the Cataract catchment to escarpment springs or mine workings. Faults in the area have not been addressed appropriately as the presence of these faults increase regional groundwater aquifer depressurization both to the north and south of the proposed Longwalls 4 and 5.

The Proponent states that the predicted loss of stream flow would be 0.07m/l per day, (or >25m/l per year, or the equivalent of approximately 10 Olympic swimming pools being lost every year, for the foreseeable future. When the next El Nino cycle occurs, even that amount of water being lost from the Sydney Catchment is unacceptable.

Recent reports of damage to the Waratah Rivulet, loss of water in the Woronora Dam and the draining of the Thirlmere lakes, all attributable in full or in part to damage from longwall mining, are alarming.

There should at very least be a requirement for a large bond or bank guarantee to be held in trust so that remediation work could start without delay should catastrophic effects be experienced in relation to stream flows and loss of catchment storage volume as a result of the proponent's workings.

Impacts on Dependent Systems

The modelling completed to date for the NRE No 1 project doesn't contain any revised information on subsidence, strains, tilts, valley closure and upsidence along Cataract River and Cataract Creek nor does it properly consider the likely ranges of permeability and storativity parameters but does indicate mining will have negative impacts on the groundwater regime. Two years baseline is not included as required. The groundwater assessment should be revised to include:

- a revision of groundwater modelling based on adequate and scientifically rigorous groundwater monitoring data;*
- sensitivity analysis of groundwater modelling that reflects the level of uncertainty in hydro-geological parameters (hydraulic conductivity and storage);*
- the absence of the Bald Hill Claystone aquitard, the presence of local geological anomalies, as well as the uncertainty in subsidence predictions for LW5;*
- a review of the assessment of the impacts on streams and swamps based on the results of the sensitivity analysis, and*
- better characterisation and monitoring of shallow groundwater systems, particularly dependency of streams on groundwater.*

Groundwater modelling can't provide definitive answers as to impacts on creeks and swamps. Risk assessment can't adequately address long term impacts or address uncertainty. In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction including damage to Waratah Rivulet. There are no examples of triple seam mining in the Southern Coalfield. Risks and uncertainties of this kind are unacceptable in relation to our water supplies and the need for biodiversity conservation.

Aquifer drawdowns need much greater assessment with regards to impact. Four of the piezometers installed have failed due to mining of the associated longwalls and there is no information on the installation of new piezometers to monitor groundwater in deeper aquifers. The role of the Bald Hill claystone in reducing mining impacts had been overstated. Documentation of geological structures such as faults, joint swarms and igneous intrusions is limited and their influence on surface deformations, groundwater flow, and impacts on creeks and swamps, is not adequate. These faults could also lead to wide variations in subsidence and its related impacts.

Subsidence is predicted to fracture rock strata and potentially have negative impacts on upland swamp EECs, streams and groundwater aquifers. The EA has no performance criteria defined for water resources (catchment yield and reservoir integrity and quality), watercourses, swamps and flora and fauna. Apart from their intrinsic value, the ecosystem services that upland swamps and groundwater aquifers provide in keeping rivers and streams flowing during periods of low rainfall are vitally important in protecting downstream ecosystems. Decreases to the groundwater levels in swamp and groundwater aquifers are likely to reduce and/or change the location of baseflow discharges, thereby affecting groundwater dependent and stream ecosystems.

In the nearby Dendrobium mine drawdowns of up to 40m in the Scarborough sandstone, 50m in the Bulgo sandstone and 25m in the Hawkesbury sandstone have been measured. Significant stream assessment must be extended from just 3rd order to include 1st and 2nd order streams flowing from swamps. Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek. These streams will be severely impacted by the subsidence over LW5. Low order streams play a vital role in connecting upland swamps to higher order streams. There are very few examples of streams self-healing. Water quality is lowered when re-directed water subsequently emerge downstream, having been contaminated by leached minerals and salts from new fracture surfaces. Re-directed water may be lost from the catchment.

If baseflows to Cataract Creek from groundwater aquifers or upland swamps are impacted this is likely to lead to impacts threatened species within Cataract Creek. This includes:

- The Stuttering Barred Frog (*Mixophyes balbus*) is listed as an endangered species under the NSW TSC Act and vulnerable under the Commonwealth EPBC Act.
- The Giant Burrowing Frog (*Heleioporus australiacus*) is listed as vulnerable under both the EPBC Act and NSW TSC Act.
- The Macquarie perch is listed as an endangered species under the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) and vulnerable under the NSW Fisheries Management Act 1994. Endangered species under the EPEC Act are a matter of national environmental significance."

Based on previous experience (Lower Cataract River, Marhnye's Hole, Waratah Rivulet) any proposed remediation of impacts is likely to be small in nature, expensive and difficult to apply in forested areas. If mining is approved, negligible impact criteria should be applied to Cataract Creek and non negligible impacts should have mandatory remediation conditions.

There have been six piezometers for which monitoring data is available from late 2009. This detail should have been provided. All 3 swamps should be monitored as well as a control swamp, to allow the impacts of the mining to be established and to provide data to inform future assessment of possible impacts in Wonga West. The EA comments briefly that groundwater levels fluctuate between 'no standing water after extended dry periods to approximately 1.8m below ground surface'. This suggests that swamps are already damaged. As a minimum, detailed

hydrological monitoring must be implemented at all swamps identified in the project approval with key performance requiring negligible drainage of water from the swamp, or redistribution of water within the swamp. If there are negligible changes in water within the swamp then there are unlikely to be consequences for any populations as habitat condition and structure is unlikely to change. The subsidence predictions for LW5, which undermines upland swamp CCHS3 and is adjacent to CCHS4, clearly exceed these thresholds. Seedsman Geotechnics (2012) predicts maximum tilt at 17 mm/m, with strains anticipated to be between 12 mm/m compression to 10 mm/m tension (Seedsman 2012) in LW5. As such these swamps are clearly at risk of negative environmental consequences from the proposal. Pells (2011) review concluded that groundwater modelling could not provide definitive answers on the impacts to streams and swamps. It was considered "probable" that there will be negative impacts on at least five swamps above the Wonga West workings, namely WCHS1, WCHS2, LCHS3, LCHS4 and WCFS2 but was unable to qualify the impacts. Monitoring over the nearby Dendrobium mine has, however, clearly revealed adverse impacts on upland swamp EECs. If the relatively impermeable base of upland swamps is fractured, then any perched aquifer is likely to drain downwards into the fracture network, thereby altering natural groundwater levels within the swamp and leading to increased desiccation. There is also currently no known method of remediating swamps that have been dewatered due to longwall mining fracturing underlying rock strata

Response to Submissions

Catchment Water Loss

This is dealt with in the Sections of this report titled Geology and Drinking Water Supply. The issues raised are also addressed in SCT 2012 in **Attachment A** of this Response Report.

Impacts to Dependent Systems

Specific elements of this response are dealt with in the Sections of this Response Report titled Surface Water and Flora & Fauna. The issues raised are also addressed in SCT 2012 in **Attachment A**.

A reduced area groundwater model specifically set up for Longwalls 4 and 5 was not prepared, however the predictions from the model were used to guide the potential effects on LW4 and LW5, along with experience gained from Geoterra and other's monitoring of surface water and groundwater systems in the Southern Coalfield as to the anticipated effects from subsidence on the groundwater and streams associated with extraction of LW4 and LW5. Two additional groundwater bores have been installed adjacent to LW4 and LW5, and data collection from the existing stream, swamp and groundwater monitoring sites are continually being used to update the baseline observations and to assist in prediction of subsidence effects on the subject systems. The location of the two groundwater bores, GW01 & GW01a are shown in **Figure 3**.

Although additional groundwater monitoring data has become available since the model was developed, it is not considered that the additional data invalidates the assumptions and parameters used in the model, and as such it does not require updating. Sensitivity parameters were assessed in the groundwater model. Although the model was used to assess the entire NRE lease area, its conclusions were extrapolated to the more limited area of LW4 and LW5.

It is not reliable to extrapolate the results of a model for a different area at Dendrobium that has different geological, geomorphological, hydraulic and depth of cover conditions etc. to the NRE1 lease area. The NRE1 model has been specifically set up for the NRE1 lease area and surrounds.

The groundwater modelling conducted provides a sufficient aid to assessing the potential effects on streams and regional groundwater systems. It should be noted that no model will, or can, provide a definite assessment as it is a mathematical representation of a complex, natural system. The model's purpose is to provide a guide to what could happen, within the bounds of the model's mathematical limitations.

The Bald Hill Claystone is not described in the Geoterra assessment as an aquiclude or impermeable layer, but as an "aquitard" or a layer with low intrinsic permeability that restricts the hydraulic connection between the aquifers above and below the BHCS. Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers.

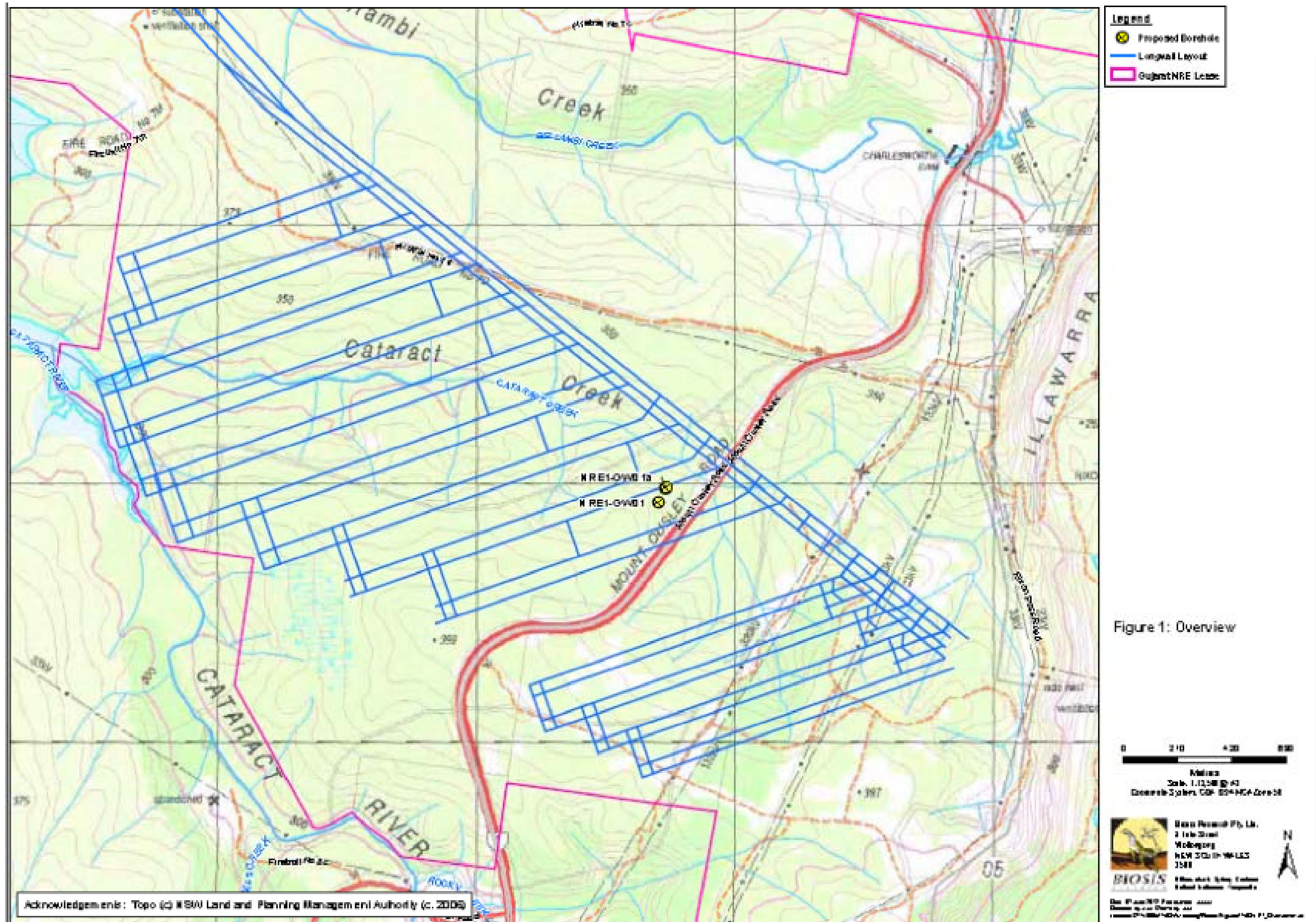
Based on the SGPL subsidence predictions it is anticipated that the Bald Hill Claystone will not be breached by vertically connected fracturing. Although the model was not run on the basis that the BHCS is breached, it would be a reasonable assumption that if it was, there could be adverse effects on the overlying shallow groundwater and surface water systems that may require modification of the mine layout and extraction plans. The groundwater depressurisation effect on stream flows was conducted using best practice industry standard methodologies and is assessed to adequately represent the potential effects on stream flows in the area.

The Preliminary Works application involves first workings in various locations across the NRE lease area that is not anticipated to have adverse effects on stream flow or groundwater systems. The proposed LW5 does not underlie Cataract Creek and its subsidence zone is not anticipated to adversely affect Cataract Creek if valley closure is measured and conservative triggers set to slow or stop the longwall at a predetermined strain level. The updated stream flow monitoring sites installed in Cataract Creek are designed to monitor changes in stream flow in the potential subsidence affected reach.

for underground operational reasons NRE proposes to relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. The Geoterra assessment does not extrapolate what could or could not occur to CRHS1 to impacts on CCHS3 and CCHS4 that lie within the potential LW4 / LW5 subsidence area. However groundwater monitoring data from CCHS3 has shown that this upland swamp is unlikely to be reliant on perched ephemeral groundwater, but is likely to be reliant on surface water flows and rainfall. As such any fracturing of bedrock below this upland swamp is unlikely to alter baseflow discharges.

A detailed analysis of flow accumulation for all upland swamps was undertaken as a part of the detailed impact assessment for upland swamps of 'special significance' by Biosis. This assessment modelled pre- versus post-mining based on detailed ground contours provided by LIDAR data and updated subsidence predictions from Seedsman. This impact assessment determined that adverse impacts to upland swamps located above Longwalls 4 and 5 were unlikely to occur, and that flow accumulation was unlikely to be altered by mining. This assessment does not take into consideration any changes to base flows as a result of fracturing of bedrock below swamps. Further information on Upland Swamps is available in **Attachment B** of this Response Report.

Figure 3 Location of GW1 & GW1a Piezometer Installation



Noise

Key Issues

1. Noise Issues

There is unacceptable noise from Colliery Pit Top operations including ventilation fans, stockpile operations and coal transport

2. Monitoring

There is inadequate location of noise monitors

3. Mitigation

There are inadequate noise mitigation measures

Summary of Submissions

Noise Issues

NRE has an exhaust fan located only 450 meters from residential areas and the noise is creating significant concerns in the area. The noise from the fan is unacceptably loud, disturbing and offensive, particularly at night and when it is exacerbated by adverse meteorological conditions. NRE's fan at their Wongawilli mine was heard 4kms away

Trucks and traffic generate the most significant noise impacts including engine noise; tail gate and body rattle, and brake noise. There have been noises created by loading/earth moving equipment, which have been noticed, particularly when the ambient noise is greatly reduced. This includes "reversing beepers", diesel machinery and other machinery noise. This noise has become more significant leading to increased sensitivity to noise amongst residents. NRE has advised residents that they are being too sensitive and need to just block out the noise.

Monitoring

Noise monitoring can't be undertaken in accordance with NRE's approved Noise Management Plan as at the time of this application it has not been approved and is in fact over four months overdue.

Noise monitoring receiver locations proposed by the proponent won't give accurate readings for all areas due to the topography of the land and "sound corridors", which then can give very different readings and impacts within a very short distance of each other.

Residents have been told the truck noise is being monitored but nothing is really being done.

Mitigation

The application states there are measures in place to reduce noise and vibration but there is no evidence to support this. For example, a member of IRRM had to inform the mine of a collapsed conveyor belt bearing. The mine was notified of the noise caused by the conveyer belt problem 2 days after the noise began. The mine had not been able to independently identify and address their noise pollution. This demonstrates that monitoring, mitigation and appropriate preventative measures are not being practiced.

Countless complaints have been made to the mine and the Office of Environment and Heritage (OEH) but there has been no resolution or even progress on the fan noise issue. NRE are either unwilling or unable to address the noise pollution. Due to its proximity to residences, the fan portal should be relocated to a shaft on top of the escarpment to move this noise generator to a more distant location.

This issue will be ongoing and that the proponent owes all existing residents a duty of care to ensure that their health and wellbeing do not suffer as a result of their actions. A residential area is not an appropriate place for a colliery.

Response to Submissions

Noise Issues

This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval.

Distance is not always a good indicator of impact from noise sources. The fan noise from the Wongawilli Colliery portal construction fan was heard in Horsley at a distance of approximately 3km yet was not heard by the Colliery's closest neighbours less than 1km away. This was due to a variety of reasons including the low frequency and tonal characteristics of the noise, topography, wind direction and temperature inversions. The matter was dealt with in liaison with the EPA, by erecting acoustic screens around the fan.

Noise is a particularly subjective environmental issue. Noise that will affect one person may not bother another. Depending on sensitivity a person may either eventually not notice the noise or may become even further attuned to a particular noise. Irrespective, NRE does not believe simply because a person may be more sensitive to a noise issue that no action requires to be taken to try to reduce or remove its impact. For any noise impact, if removal is not practical, NRE will work with the EPA and the resident to reduce the noise to a level that is considered reasonable by the EPA.

Monitoring

In accordance with Schedule 3, Condition 16 of the MP 10_0046 approval, the Noise Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 16 May 2012. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31 August 2012. It was resubmitted on 31 August 2012.

The intention of the statement in the modification application regarding the 'approved management plan' was to indicate that the ongoing operation of the Colliery would be managed in accordance with the DP&I mandated Noise Management Plan as approved. It was not meant to infer that the plan had been approved at the time of the lodgement of the EA.

NRE has proposed a noise monitoring program in its Noise Management Plan to comply with the requirements of the Preliminary Works Pt3A approval conditions regarding noise monitoring.

Rather than wait for formal approval before establishing its proposed monitoring system, NRE has placed an order for real time noise monitoring equipment now in order to reduce lead time for the receipt of this equipment when final approval is granted.

Mitigation

NRE is currently organising a noise audit as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. The Noise Management Plan will be updated with actions from the audit recommendations.

An audit by Somerset Risk of the trucking operations at NRE identified a need for a Code of Practice and audit system including a truck induction. This has been in operation for 12 months and has been added to the mine work order system for auto generation. Also a regular PKCT meeting is held with NRE and the trucking contractors where a monthly report is presented and any issues discussed and actioned. The resealing of Bellambi Lane has reduced the body rattle noise. Any excess noise is identified and the truck removed from haulage till the repairs are complete. A recent example is the mud guard on truck and dog trailer was reported to be rattling.

The mud flap was repaired within a short time of the report. New trucks compliant with the Euro 5 standard for emissions control are being purchased by NRE's trucking contractor. Anecdotal evidence indicates that the new emission controls also result in reduced noise.

Pit Top Remediation

Key Issues

1. Mine Life

Questions were raised regarding mine life and final rehabilitation of pit top

2. Mine Operations Plan

DRE raised the requirement to update Mine Operations Plan to include LW5 rehabilitation

Summary of Submissions

Mine Life

Questions were raised with regard to the rehabilitation and use of the mine site once mining at No.1 Colliery is complete.

Mine Operations Plan

DRE advised that the proposed modification should be reflected in the existing NRE No.1 Colliery operations and environmental management processes. DRE recommended inclusion of the conditional requirements for a Mining Operations Plan and an Annual Environmental Management Report to the satisfaction of the Director General of the Department of Trade and Investment, Regional Infrastructure & Services.

Response to Submissions

Mine Life

This modification application doesn't seek to extend the mine life beyond the existing 13 October 2013 limit of approval in MP10_00463. NRE has applied for an Underground Expansion Project which will endeavour to seek approval for an extension of operations of the Colliery beyond 13 October 2013.

Mine Operations Plan

The current MOP will be amended to include any changes to rehabilitation that may result from LW4 & 5 and MG 6, 7 & 8 if the application is approved by DP&I. The outcomes of the management of subsidence with regard to LW4 & 5 will be reported in the AEMR. Should approval be given for this project, the Extraction Plan/SMP will both require contingency plans up to and including offset undertakings to minimise or repair any impacts deemed unacceptable by regulators. Section 239 and Section 265 of the Mining Act also allow the landholder (in this case SCA) to claim costs for repair, remediation, replacement of damage to land that affects the landowner's capacity to undertake its business. On this basis, within reason, the SCA can require remediation, repair or offset of any impacts beyond those anticipated or approved. In this sense the community is protected from bearing the responsibility of repair or having to put up with detrimental impacts. Further clarification of the protections afforded to the Special Areas is contained in NRE's Mining Leases as follows:

- ML 1575 conditions 4,6,16,17,18,19,20,28,29,32 and Annexure A
- MPL 271 conditions 2,7,12,13,14,15,25
- CCL 745 conditions 2,7,8,12,13,14,22,25

These conditions are all enforceable by DRE both through fines and Land & Environment Court action. Further, NRE, like all other mining lease holders is required to maintain a Security with DRE for rehabilitation costs and indemnify the Crown (including the SCA) against any actions, suits, claims and demands of whatsoever nature and all costs, charges and expense which may be brought against the lease holder or which the lease holder may incur in respect of any accident or injury to any Person or property.

Any management plans that are approved by DP&I will be updated where management of subsidence impacts are required to be added for LW5. The outcomes of the management of subsidence with regard to LW4 & 5 will be reported in the AEMR.

Surface Water

Key Issues

1. Stream Protection

Requirement for protection of all upland swamps and streams of any Strahler Stream Classification order

2. Stream Flow Impacts

Concerns regarding impacts on water catchments, swamp outflows, Cataract River, Cataract Creek and Cataract Reservoir

Summary of Submissions

Stream Protection

The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes the 3rd order Cataract Creek, low order streams and several upland swamps. Cataract Creek is considered by the PAC as having “highly significant values” making it “worthy of protection”. It is fed by two of the 1st order tributaries that flow north from swamps CCHS3 and CCHS4. These streams may also meet the definition of special significance as they have swamps as part of their headwaters (as an indicator of streams with permanent flow). Low order streams play a vital role in connecting upland swamps to higher order streams.

Stream Flow Impacts

Subsidence increased strata permeability and strata depressurization risks redirection and loss of surface water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. The Bald Hill Claystone layer cannot be counted on to protect surface and near surface waters from depressurization and water loss.”

If baseflows to Cataract Creek from groundwater aquifers or upland swamps are impacted this is likely to lead to impacts threatened species within Cataract Creek. This includes:

- The Stuttering Barred Frog (*Mixophyes balbus*) is listed as an endangered species under the NSW TSC Act and vulnerable under the Commonwealth EPBC Act.*
- The Giant Burrowing Frog (*Heleioporus australiacus*) is listed as vulnerable under both the EPBC Act and NSW TSC Act.*
- The Macquarie perch is listed as an endangered species under the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) and vulnerable under the NSW Fisheries Management Act 1994. Endangered species under the EPEC Act are a matter of national environmental significance.*

Based on previous experience (Lower Cataract River, Marhnye's Hole, Waratah Rivulet) any proposed remediation of impacts is likely to be small in nature, expensive and difficult to apply in forested areas. If mining is approved, negligible impact criteria should be applied to Cataract Creek including:

- negligible diversion of flows or changes in the natural drainage behaviour of pools;*
- negligible gas releases and iron staining; and*
- negligible increase in water turbidity.*

The PAC specifies negligible to mean “small and unimportant so as not to be worth considering” and further states: “The Panel therefore recommends that the definition of “negligible impact” for rivers and streams should be: “no diversion of flows, no change in the natural drainage behaviour of pools, minimal iron staining, minimal gas releases and continued maintenance of water quality at its pre-mining standard. Non negligible impacts should have mandatory remediation conditions.

Recent reports of damage to the Waratah Rivulet, loss of water in the Woronora Dam and the draining of the Thirlmere lakes, all attributable, in full or in part, to damage from longwall mining, are alarming.

The EA comments briefly that groundwater levels fluctuate between 'no standing water after extended dry periods to approximately 1.8m below ground surface'. This suggests that they are in large already damaged swamps. As a minimum, detailed hydrological monitoring must be implemented at all swamps identified in the project approval with key performance requiring negligible drainage of water from the swamp, or redistribution of water within the swamp. If there are negligible changes in water within the swamp then there are unlikely to be consequences for any populations as habitat condition and structure is unlikely to change.

The subsidence predictions for LW5, which undermines upland swamp CCHS3 and is adjacent to CCHS4, clearly exceed these thresholds. Seedsman Geotechnics (2012) predicts maximum tilt at 17 mm/m, with strains anticipated to be between 12 mm/m compression to 10 mm/m tension (Seedsman 2012) in LW5. As such these swamps are clearly at risk of negative environmental consequences from the proposal. Pells (2011) review concluded that groundwater modelling could not provide definitive answers on the impacts to streams and swamps. It was considered "probable" that there will be negative impacts on at least five swamps above the Wonga West workings, namely WCHS1, WCHS2, LCHS3, LCHS4 and WCFS2 but was unable to qualify the impacts. Monitoring over the nearby Dendrobium mine has, however, clearly revealed adverse impacts on upland swamp EECs. If the relatively impermeable base of upland swamps is fractured, then any perched aquifer is likely to drain downwards into the fracture network, thereby altering natural groundwater levels within the swamp and leading to increased desiccation. There is also currently no known method of remediating swamps that have been dewatered due to longwall mining fracturing underlying rock strata. This water will be lost to the catchment streams.

Response to Submissions

Stream Protection

First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek.

CCHS4 is located at the headwaters of a tributary of Cataract Creek. CCHS4 is the only upland swamp directly associated with a 1st order stream and has a waterfall located at the base of the swamp. Upland swamp CCHS3 and three small areas of upland swamp located over LW4 are located above the upper headwaters of two tributaries of Cataract Creek. The drainage lines below these swamps are poorly defined and do not contain flowing water.

Stream Flow Impacts

These issues are also discussed in the Sections of this Response Report titled Flora & Fauna and Groundwater. The issues raised are also addressed in SCT 2012 in Attachment.

Biosis is currently undertaking monitoring of Cataract Creek for threatened frog species. To date, no threatened frog species have been recorded within Cataract Creek. Biosis has undertaken detailed mapping of frog habitat within Wonga East, including mapping of breeding pools and potential breeding habitat. This detailed assessment has identified that potential breeding habitat within the area of potential impact is limited in extent. Cataract Creek does not provide suitable breeding habitat for the Giant Burrowing Frog. In addition, monitoring to date has not recorded the Stuttering Barred Frog within Cataract Creek, although suitable habitat is present. Given the limited number of known contemporary records for this species, if it is recorded within Cataract Creek it will be afforded all protection.

Cataract Creek is within a potential zone of strains that may cause cracking in the adjacent creek bed due to extraction of LW5. Development of, and adherence to an adaptive management plan that develops and adheres to specified triggers to avoid the cracking, and associated through flow and water quality changes of Cataract Creek bed will be required.

On the basis that the 4th order reach of Cataract Creek downstream of the freeway is significant, the development of a stream management plan, with setting of appropriate triggers and adherence to these triggers to avoid the cracking of Cataract Creek will be required through an adaptive management process. NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to:

1. Monitoring intensities increasing as LW5 approaches Cataract Creek;
2. Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact linked to slowing the longwall progress; and
3. Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact linked to stopping and removing the longwall at the nearest Maingate cut through.

NRE proposes to relocate the start line of LW5 adjacent to the start line of LW4. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. This will avoid causing adverse impacts on CRHS1. The eastern half of swamp CCHS3 will still be directly undermined, and swamp CCHS4 will be partially within the 20mm subsidence zone of LW5. CCHS3 has been investigated by shallow piezometer installation studies and has been identified as being located in very shallow, dry, sandy soils with no identified moist peaty / humic content and is assessed as not being a groundwater dependent swamp.

Traffic and Transport

Key Issues

1. Monitoring and Management

There is no approved Traffic Management Plan and inadequate transport monitoring down Bellambi Lane. NRE have not demonstrated a capacity to self regulate their activities.

2. Road Transport

There is damage to Bellambi Lane and residences as a result of vibrations and general impact from truck movements from the Colliery. There are questions about the appropriateness of the coal transport route to Port Kembla Coal Terminal and the allowable coal transport hours

3. Safety

Concerns have been raised around general road safety related to truck movements including speeding, tailgating and non-compliance with self imposed speed limits on Bellambi Lane

4. Quality of Life Impacts

Serious impact on nearby residents quality of life due to truck compression and normal braking, inadequate covering of loads, general truck noise as well as inadequate dust mitigation including truck washing and covering of loads

Summary of Submissions

Monitoring and Management

The EA proposes no changes to the existing transport arrangements and states there is an approved Traffic Management Plan. This is not currently in place or approved nor has NRE effectively monitored compliance with the existing Code of Conduct.

NRE has claimed that it is not its responsibility to control the trucks that transport their coal. OEH has advised complainants that all complaints should be directed at the mine and not the contractor (consultants).

NRE should install speed cameras, vibration monitors, dust monitors or surveillance cameras down Bellambi Lane.

Road Transport

Currently the only method for coal transport from site to the Port Kembla Coal Terminal is by truck. One truck alone is estimated to do approx 18 round trips per day. Roads in this residential area are already overloaded with coal trucks for the various coal mines. NRE should be required to improve roads in the area if it wants to use them.

NRE have incorrectly indicated that transport hours will not change and remain within Coal Loader 24/7 times. The Preliminary Works Pt3A approval times are 7am-10pm Mon-Fri and 8am-6pm Sat-Sun.

Concerns are raised about additional employees generated by the proposal and what the resultant parking and traffic impacts will be. RMS notes the proposed modification does not involve any increase in the traffic generation of the colliery.

Safety

Legal speed limits on the entire haulage route are not currently being obeyed. Neither is the self-imposed 50km/h limit being adhered to along Bellambi Lane. The Self-Imposed 50km/h speed limit was, in fact, requested by local residents to the mine who consulted continuously with the mine and the transport company, to ensure the safety of children, family, friends and local work colleagues.

Several near misses were reported where coal trucks tailgating along the Northern Distributor nearly hit cars waiting for pedestrians at the Bellambi lane turn off. There have been near misses with vehicles entering along Bellambi Lane. Some of the trucks have been witnessed skidding through the red traffic lights as a result of speed while others have been witnessed deliberately driving through the red light to avoid having to wait.

Quality of Life Impacts

Trucks cause significant vibration through the ground worsened by degrading road surfaces. Noise impacts are experienced as a result of acceleration and deceleration, empty trailers, rattling tailgates, compression braking, and squealing brakes. Dust is caused as a result of unwashed trucks, uncovered loads, and carcinogenic diesel fumes. All of this reduces the quality of life of surrounding residents.

Response to Submissions

Monitoring and Management

The Traffic and Transport Management Plan was submitted to DP&I for assessment on 31 August 2012.

The intention of the statement in the modification application regarding the 'approved management plan' was to indicate that the ongoing operation of the Colliery would be managed in accordance with the DP&I mandated Traffic Management Plan as approved. It was not meant to infer that the plan had been approved at the time of the lodgement of the EA.

NRE is held fully accountable by the EPA with regard to the actions of its contractors. This matter was discussed with IRRM and other community members at a recent community information day about the LW4 & 5 and MG 6, 7 & 8 application. The point was made during this discussion that despite significant controls, Codes of Practice, audits, a warning system, and other methods to manage the performance of the trucking contractors, any system that depends on human beings will always be affected by human error or attitude. In that context, 100% compliance 100% of the time cannot be guaranteed for any system. However, updates to the management plans are ongoing and any issues raised are included in the Colliery's work order sheets. A recent example of the evolving management of truck related issues related to complaints of trucks leaving NRE with uncovered loads. NRE undertook CCTV audit of trucks leaving the site to check if covers were in place.

Road Transport

This proposal will not increase surface activity or road transport above that modelled in the Preliminary Works Pt3A. Any changes to coal volumes and management will be dealt with as part of a future application for the expansion of NRE operations at the site.

The modification will not affect employee numbers and thus have no flow on effect with regard to traffic generation or on-site parking. No. 1 Colliery is already a 24/7 operation with sufficient car parking and amenities to accommodate employees. The mine has historically operated with over 1200 personnel.

NRE will comply with Condition 25 of Schedule 2 of the Preliminary Works Pt3A approval with regard to trucking of coal to the Coal Terminal.

Safety

To this point NRE has been unaware of the safety incidents referred to in the submissions. Both NRE and the trucking company also regularly check truck behaviour on the coal route at random on the haulage days. NRE will review its current practices and make updates to management

plans, Codes of Conduct and other processes in an attempt to prevent unlawful behaviour by trucking contractors.

In accordance with Schedule 3, Condition 28 of MP 10_0046 approval, the Traffic Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11 May 2012. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31 August 2012. It was resubmitted on 31 August 2012.

This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval.

The RTA has made changes to the traffic light sequence at both Bellambi Lane intersections to promote a smoother transition for traffic. A self imposed 50km/h speed limit is a part of Driver's Code of Conduct monitored by a GPS tracking system along Bellambi Lane to try to eliminate issues of truck drivers exceeding this agreed speed limit. NRE and Brindles (Trucking Contractor) can monitor the speed of trucks at all times.

NRE and Brindles regularly deliver talks to all trucks drivers regarding requirements of Driver's Code of Conduct. NRE has commenced a coal distribution auditing program to ensure all drivers are following the requirements of Driver's Code of Conduct. Further feedback on additional issues in this area will be examined and if additional solutions are available they will be implemented.

Quality of Life Impacts

This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria.

However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review.

NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. This new data will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.

New trucks compliant with the Euro 5 standard for emissions control are being purchased by NRE's trucking contractor. Euro 5 regulatory standard regulates emissions from all combustion engines with the goal to limit as much as possible the negative impact of road vehicles on the environment and health. The Regulation covers a wide range of pollutant emissions including carbon monoxide (CO), non-methane hydrocarbons and total hydrocarbons, nitrogen oxides (NO_x) and particulates (PM). It covers tailpipe emissions, evaporative emissions and crankcase emissions. It sets limits for emissions from diesel vehicles as follows

- carbon monoxide: 500 mg/km;
- particulates: 5 mg/km (80 % reduction of emissions in comparison to the Euro 4 standard);
- nitrogen oxides (NO_x): 180 mg/km (20 % reduction of emissions in comparison to the Euro 4 standard); and
- combined emissions of hydrocarbons and nitrogen oxides: 230 mg/km.

Auto coal covers have been fitted to all coal haulage trucks since NRE started operations 7 years ago. In 2007 one complaint regarding a coal cover not being in place instigated the fitting of a CCTV at Bellambi Lane intersection as well as a sign reminding drivers to cover their loads. This has now been added to the audit system. Also a points system is in place whereby the drivers receive a warning when any justified complaints are recorded (3 warnings result in dismissal). PKCT are also notified of any issues in a Monthly Report document. A flashing dash board warning light is being fitted to all the haulage trucks to indicate when the coal cover is not in place as well as installation of increased signage as a reminder for continued compliance.

All trucks travel through a wheel wash then are again cleaned by a second truck wash. Coal from unloading at PKCT can get caught on the draw bar between the truck and dog/trailer and return to site. NRE has targeted this coal for removal prior to trucks leaving NRE. As some trucks vary in height further improvements are ongoing including the installation of a spray bar with multi jets which are set at different heights to account for changes to truck combinations. The truck wash now uses fresh water to minimise the drag out of coal and dust on truck tyres to Bellambi Lane. Truck wash upgrades should be completed at the PKCT by late November 2012 and this should result in cleaner trucks travelling back from PKCT. Since an issue recently with unwashed trucks leaving the site due to failure of the wheel wash, operations are now suspended if the truck wash units are not working. This has been included in management plans

Since the opening of the Northern Distributor extension (now Memorial Drive) in 2009 the average weekday traffic volumes in Bellambi Lane have dropped from 14,380 (2009) to 5,693 (2010) (ERM 2010). This reduction in overall traffic would have made the truck movements from the Colliery more noticeable. The Colliery has not increased traffic on Bellambi Lane and traffic will not increase as a result of this proposal. An audit by Somerset Risk identified a need for a Code of Practice and audit system including a truck induction. This has been in operation for 12 months and has been added to the mine work order system for auto generation. Also a regular PKCT meeting is held with NRE and the trucking contractors where a monthly report is presented and any issues discussed and actioned. The resealing of Bellambi Lane has improved the body rattle noise. Any excess noise is identified and the truck removed from haulage till the repairs are complete. A recent example is the mud guard on truck and dog trailer was reported to be rattling. The mud flap repaired within a short time of the report.

Due to the very slight inclines, coal transportation along Bellambi Lane and Memorial Drive require no compression braking.

Visual Impact

Key Issues

1. Infrastructure Design Issues

Pit Top infrastructure design considered insensitive to the escarpment backdrop

Summary of Submissions

The mine is located in a sensitive escarpment area. Gujarat NRE should be more sensitive to the beautiful environment they operate in. The visible components included in this application should not be limited to the new items but should also address the existing structures. The existing zincalume shed is the most obvious of these and should be upgraded to reflect the intent of the Illawarra Strategic Management Plan and the current DCP/LEP of Wollongong City Council. The shed should in the least be painted or over clad to soften the impact against the escarpment.

Response to Submissions

The Pit Top facilities did not form part of this application. Visual impact issues can be addressed by DP&I during assessment of the proposed Underground Expansion Project which will shortly be submitted for Public Exhibition. The new proposal will involve upgrades to existing site infrastructure.

SOCIO-ECONOMIC

Community

Key Issues

1. Community Consultation

There has been both inadequate and uncommitted community consultation from NRE with regard to the proposal

2. Quality of Life

There were numerous reports of general quality of life or health impacts due to proximity of community to the Colliery and its activities

3. Company Attitude

A poor attitude experienced by community members from NRE employees with regard to addressing community concerns

Summary of Submissions

Community Consultation

The recommendation of the Southern Coalfield Inquiry for early consultation with stakeholders about projects has been ignored and the EA's account of the consultation process is highly misleading. No proper community consultation has taken place regarding Gujarat's proposed mining expansion and its effects on local residents.

NRE was reprimanded by DRE with regard to its consultation for the LW4 Subsidence Management Plan application.

NRE's establishment of its Community Consultative Committee was overdue and only had its first meeting in August 2012 only after prolonged action by community members.

Quality of Life

The submissions related to this issue have been dealt with in the relevant sections of this Response Report as follows:

- *Air Quality*
- *Noise*
- *Traffic and Transport*
- *Visual Amenity*

Company Attitude

NRE has demonstrated an ongoing neglect and contempt with regard to our concerns. This treatment of the local community by NRE shows that this company's approach is to get away with what it can. As a result, countless complaints about noise and coal dust remain unresolved.

Response to Submissions

Community Consultation

A Community Information Day was held on 23 August 2012 focused on addressing questions and concerns around the LW 4 & 5 and MG 6, 7 & 8 modification application. Copies of the EA have been placed on the website as required by the Preliminary Works Pt3A, direct neighbours to the Colliery were advised via letterbox drop of the Community Information Day and a list of interested persons were sent emails containing a link to the EA and notification of the Community Information Day.

NRE acknowledges that it can improve both its community consultation and community interaction, particularly with close neighbours. Significant effort has been undertaken recently to listen to and address neighbours reasonable concerns. Major investment is being made to ensure that air quality monitoring is best practice and that dust suppression techniques are both expanded and improved. NRE has also recently completed noise reduction works on its Pit Top ventilation fan which has reduced the overall noise from its operation.

NRE has been advised by DRE via a letter on 23 August 2012 that it's LW4 & 5 SMP application was based on a "*community consultation process that falls short of community expectations and industry best practice. As such DRE request that the Colliery enhance their community consultation process going forward.*" Further the letter requested a resubmission of the community consultation process that would address all the consultation requirements of the SMP Guidelines for Applications for Subsidence Management Approvals. This request has been somewhat overtaken by events related to the submission of the LW4 & 5 and MG 6, 7 & 8 Pt3A modification application. DRE has recently advised NRE that while an SMP is still required to be lodged for the extraction of LW5, it will be undertaken as a parallel but separate application to the Extraction Plan that will be required by DP&I.

In terms of NRE's ongoing consultation processes it should be noted that the following activities will be or have been undertaken

1. A CCC has been established;
2. Approvals based Community Information Days are undertaken;
3. Two general Community Information Days per year will be held; and
4. Newsletters updating the local community on activities at the mine will be distributed

Quality of Life

The comments related to this issue have been dealt with in the relevant sections of this Response Report as follows:

- Air Quality
- Noise
- Traffic and Transport
- Visual Amenity

Company Attitude

This Response Report outlines numerous activities that NRE is undertaking in order to respond to the concerns of resident and other stakeholders. NRE accepts that it can improve its community consultation and intends to do so.

Drinking Water Supplies

Key Issues

1. **Special Area Protection**

There is a significant focus on the protection of Special Areas with specific regard to protecting the water quality and quantity available to Sydney Water for ongoing provision of supplies

2. **Impact on Catchment Yield**

Much concern was expressed that reduced catchment yield may result from reservoir bed or surface cracking allowing leakage into the mine goaf as well as subsurface creek flow diversion and swamp impacts

Summary of Submissions

Special Area Protection

The SCA manages 16,000 square kilometres, 21 dams and supplies more than 2.5 million megalitres of water to customers in Sydney, the Blue Mountains, Illawarra, Southern Highlands and the Shoalhaven, for more than 4.5 million people who make up around 60 per cent of the population of NSW. The land NRE's coal lease covers is owned by the Sydney Catchment Authority and is part of the Metropolitan Special Area providing drinking water to Sydney.

The NSW Government committed to ensuring drinking water security by putting into place the 2006 Metropolitan Water Plan. However this is ineffective as the Special Areas are not recognized in the Strategic Regional Land Use Policy (SRLUP) process. The public can't access Special Areas to protect the water supply, but Part 3A applications were exempted from the Neutral or Beneficial Effect (NorBE) requirements contained in the Environmental Planning & Assessment Act 1979 allowing impacts to occur. The project under consideration would not pass the NorBE test. This leaves the Special Areas without effective protection

The 15 year life of the NRE 1 coal mine sharply contrasts the never ending need for high quality drinking water. The coal is probably more valuable left in place in order to secure this precious resource. The catchment should be financially valued to appropriately reflect its importance.

The Sydney Water Catchment Special Area is not an appropriate location for an experiment in triple seam mining, including two seams of longwall mining.

Impact on Catchment Yield

There is now an extensive public domain record of the damage toll inflicted by longwall mining on drinking water catchments and associated infrastructure. Long-wall mining is identified by a wide range of authors as a threat to the catchment water quality and quantity, wetland and river ecosystems, and geological and aquifer integrity. Most recently it has become clear that drawdown associated with longwall mining has contributed to the drying of the ancient and World Heritage listed Thirlmere Lakes, which form part of the Warragamba catchment.

Uncertainty in the modelling of subsidence increases the risk of there being a reduction in catchment storage in the area. NRE states that the predicted loss of stream flow would be 0.07ML/day, or >25ML/year, or the equivalent of approximately 10 Olympic swimming pools being lost every year, for the foreseeable future. During extended dry periods even that amount of water being lost is unacceptable. A bond or bank guarantee should be required so that remediation work could start without delay should stream flows or catchment storage volume be affected.

Response to Submissions

Special Area Protection

The effectiveness of government water security policy such as the exemption of Pt3A applications from the NorBE sections of the EP& A Act 1979, the 2006 Metropolitan Water Plan, or Strategic Regional Land Use Policy (SRLUP) process is a political issue beyond the scope of this Response Report.

The Mining Act is the principal legislation covering mineral extraction in NSW. The object of the Act is to encourage and facilitate the discovery and development of mineral resources in New South Wales, having regard to the need to encourage ecologically sustainable development. More specifically it is to ensure the efficient development of the state's minerals in an environmentally and socially appropriate manner to maximise the economic and social benefits to the community and state. This is translated into NRE's lease conditions by the requirement to maximise the extraction of coal from its lease areas where economically feasible but also requires specific protection of Special Areas, and covers rehabilitation and compensation for landholders for damage caused by mining activities.

SCT makes comment with regard to the dangers or uncertainties associated with multi-seam mining particularly for a third level of mining. SCT is not aware of any previous mining in the Southern Coalfield where three seams have been mined directly above one another, with the exception now from LW4 at NRE No.1 Colliery. There has been previous multi-seam mining in three seams in the Newcastle Coalfield at Wyee and Myuna (in the Wallarah, Great Northern, and Fassifern coal seams) and there may have been other sites in some of the older mines. The practice of multi-seam mining is quite common in the United Kingdom where SCT are aware of one site where up to nine seams were mined at the same colliery and in other countries such as China, Poland, Russia, and Germany. There does not appear to be any significant practical impediment to successfully conducting multi-seam mining and managing the resulting subsidence impacts.

Although there are without doubt greater uncertainties associated with prediction of subsidence in multi-seam mining to the same level of confidence as has become customary for subsidence predictions in single seam mining operations, the greater uncertainty of prediction is not of itself necessarily of great consequence in terms of potential impacts or how they are managed. The basic geotechnical mechanics of ground movement are not expected to change significantly as a result of the interaction of multiple seams. Larger subsidence movements are expected, but these are likely to be similar to the effects that would develop if a thicker seam were mined.

SCT 2012 states that a risk based approach is an appropriate way to manage the uncertainties.

Impact on Catchment Yield

Submissions related to specific natural features associated with this issue have been dealt with in the relevant sections of this Response Report as follows:

- Aboriginal Cultural Heritage
- Flora & Fauna
- Geology
- Groundwater
- Surface Water

The Sydney Catchment Authority reports on water balances for its combined catchments in its Annual Reports and for individual storages in its weekly Water Storage and Supply Reports. An element considered in the reports is water losses to the storage system.

The drinking water catchments lose a significant amount of water each year as a result of simple evaporation. Between 2007/8 and 2010/11 the catchments lost an average of 10.75% of their storage to evaporation.

As a result of the significant downstream ecological impacts that result from reservoir creation, the SCA is also required to release quantities of water to ensure the health of downstream ecosystems. Between 2007/8 and 2010/11 the catchments lost an average of 10.25% of their storage to environmental flow releases.

The total annual losses (unavailable for drinking water) from the combined catchment storages due to evaporation and environmental flow are shown in **Table 8** and have varied between 164,061ML and 399,650ML per year from 2007/8 to 2010/11 which is an average of 261,089ML or 21% of total storage volume.

Table 8 Total Catchment Storage Losses by Financial Year

Financial Year	Evaporation (ML)	Environmental Flows (ML)	TOTAL (ML)
2007/08	110,220	53,841	164,061
2008/09	121,700	158,871	280,571
2009/10	98,933	101,143	200,076
2010/11	93,447	306,203	399,650

The groundwater model report indicates a potential sub-surface loss of stream flow of 0.07ML/day for Cataract Creek and 0.03ML/day for Bellambi Creek. The model indicates that surface water flow may be reduced but it will still flow via subsurface fractures and emerge downslope as discharge into Cataract Creek or Cataract Reservoir. As such, at worst, the water loss is only temporary due to subsurface diversion.

That means a potential annual temporary transfer from stream flow to underflow, or throughflow, after mining proposed LW's 4 to 11 in Area 2 of Wonga East of 25.6ML/year for Cataract Creek. With regard to LW5, and taking into account LW4 has already been mined, it would be, roughly, about 2/11 of 25.6ML/year or about 4.6ML/year.

If it is assumed that the estimated 4.6ML per year of water that may be redirected as subsurface flow from streams is temporarily lost to the water storage due to the extraction of LW's 4 & 5, then that represents slightly less than 0.002%, (two one-thousandths of one percent) of the annual average storage losses. Assuming the average evaporative and environmental flow losses remain the same, and applying the 25.6ML temporary subsurface losses from all eight of the proposed longwalls in NRE's Wonga East Area 2 to take into account cumulative losses, the potential annual loss is only slightly less than 0.01% (one one-hundredths of one percent) of total annual storage losses.

Cataract Reservoir itself has a full operating storage of 97,190ML. The lowest level of the storage that NRE is aware of is 27,620ML or 29.3% capacity on 20 July 2006. If the low level figure is used, the loss of 4.6ML per year for Longwalls 4 & 5 amounts to less than 0.02% (two one-hundredth of one percent) of the Cataract storage capacity. Even extrapolating to all eight proposed longwalls at an annual loss of 25.6ML, the number is less than 0.01% (one one-hundredth of one percent) of the storage volume.

At full storage level the potential LW4 & 5 temporary loss contribution drops to less than 0.005% (five one-thousandths of one percent) and potential cumulative loss for the eight proposed longwalls drops to less than 0.03% (three one-hundredths of one percent) of storage. These figures are displayed in **Table 9** below.

Table 9 Comparison of Potential Longwall Related Losses to the Cataract Storage

% Annual Loss of Cataract Storage at Lowest Known Level from LW4 & 5 (27,620ML)	% Annual Loss of Cataract Storage at Capacity Storage from LW's 4 & 5 (97,190ML)	% Cumulative Annual Loss of Cataract Storage at Lowest Known Level from LW's 4 to 11 in Wonga East (27,620ML)	% Cumulative Annual Loss of Cataract Storage at Capacity Storage from LW's 4 to 11 in Wonga East (97,190ML)
<0.02%	<0.005%	<0.01%	0.03%

NOTE: It is assumed that 4.65ML per annum is temporarily lost to the catchment due to mining Longwalls 4 & 5.

In comparison to the overall storage of the Cataract Reservoir, even at low levels, the predicted potential water diversion is not significant for Longwalls 4 & 5 or even considering potential cumulative impacts of up to eight longwalls in the Wonga East area.

Should approval be given for this project, the Extraction Plan/SMP will both require contingency plans up to and including offset undertakings to minimise or repair any impacts deemed unacceptable by regulators. Section 239 and Section 265 of the Mining Act will also allow the landholder (in this case SCA) to claim costs for repair, remediation, replacement of damage to land that affects the landowner's capacity to undertake its business. On this basis, within reason, the SCA can require remediation, repair or offset of any impacts beyond those anticipated or approved. In this sense the community is protected from bearing the responsibility of repair or having to put up with detrimental impacts. Further clarification of the protections afforded to the Special Areas is contained in NRE's Mining Leases as follows:

- ML 1575 conditions 4,6,16,17,18,19,20,28,29,32 and Annexure A
- MPL 271 conditions 2,7,12,13,14,15,25
- CCL 745 conditions 2,7,8,12,13,14,22,25

These conditions are all enforceable by DRE both through fines and Land & Environment Court action. Further, NRE, like all other mining lease holders is required to maintain a Security with DRE for rehabilitation costs and indemnify the Crown (including the SCA) against all actions, suits, claims and demands of whatsoever nature and all costs, charges and expense which may be brought against the lease holder or which the lease holder may incur in respect of any accident or injury to any Person or property.

Streambed and pool cracking has demonstrably affected the connected overland flow in Waratah Rivulet, however no loss of water from Woronora dam has been demonstrably established that NRE or its consultants are aware of. No connection to the mining at Tahmoor has been established both by government agencies or by a government selected working group on Thirlmere Lakes.

Economic

Key Issues

1. NSW Economic Impact

The NSW government's focus is on immediate royalties and gives inadequate consideration to ecosystem services and the life cycle impacts of coal mining. This leads to long term economic impact from the externalisation of mining impact costs on the catchment to the NSW public.

2. Corporate vs. Local Benefit

All NRE's profits go overseas and it only invests capital where it can lead to job reductions. What does NRE do for the local community?

3. Socio-Economic Benefits

The employment and flow on benefits resulting from NRE operations and the coal industry in the Southern Coalfields is small in terms of NSW budget income and jobs created. Statements of economic and social impact of operations by coal companies are overstated particularly in NRE's case where the coal quality is poor;

Summary of Submissions

NSW Economic Impact

Proponents and Government do not fully assess the life cycle costs of mining and using coal. These costs include quantifiable health and utility infrastructure costs to the tax payer as well as unquantifiable short and long term environmental and social costs. In assessing mining royalty benefits consideration must be given to the health costs of coal combustion. There is more to consider than royalties and a small number of jobs. The economic benefits from this proposal are far outweighed by the risk of environmental impacts to water catchment areas.

Corporate vs. Local Benefit

The community did not force NRE to invest in the mine nor is the community responsible to ensure NRE profits from its investment. NRE has advised it needs income from mining to be able to fund its operations and compliance with approvals. Doing things properly usually costs more but the increased cost usually takes the form of increased employment. This means less profit for NRE but more benefits to the local community. As NRE is foreign owned all the profit goes overseas. Taking time to prepare applications properly is more expensive but coking coal is valuable and its value will only increase with time. Why not leave it in the ground until then?

Community funding commitments are not addressed in this modification. How does the local community benefit from this proposal? The Preliminary Works DA documents \$0.1m-\$0.15m commitment to specified groups over two years, is this funding to remain and why isn't it being extended under this modification?

Socio-Economic Benefits

Undertaking activities in a proper manner will increase employment at the Colliery and NRE continually raises the point of the employment it provides as justification of its operations. However the modification states that employment has reduced to 222 from the 337 employees and contractors stated in the Preliminary Works Pt3A. There is no explanation as to why this has occurred.

Royalties received by the NSW government as a proportion of State revenues are very small as are the number of jobs at NRE in relation to the regional workforce. Capital investment by NRE may be spent on items manufactured overseas and profits go to India. If this company fails, others will fill the gap.

A longwall misalignment error has resulted in the contamination of all the extracted coal from LW4. The proceeds of sale of the minerals extracted only covered extraction costs. This should be taken into account during the assessment of NRE's competency to responsibly extract LW5.

Response to Submissions

NSW Economic Impact

Consideration of externalised or unquantifiable cost of proposals are undertaken as part of the assessment process driven by sustainable development requirements as stated in the Objects of the EP&A Act 1979. Economic considerations are also an important element in this assessment and are a primary concern of the NSW Government as embodied in the both the Mining Act and should be considered in balance alongside other environmental and socio-economic considerations listed in the Objects of the Act. The objects of the Act with regard to economic development are:

(a) to encourage:

- (i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,
- (ii) the promotion and co-ordination of the orderly and economic use and development of land,"

NRE produces coal primarily for the coking coal market. Coking coal is used for the production of steel. There is no other currently viable method of steelmaking. If global demand for steel diminishes due to new materials becoming available then the demand for coking coal will similarly diminish. The production of coking coal is to meet a global demand for steel, which includes Australia. NRE's extraction of coking quality coal doesn't create the demand it only meets the demand.

Corporate vs. Local Benefit

Longwall mining is considered world-wide as the safest and most efficient method of underground coal extraction. It provides for >90% coal recovery whilst providing a safe and productive workplace. NRE did not purchase a longwall miner with the goal of reducing the workforce.

Coal mining, like most other industries, is cash flow reliant. Coal mines are extremely expensive operations to run. If you are not mining coal and meeting contract commitments you receive no income. Without a continual supply of coal to meet contract obligations, coal mines can't sustain operations for a significant period before it becomes an economic necessity to place the mine on care and maintenance to reduce costs and prevent the company from having to cease operations entirely. As such, the option of just leaving coal in the ground until some later time is simply not a commercially viable proposition for any company.

The community support commitments have not been modified as part of this application. Gujarat NRE supported 21 different community groups and sporting organizations to the sum of \$1,386,027.91 well above \$0.1m-\$0.15m.

Socio-Economic Benefits

NRE have invested more than \$600 million since 2004 to re-establish production and progressively upgrade operations with the view of establishing an operating mine with a minimum life of 18 to 20 years. This has included upgrading or replacing mining equipment, mining infrastructure and environmental controls to meet current day standards. In 2008 NRE started on seeking the necessary approvals. The assumption was made that 4 years would allow NRE to

gain approval for some longwall mining to be undertaken by this time. To date NRE has spent more than \$4.1 million on studies and reports to establish database that support these approval applications. This database is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies."

While not always true, additional employment can improve the quality of approval processes, operations and compliance activities. With quality improvement in mind, NRE have recently increased its environmental staff from four to nine with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment along with new environment and community officers to ensure that in the future approvals and environmental compliance aim for best practice outcomes.

Employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements:

1. Operational viability dictated by coal prices and operating costs; and
2. Gaining approvals to allow ongoing proposed operations in a timely manner

Employee levels at the mine continually fluctuate, particularly when development into new mining areas occurs or upgrades of equipment take place.

Mining royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95% or \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million or about 0.16% of the total coal royalties. While this could be regarded as a very small contribution, the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine (not including contractors) who in 2011-12 received a total \$314,864 per week as net wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related services who operate in the Greater Wollongong and Illawarra Region. This is a significant local contribution.

LW4 was the first panel extracted by the new longwall and longwall crew. The established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by adjusting the longwall equipment to reduce the cutting height for any future longwalls.

Infrastructure

Key Issues

1. Catchment Structures

References were made to Cataract Dam wall and Mt Ousley Rd

2. Residential Structures

Issues raised with regard to damage to Bellambi Lane and residences as a result of vibrations and general impact from truck movements from the Colliery

Summary of Submissions

Catchment Structures

There are no historic heritage sites identified within the project area. However, the State Heritage listed Cataract Dam and the South Bulli Colliery are located nearby. Accordingly, Section 6.3.2 of the HMP details the procedure to be followed in the event of the discovery of historic cultural material. This is considered adequate.

A technical committee has been set up between representatives of NRE and RMS to resolve issues related to Mt Ousley Rd. RMS will not object to the development provided all proposed modifications to MP10_0046 are submitted to the Technical Committee for approval.

Residential Structures

The comments related to this issue can be found in the relevant sections of this Response Report as follows:

- Noise
- Traffic and Transport

Response to Submissions

Catchment Structures

The RMS technical committee involves ongoing communication, data provision by NRE and regular meetings to discuss subsidence related issues. Any changes related to the management of subsidence in areas of interest to RMS will not occur without full consultation and the consent of the committee.

Residential Structures

The comments related to this issue have been dealt with in the relevant sections of this Response Report as follows:

- Noise
- Traffic and Transport

ADDITIONAL ISSUES

Conditions of MP10_0046

Bulli Decline Conveyor – Condition 14 (a) of Schedule 3

Background

Condition 14 (a) of Schedule 3 of MP10_0046 states:

“The Proponent shall ensure that the following noise mitigation measures are undertaken, in consultation with OEH, and to the satisfaction of the Director General:

- (a) the existing Bulli Conveyor is decommissioned by the end of December 2012; and*
- (b) the Wongawilli Conveyor utilises noise minimization measures conforming to Best Available Technology Economically Achievable (BATEA) standards, with construction completed by the end of December 2012.”*

Condition 14(a) is in conflict with the original intent of the Statement of Commitment that it appears to be modeled on. The original undertaking is located as dot point 3 of the Acoustics section of the Statement of Commitments in MP10_0046 and is shown in **Table 10**

Table 10 **Bulli Conveyor Statement of Commitment**

Outcome	Commitment	Timing
Operations are managed to minimise potential adverse impacts on the environment, residences and the community	The existing Bulli decline conveyor will be decommissioned and demolished on completion of the new driveage which is likely to start in mid to late 2012.	On completion of the new driveage

Issue

As can be seen in the above copy of bullet point 3 in the Statement of Commitments made no reference to the actual intended completion date of the decommissioning of the Bulli Conveyor as it is intrinsically linked to the completion of the Wonga Mains driveage. The only reference to the timing of the decommissioning of the Bulli decline conveyor was made in the Commitment section which only gave an estimate of commencement time.

Initially NRE was driving the Wonga Mains from both the Pit Top and the No.4 Shaft. However, due to operational and financial reasons the drivage from the No.4 Shaft direction has had to be suspended. This is going to lead to substantial delays to the completion of the Wonga Mains. The Bulli Conveyor will need to remain in service until the Wonga Mains are complete.

NRE is unable to comply with the condition as it exists as it sets an unachievable completion date which is contrary to the original intention of NRE's commitment. NRE intended that the commitment be regarded as part of the construction sequence rather than a time specific activity.

Resolution

In light of the above issues, NRE would like to request the modification of Condition 14(a) of Schedule 3 of MP10_0046 to state:

- *the existing Bulli Conveyor is decommissioned **when the Wonga Mains drivage is complete***

The Bulli Conveyor will remain subject to the noise limits and controls as set out in MP10_0046.

Statement of Commitments

As a result of the strong focus of community groups on the Statement of Commitments during the public exhibition of the EA, NRE has been required to undertake a detailed review and respond to concerns about information adequacy, omissions and errors. During this process a number of additional issues have come to NRE's attention as requiring clarification or minor modification.

Traffic and Transport

Background

The current MP10_0046 Statement of Commitments contains the following commitment in dot point 5 of the Soil and Water section as shown in **Table 11**.

Table 11 Traffic and Transport Statement of Commitment

Outcome	Commitment	Timing
Operations are managed to ensure minimal impacts on the local road network.	NRE will implement a traffic/driver management protocol which includes: - trucking during PKCT approved hours - obeying legal speed limits including a self imposed 50km/hr speed limit along Bellambi Lane - ensuring drivers are vigilant regarding separation distances; - avoiding compression braking,. Compression brakes must not be used on the approach to Port Kembla Rd/Springhill Rd lights when entering or exiting PKCT; - covering all loads; - washing all trucks prior to leaving the site; - reporting all vehicle faults to the owner; and - reporting all traffic incidents.	Continuous

Issue

It was considered likely that there was some room for confusion with regard to dot point 2 of this section of the Statement of Commitments which states

- obeying legal speed limits including a self imposed 50km/hr speed limit along Bellambi Lane;*

It was felt that a minor amendment was needed within the commitment to clarify that the intent of this statement was that the 50 km/h self imposed speed limit only refers to PKCT coal transport trucks.

Resolution

NRE would like to request the modification of dot point 2 of the Traffic and Transport Statement of Commitments of MP10_0046 as shown in **Table 12**.

Table 12 Proposed Traffic and Transport Statement of Commitment

Outcome	Commitment	Timing
Operations are managed to ensure minimal impacts on the local road network.	NRE will implement a traffic/driver management protocol which includes: - trucking during PKCT approved hours <i>obeying legal speed limits including a self imposed 50km/hr speed limit along Bellambi Lane for all coal transport trucks;</i> - ensuring drivers are vigilant regarding separation distances; - avoiding compression braking,. Compression brakes must not be used on the approach to Port Kembla Rd/Springhill Rd lights when entering or exiting PKCT; - covering all loads; - washing all trucks prior to leaving the site; - reporting all vehicle faults to the owner; and - reporting all traffic incidents.	Continuous

Bellambi Gully Creek Diversion

Background

The current MP10_0046 Statement of Commitments contains the following commitment in dot point 5 of the Soil and Water section as shown in **Table 13**.

Table 13 Bellambi Gully Creek Diversion Statement of Commitment

Outcome	Commitment	Timing
Construction and operations are managed such that adverse impacts to water quality and flows Bellambi Gully Creek and surrounding residents are prevented or minimised	- The underground pipe section of Bellambi Gully Creek will be replaced with a suitably designed and engineered open bypass channel constructed on the southern side of the coal stock pile area. This will include: - a dissipation pond will be constructed at the end of the bypass channel to reduce the energy of flows back into Bellambi gully Creek; - upgrades to the existing channel including Reno mattresses and Gabion drop structures to reduce the velocity of water flowing down the gully; and - regular maintenance to minimise scouring during major flow events.	Within 12 months of approval

Issue

For a variety of reasons the surface facilities works approved as part of MP10_0046 are progressing more slowly than was anticipated. As such the diversion of Bellambi Gully Creek has not commenced and will not be completed within 12 months of approval.

The diversion of the Gully is a part of the surface facilities construction sequence that needs to precede any increase of the capacity of the coal stockpile. This increase is proposed in the Underground Expansion Project application which has also been delayed. As such it is not currently possible for NRE to meet this Statement of Commitment.

Resolution

Given that the diversion is actually a construction sequence issue rather than a standalone matter, NRE would like to request the modification of dot point 5 of the Soil and Water section of the Statement of Commitments of MP10_0046 as shown in **Table 14**.

Table 14 Proposed Bellambi Gully Creek Diversion Statement of Commitment

Outcome	Commitment	Timing
Construction and operations are managed such that adverse impacts to water quality and flows Bellambi Gully Creek and surrounding residents are prevented or minimised	- The underground pipe section of Bellambi Gully Creek will be replaced with a suitably designed and engineered open bypass channel constructed on the southern side of the coal stock pile area. This will include: - a dissipation pond will be constructed at the end of the bypass channel to reduce the energy of flows back into Bellambi gully Creek; - upgrades to the existing channel including Reno mattresses and Gabion drop structures to reduce the velocity of water flowing down the gully; and - regular maintenance to minimise scouring during major flow events.	Prior to commencement of construction of Stage 2 of the stockpile development if approved

Erection of Noise Barriers

Background

The current MP10_0046 Statement of Commitments contains the following commitment in dot points 1 & 2 of the Acoustics section as shown in **Table 15**.

Table 15 Noise Barrier Statement of Commitment

Outcome	Commitment	Timing
Operations are managed to minimise potential adverse impacts on the environment, residences and the community	• A 3m high barrier will be constructed to the south of Broker Street across the intersection with West Street (subject to site constraints)	Within 12 months of approval
	• A 3.6m high barrier will be constructed to north of the internal access road from the weighbridge to the Princes Hwy (subject to site constraints)	Within 12 months of approval

Issue

NRE has been advised by both noise consultants and the DP&I noise professional that locating noise barriers in the positions indicated will not result in any significant noise impact reduction on the surrounding residential area.

It does not make sense to proceed with costly yet potentially ineffective noise controls. As required by Condition 13 of Schedule 3 of MP10_0046, a Noise Audit of current operations is required to be undertaken by the end of December 2012.

NRE would prefer to allow the outcomes and recommendations of the Noise Audit to guide its noise mitigation actions rather than a commitment to undertake specific works that are unlikely to be effective.

Resolution

NRE would like to request the modification of dot points 1 & 2 of the Acoustic section of the Statement of Commitments of MP10_0046 to consolidate them into one statement as follows in **Table 16**.

Table 16 Proposed Noise Management Statement of Commitment

Outcome	Commitment	Timing
Operations are managed to minimise potential adverse impacts on the environment, residences and the community	Noise management will be undertaken in accordance with a Noise Management Plan when approved by DP&I as per Schedule 3, Condition 16 and as amended by the DoPI approved Noise Audit Action Plan as per Schedule 3, Condition 13.	As per Noise Management Plan

ATTACHMENT A

SCT 2012 Response to Subsidence Related Comments on Longwalls 4 and 5 and MG 6, 7, 8 Pt3A Modification Application



SCT Operations Pty Ltd

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4 October 2012

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Dear David,

**RESPONSE TO SUBSIDENCE RELATED COMMENTS ON LONGWALLS 4 AND 5 AND
MG6, 7, 8 PT3A MODIFICATION APPLICATION**

As requested, please find herein our basic response, with detail as required, to comments listed in the spreadsheet that you provided by email.

The report is structured to provide a background to SCT Operations Pty Ltd's (SCT's) commission, an overview of the recent subsidence results from Longwall 4 and groundwater monitoring from Borehole GW-1 located near Cataract Creek, and then responses to particular issues raised based on these results. There are several issues that are raised repeatedly in various submissions and these issues are addressed collectively in the response presented.

1. BACKGROUND

Over the past two months, SCT has been commissioned by Gujarat NRE Coking Coal Limited (NRE) to assess the anticipated subsidence related impacts of proposed longwall mining in the Wongawilli Seam at NRE No.1 Colliery and to assist with guiding the development of strategies to monitor and manage these impacts. Site inspections of relevant sections of Cataract Creek, Cataract River, Lizard Creek, Wallandoola Creek and various tributaries have been conducted as part of this review together with inspections of the general surface terrain above both the proposed Wonga East and Wonga West mining areas. The comments presented in this letter report are based on our review of the available data, observations made during the site inspections, and our assessment of these results in the context of experience at other sites.

NRE has recently completed mining Longwall 4 in the Wongawilli Seam in an area called Wonga East. In this area, the Bulli Seam was previously mined using pillar extraction techniques (early to mid 1900's) and the Balgownie Seam was extracted using longwall mining techniques (between 1970 and 1982). Subsidence data was not collected for mining in the Bulli Seam, although about 1m of subsidence is considered likely to have occurred based

on experience at other similar sites. The results of subsidence monitoring above the Balgownie Seam longwall panels are of high quality and provide insight into the nature of subsidence above multi-seam mining operations.

Final subsidence survey data from Longwall 4 and some of the deep groundwater monitoring data from Borehole GW-1 is not yet available following the recent completion of Longwall 4, but results are expected to be available within the next few weeks. Nevertheless, the results that are available so far from Longwall 4 and the GW-1 groundwater monitoring provide a basis for initial comment on the various submissions presented.

2. OVERVIEW OF SUBSIDENCE MOVEMENTS OBSERVED

Figure 1 shows the layout of subsidence monitoring lines above Longwall 4 as at 7 August 2012. The longitudinal line and the southern cross-line are of particular interest to the current discussion. The results from the northern cross-line are not available at the time of writing.

Figure 2 shows the subsidence monitored on the southern cross-line when Longwall 4 was in the position indicated in Figure 1. Maximum subsidence is approximately 1.3m in the centre of the panel, maximum tilt is approximately 30mm/m, and maximum strain is approximately 5mm/m (allowing for peg spacing variations from a standard 1/20th overburden depth).

Figure 3 shows the subsidence monitored on the central longitudinal line at the same longwall face position. Maximum subsidence is 1.3m, maximum tilt is approximately 25mm/m at the start of the panel and 15mm/m over the longwall face and maximum strain is 3mm/m.

2.1 Discussion of Subsidence Monitoring Results

The subsidence monitoring was two dimensional (level and peg to peg distance) rather than three dimensional. The available monitoring data is therefore not suitable to determine far-field horizontal movements or movements in a downslope direction associated with valley closure. SCT has recommended the surveying be upgraded to full three dimensional subsidence monitoring in future and be extended to include more detail of valley closure movements. It is understood that this upgrade is planned.

The subsidence monitoring above Longwall 4 has two characteristics that are of particular interest in the context of multi-seam mining. The first is that the level of vertical subsidence is significantly higher than would be expected above a single panel in undisturbed strata. The second is that the subsidence observed is tightly constrained within the plan geometry of Longwall 4, despite two seams having been mined immediately above the Wongawilli Seam mining horizon, each with their own independent extraction geometries.

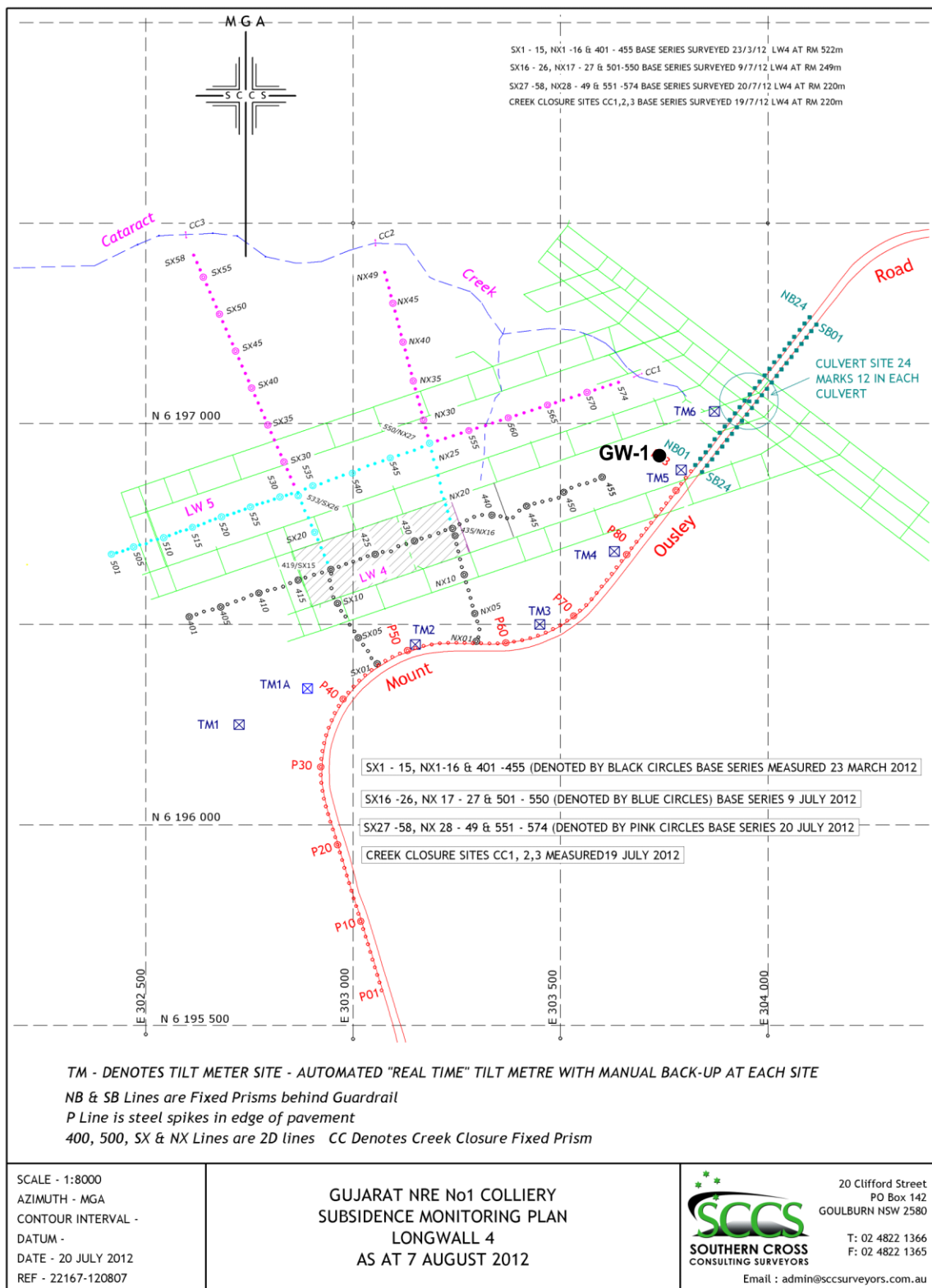


Figure 1: Subsidence monitoring lines above Longwall 4 (as at 7th August 2012).

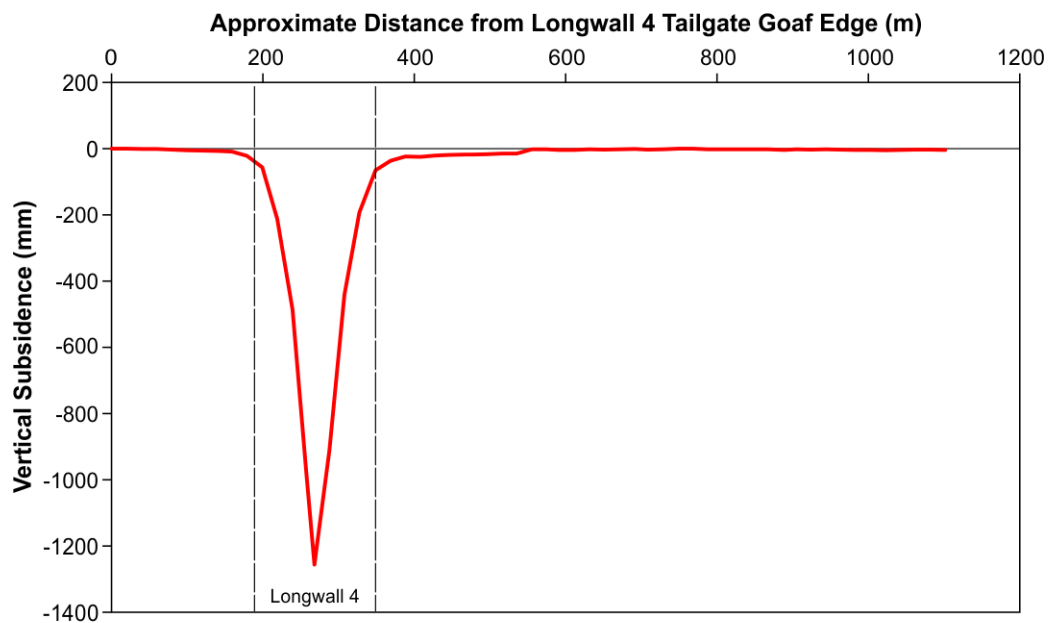


Figure 2: Longwall 4 cross line SX.

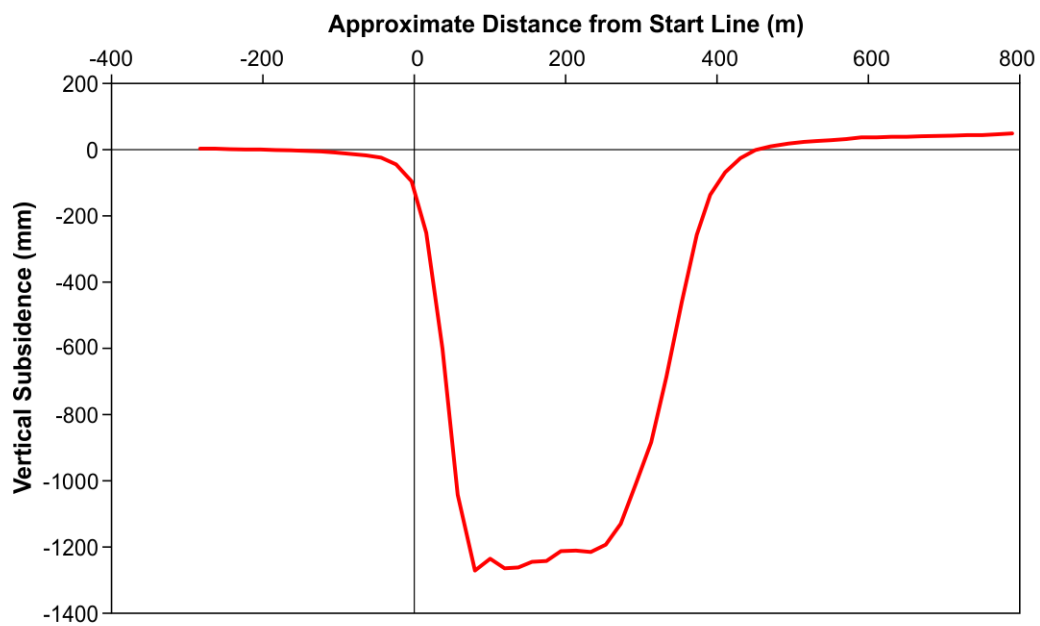


Figure 3: Longwall 4 centre-line subsidence.

The 1.3m of vertical subsidence observed in the centre of the panel is well above the less than 100mm that would be expected in the centre of a similar width panel in strata that has not been disturbed by previous mining subsidence. A similar response was observed above the Balgownie Seam longwall panels where 1.4m of subsidence was observed above panels that would be expected to show less than 100mm of subsidence for the same geometry in undisturbed strata.

The implication of this result is that the initial Bulli Seam mining and the subsequent Balgownie Seam mining have reduced the bridging characteristics of the overburden strata so that the overburden strata is more compliant and less able to span across a single panel.

Total cumulative subsidence in the centre of Longwall 4 is estimated to be about 1m from mining the Bulli Seam, 0.5-1.3m from mining in the Balgownie Seam depending on location and 1.3m from mining in the Wongawilli Seam giving total subsidence above Longwall 4 in the range 2-3m.

The second characteristic of interest, the tight correlation between observed subsidence and the mined panel geometry in the deepest of three seams, indicates that the multi-seam mining may not be as significant in terms of altering the footprint of the surface subsidence as previously envisaged.

The tight correlation of subsidence with the Wongawilli Seam panel geometry indicates that there is no evidence of pillar instability (pillar run) in the Bulli Seam and that the pillar extraction areas in the Bulli Seam above Longwall 4 are already fully subsided.

There is also no evidence of the influence of the mining geometry in the Balgownie Seam, although this may be a result of the relatively small size of the Wongawilli Seam mining footprint at the completion of Longwall 4.

The implication of these results is that although the subsidence magnitude is greater for mining in the third seam, the lateral extent of the area affected by mining may not be significantly greater than for single seam mining. This outcome needs to be reviewed after further data becomes available for a wider range of pillar geometries in the overlying seams, but the initial data indicates that the surface subsidence is substantially limited to within the panel footprint in the seam that is mined.

2.2 Valley Closure Movements Associated with Horizontal Movement in a Downslope Direction

When mining under terrain where there is some topographic relief, or where the strata is dipping relative to the surface, there is a tendency for subsiding strata to cause an outward movement of the valley sides towards topographic low points. This movement is a result of dilation of natural joints and mining induced fractures as well as dilation caused by the rotation of blocks of overburden strata as they subside differentially. The effect of these

horizontal movements is to cause stretching at topographic high points and compression (valley closure) at topographic low points. These horizontal movements appear to occur substantially in response to vertical subsidence with the energy available to drive them derived from the potential energy released as the rock strata subsides or in some circumstances by release of potential energy stored as in situ stress.

Minor tensile surface cracking has been observed at the top of the hill on Mt Ousley Road during the period of mining Longwall 4. This observation is consistent with general experience of mining below steep terrain and is likely to be associated with an equal amount of compression across Cataract Creek, with the movement likely to have been taken up on a horizontal shear plane at or near the base of the valley.

Despite comments in some of the submission to the contrary, the mechanics of the processes associated with valley closure and horizontal movement in a downslope direction have been relatively well understood for some time (Mills 2001).

2.3 Disturbance to the Overburden Strata and Potential for Increased Hydraulic Conductivity

A characteristic of the reduced bridging capacity of the overburden strata and the increased subsidence that is observed above multi-seam mining operations such as Longwall 4 is increased disturbance of the subsided overburden strata and increased potential for overall increased hydraulic conductivity between the surface and the mining horizons. Such increased hydraulic conductivity is not necessarily a significant issue if the main source of recharge is rainfall because, in general, only a very small percentage of total rainfall is lost into mining induced fractures in a typical bushland environment. However, this increased vertical hydraulic conductivity may be an issue if the recharge source is a reservoir, a major creek or river, or a swamp whose flora and fauna are sensitive to the natural balance between inflow from rainfall or surface runoff and losses to the bedrock so that longer term storage of water within the swamp is affected.

Significant disturbance to the overburden strata through vertical subsidence is likely to be substantially avoided if surface features are not directly mined under because most of the vertical stretching that contributes to increased hydraulic conductivity is located directly over each longwall panel. There is still potential for some disturbance and associated increase in the hydraulic conductivity as a result of secondary effects such as valley closure or where aquifers or stratigraphic with higher natural hydraulic conductivity, but these effects also tend to be much greater directly above each panel.

The valley closure impacts tend to be specific to topographic low points and are not necessarily associated with increased vertical hydraulic conductivity to the mining horizon, although the impacts may nevertheless be significant within the context of the river channel or valley infill swamp.

Subsurface mining disturbance to stratigraphic units that have naturally higher hydraulic conductivity may result in a pathway of increased hydraulic conductivity between groundwater stored in these units and the mining horizon. There is potential for the associated drawdown to extend well outside the footprint of individual longwall panels, particularly when horizontal movements that occur toward each longwall goaf result in a net volume increase of the aquifer.

The further away that a longwall panel is from a given surface feature, the less likelihood there is for significant impact on that feature. A distance equal to half the depth between the surface and the mining horizon (also referred to as an angle of draw of 26.5°) is commonly used to describe the distance outside a longwall panel where vertical subsidence becomes imperceptible for most practical purposes. This distance tends to increase with overburden depth and in the Southern Coalfield of NSW a value of 0.7 times depth (angle of draw of 35°) is commonly adopted where the overburden depth is greater than about 250m.

Far-field horizontal movements, valley closure movements, and lateral drawdown within the deep groundwater system are recognised to have potential to extend beyond, the limits of vertical subsidence, but these effects do not generally have a significant impact.

3. OVERVIEW OF INITIAL GW-1 PIEZOMETER MONITORING RESULTS

Borehole GW-1 was recently drilled some 220m southwest of where Mt Ousley Road crosses Cataract Creek (see Figure 1). The hole is located in an area where the Bulli Seam has previously been mined and above a 150m long by 190m wide longwall goaf in the Balgownie Seam. The hole was drilled to a depth of 170.1m and terminated in the Scarborough Sandstone. Numerous fractures were observed within the overburden strata during drilling and subsequently when the borehole was inspected with a down-hole camera and geophysically logged.

A string of eight vibrating wire piezometers was installed in GW-1. Figure 4 shows the profile of the pore pressures measured in this hole soon after the instruments were installed. This profile is plotted alongside the stratigraphy inferred from chip logging during drilling and geophysical logging once the hole was completed. A hydrostatic pressure gradient is also plotted from 24m below the surface, the elevation of the standing water level in the hole.

A hydrostatic pressure gradient represents the rate of increase in water pressure that would be expected in a connected body of water where there is no vertical flow, such as might be observed in the ocean for instance. A pore pressure gradient that is reduced below hydrostatic is indicative of a downward flow, although the rate is also dependent on the hydraulic conductivity of the strata.

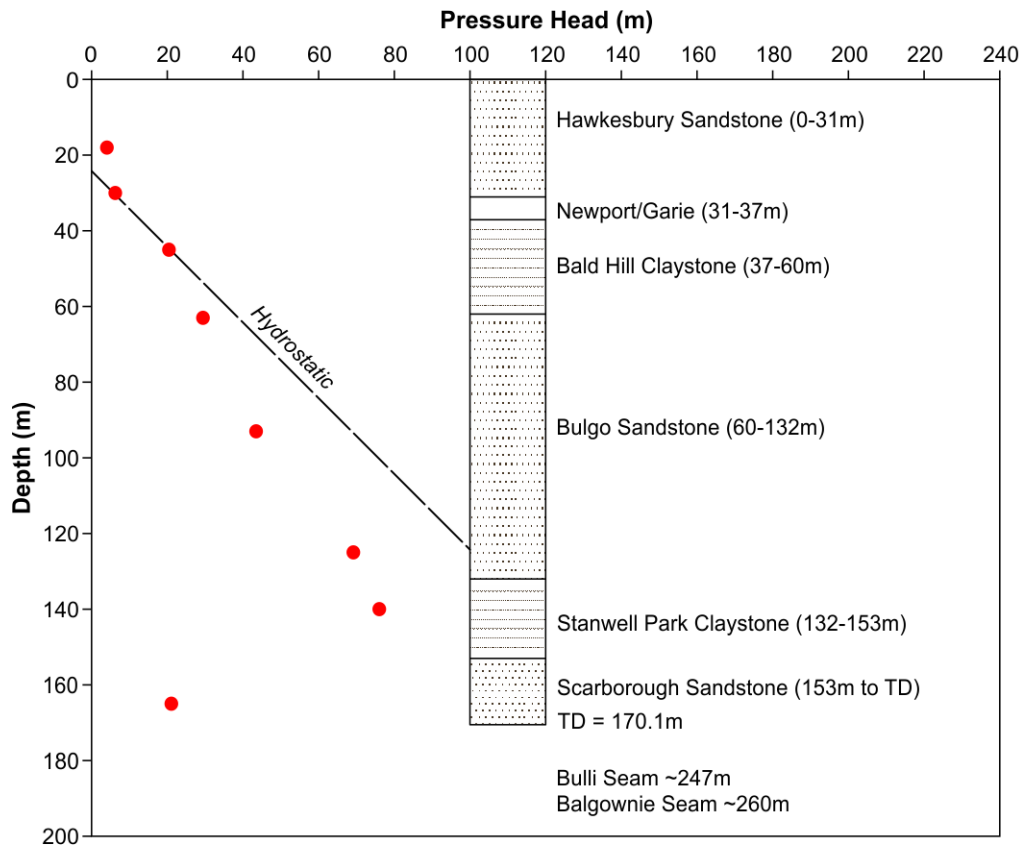


Figure 4: Summary of groundwater monitoring in Borehole GW-1.

The pore pressure profile shown in Figure 4 is considered to be a convincing initial measurement of the pore pressures within the rock strata at this site. The individual point measurements are coherent with one another and consistent with experience of similar measurements at other sites.

The results indicate that there is a restriction to downward flow at a horizon within the Bald Hill Claystone at this site.

Below the Bald Hill Claystone horizon, the pressure gradient diverges from hydrostatic consistent with some low level downward flow. At approximately 100-120m above the Balgownie Seam mining horizon, there is a reduction in pore pressure with increasing depth consistent with the top of a more hydraulically connected fracture network above the longwall goaf in the Balgownie Seam.

The form of the pressure profile indicates the vertical flow rate is likely to be relatively insignificant by comparison with rainfall recharge, but the magnitude of downward flow indicated by this profile depends on the hydraulic conductivity of the overburden strata. In due course, the response of the groundwater profile to rainfall and the results of packer testing conducted in GW-1 are expected to provide a stronger indication of the rate of downward flow at this site.

4. RESPONSE TO SUBMISSIONS

There appears to be several themes within the submissions that are able to be addressed collectively.

4.1 Multi-Seam Subsidence

One theme dwells on the dangers or uncertainties associated with multi-seam mining particularly for a third level of mining. SCT is not aware of any previous mining in the Southern Coalfield where three seams have been mined directly above one another, except now from mining Longwall 4 at NRE. There has been previous multi-seam mining in three seams in the Newcastle Coalfield at Wyee and Myuna Collieries (Wallarrah, Great Northern, and Fassifern Seam) and there may have been other sites in some of the older mines in the Newcastle Coalfield. The practice of multi-seam mining is quite common in the United Kingdom where SCT are aware of at least one site where up to nine seams were mined at the same colliery. Multi-seam mining is also common in other countries such as China, Poland, Russia, and Germany.

There does not appear to be any significant practical impediment to successfully conducting multi-seam mining and managing the resulting subsidence impacts.

Although there are greater uncertainties associated with prediction of subsidence in multi-seam mining to the same level of confidence as has become customary for subsidence predictions in single seam mining operations, the greater uncertainty of prediction is not of itself necessarily of great consequence in terms of potential impacts or how they are managed. The basic mechanics of ground movement are not expected to change significantly as a result of the interaction of multiple seams. Larger subsidence movements are expected, but these are likely to be similar in form, but generally less in magnitude, than the effects that would develop if a single seam of equivalent thickness was mined.

A risk based approach is an appropriate way to manage these uncertainties.

4.2 Influence of Major Geological Structures

Another theme apparent in the submissions is the concept that major geological structures such as faults and dykes will significantly influence subsidence behaviour and these features need to be avoided.

There are some examples of unusual subsidence that can be related to geological structures, mainly dykes, but these examples are relatively rare. In general, geological structures such as faults and dykes do not significantly change surface subsidence behaviour.

There has been previous mining on two levels adjacent to the dyke within the Wonga East mining area. There is no evidence in the measured subsidence

profiles of this feature having any influence on surface subsidence behaviour. The main influence of these structures appears to have been at seam level where it has been difficult to mine through the dyke material in the Balgownie Seam longwall panels and easier to step the longwall around it.

The concept that geological fault structures may become reactivated as hydraulic pathways has been advanced in some of the submissions. In SCT's experience, there is not any very strong evidence to confirm that geological faults in the Southern Coalfield are either more conductive or less conductive than the surrounding strata or that they provide a connection between the surface and underground.

4.3 Influence of Bald Hill Claystone

The Bald Hill Claystone is recognised and accepted to have relatively low matrix permeability compared to other stratigraphic units because of its fine grained nature.

However, the fracture/joint permeability rather than the matrix permeability is recognised as likely to be the main control on overall hydraulic conductivity of stratigraphic units within the overburden strata simply because the hydraulic conductivity of the fracture network is typically much greater than the hydraulic conductivity of the matrix.

There is no evidence that SCT is aware of to indicate that the Bald Hill Claystone is somehow self-healing as a consequence of its so called "claystone" characteristics. Indeed natural joints are relatively common including joints that have remained open long enough to become infilled by mineralisation (calcite or similar) deposited by groundwater percolating through the natural fracture network within the rock mass over geological time.

Mining induced ground movements tend to increase the aperture of existing joints as well as create new fractures. The ground movements directly over each longwall panel tend to be stretching in nature and therefore, are more effective at increasing hydraulic conductivity of the rock mass than the more compressive movements that occur within the overburden strata directly above each of the chain pillars between panels.

The notion that the Bald Hill Claystone is an effective aquitard either prior to or post mining needs to be explored on a site by site basis. The measurements from GW-1 indicate that a horizon within the Bald Hill Claystone may be acting as somewhat of an aquitard at this site, but further monitoring of the groundwater response to rainfall recharge is needed to establish the effectiveness of this unit to limit vertical flow.

4.4 Effect of Mining on Swamps

There are recognised to be several different types of swamps and each type of swamp may be more or less vulnerable to particular types of ground disturbance. It should be recognised that any impacts to swamps are unlikely to become apparent until well after mining is complete and well after there is any capacity for the mine to make any significant change to the mining process. The concept of a Trigger Action Response Plan (TARP) as a method of protecting swamps is not credible because many of the impacts are likely to be long term and difficult to detect without extended monitoring.

In swamps that are not located across valley floors, a high level of protection is provided if the swamps are not directly mined under. Higher protection is provided with increased distance between the swamp and the edge of the nearest longwall panel.

In swamps located across topographic low points, there is potential for valley closure impacts whenever mining occurs below the slopes that lead down to the swamp, although there does appear to be some tolerance of the rock strata to valley closure before impacts become significant.

A judgement based on the significance or otherwise of individual swamps and the flora and fauna associated with them is required to be made ahead of mining. If mining is allowed to proceed directly under a swamp (or the slopes leading down to a swamp where valley closure is expected to be sufficient to have an impact) there is considered to be potential for impacts to occur, not necessarily immediately, but potentially over time as readjustments occur to accommodate changes to the balance between recharge and possible outflow through newly created fractures.

4.5 Impact Metropolitan Water Supply and Cataract Creek

Longwalls 4 and 5 are located in an area that is remote from the stored waters of Cataract Reservoir. There is not considered to be any potential for significant flow from stored waters into the mine. An increase in vertical hydraulic conductivity is expected in areas that have been directly mined under, as evidenced by the piezometric profile shown in Figure 4, but the magnitude of flow is likely to be insignificant by comparison with the volume of rainfall recharge and other neutral effects such as evaporation from the surface of the reservoir.

Some impacts on water quality from tributaries to Cataract Creek are expected. There appears from the iron staining evident in the water flowing in Cataract Creek to be some ongoing impacts from previous mining that was undertaken some 30-40 years ago, so the post mining recovery appears to be relatively slow. Further mining below the tributaries to Cataract Creek is expected to increase the level of rock fracturing adjacent to these tributaries and further iron staining is expected. Such an increase is apparent in a tributary to Cataract Creek located over Longwall 4.

The rock strata in the base of Cataract Creek does not appear to have been impacted by previous mining in the same way as rock strata in the base of watercourses located on Hawkesbury Sandstone. This difference is considered to be a result of Cataract Creek being located on the outcrop of Bald Hill Claystone. The valley closure or horizontal movement in a downslope direction that occur as a result of mining subsidence appear to be concentrated on a horizon at the bottom of the overlying Hawkesbury Sandstone above the level of the river channel. The rock strata in the floor of Cataract Creek is therefore, not subject to the horizontal compression that gives rise to fracturing and upsidence evident in watercourses located within Hawkesbury Sandstone. Further subsidence monitoring is required to confirm this mechanism, but the lack of impact on the floor of Cataract Creek is consistent with this mechanism.

4.6 Impact on Illawarra Escarpment and Other Rock Features

There is considered to be no potential for proposed mining of Longwall 5 to have any impact on the Illawarra Escarpment. Longwall 5 is remote from the escarpment and any far field ground movements are expected to be well below the tolerance of the escarpment or the level of other natural influences such as seasonal thermal variation.

Sandstone rock formations associated with the outcrop of Hawkesbury Sandstone are located over Longwall 5 and would be subject to horizontal compression associated with subsidence movements. There is considered to be some potential for rock falls on about 5% of the subsided length of rock formations.

If you have any queries or require further clarification of any of these issues, please do not hesitate to contact me directly.

Regards



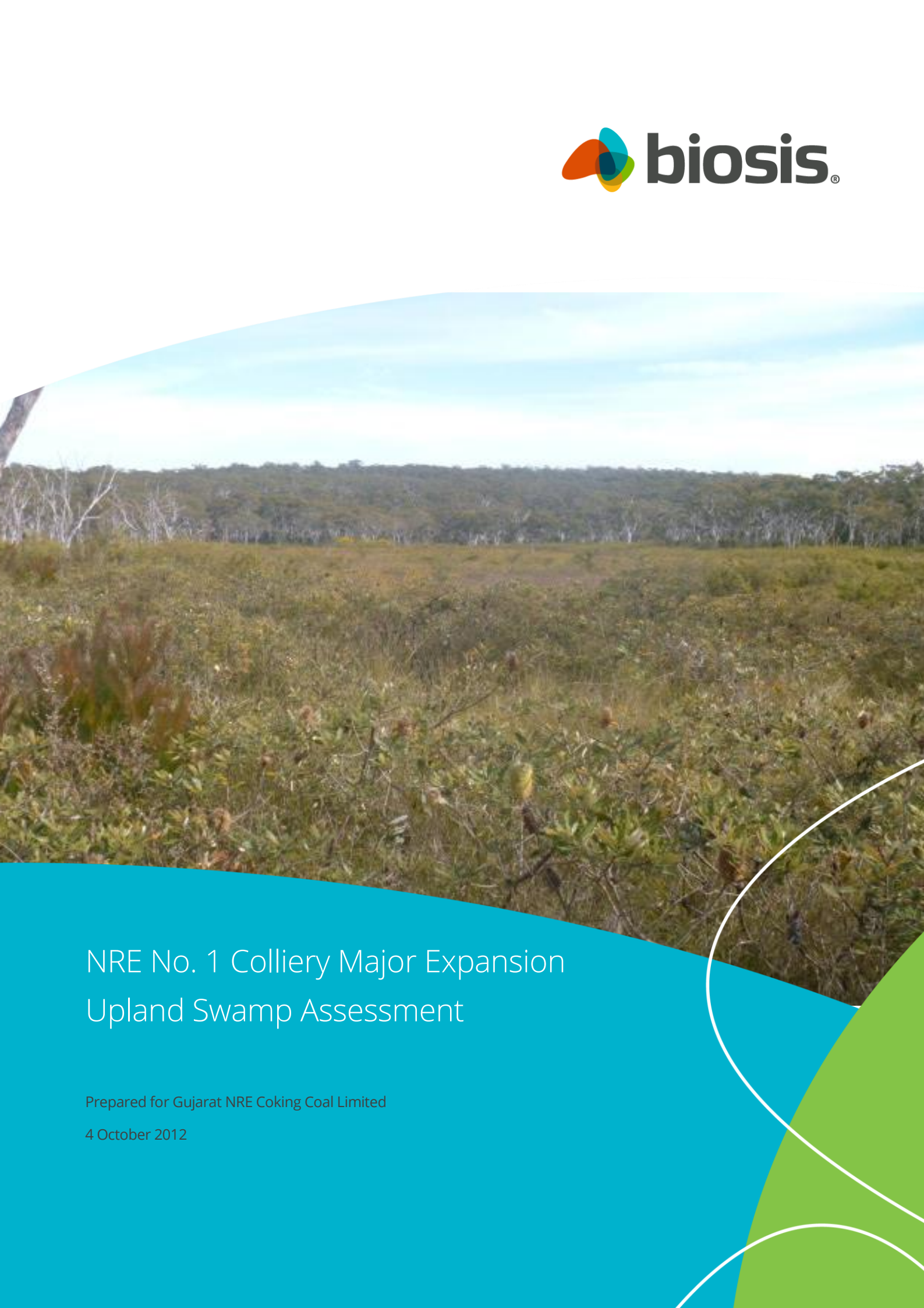
Ken W. Mills
Senior Geotechnical Engineer

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ATTACHMENT B

Biosis 2012 NRE No. 1 Colliery Major Expansion Upland Swamp Assessment



NRE No. 1 Colliery Major Expansion Upland Swamp Assessment

Prepared for Gujarat NRE Coking Coal Limited

4 October 2012

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Summary

Biosis Pty Ltd was commissioned by Gujarat NRE Coking Coal Ltd to undertake a detailed assessment of upland swamps. This detailed assessment will be used as part of the Environmental Assessment (EA) being undertaken by ERM for NRE's No. 1 Major Expansion Project.

The study area is located on the Woronora plateau, approximately 8 km north of Wollongong and approximately 70 km south of the Sydney CBD.

Upland swamps were mapped using a combination of LiDAR data, to define areas requiring further investigation, ground truthing of these areas in the field to define swamp boundaries and map swamp sub-communities and use of a Geographic Information System (GIS) to spatially represent data.

Following identification of upland swamps within the study area, an impact assessment was undertaken. The impact assessment was undertaken in two stages. The first stage involved the undertaking of an impact assessment according to the Draft *Upland Swamp Environmental Impact Assessment Guidelines* (OEH 2012). The second stage involved an assessment of the potential for upland swamps of 'special significance' to be impacted based on a variety of features, including an initial risk assessment according to OEH (2012), comparative analysis of upland swamps that have previously been undermined, changes to flow accumulation and potential for fracturing of bedrock and desiccation.

This project identified a total of thirty-nine (39) upland swamps meeting the definition of the Coastal Upland Swamp Endangered Ecological Community within the Wonga East study area and forty-five (45) upland swamps within the Wonga West study area. This assessment method identified a number of previously unmapped swamps within the study area, as well as highlighted the complexity and variability of this vegetation community.

The initial stages of the impact assessment identified that seven (7) upland swamps in Wonga East and eight (8) upland swamps in Wonga West are considered to be of 'special significance' using OEH criteria. Detailed impact assessment, including an initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and analysis of strains and potential for fracturing of bedrock, was undertaken on these 'special significance swamps'.

This detailed impact assessment identified that:

- There is a negligible likelihood of negative environmental consequences for seven (7) upland swamps within the study area, including CRUS2, CRUS3, LCUS1, LCUS6, LCUS27, WCUS1 and WCUS4-vfs. NRE can proceed to mining and monitoring in these areas.
- There is a low likelihood of negative environmental consequences for five (5) upland swamps within the study area, including CCUS4, CCUS10, CRUS1, LCUS8 and WCUS11. NRE may wish to consider changes to longwall layout to reduce impacts to these swamps.
- There is a moderate likelihood of negative environmental consequences for two (2) upland swamps within the study area, including WCUS4-hws and WCUS7. NRE should consider implementation of suitable impact avoidance, minimisation and mitigation measures to reduce impacts to these swamps.
- There is a significant likelihood of negative environmental consequences for two (2) upland swamps within the study area, including CCUS1 and CCUS5. NRE should consider implementation of suitable impact avoidance, minimisation and mitigation measures to reduce impacts to these swamps.

A number of recommendations to avoid or minimise impacts to upland swamps considered to 'special significance' are provided in the conclusions. NRE need to consider changes to the mine layout and / or suitable impact avoidance and mitigation measures to reduce the impacts on these swamps, including:

- adjust the layout in respect of Area 1 LW3 to avoid impacts to CCUS1.
- adjust the layout in respect of Area 2 LW7 and LW8. If this is not feasible, detailed monitoring of CCUS5 should be undertaken during the extraction of Longwalls 7 and 8. Detailed triggers relating to changes in gradient, groundwater monitoring and / or observational monitoring should be developed, and if triggered measures to minimise impacts should be considered.
- adjust the layout in respect of Area 3 LW2 to minimise impacts on the headwaters of WCUS4.
- adjust the layout in respect of Area 3 LW3 and LW4 to reduce predicted strains to WCUS7 and Wallandoola Creek.

Provided the recommendations outlined in this report are implemented negative environmental outcomes for upland swamps of 'special significance' can be achieved.

1. Introduction

1.1 Project background

Biosis Pty Ltd (Biosis) was commissioned by Gujarat NRE Coking Coal Limited (NRE) to undertake a detailed assessment of upland swamps. This detailed assessment will support the Environmental Assessment (EA) being undertaken by ERM for NRE's No. 1 Major Expansion Project.

NRE is currently seeking approval for expansion of operations at the NRE No. 1 Mine, including longwall mining of two areas known as Wonga East and Wonga West (see Section 1.4). The Wonga East and Wonga West areas are located on the Woronora plateau, a deeply dissected plateau gradually declining from south to northwest (NPWS 2003). Upland swamps are a significant natural feature of the Woronora plateau.

1.1.1 Previous Assessments of Upland Swamps

A number of ecological assessments have been undertaken for the Major Expansion Project (ERM 2011, 2012). These assessments have previously identified upland swamps within the study area, based on vegetation mapping by NPWS (2003), ground-truthing and assessment of groundwater levels.

Initially, some areas mapped by NPWS (2003) as upland swamps were excluded based on low or negligible groundwater levels, a lack of humic layer, no free moisture and very shallow sandstone (ERM 2012). However review of the Final Determination for Coastal Upland Swamp Endangered Ecological Community (EEC) by the NSW Scientific Committee (2012) has highlighted that these areas are likely to be consistent with the EEC, and these areas were included as a part of the Preliminary Works Part 3A Modification for Longwall 4 and 5 (Cardno 2012). This iterative process has resulted in some upland swamps being included in previous work, then removed, and then included again.

Due to potential discrepancies between the description of Coastal Upland Swamp in the Final Determination (NSW Scientific Committee 2012), various literature and geomorphological processes, it was identified that a consistent approach to identification and impact assessment was required.

The approach of this assessment is to identify all areas of the Coastal Upland Swamp EEC (NSW Scientific Committee 2012) within the study area. All areas meeting the definition of the Coastal Upland Swamp EEC (upland swamp) were included for further analysis.

To allow for comparison to previous mapping of upland swamps, Table 1 reconciles current naming and previous naming.

Table 1: Current naming of upland swamps compared to previous naming

Swamp Name - Current	Swamp Name - Previous
BCUS1	-
BCUS10	-
BCUS11	-
BCUS2	-
BCUS3	-
BCUS4	-
BCUS5	-

BCUS6	-
BCUS7	-
BCUS8	-
BCUS9	-
CCUS1	CChs1
CCUS10	-
CCUS11	-
CCUS12	-
CCUS13	-
CCUS14	-
CCUS15	-
CCUS16	-
CCUS17	-
CCUS18	-
CCUS19	-
CCUS2	CChs2
CCUS20	-
CCUS21	-
CCUS22	-
CCUS23	-
CCUS3	CChs3
CCUS4	CChs4
CCUS5	-
CCUS6	-
CCUS7	-
CCUS8	-
CCUS9	-
CRUS1	CRhs1
CRUS2	CRhs2
CRUS3	CRhs3
CRUS4	-
CRUS5	-
LCUS1	LCvfs1
LCUS10	-

LCUS11	-
LCUS12	-
LCUS13	-
LCUS14	-
LCUS15	-
LCUS16	-
LCUS17	-
LCUS18	LChs3
LCUS19	-
LCUS2	-
LCUS20	-
LCUS21	-
LCUS22	-
LCUS23	-
LCUS24	-
LCUS25	LChs4
LCUS26	LChs6
LCUS27	LChs6
LCUS28	LChs5
LCUS29	LChs5
LCUS3	-
LCUS30	-
LCUS31	-
LCUS32	LChs5
LCUS33	-
LCUS4	LCvfs2
LCUS5	-
LCUS6	LChs2
LCUS7	-
LCUS8	-
LCUS9	-
WCUS1	WCvfs1
WCUS10	-
WCUS11	WChs2

WCUS12	-
WCUS2	-
WCUS3	-
WCUS4	WChs1 / WCvfs1
WCUS5	-
WCUS6	-
WCUS7	WCvfs2
WCUS8	-
WCUS9	-

1.2 Upland Swamps

1.2.1 Formation

On the floors of low gradient / low flow valleys or in seepage zones along benched slopes, upland swamps form due to the obstruction of drainage and subsequent trapping of sediment. Upland swamps are formed by a positive feedback mechanism, where sediment is accumulated in valley floors through some type of initial blockage (e.g. rock benches, obstruction by large logs etc.). This results in impeded drainage, waterlogging of the soil, increased soil moisture, killing of trees due to waterlogging and an increase in dense hydrophilic vegetation. This process reduces the transpiration capacity of the vegetation, which allows the water table to rise more frequently than if trees were present, reinforcing the process (Young 1982, Keith *et al.* 2006, Tompkins & Humphrey 2006, NSW Scientific Committee 2012).

1.2.2 Hydrology, Soils and Vegetation

Soils and vegetation communities within upland swamps are strongly associated with the distribution of water (both surface water flows and groundwater) within upland swamps (Keith *et al.* 2006, Tompkins & Humphrey 2006, NSW Scientific Committee 2012).

In areas of frequent waterlogging / high groundwater levels and / or permanent moisture, soils contain a high organic content, are generally deeper and tend to support areas of Tea-tree Thicket dominated by Tea-tree *Leptospermum* spp., *Melaleuca squarrosa* and *Acacia rubida*, with an understorey of Coral Fern *Gleichenia* spp.. In areas of intermittent waterlogging and / or moisture, soils consist of a mix of organic material and mineral sands, and tend to support Cyperoid heath, dominated by dense stands of large sedges from the Cyperaceae family including *Gymnoschoenus sphaerocephalus*, *Lepidosperma limicola*, *Chorizandra sphaerocephala* and *Baumea rubiginosa*. In the driest parts of upland swamps, soils can vary in depth and composition, with driest areas supporting mineral sands of a few centimetres in depth. These areas intergrade with deeper, wetter soils mentioned above. These drier areas support a mix of Restioid Heath, Sedgeland and Banksia Thicket. Sedgeland, located in areas subject to periodic waterlogging and seepage, is comprised of a low dense cover of sedges such as *Leptocarpus tenax*, *Schoenus brevifolius* and *S. paludosus* with some small shrubs such as *Baeckea imbricata*, *Sprengelia incarnata* and *Actinotus minor*. Restioid Heath, located on swamp margins and upper slopes where the water table rarely reaches the surface, is comprised of a low shrub layer of *Banksia oblongifolia*, *Banksia robur*, *Epacris obtusifolia* and a dense ground cover of species such as *Empodisma minus*, *Lepyrodia scariosa*, *Leptocarpus tenax* and *Schoenus brevifolius*. Banksia Thicket, located on swamp margins and upper slopes where the water table rarely reaches the surface, forms a dense heath, often on the margins of upland swamps or in smaller swamps located along benched terraces (N. Garvey pers. obs.).

As demonstrated above, hydrology plays a key role in the formation and maintenance of upland swamps, and changes in hydrology play a significant role in determining the spatial variation in vegetation sub-communities within upland swamps. Some upland swamps are reliant on the perched ephemeral water table to maintain moisture dependent vegetation communities, which in turn assists in the development of a deep layer of organic material, which in turn traps more moisture. However, other swamps are reliant on rainfall and surface water flows, and perched ephemeral water tables may be absent or may dry out during periods of low rainfall. These differences in reliance on groundwater versus rainfall lead to differences in susceptibility to impacts.

1.2.3 Legislative Status

Upland swamps within the study area are currently listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act) as the Coastal Upland Swamp in the Sydney Basin Bioregion EEC.

Upland Swamps within the study area are not representative of the Temperate Highland Peat Swamps on Sandstone (THPSS) EEC listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The listing advice for the THPSS EEC (TSSC 2005) contains a number of criteria not met by the upland swamps within the study area, as outlined in Table 2.

Table 2: Criteria for THPSS and Comparison with Upland Swamps within the Study Area

THPSS Criteria	Upland Swamps within the Study Area
Altitudinal range of 600 – 1100 m ASL.	Altitudinal range of 350 m – 300 m ASL.
Distributional components, as defined in Table 2 of DSEWPaC (2012) and mapped by DEH (2005).	No Woronora swamps are listed as components of the THPSS. No Woronora swamps are mapped within the geographic boundaries of the EEC.
Soils are generally black to grey coloured acid, peaty soils, with a moderate to high organic matter content.	Only some swamps generate peat. Associated with waterlogged swamps.

On the basis of the criteria assessed in Table 1 upland swamps within the study area are not representative of the THPSS EEC. We understand that the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) are currently reviewing the listing of upland swamps, and that the new listing advice is likely to cover swamps on the Woronora plateau.

1.2.4 Potential Impacts

Subsidence associated with longwall mining has potential to result in changes to hydrological processes within upland swamps. There are two broad mechanisms by which subsidence can result in impacts to upland swamps, as summarised in Table 3 below.

Table 3: Mechanisms for and Impacts to Upland Swamp Resulting from Subsidence

Broad mechanism	Potential Impacts
Fracturing of bedrock as a result of tensile and compressive strains, resulting in increased transportation of water through this fracture network.	Lowering of the water table below a swamp, leading to dewatering and drying of the swamp and lower levels of soil moisture. This can in turn, result in changes to vegetation composition within swamps.
Changes in gradients within a swamp, as a result of tilts associated with subsidence, leading to	Changes to the gradients within a swamp can lead to increased accumulation of water in some areas

potential for redistribution of water within a swamp.	and reduced accumulation in other areas. This, in turn, can result in changes to vegetation composition within swamps.
	Changes in flow regimes within swamps result in the re-concentration of flows within a swamp, potential for development of nick points and potential for scouring and erosion.

Vegetation sub-communities within upland swamps that are reliant on certain hydrological regimes differ in their susceptibility to impact. Vegetation sub-communities reliant on permanent water are most likely to be reliant on shallow groundwater flows or accumulation of surface water against flow impeters such as rockbars, accumulation of logs or other obstructions. These sub-communities, including Tea-tree Thicket (MU43) and Cyperoid Heath (MU44c), are particularly susceptible to impacts resulting from fracturing of the bedrock and a decrease in soil moisture (Keith *et al.* 2006). Changes in gradient within a swamp, resulting in increased water accumulation are likely to favour transition from drier sub-communities, such as Banksia Thicket (MU42), Sedgeland (MU44a) and Restioid Heath (MU44b), to wetter sub-communities such as Cyperoid Heath (MU44c) and Tea-tree Thicket (MU43; Keith *et al.* 2006). Changes in gradient resulting in more rapid transportation of water and less pooling are likely to favour transition from wetter sub-communities to drier ones (Keith *et al.* 2006).

Valley infill swamps are considered more susceptible to scouring and erosion due to increased flow rates through these swamps (Earth Tech 2003, PAC 2010, OEH 2012). Headwater swamps are likely to be less susceptible to impact for a variety of reasons, including:

- lower flow rates within the swamp, resulting from more dispersed sheet flow of water across the swamp;
- less reliance on perched ephemeral groundwater systems when compared with valley infill swamps; and,
- less susceptibility to non-conventional subsidence effects, such as valley closure, buckling and shearing.

Scour pools within a swamp are a good indicator of susceptibility to erosion (Tomkins & Humphrey 2006).

For these reasons, impacts to upland swamps resulting from subsidence associated with longwall mining are considered a 'major concern' (PAC 2010).

1.3 Scope of assessment

NRE has engaged Biosis to undertake a detailed and comprehensive assessment of upland swamps within their Wonga East and Wonga West study areas, to allow a detailed and comprehensive impact assessment to be undertaken.

The objectives of this assessment are to:

- Accurately map the boundaries of upland swamps within the Wonga East and Wonga West areas.
- Undertake detailed mapping of vegetation sub-communities within upland swamps.
- Undertake an impact assessment to determine those significant upland swamps considered at significant risk from subsidence associated with longwall mining of Wonga East and Wonga West.

1.4 Location of the study area

The study area is located on the Woronora plateau, approximately 8 km north of Wollongong and approximately 70 km south of the Sydney CBD (Figure 1).

The NRE No1 Major Expansion Project includes longwall mining of the Wongawilli seam in two areas referred to as Wonga East and Wonga West (Figure 2). The study area is defined as an area incorporating a 600 m buffer from the edge of secondary extraction.

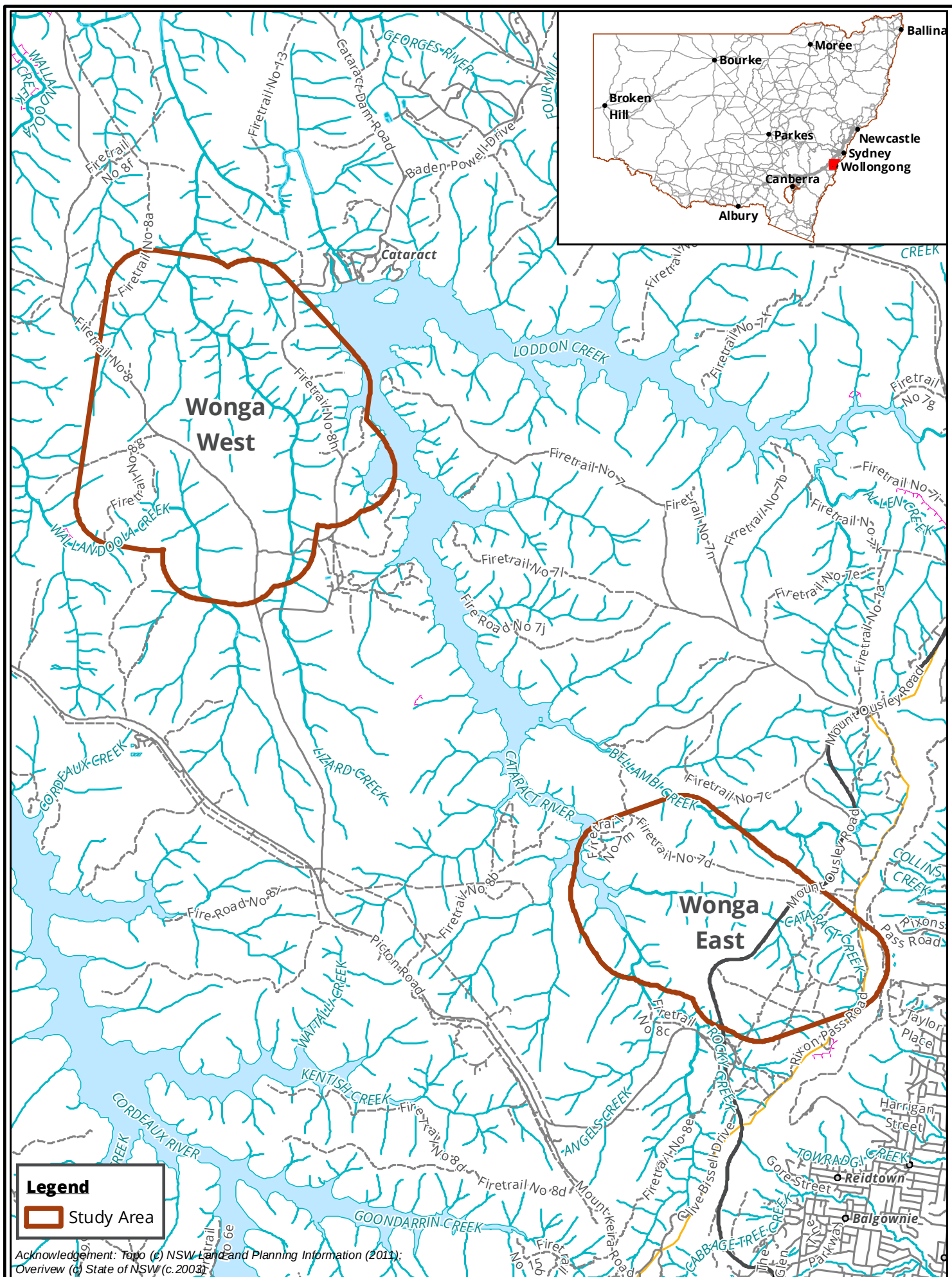
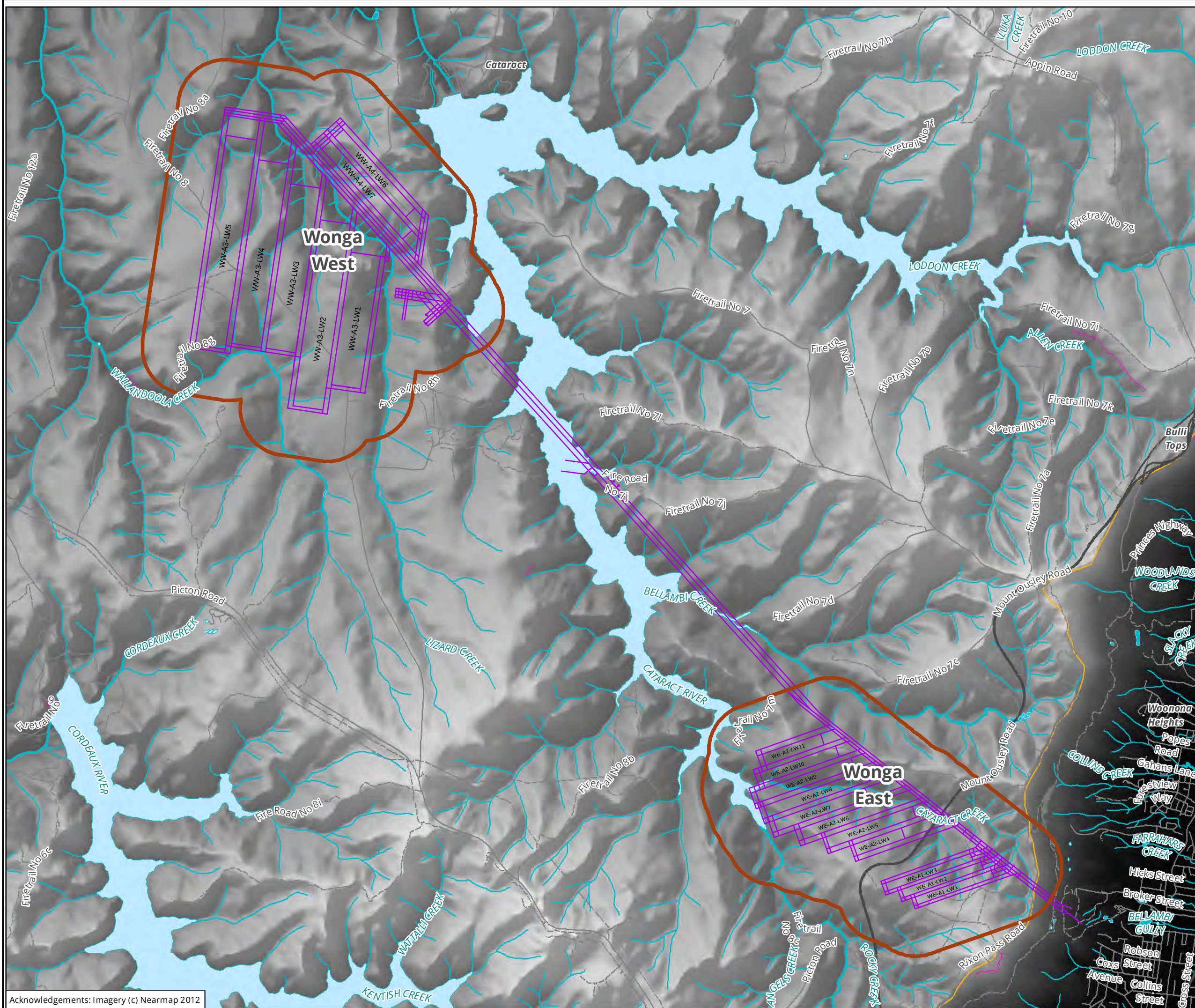


Figure 1: Location of the study area, in a regional context



Legend
 Study Area
 Longwalls

Figure 2: Location of the study area, showing Wonga East and Wonga West

0 0.45 0.9 1.35 1.8 2.25
 Kilometers
 Scale: 1:45,000 @ A3
 Coordinate System: GDA 1994 MGA Zone 56

 Biosis Pty Ltd
 Ballarat, Brisbane, Canberra, Melbourne,
 Sydney, Wangaratta & Wollongong

Matter: 15094,
 Date: 05 October 2012,
 Checked by: NMG, Drawn by: apritchard
 Location: P:\15000s\15094\Mapping\Report Figures\15094 F2 Overview

2. Methods

2.1 Detailed Mapping of Upland Swamps

Upland swamps were mapped using a combination of Light Detection and Ranging (LiDAR) data, to define areas requiring further investigation, ground truthing of these areas in the field to define swamp boundaries and map swamp sub-communities and use of a Geographic Information System (GIS) to spatially represent data. This methodology is outlined further below.

2.1.1 Mapping of 'Potential Wetlands'

LiDAR data was obtained by AAM Group (previously AAM Hatch) using Airborne Laser Scanning (ALS) from a fixed wing aircraft on 20 October 2009.

Initial areas of 'Potential Wetland' were determined in an automated process using a series of GIS analysis tools in ArcGIS, which were combined into a single ArcGIS Model Builder geoprocessing model.

A CSV file, containing the raw LiDAR non-ground returns, was converted into a point feature class with one point for every captured non-ground return. The points were converted to a raster using the 'Topo to Raster' geoprocessing tool within ArcGIS Spatial Analyst to convert the points to a continuous raster surface. The matching CSV file, containing the raw LiDAR ground points, was converted to point data. The points were converted to a raster DEM using the same tool and parameters as the non-ground. A Canopy Height Model (CHM) was developed by subtracting the values of the ground raster from the non-ground raster. This CHM was then run through the 'Focal Statistics' tool in ArcGIS to produce a focal range raster. The output raster created by this tool represents the rate of change in the height of vegetation within a 1m² neighbourhood. It was taken that a high rate of change within this relatively small area would be likely to signify the boundary of a swamp.

The range values were then reclassified into categories in order to create hard breaklines between what was possibly swamp and what was likely taller, fringing vegetation. After discussion with experts on upland swamps within Biosis and some testing and evaluation of data in areas of known swamp it was decided that a rate of change greater than 2 m within a 1 m neighbourhood appeared to give the best indication of a potential swamp boundary. Although there may be instances where different vegetation communities within a swamp create a change greater than 2 m height within 1 m of travel, this option gave the closest representation of the boundary of the previously mapped control swamps whilst filtering out 'background noise' in the data.

The range raster by itself showed many areas where the rate of change was less than 2 m within a 1 m neighbourhood outside swamp areas due to thick canopy coverage of mature trees of similar height. To remove these areas the range raster it was run through the Conditional (Con) geoprocessing tool within ArcGIS to only retain areas of the range raster where the total vegetation height was less than 6 m. This was considered representative of swamps where vegetation rarely exceeds 6 m in height. The con raster was then converted to polygons representing a first cut of potential swamp land.

Following the automated process of LiDAR data into potential wetland polygons, further manual 'cleaning' of the polygons was required to further filter out false positives. The polygons were dissolved so any with overlapping or coincident boundaries were treated as a single swamp. After comparison with the known swamp control dataset, it was decided that only polygons over 1000 m² should be kept in order to filter out further 'background noise'. Any obvious false positives, including areas such as clearings, rods and waterbodies, were manually removed from the dataset using aerial imagery interpretation.

The polygons were then loaded on GIS capable field computers for field staff to locate and ground-truth.

2.1.2 Detailed Ground Truthing and Mapping of Vegetation Sub-communities

Following automated mapping of 'Potential Wetlands' these areas were ground-truthed to determine whether areas mapped were representative of upland swamps. A team of botanists experienced with the identification of upland swamps on the Woronora plateau visited all potential upland swamps.

Some areas mapped as 'Potential Wetland' consisted of rocky outcropping, mallee, dry heath vegetation or sparse canopy. These areas were excluded from further analysis.

Areas of upland swamp were assessed in detail. Boundaries of all swamps were mapped accurately using a combination of LiDAR data, ground-truthing using a handheld GPS and aerial photo interpretation (API). Where boundaries obtained during the automated processing of LiDAR data did not accurately reflect swamp boundaries these boundaries were revised using API and marked on printed field maps.

Vegetation sub-communities present within swamps were mapped using a combination of ground-truthing using a handheld GPS and API. Sub-communities were mapped according to community profiles contained within *The Native Vegetation of the Woronora, O'Hares and Sydney Metropolitan Catchments* (NPWS 2003), and included those communities considered part of the Coastal Upland Swamp EEC (NSW Scientific Committee 2012), including:

- MU 42 Upland Swamps: Banksia Thicket;
- MU43 Upland Swamps: Tea-tree Thicket;
- MU44 Upland Swamps: Sedgeland Heath Complex;
 - MU44(a) Sedgeland;
 - MU44(b) Restioid Heath;
 - MU44(c) Cyperoid Heath.

The NSW Scientific Committee Final Determination for Coastal Upland Swamp EEC (NSW Scientific Committee 2012) was also used as a key reference when classifying upland swamps.

Photos were taken of each swamp and photo points were recorded using a hand held GPS.

Following field assessment the results of detailed ground-truthing were digitised in a GIS. Boundaries of upland swamps and of sub-communities within swamps were refined, in collaboration with GIS staff using API. Where swamp boundaries continue beyond the Study Area polygons have been created based on a combination of aerial photo interpretation and NPWS (2003) vegetation mapping.

2.1.3 Classification and Naming of Upland Swamps

Upland swamps were classified into headwater swamps or valley infill swamps. Headwater swamps form in the headwater tributaries with gentle gradients less than 10 degrees, where plateau incision is weak. Valley infill swamps are formed in the incised valleys of second or third order streams and tend to elongate along the valley (Tompkins & Humphrey 2006, DoP 2008).

However, these traditional concepts for differentiation of upland swamps were difficult to implement as a part of this study, particularly for upland swamps in Wonga West where a number of what appeared to be narrow valley infill swamps were located on first order streams in low gradient areas, while complex mosaics of headwater and valley infill swamps occurred in other areas. In addition, the majority of upland swamps within the study area were found to occur on slopes less than 10 degrees. An alternate method for the classification of upland swamps was required.

To attempt to differentiate upland swamp types an analysis of slope and flow accumulation modelling (Section 2.2) was undertaken to define the slope and / or flow accumulation that delineated these two swamp types. Interpretation of mean flow accumulation indicated that swamps appeared to differentiate

at a mean flow accumulation of 25,000 m², with upland swamp located in second and third order drainage lines having flow accumulations higher than this value. Using this differentiation point, each of the vegetation sub-communities was assigned to either headwater or valley infill swamp type.

Upland swamps were then grouped for naming and further analysis. Initially, areas of upland swamp vegetation connected by Fringing Eucalypt Woodland (MU45) or Mallee Heath (MU46), or upland swamp vegetation separated by rocky outcropping, were grouped and considered part of the one upland swamp complex. In areas where connectivity between proximate upland swamps was not obvious, slope and flow accumulation modelling were used to identify whether these swamps are independent or whether these swamps should be considered as the one upland swamp complex. Where upland swamps were located in close geographic proximity and were part of the same flow pathway and / or located along terraced slopes they were grouped together. Following an initial classification using this method, further refinement of swamp groups was undertaken, as initial observation indicated that some swamps that would otherwise be considered part of the same swamp were, in fact, located along different flow pathways. An extreme example of this is shown in Figure 3.

Swamps were then named based on the catchment they were positioned within, generally working from the upstream to downstream extent. Where a valley infill and headwater swamp were connected this was considered to form one functional unit, and therefore considered part of the same upland swamp. However, due to potential differences in type and degree of impacts they have been considered separately where appropriate.

2.2 Analysis of Upland Swamp Using a Geographic Information System

GIS analysis was undertaken using 1 m LiDAR data to create a number of analytical surfaces using ESRI ArcGIS 10.1 Spatial Analyst tools to produce layers and statistics used to categorise the terrain and water flow through individual swamp vegetation communities. The steps used to create this data are outlined below.

2.2.1 Slope and Flow Analysis

One metre thinned ground LiDAR data was converted to a continuous raster digital elevation model (DEM) using the Topo to Raster tool which interpolates point and contour data into a hydrologically corrected, continuous elevation surface that is the basis for many other analyses. The DEM was run through the Spatial Analyst slope tool to produce a surface showing degree of slope across the Study Area. Slope statistics pertaining to the boundaries of vegetation communities within coastal upland swamps previously modelled and ground-truthed by Biosis, were calculated using the Zonal Statistics as Table tool. This produced a table showing the minimum, maximum, sum, mean and standard deviations of slope within each of the vegetation patches. The table was joined to the original swamp vegetation community polygons, which were then symbolised along a range using these statistics in order to characterise the relationship between the vegetation communities and slope.

The 1 m DEM was run through the Fill tool in Spatial Analyst to create a depression-less DEM. This tool fills any sinks in the DEM created by errors in the data or natural areas of pooling to remove barriers to flow through these areas and allow analysis of flow paths and accumulation across the DEM. A flow direction surface was created from the depression-less DEM as an intermediate step required for analysing flow accumulation. A flow accumulation surface was produced from the flow direction model. The flow accumulation model shows for each cell in the accumulation raster, how many cells upstream of the subject cell flow into any given point across the model. This effectively represents how large the catchment area of any given point on the surface and the path the accumulated water will take from its source to its outfall. Although flow accumulation models flow pathways through the landscape based on flow direction, it does not provide a representation of creeks per se, and should not be taken as such.

Similarly, to the slope analysis, statistics of minimum, maximum, mean, total and standard deviation of flow through each mapped upland swamp vegetation community were calculated using the Zonal Statistics tool. The resulting statistics table was joined back to the swamp polygons for further analysis.

2.2.2 Subsidence Calculations

The predicted effects of modelled 'upper bound scenario' mining subsidence were investigated by creating additional slope and flow surfaces using a DEM adjusted to show surface levels following modelled subsidence. The methods used to create these surfaces are as follows:

- Predicted mining subsidence 'worst case scenario' contours provided by Seedsman (2012) were interpolated using the 'Topo to Raster' tool to produce a predicted subsidence surface;
- This subsidence surface was subtracted from the DEM modelled from the LiDAR data to produce a predictive DEM showing adjusted surface levels following 'worst case scenario' vertical shift due to mine subsidence;
- The adjusted DEM was converted to a slope surface as per the method use to model the unadjusted DEM; and
- The adjusted DEM was converted to a flow accumulation layer using the same methods and parameters applied to the original DEM.

Zonal statistics were calculated for each swamp community using the predicted post mining subsidence flow accumulation surface. The resulting data was then joined back to the original swamp vegetation community boundaries polygon layer. The matching pre-mining statistical values were then subtracted from the post mining statistic values. This resulted in negative values where a net loss of flow and positive values where a net gain in flow through a community was predicted. The resulting values were also used to represent the magnitude of the change in water flowing through a given community.

Spatial layers of the flow accumulation models were created to show darkening colour along an identical scale so that pre and post mining flow scenarios could be visually compared to show diversion of water through individual swamps and communities.

2.3 Comparison to Regional Vegetation Mapping (NPWS 2003)

Upland swamp mapping undertaken for this project was compared with mapping of upland swamps from *The Native Vegetation of the Woronora, O'Hares and Sydney Metropolitan Catchments* (NPWS 2003). NPWS (2003) acknowledge the limitations of the mapping, and the data contained within is only meant to provide a guide and should not be relied upon for detailed impact assessment.

Two regional upland swamp mapping layers were created using a Geographic Information System. The first layer included all upland swamp communities representative of the Coastal Upland Swamp EEC, and included:

- MU 42 Upland Swamps: Banksia Thicket;
- MU43 Upland Swamps: Tea-tree Thicket;
- MU44 Upland Swamps: Sedgeland Heath Complex;
 - MU44(a) Sedgeland;
 - MU44(b) Restioid Heath; and
 - MU44(c) Cyperoid Heath.

This layer was cropped at the boundaries of the study area.

A second layer was created where boundaries between vegetation sub-communities were dissolved to create a Coastal Upland Swamp EEC layer. From this layer the number of upland swamps in each area, the total area of upland swamp and the total area for each vegetation sub-community were calculated.

Comparisons were then made between swamp mapping from NPWS (2003) and data obtained as a part of this assessment.

2.4 Significance and Impact Assessment

The impact assessment was undertaken in two stages. The first stage involved the undertaking of an impact assessment according to the Draft *Upland Swamp Environmental Impact Assessment Guidelines* (OEH 2012).

The second stage involved an assessment of the potential for upland swamps of 'special significance' to be impacted based on a variety of features, including an initial risk assessment according to OEH (2012), comparative analysis of upland swamps that have previously been undermined, changes to flow accumulation and potential for fracturing of bedrock and desiccation.

2.4.1 Assessment of 'Special Significance'

The assessment of 'special significance' of upland swamps was undertaken according to OEH (2012). This document sets out five criteria for determining whether upland swamps are considered of 'special significance', including:

- Statutory thresholds;
- Substantial size;
- Unusual complexity;
- Closely proximal habitat (swamp clusters); and,
- Scientific research importance.

An upland swamp is considered to be 'special significance' if it meets three out of the five 'special significance' criteria (OEH 2012).

All upland swamps mapped as a part of this assessment form part of the Coastal Upland Swamp EEC, and therefore meet the statutory threshold criterion. In addition, a number of upland swamps within the study area are, either known to support threatened species and / or provide potential habitat for threatened species.

There are four key clusters of upland swamps on the Woronora plateau; Maddens Plain; Wallandoola Creek; North Pole; and Stockyard. Upland swamps within the study area form part of the Wallandoola Creek cluster, and therefore meet this criterion.

OEH (2012) defines upland swamps as being of scientific research importance if they are important reference sites, contain unique features or resources for scientific study, are part of a network of research sites or are part of a research project. OEH (2012) maps upland swamps of scientific research importance. Upland swamps within the study area are not considered of scientific research importance.

All upland swamps with a size greater than 7.4 ha are considered substantial in size. This size threshold represents the top 10% of upland swamps on the Woronora plateau.

To meet the criterion for unusual complexity (biodiversity), swamps must contain Tea-Tree Thicket (MU43) or contain all vegetation sub-communities. If the assessment is relying solely on NPWS (2003) mapping, the presence of Tea-Tree Thicket (MU43) is used to indicate that other vegetation sub-communities are

likely to be present. If independent assessment of vegetation sub-communities is undertaken then an upland swamp must contain all vegetation sub-communities, including Banksia Thicket (MU42), Tea-tree Thicket (MU43) and Sedgeland-Heath Complex (MU44), to be considered unusually complex. As all upland swamps were ground-truthed, and detailed mapping of vegetation sub-communities undertaken, upland swamps must contain all vegetation sub-communities to be considered unusually complex.

2.4.2 Assessment of Potential for Impact

Those upland swamps considered to be of 'special significance' were subject to an impact assessment to determine whether an impact to these upland swamps is predicted to occur.

OEH (2012) requires proponents to undertake a preliminary prediction of subsidence levels under upland swamps and compare this to subsidence criteria outlined in PAC (2010) to determine upland swamps considered to be at risk of negative environmental consequences. These criteria include:

- all swamps subject to systematic tensile strains $> 0.5 \text{ mm / m}$;
- all swamps subject to systematic compressive strains $> 2 \text{ mm / m}$;
- all swamps with depth of cover less than 1.5 times longwall panel width;
- all swamps subject to tilt (transient or final) $> 4 \text{ mm/ m}$;
- all swamps subject to valley closure of $> 200 \text{ mm / m}$; and,
- all swamps subject to a maximum observed closure strain $> 7.0 \text{ mm / m}$.

However, given the inexact nature of subsidence predictions OEH (2012) also request that a comparative analysis of subsidence levels from past mining operations and observed impacts to upland swamps is undertaken.

Due to the difficulty with obtaining subsidence data on previous mining operations in conjunction with monitoring data from upland swamps an alternate approach was considered warranted by the current assessment. Hydrology, particularly shallow groundwater and surface water flows, is a key component in the formation and maintenance of upland swamps. As detailed in Section 1.2.4, changes in hydrology resulting from subsidence associated with longwall mining have potential to result in impacts to upland swamps. Thus it was deemed that an assessment of hydrology was critically important to undertaking any risk assessment.

For this reason the following work was also undertaken to inform the risk assessment:

- Hydrological assessment undertaken by Geoterra Pty Ltd;
- Analysis of flow accumulation pre- and post-mining, taking into account subsidence predictions (Seedsman 2012); and,
- Predicted compressive and tensile strains to determine areas that may be subject to fracturing of bedrock.

It was deemed that these analyses, considered in conjunction, would provide best practice predictions for upland swamps considered at risk of impact as a result of longwall mining in Wonga East and Wonga West.

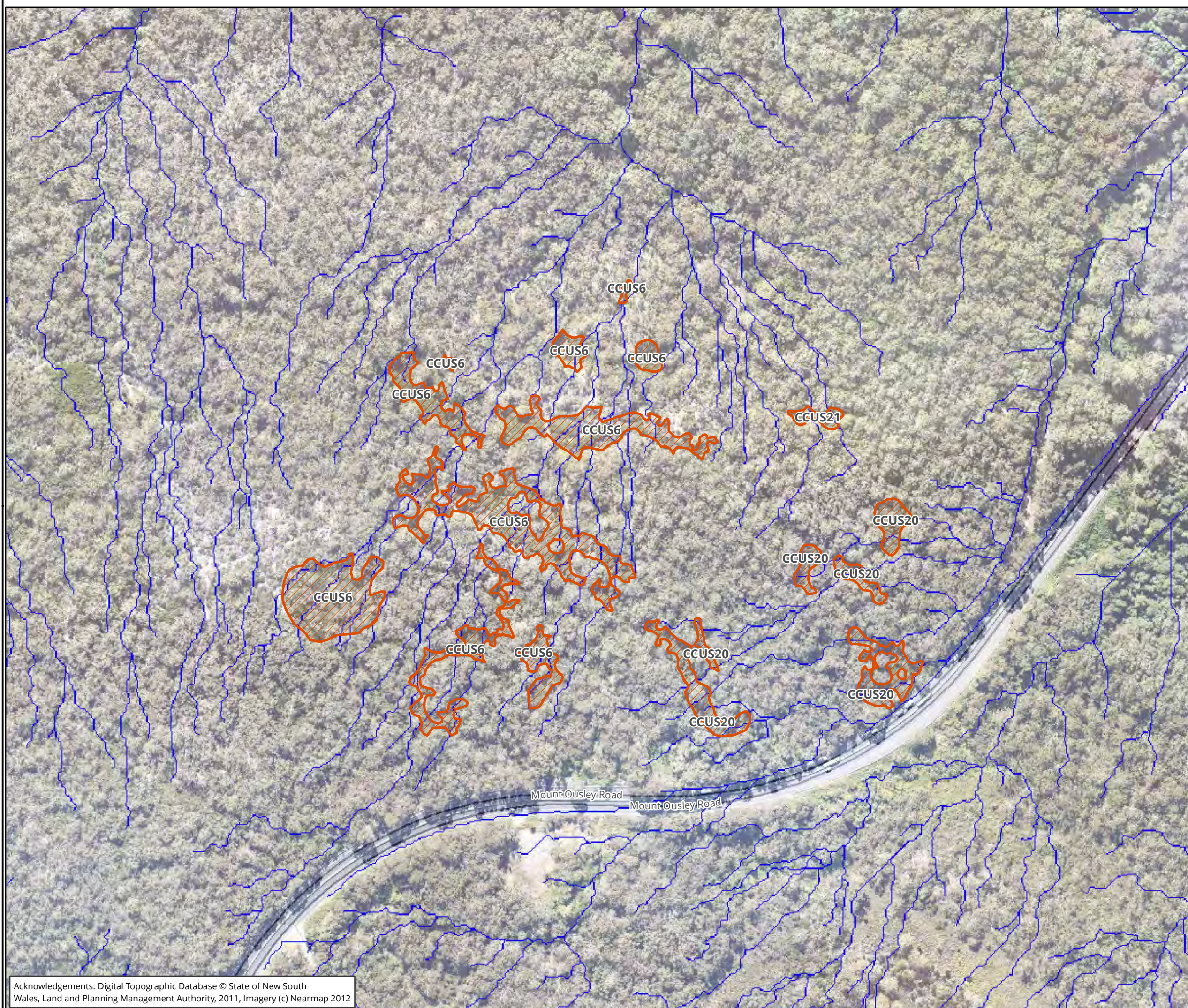
2.5 Qualifications

Areas of Upland Swamp: Fringing Eucalypt Woodland (MU45) were not mapped as a part of this assessment. At the margins of swamps this vegetation community intergrades with surrounding Eucalypt woodland, and is difficult to differentiate in many areas. In addition, the methods used for this project to

map upland swamps excluded areas of this community due to presence of a tree layer greater than 6 m in height.

Flow accumulation modelling does not provide an assessment of streams within the study area, and should not be used as such. Flow accumulation models flow pathways from the start of a catchment and models catchment areas. Flow accumulation modelling provides an indication of changes to catchment areas and potential pathways.

Subsidence predictions are inexact and provide a guide for understanding potential subsidence effects. Analysis based on these will also have the same level of uncertainty and provide a guide only.



Legend

Upland Swamp

Flow Accumulation

Nil

Flow Accumulation

Figure 3: Swamp CCUS6, CCUS20 and CCUS21 showing how slope and flow accumulation can be used to group swamps

0 30 60 90 120 150

Meters
Scale: 1:3,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56

biosis
Biosis Pty Ltd

Ballarat, Brisbane, Canberra, Melbourne,
Sydney, Wangaratta & Wollongong

Matter: 15094,
Date: 26 September 2012,
Checked by: NMG, Drawn by: ANPjshepherd
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3. Results

3.1 Description Classification of Upland Swamps

3.1.1 Wonga East

A total of thirty-nine (39) upland swamps were recorded within Wonga East (Figure 4). Of these, fourteen (14) are within the predicted limits of subsidence.

Size ranged from 0.04 ha to 9.84 ha with an average of 1.26 ha. All swamps within Wonga East are headwater swamps.

The majority of upland swamps in Wonga East (34/39) support Banksia Thicket (MU42), with twenty (20) upland swamps supporting only this vegetation sub-community. Ten (10) upland swamps support Tea-tree Thicket (MU43). Six (6) upland swamps support a complete range of upland swamp vegetation sub-communities (MU42, MU43 and MU44).

Seven (7) uplands swamp in Wonga East are considered to be of 'special significance' according to criteria set out in OEH (2012) (see Section 4.1). All swamps within Wonga East meet criteria for statutory thresholds (Coastal Upland Swamp EEC) and closely proximate habitat (all are part of the Wallandoola Creek cluster). CRUS1 is considered to be of 'special significance' based on size in addition to the criteria above, while CCUS1, CCUS4, CCUS5, CCUS10, CRUS2 and CRUS3 are considered to be of 'special significance' due to the complexity of vegetation sub-communities within these swamps, as all support Banksia Thicket (MU42), Tea-tree Thicket (MU43) and Sedgeland-Heath Complex (MU44a,b,c). Of these significant swamps, five (5) have potential to be subject to subsidence (CCUS1, CCUS4, CCUS5, CCUS10 and CRUS1).

A detailed description of each upland swamp within Wonga East is provided in Appendix 1.

3.1.2 Wonga West

A total of forty-five (45) upland swamps were recorded within Wonga West (Figure 5). Of these, thirty-six (36) are within the predicted limits of subsidence.

Size ranged from 0.06 ha to 129.89 ha with an average of 4.79 ha. Wonga West contains a mix of headwater and valley infill swamps, with four upland swamps (LCUS1, LCUS6, LCUS8 and WCUS4) containing both headwater and valley infill swamp types. However, as these swamps are functioning as one larger swamp they have been named as such.

Upland swamps in Wonga West are diverse in the vegetation sub-communities they support. Restioid Heath (MU44b) was the most abundant vegetation sub-community, with twenty-seven (27) upland swamp supporting this community of which thirteen (13) supporting only this community. Twenty-six (26) upland swamps support Banksia Thicket (MU42), with twelve (12) upland swamps supporting only this vegetation sub-community. Thirteen (13) upland swamps support Tea-tree Thicket (MU43). Six (6) upland swamps support a complete range of upland swamp vegetation sub-communities (MU42, MU43 and MU44).

Eight (8) upland swamps in Wonga West are considered of 'special significance' according to criteria set out in OEH (2012) (see Section 4.1). All swamps within Wonga West meet criteria for statutory thresholds (Coastal Upland Swamp EEC) and closely proximate habitat (all are part of the Wallandoola Creek cluster). WCUS4 is considered to be of 'special significance' based on size in addition to the criteria above. LCUS6, LCUS8, LCUS27, WCUS7 and WCUS11 are considered to be of 'special significance' due to the complexity of vegetation sub-communities within these swamps, as all support Banksia Thicket (MU42), Tea-tree Thicket (MU43) and Sedgeland-Heath Complex (MU44a, b, c). LCUS1 and WCUS1 are considered to be of 'special

significance' due to size and complexity. Of these significant swamps, seven (7) are predicted to be subject to subsidence.

A detailed description of each upland swamp within Wonga West is provided in Appendix 1.

3.2 Comparison with Regional Vegetation Mapping (NPWS 2003)

Comparison between mapping of upland swamp with that by NPWS (2003) indicated that upland swamps are more complex, more numerous and differ in extent when compared to data from NPWS (2003). The limitations of the sampling, analysis and mapping are however acknowledged by NPWS (2003).

Summary statistics are provided in Table 4 and Table 5. A visual comparison is provided in Figure 4 and Figure 5.

Table 4: Comparison of upland swamp mapping by Biosis (2012) and NPWS (2003) for Wonga East (600 m buffer)

	Biosis (2012)	NPWS (2003)
Total No. of Upland Swamps	39	28
Total area of Upland Swamps	49.06 ha	68.04 ha
Area of Banksia Thicket (MU42)	35.15 ha	48.35 ha
Area of Tea-tree Thicket (MU43)	5.20 ha	0 ha
Area of Sedgeland-Heath (MU44)	8.71 ha	19.69 ha

Table 5: Comparison of upland swamp mapping by Biosis (2012) and NPWS (2003) for Wonga West (600 m buffer)

	Biosis (2012)	NPWS (2003)
Total No. of Upland Swamps	45	18
Total area of Upland Swamps	72.13 ha	50.79 ha
Area of Banksia Thicket (MU42)	15.76 ha	4.86 ha
Area of Tea-tree Thicket (MU43)	13.92 ha	1.67 ha
Area of Sedgeland-Heath (MU44)	42.44 ha	44.26 ha

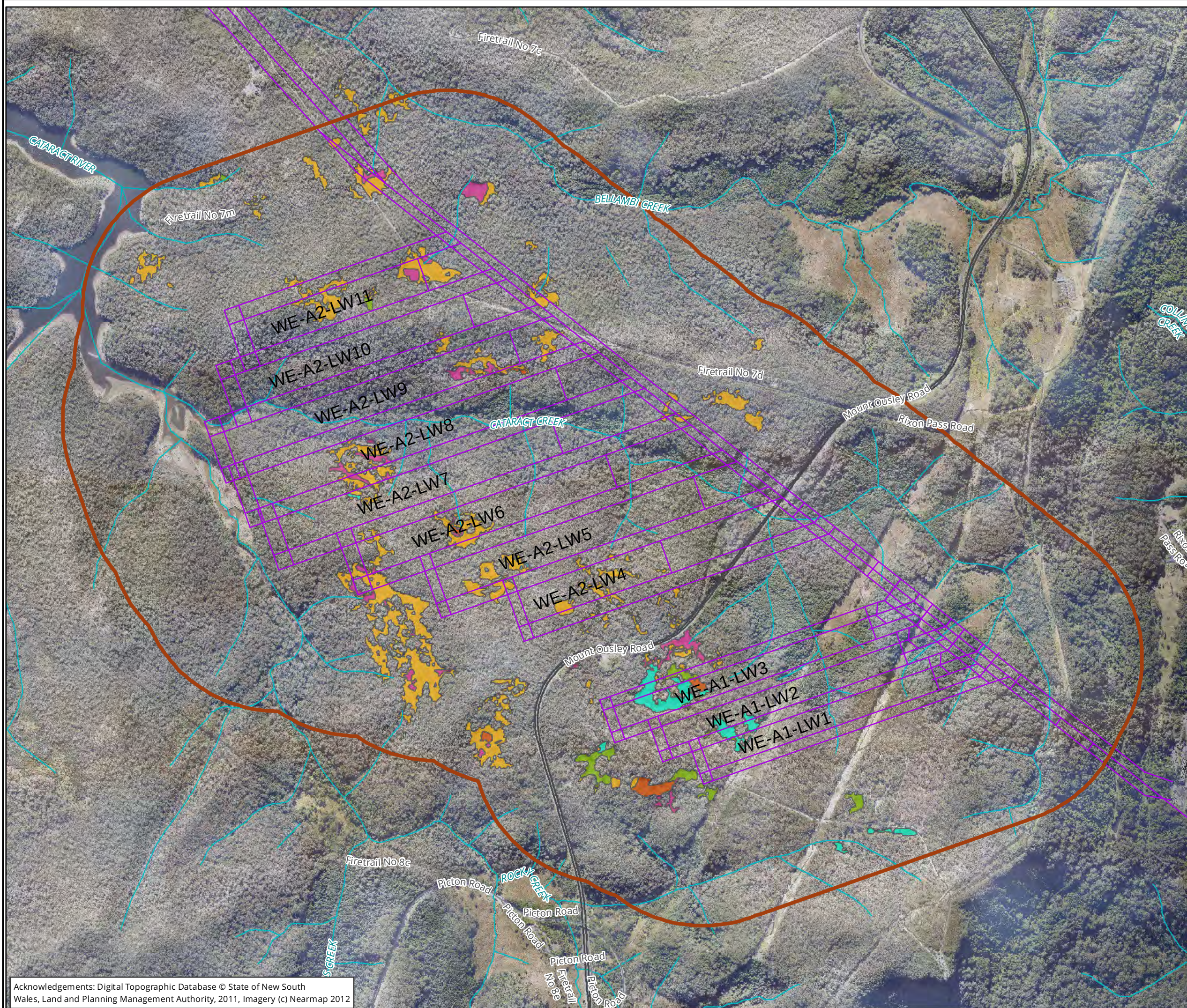
Mapping of upland swamp undertaken for this project:

- located an additional eleven (11) upland swamps at ten (10) locations in Wonga East;
- found that two areas mapped as upland swamp by NPWS (2003) in Wonga East were not upland swamp;

-
- located an additional twenty-six (26) upland swamps at twenty-two (22) location in Wonga West;
 - found that there was 18.98 ha less upland swamp within Wonga East than mapped by NPWS (2003);
 - found that there was 21.34 ha more upland swamp in Wonga West than mapped by NPWS (2003);
 - found that all Banksia Thicket (MU42) and Sedgeland-Heath Complex (MU44) were less prevalent in Wonga East than mapped by NPWS (2003) but there was Tea-tree Thicket (MU43) that had not been mapped;
 - found that Banksia Thicket (MU42) and Tea-tree Thicket (MU43) were more prevalent in Wonga West than mapped by NPWS (2003) but Sedgeland-Heath Complex (MU44) was equivalent in extent;
 - found that upland swamp are much more complex than reflected by NPWS (2003) with areas mapped as one large swamp by NPWS (2003) were often comprised of several discrete swamps separated by areas of forest or reliant upon surface flows from different locations; and,
 - found that the extent and location of vegetation sub-communities was much more complex than as shown by NPWS (2003), with swamps mapped as containing one or two areas of each sub-community were actually comprised of numerous, smaller units of each vegetation sub-community.

Detailed mapping of upland swamp using LiDAR to indicate areas for further investigation, followed by ground-truthing and detailed mapping of vegetation sub-communities within each swamp has shown that mapping of upland swamps by NPWS (2003) does not accurately represent the extent or complexity of upland swamps. As per the limitations of this mapping outlined in Section 2.3, this is to be expected based on a more detailed assessment of vegetation communities within the study area.

This, in turn, means that impact assessments based on data obtained by NPWS (2003) are unlikely to be capable of accurately predicting impacts to upland swamps. Based on observed and predicted impacts to upland swamps this lack of understanding of the micro-scale changes in soil moisture within a swamp and thus the sub-communities reliant upon it, are likely to inhibit the ability of proponents to reliably predict impacts to upland swamps. For example, this project has found that Tea-tree Thicket MU43 was much more prevalent than as mapped by NPWS (2003), with this community more dependant on permanent waterlogging and thus more susceptible to impact. In addition, mapping of Sedgeland-Heath Complex MU44 by NPWS (2003) does not reflect changes between Sedgeland (MU44a), Restioid Heath (MU44b) and Cyperoid Heath (MU44c). As Cyperoid Heath (MU44c) is reliant on intermittent waterlogging when compared to other communities within this complex to accurately predict areas most at risk proponents, need to understand this micro-scale change and complexity.



Legend

Vegetation Sub-Communities

- MU42 Upland Swamps: Banksia Thicket
- MU43 Upland Swamps: Tea-Tree Thicket
- MU44a Upland Swamps: Sedgeland-Heath Complex (Sedgeland)
- MU44b Upland Swamps: Sedgeland-Heath Complex (Restioid Heath)
- MU44c Upland Swamps: Sedgeland-Heath Complex (Cyperoid Heath)

Survey Area

- Wonga East Study Area
- Longwalls

Figure 4: Upland Swamps in Wonga East

0 0.15 0.3 0.45 0.6 0.75
Kilometers

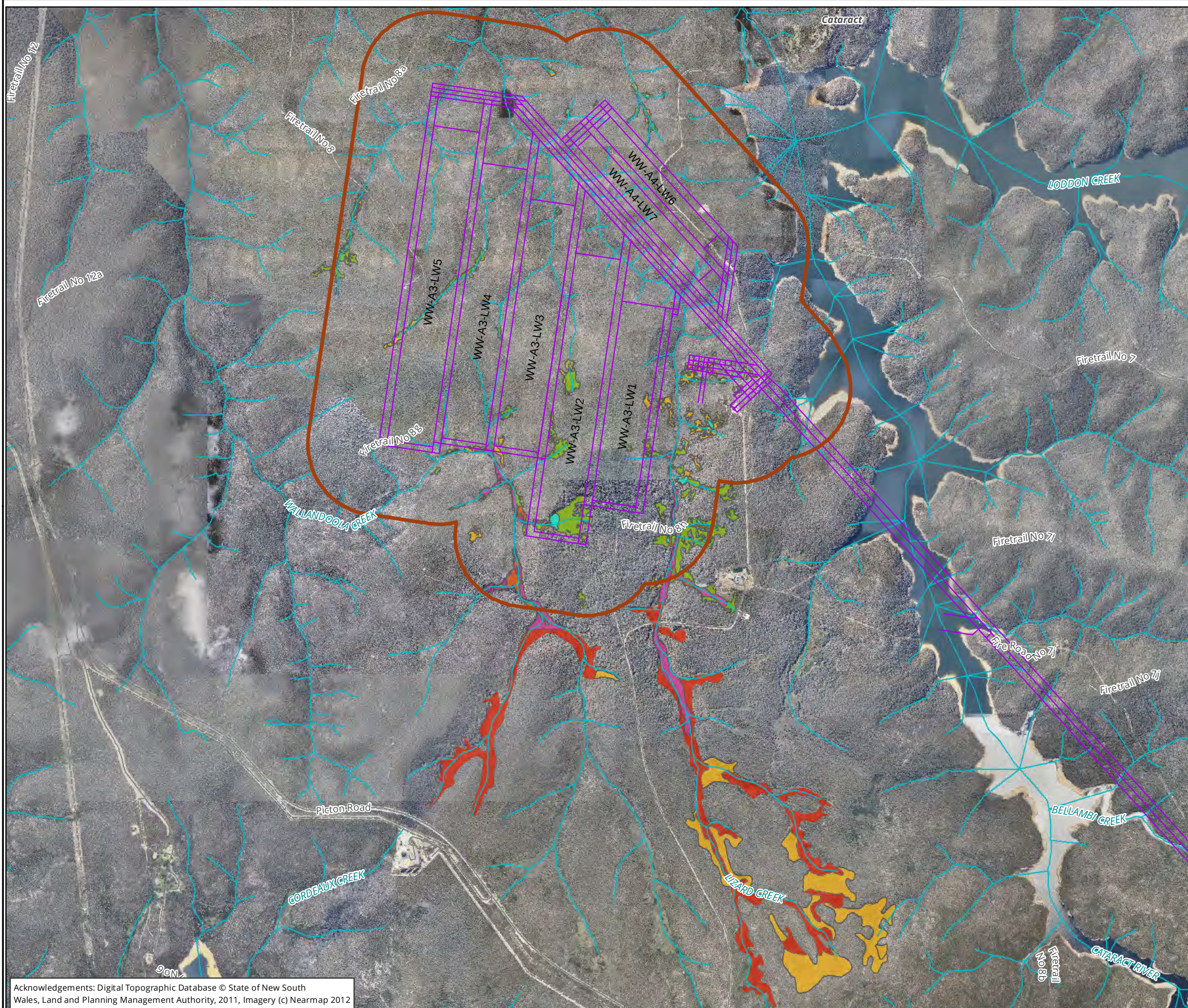
Scale: 1:15,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56



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Date: 05 October 2012,
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Legend

Vegetation Sub-Communities

- MU42 Upland Swamps: Banksia Thicket
- MU43 Upland Swamps: Tea-Tree Thicket
- MU44a Upland Swamps: Sedgeland-Heath Complex (Sedgeland)
- MU44b Upland Swamps: Sedgeland-Heath Complex (Restioid Heath)
- MU44c Upland Swamps: Sedgeland-Heath Complex (Cyperoid Heath)

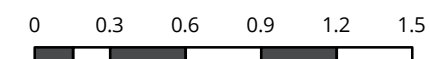
Vegetation Outside Current Study Area (NPWS 2003)

- MU44 Upland Swamps: Sedgeland-Heath Complex

Survey Area

- Wonga West Study Area
- Longwalls

Figure 5: Upland Swamps in Wonga West



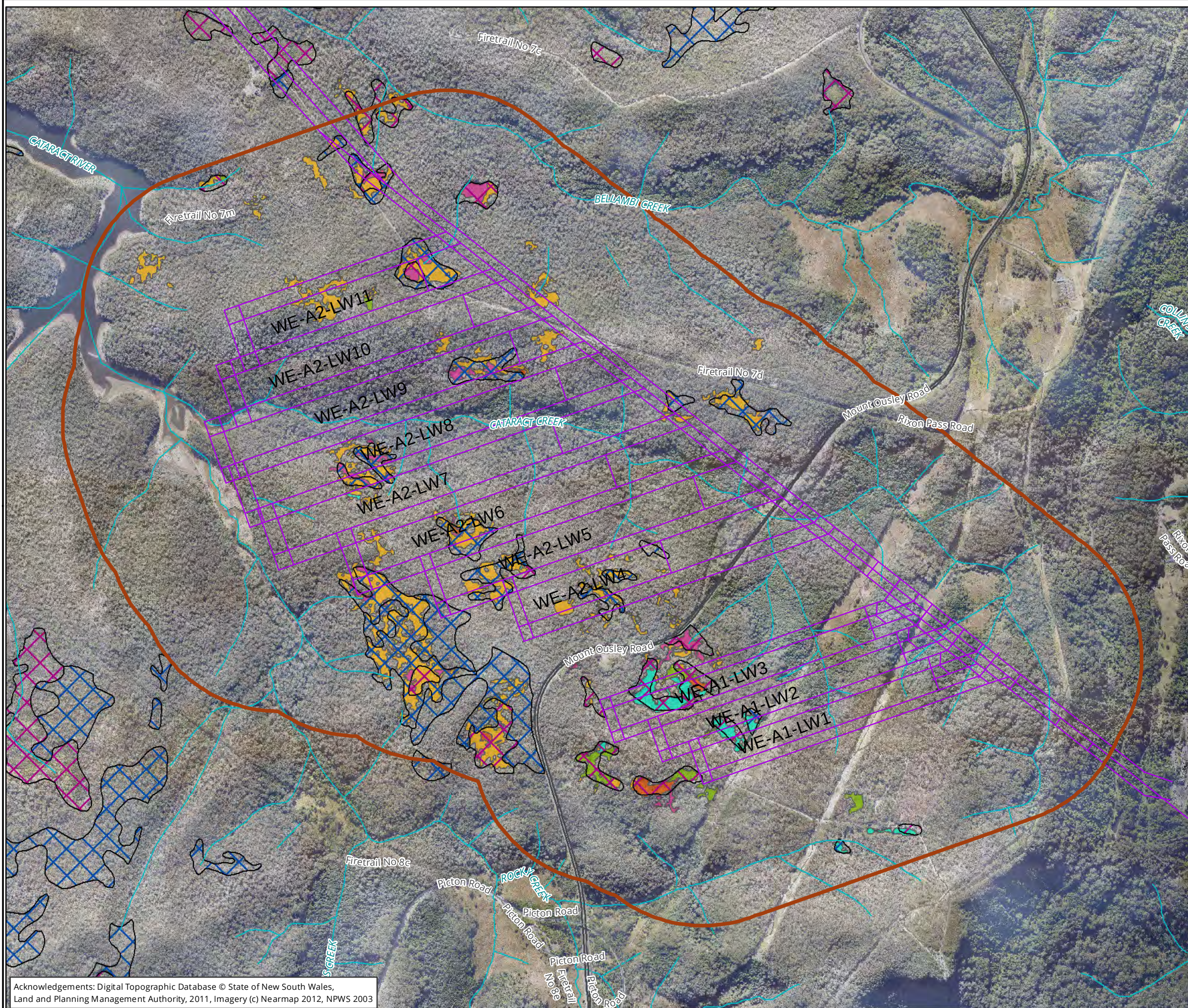
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Vegetation Sub-Communities

- MU42 Upland Swamps: Banksia Thicket
- MU43 Upland Swamps: Tea-Tree Thicket
- MU44a Upland Swamps: Sedgeland-Heath Complex (Sedgeland)
- MU44b Upland Swamps: Sedgeland-Heath Complex (Restioid Heath)
- MU44c Upland Swamps: Sedgeland-Heath Complex (Cyperoid Heath)

Vegetation Communities (NPWS 2003)

- MU42 Upland Swamps: Banksia Thicket
- MU43 Upland Swamps: Tea-Tree Thicket
- MU44 Upland Swamps: Sedgeland-Heath Complex

Survey Area

- Wonga East Study Area
- Longwalls

Figure 6: Comparison of upland swamps mapped in Wonga East with those mapped by NPWS (2003)

0 0.15 0.3 0.45 0.6 0.75
Kilometers

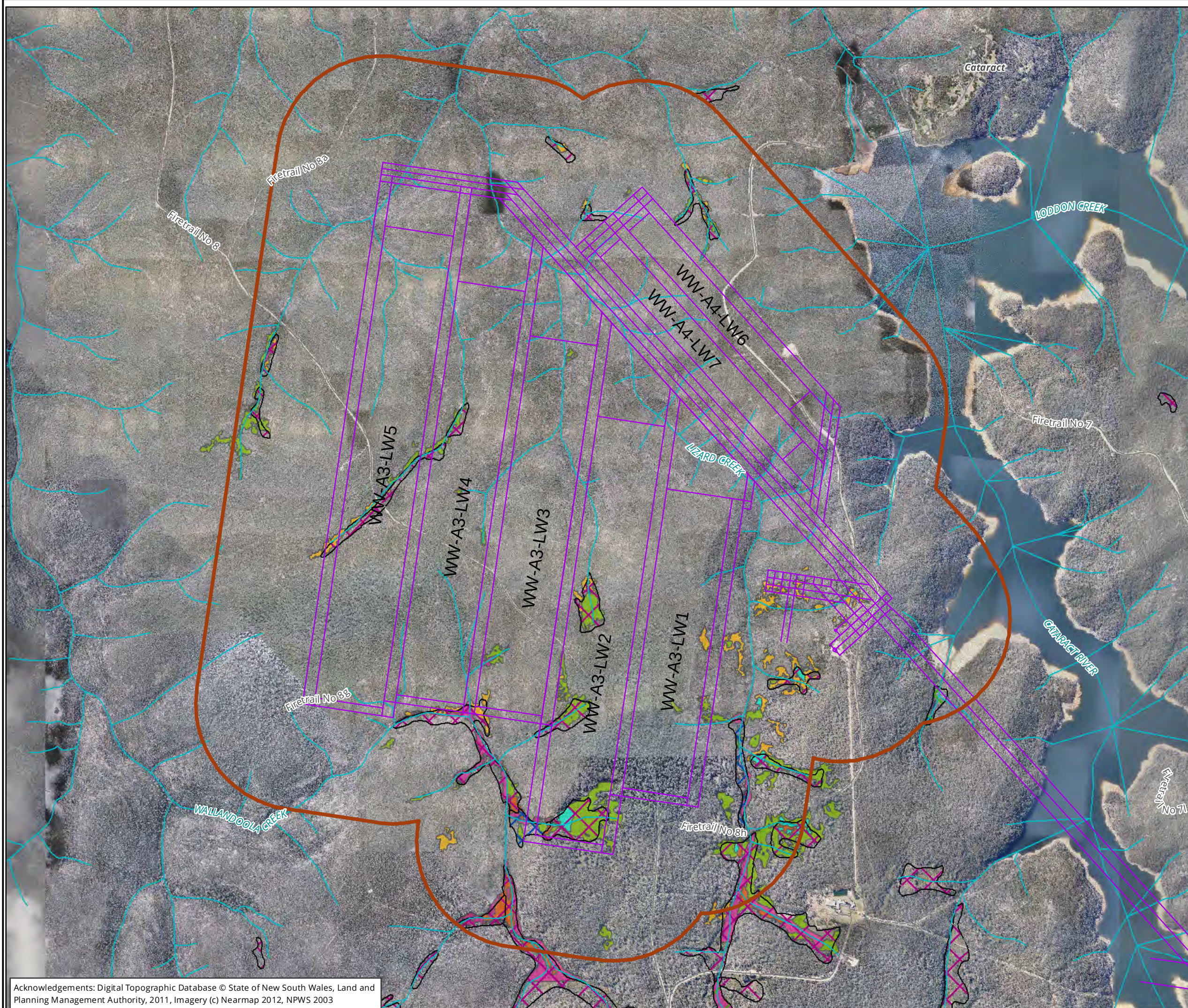
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Legend

Vegetation Sub-Communities

- MU42 Upland Swamps: Banksia Thicket
- MU43 Upland Swamps: Tea-Tree Thicket
- MU44a Upland Swamps: Sedgeland-Heath Complex (Sedgeland)
- MU44b Upland Swamps: Sedgeland-Heath Complex (Restioid Heath)
- MU44c Upland Swamps: Sedgeland-Heath Complex (Cyperoid Heath)

Vegetation Communities (NPWS 2003)

- MU42 Upland Swamps: Banksia Thicket
- MU43 Upland Swamps: Tea-Tree Thicket
- MU44 Upland Swamps: Sedgeland-Heath Complex

Survey Area

- Wonga West Study Area
- Longwalls

Figure 7: Comparison of upland swamps mapped in Wonga West with those mapped by NPWS (2003)

0 0.2 0.4 0.6 0.8 1
Kilometers

Scale: 1:20,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56



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4. Upland Swamp Significance and Impact Assessment

This section provides an assessment of impacts to upland swamps based on:

- Significance criteria set out in the *Draft Upland Swamp Environmental Impact Assessment Guidelines* (OEH 2012);
- An initial risk assessment based on subsidence criteria outlined in PAC (2010) and OEH (2012);
- A comparative analysis of previous mining and observed impacts to upland swamps;
- An analysis of groundwater levels obtained from piezometers within the study area (GeoTerra Pty Ltd);
- Analysis of slope and flow accumulation pre- and post-mining; and,
- Compressive tilts and strains and potential impacts to upland swamps.

The goal of the impact assessment was to determine upland swamps of 'special significance' considered to be at significant risk of impact as a result of subsidence associated with longwall mining.

4.1 Assessment of 'Special Significance'

All upland swamps within the study area fulfil two out of the five criteria listed in OEH (2012) for determining whether upland swamps are considered to be of 'special significance'. All upland swamps form part of the Coastal Upland Swamp EEC, and all upland swamps are part of the Wallandoola Creek cluster of upland swamps. Thus all upland swamps are considered significant on the basis of statutory thresholds and closely proximate habitat. No upland swamps within the study area are considered to be significant due to the scientific research importance criteria.

The size and complexity for all upland swamps was assessed and level of significance determined. Any upland swamp meeting three out of the five criteria listed in OEH (2012) are considered to be of 'special significance'.

The assessment of 'special significance' identified that seven (7) upland swamps in Wonga East and eight (8) upland swamps in Wonga West are of 'special significance'. Analysis for significant swamps is presented in Table 6 and Table 7. Significant swamps are shown in Figure 8 and Figure 9.

Table 6: Assessment of 'Special Significance' - Wonga East

Swamp Name	Statutory	Size (ha)	Complexity	Cluster	Scientific	Significant	Reason
CCUS1	<i>Coastal Upland Swamp EEC</i>	4.81	<i>MU42, MU43, MU44b, MU 44c</i>	<i>Wallandoola</i>	No	Yes	Statutory threshold, Closely proximate habitat, Complexity
CCUS10	<i>Coastal Upland Swamp EEC</i>	1.63	<i>Yes - MU42, MU43, MU44c</i>	<i>Wallandoola</i>	No	Yes	Statutory threshold, Closely

Swamp Name	Statutory	Size (ha)	Complexity	Cluster	Scientific	Significant	Reason
							proximate habitat, Complexity
CCUS4	<i>Coastal Upland Swamp EEC</i>	1.77	MU42, MU43, MU44c	Wallandoola	No	Yes	Statutory threshold, Closely proximate habitat, Complexity
CCUS5	<i>Coastal Upland Swamp EEC</i>	3.45	MU42, MU43, MU44a	Wallandoola	No	Yes	Statutory threshold, Closely proximate habitat, Complexity
CRUS1	<i>Coastal Upland Swamp EEC</i>	9.84	MU42, MU43	Wallandoola	No	Yes	Statutory threshold, Closely proximate habitat, Size
CRUS2	<i>Coastal Upland Swamp EEC</i>	3.12	MU42, MU43, MU44c	Wallandoola	No	Yes	Statutory threshold, Closely proximate habitat, Complexity
CRUS3	<i>Coastal Upland Swamp EEC</i>	3.42	MU42, MU43, MU44a, MU44b, MU44c	Wallandoola	No	Yes	Statutory threshold, Closely proximate habitat, Complexity

Table 7: Assessment of 'Special Significance' - Wonga West

Swamp Name	Statutory	Size (ha)	Complexity	Cluster	Scientific	SigAss	Reason
LCUS1	<i>Coastal Upland Swamp EEC</i>	129.9	MU42, MU43, MU44b	Wallandoola	No	Yes	Statutory threshold,

							Closely proximate habitat, Size, Complexity
LCUS27	<i>Coastal Upland Swamp EEC</i>	1.04	<i>MU42, MU43, MU44b</i>	<i>Wallandoola</i>	No	Yes	Statutory threshold, Closely proximate habitat, Complexity
LCUS6	<i>Coastal Upland Swamp EEC</i>	3.74	<i>MU42, MU43, MU44a, MU44b, MU44c</i>	<i>Wallandoola</i>	No	Yes	Statutory threshold, Closely proximate habitat, Complexity
LCUS8	<i>Coastal Upland Swamp EEC</i>	2.09	<i>MU42, MU43, MU44a, MU44b</i>	<i>Wallandoola</i>	No	Yes	Statutory threshold, Closely proximate habitat, Complexity
WCUS1	<i>Coastal Upland Swamp EEC</i>	36.16	<i>MU42, MU43, MU44c</i>	<i>Wallandoola</i>	No	Yes	Statutory threshold, Closely proximate habitat, Size, Complexity
WCUS11	<i>Coastal Upland Swamp EEC</i>	2.79	<i>MU42, MU43, MU44b</i>	<i>Wallandoola</i>	No	Yes	Statutory threshold, Closely proximate habitat, Complexity
WCUS4	<i>Coastal Upland Swamp EEC</i>	11.08	<i>MU43, MU44a, MU44b, MU44c</i>	<i>Wallandoola</i>	No	Yes	Statutory threshold, Closely proximate habitat, Size
WCUS7	<i>Coastal Upland Swamp EEC</i>	1.97	<i>MU42, MU43, MU44c</i>	<i>Wallandoola</i>	No	Yes	Statutory threshold, Closely proximate habitat, Complexity

Full results are presented in the Swamp matrix shown in Appendix 2. Upland swamps of 'special significance' are considered further below.

4.2 Assessment of Potential Impacts

4.2.1 Initial Risk Assessment

An initial risk assessment on upland swamps of 'special significance' was undertaken according to subsidence criteria outlined in PAC (2010) and OEH (2012). Results are presented in Table 8 and Table 9.

Table 8: Initial Risk Assessment for Wonga East (Figures in bold are greater than criteria outlined in OEH 2012)

SwampName	Ratio Depth of cover : Panel width	Tensile Strain	Compressive Strain	Max Tilt
CCUS1	2.47	2.65	-6.79	11.38
CCUS4	1.91	4.63	-8.03	21.04
CCUS5	1.89	4.74	-8.03	21.30
CCUS10	1.92	4.60	-8.74	21.39
CRUS1	1.85	4.34	-7.20	17.51
CRUS2	-	0.00	0.00	0.00
CRUS3	-	0.00	0.00	0.00

Table 9: Initial Risk Assessment for Wonga West (Figures in bold are greater than criteria outlined in OEH 2012)

SwampName	Ratio Depth of cover : Panel width	Tensile Strain	Compressive Strain	Max Tilt
LCUS1	-	0.00	0.00	0.00
LCUS6	-	0.00	0.00	1.93
LCUS8	1.27	2.75	-2.64	9.15
LCUS27	-	0.00	0.00	0.00
WCUS1	-	0.00	0.00	0.00
WCUS4	1.28	5.03	-6.97	10.58
WCUS7	1.31	5.45	-0.01	10.70
WCUS11	1.31	5.35	-3.81	8.02

Based on this initial risk assessment according to subsidence criteria outlined in PAC (2010) and OEH (2012) 'special significance' upland swamps CCUS1, CCUS4, CCUS5, CCUS10 and CRUS1 in Wonga East and LCUS8, WCUS4, WCUS7 and WCUS11 in Wonga West can be considered at risk of negative environmental consequences based on these subsidence criteria.

Special significance upland swamps CRUS2 and CRUS3 in Wonga East and LCUS1, LCUS6, LCUS27 and WCUS1 in Wonga West are considered not at risk of negative environmental consequences based on these subsidence criteria.

4.2.2 Comparative Analysis

Due to the inexact nature of subsidence predictions OEH (2012) requires an assessment of past mining and subsidence with impacts to upland swamps resulting from this subsidence. In this regard there is a significant paucity of data available to undertake such a comparative analysis.

Impacts to a very small number of upland swamps, located above mining areas, have been observed. The most notable and widely reported include Swamp 37 (Drillhole Swamp) and Swamp 18 in the Avon catchment (EarthTech 2003; Tompkins and Humphrey 2006) and Flatrock Swamp in the Woronora catchment (Tompkins and Humphrey 2006). Although hypothesised to be a contributing factor, subsidence has not been determined to be a sole reason for any observed impacts to upland swamps; however subsidence effects are believed to be a contributing factor.

The following summarises EarthTech (2003), Tompkins and Humphrey (2006) and other relevant the reports and assessments.

EarthTech (2003)

EarthTech (2003) provides an analysis of seven (7) upland swamps where longwall mining has occurred as well as eleven (11) upland swamps where bord and pillar or shortwall mining has been undertaken. These upland swamps, including a mix of headwater and valley infill swamps, were located in proximity to the former Elouera Colliery. Mining in this area has been undertaken across an extensive period of time, with bord and pillar mining being undertaken prior to the extraction of coal from the Elouera mine commencing in 1993 and extending northwards under a number of upland swamps.

Swamps 17, 18, 19, 26 and 27 are located directly above longwalls mined as part of the former Elouera colliery, while Swamps 21a and 31 are located in close proximity to these longwalls. Of these upland swamps, six (6) were found to have been subject to subsidence effects, including subsidence, cracking or collapse of underground workings. Of these, one (1) upland swamp (Swamp 18) was found to have undergone observable impacts including scouring and erosion. Swamp 19 was hypothesised to have undergone some impacts including development of scour pools; however this is likely to be a natural part of cut and fill events within this dynamic vegetation community and is not considered to be an impact per se (see below). Maximum vertical subsidence associated with the extraction of these longwalls was 1.2 m. Earth Tech (2003) hypothesised that impacts to Swamp 18 resulted from drying due to fracturing of bedrock below the swamp and a change in gradient through the swamp resulting in the re-distribution of water within the swamp. Contributing factors include the size of the swamp and alignment perpendicular to, and spanning, longwalls. Swamps where impacts were not observed (Swamps 17, 21a, 26 and 27) were smaller and generally aligned with longwalls or were not located directly above longwalls.

Swamps 20, 21b, 22, 24, 28a, 28b, 29, 30, 37a, 37b and 37c are located either partially or wholly above bord and pillar or shortwall workings. Of these upland swamps nine (9) have been subject to known subsidence effects, including subsidence, cracking or collapse of underground workings, while two may have been subject to subsidence effects. Of these, one (1) upland swamp (Swamp 37a) was found to have undergone observable changes including gully erosion and scouring. Although maximum subsidence associated with Swamp 37a was 2.4m, which is comparable to vertical subsidence from longwall extraction, mechanical disturbance (to Swamp 37a

formation of a road through the swamp) occurred prior to erosion and scouring. The presence of this form of disturbance confounds any attempts to make a conclusion on the impacts of mining.

Based on data from this report we can cautiously conclude that subsidence of 1.2 m is known to have resulted in dewatering of one (1) out of five (5) upland swamps located directly above the former Elouera colliery. This subsidence effect, in conjunction with other factors such as fire and intense rainfall, may have contributed to the erosion and scouring of Swamp 18. However, a lack of impact to four subsided swamps indicates that mining-induced subsidence is not a sole cause of erosion of upland swamps.

Tompkins and Humphrey (2006)

Tompkins & Humphrey (2006) undertook an assessment of three (3) upland swamps within the Avon and Woronora catchments to assess the causes and triggers for erosion of upland swamps.

Tompkins and Humphrey looked at past aerial photography, swamp stratigraphy, subsidence effects and fire history of Swamp 18, Swamp 37a (Drillhole Swamp) and Flatrock Swamp. All of these swamps have undergone erosion, scouring and gully formation and all have been undermined, either by longwall mining or bord and pillar mining.

By looking at swamp stratigraphy Tompkins and Humphrey (2006) were able to deduce that the erosion and filling of upland swamps is part of a natural process and that the development of scour pools is the first indication of the potential for such an event. What causes the initial formation of scour pools is not known, but is likely to be triggered by heavy rainfall.

Tompkins and Humphrey (2006) also concluded that upland swamps erode as a result of a unique set of circumstances where internal thresholds are breached. It is likely that a combination of factors, including prior erosion, fire, anthropomorphic impacts and heavy rainfall breach these thresholds.

Tompkins and Humphrey (2006) concluded that dewatering and drying of upland swamps as a result of fracturing of the bedrock may have increased the erosion potential of these upland swamps. This drying, in conjunction with fire and substantial rainfall, is likely to have increased the susceptibility of upland swamps, particularly Swamp 18, to erosion. However, they also found that no single factor could be directly implicated in the erosion of these upland swamps. The presence of scour pools was a likely indicator of future erosion.

Dendrobium Area 2 and 3A

Impacts to groundwater levels around two upland swamps within BHP Billiton's (BHPB) Dendrobium Area 3A mine have been recorded (Comur Consulting 2012). Groundwater levels in four piezometers located within Swamp 12 have exhibited a lack of sustained groundwater recovery following mining of Longwall 7. Groundwater levels in two piezometers have shown a reduced recovery of groundwater following mining of Longwall 7. This lack of sustained groundwater is concurrent with observed fracturing of creeks below both upland swamps. To date no observable impacts to these upland swamps have resulted from this reduction in groundwater levels. Longwall 7 has resulted in a maximum vertical subsidence of 1.4 m, maximum tilt of -14 mm / m and maximum strain of 7 mm / m (MSEC 2012).

At Swamp 1 in Dendrobium Area 2 a reduction in groundwater levels in piezometers located in proximity to Swamp 1 coincides with observations of surface fracturing within this upland swamp (Biosis 2011). Despite these observable subsidence effects, no erosion of Swamp 1 has been observed. Changes in flora species composition within Swamp 1 appears to be changing at a faster rate than control swamps, with species richness and diversity declining since this area was undermined (Biosis 2012). However, this decline in species richness and diversity is to be expected following fire, with obligate seeding shrubs out-competing other species and curtailing their growth (Keith *et al.* 2006).

It is too early to tell whether reductions in groundwater in Swamps 12 and 15a will result in impacts to these swamps. Observed changes in flora composition at Swamp 1 are confounded by the fire history of this swamp,

with post-fire successional change occurring as predicted by Keith *et al.* (2006). Future monitoring will provide additional information.

Other Reports

The Bulli Seam Operations PAC Report (PAC 2010) stated that impacts to a number of upland swamps has been observed, including Swamp 18 (see above), Swamp 1 in Dendrobium Area 2 and Swamp 32. Also recorded in PAC (2010) is *"the panel observed that multiple swamps either side of an undermined (and severely impacted) reach of Lizard Creek appeared to be dry and undergoing compositional change from invasion by wattles and eucalypts"* (p. 88).

No specific data on the location of any impacts, or subsidence measurements was available for this report.

Conclusion

Based on literature review completed as a part of this comparative analysis, subsidence of greater than 1.2 m may result in reductions in groundwater and resultant dewatering and drying of upland swamps. Drying of swamps may increase their sensitivity to other natural factors, such as fire and scouring, lowering thresholds for erosion events. However, this drying must be concurrent with these other contributing factors for erosion to occur.

To date there is little evidence as to whether this drying of upland swamps results in changes to the size of, or species composition within, upland swamps. Additional data is required to determine the impacts of reductions in groundwater on upland swamps.

4.2.3 Groundwater

Groundwater data is available for a limited number of upland swamps of special significance within the study area. Data is presented in Table 10 and Table 11.

Table 10: Groundwater data from upland swamps of 'special significance' in Wonga East

Upland Swamp	Peizometer	
CCUS1	-	-
CCUS4	PCc4	Shallow groundwater recharges to surface following rainfall. No drying of piezometer recorded from limited data.
CCUS5	PCc5a, PCc5b	Shallow groundwater recharges to near surface following rainfall. No drying of piezometer recorded from limited data.
CCUS10	-	-
CRUS1	PCr1	Shallow groundwater recharges following rainfall. However, one month following rainfall piezometer appears to dry out.
CRUS2	-	-

Table 11: Groundwater data from upland swamps of 'special significance' in Wonga West

Upland Swamp	Peizometer	

LCUS1	PL1a, PL1b	Shallow groundwater recharges following rainfall. Groundwater has taken 3-4 months to dry out following rainfall.
LCUS6	-	-
LCUS8	-	-
LCUS27	-	-
WCUS1	PW1	Groundwater saturated. Moderated response to rainfall as piezometer is in direct contact with stream seepage along Wallandoola Creek valley.
WCUS4	PW4	Shallow groundwater recharges following rainfall. Groundwater has taken 3-4 months to dry out following rainfall.
WCUS7	-	-
WCUS11	PW11	Shallow groundwater recharges following rainfall. Groundwater has taken 3-4 months to dry out following rainfall.

Based on this assessment of groundwater upland swamps in Wonga East and West have input from seepage associated with shallow ephemeral groundwater systems. However these upland swamps appear to dry out following periods of low rainfall, with the time to drying out varying between one (CRUS1) to several (LCUS1, WCUS4 and WCUS11) months. Drying time is also likely to be strongly influenced by climatic factors, with drying time influenced by top up events. Only one upland swamp currently monitored (WCUS1) was found to be saturated throughout the monitoring period; this upland swamp is in direct contact with stream seepage along Wallandoola Creek.

Assessment by Geoterra Pty Ltd has indicated that shallow ephemeral groundwater that is present in upland swamps is hydraulically separated, and that upland swamps are more responsive to rainfall and /drying cycles than regional aquifers.

Based on this data we can conclude that WCUS1 is saturated due to direct contact with stream seepage. Upland swamps CCUS4, CCUS5, LCUS1, WCUS4 and WCUS11 are recharged following rainfall events, but dry out during periods of extended low rainfall when the shallow groundwater table is not recharged. CRUS1 appears to dry out rapidly following recharge.

4.2.4 Flow Accumulation

Detailed analysis of flow accumulation for upland swamps determined to be of 'special significance' was undertaken, and is presented below.

Table 12: Discussion of changes in flow accumulation pre- versus post-mining for upland swamp of 'special significance' in Wonga East

Upland Swamp	Discussion of changes in flow accumulation

CCUS1	Flow accumulation modelling pre-mining indicates the presence of two main flow pathways through this upland swamp – one exiting the swamp in the northeast section of the swamp and one in the southeast section of the swamp. These exit points coincide with area of Tea-tree Thicket (MU43) and Cyperoid Heath (MU44c), with both sub-communities reliant on permanent to intermittent water logging. Flow accumulation modelling post-mining indicates that tilts associated with Area 1 LW3 may result in changes to flow pathways, particularly for the southern section of the swamp. The area of Cyperoid Heath (MU44c) in the southeast section may be subject to a significant reduction in flow accumulation. This reduction in water availability could result in less waterlogging and potential for changes to vegetation composition.
CCUS4	Flow accumulation modelling pre-mining indicates the presence of two main flow pathways through this upland swamp. One minor flow accumulation passes through the eastern section of the swamp, while the main flow pathway passes through the western section of the swamp. The western flow pathway corresponds with areas of Tea-tree Thicket (MU43) and Cyperoid Heath (MU44c). Post-mining, only negligible changes in the eastern flow accumulation pathway are predicted to occur. The western flow pathway changes slightly in response to changes in gradient within the swamp. The upper section of Tea-tree Thicket (MU43) is expected to undergo a reduction in flow accumulation and potential reductions in groundwater availability; however, flow accumulation in lower sections of Tea-tree Thicket (MU43) and Cyperoid Heath (MU44c) are predicted to undergo increases in flow accumulation and potentially increased wetting and waterlogging. Any resultant changes are likely to be small in scale and decreases in flow accumulation are likely to be offset by increases in other areas.
CCUS5	Pre-mining flow accumulation modelling indicates that this upland swamp has a dispersed flow accumulation, with numerous flow pathways through the swamp. There is a significant flow pathway through the eastern section of the swamp, corresponding with an area of Tea-Tree Thicket (MU43). Substantial benching within this swamp appears to be correlated with vegetation sub-communities; with areas of Tea-Tree Thicket (MU43) corresponding with the location of rockbars within the swamp, and it is likely that community composition in this swamp relates to a combination of flow and these rockbars allowing pooling of water at these locations. Post-mining the flow pathway is still quite dispersed, with flow pathways throughout the swamp. However, changes in gradient, particularly across the top of the swamp at the edge of Longwall 8, result in a diversion of the flow pathway in the eastern section of the upland swamp around the exterior of the swamp. This results in a significant reduction in flow accumulation through this eastern section, and may result in a reduction if waterlogging in these areas.
CCUS10	Flow accumulation modelling pre-mining indicates a dispersed flow accumulation across this upland swamp. This swamp has a small catchment area. Vegetation sub-communities appear to correspond with area of benching down the slope, with these rockbars resulting in accumulation of water in these areas.

	Post-mining flow accumulation modelling indicates that there is not predicted to be a significant change in flow accumulation or pathways across the swamp.
CRUS1	Only the upper northern section of CRUS1 is located above Longwall 6. As a result there is little change in flow accumulation, either across the swamp or within thus upper section. No significant changes are expected to result from changes in flow accumulation.
CRUS2	CRUS2 is located outside of the predicted limits of subsidence. Pre- and post mining flow accumulation modelling indicates that there is not predicted to be any significant changes in flow accumulation or pathways within CRUS2.
CRUS3	CRUS3 is located outside of the predicted limits of subsidence. Pre- and post mining flow accumulation modelling indicates that there is not predicted to be any significant changes in flow accumulation or pathways within CRUS3.

Table 13: Discussion of changes in flow accumulation pre- versus post-mining for upland swamp of 'special significance' in Wonga West

Upland Swamp	Discussion of changes in flow accumulation
LCUS1	Although LCUS1 is not located above any of the longwalls, combined Bulli and Wongawilli subsidence predictions indicate that subsidence extends southeast of the longwall and may impact on the downstream reach of this swamp. LCUS1 is a mix of headwater and valley infill swamp. Pre-mining flow accumulation modelling indicates that there is a disperse flow across areas of headwater swamp, with flow accumulation increasing significant through the main channel of Lizard Creek, which supports Tea-tree Ticket (MU43). Post-mining flow accumulation modelling indicates that there will be a significant increase in flow accumulation in the downstream reach of LCUS1, particularly within the main channel. This increase in flow accumulation is not predicted to result in any significant changes to LCUS1.
LCUS6	Although LCUS6 is not located above any of the longwalls, combined Bulli and Wongawilli subsidence predictions indicate that subsidence extends east of the longwall and may impact on this swamp. LCUS6 is a mix of headwater and valley infill swamp. Pre-mining flow accumulation modelling indicates that the headwater swamp section of LCUS6 supports only very small flow accumulation. Valley infill areas are located along the main channel of Lizard Creek and support more substantial flows accumulation. Post-mining, flow accumulation modelling indicates that there will be reduction if flow accumulation with headwater sections of this swamp, but that these changes will be so small as to be negligible. Valley infill sections will be subject to significant increases in flow accumulation, which may result in increases in species reliant on and resilient to

	increases in waterlogging.
LCUS8	LCUS8 is a mix of headwater and valley infill swamp, with two areas of headwater swamp located on either side of a valley infill swamp which spans the main channel of Lizard Creek. Pre-mining flow accumulation indicates that areas of headwater swamp are subject to a diversified flow accumulation, with no significant flow pathways. The area of valley infill swamp is subject to substantial flow accumulation from Lizard Creek. Post-mining areas of headwater swamp undergo very small changes in flow accumulation and these are not predicted to be significant. Observed changes to flow accumulation modelling for areas of valley infill swamp indicate an increase in flow accumulation in this area. Any changes in flow accumulation are not predicted to result in any significant changes to this upland swamp.
LCUS27	LCUS27 is located outside of the predicted limits of subsidence. Pre- and post mining flow accumulation modelling indicates that there is unlikely to be any significant changes in flow accumulation or pathways within LCUS27.
WCUS1	Although WCUS1 is not located above any of the longwalls, combined Bulli and Wongawilli subsidence predictions indicate that subsidence extends south of the longwall and may impact on this swamp. Comparison of pre- and post-mining flow accumulation indicates that, as this swamp is located parallel to predicted subsidence there will be negligible changes to flow accumulation pathways. Some minor and localised changes to flow pathways may occur, but these are not predicted to result in a significant effect on this swamp.
WCUS4	WCUS4 consist of a mix of headwater and valley infill swamp. The section of headwater swamp is located above Longwall 13, while valley infill areas are located outside of longwalls. Pre-mining flow accumulation modelling indicates that areas of headwater swamp have diversified flows, but a main flow pathway occurs along the northern boundary of the headwater swamp. This main channel corresponds with areas of Tea-tree Thicket (MU43). The area of valley infill swamp is located along the main channel of Wallandoola Creek. Post-mining flow accumulation modelling indicates that areas of headwater swamp may undergo a small shift in flow pathway further to the north, with vegetation sub-communities along the southern boundary likely to experience low flow accumulation, including an area of Cyperoid Heath (MU44c). However, this area of Cyperoid Heath appears to correspond with a minor bench and this minor change in flow pathway is not predicted to result in any significant effect. For areas of valley infill swamp there is likely to be only minor changes in flow accumulation and no impacts are expected to occur.
WCUS7	WCUS7 is a valley infill swamp located along the main channel of Wallandoola Creek. Comparison of pre- and post-mining flow accumulation modelling indicates that there may be a minor change in flow pathway along Wallandoola Creek. However, any changes in flow accumulation are likely to be constrained by the main channel of Wallandoola

	Creek, and may be unlikely to occur. No significant effects on WCUS7 are predicted to occur.
WCUS11	Pre-mining flow accumulation modelling indicates that there are two main flow pathways through each arm of this upland swamp. The main flow pathway is through the south-eastern arm, largely due to Fire Road 8 re-directing flows around the north-western arm and into the south-eastern arm. Significant flow accumulation at the downstream extent of WCUS11 corresponds with an area of Tea-tree Thicket (MU43). Post-mining flow accumulation indicates that there will be little change in flow accumulation through WCUS11. No significant effects are predicted to occur.

Flow accumulation modelling for upland swamps meeting criteria for 'special significance' (OEH 2012) has been completed. This modelling predicts flow accumulation (catchment) and flow pathways through upland swamps.

Overall, areas of valley infill swamp in Wonga West are not predicted to undergo significant changes in flow accumulation, largely due to the fact that they are located along the main channels of Lizard and Wallandoola Creek, are not located above longwalls and are thus largely subject to minimal levels of subsidence.

Headwater swamps are likely to be more susceptible to changes in flow accumulation, as vegetation sub-communities reliant on permanent or frequent waterlogging are likely to occur in areas of increased flow accumulation (as in CCUS1 and CCUS4) and along rockbars created by benching of the sandstone.

Flow accumulation modelling indicated that upland swamps CCUS1, CCUS4, CCUS5 and WCUS4 may undergo changes in flow accumulation that may result in changes in groundwater availability. This change in groundwater availability could result in changes in vegetation communities within these swamps.

4.2.5 Compressive and Tensile Strains

Compressive and tensile strains can be used to predict where fracturing of bedrock may occur, and thus where potential for dewatering and drying of upland swamps may occur.

There are a number of risk factors that may contribute to the fracturing of an upland swamp, particularly the type of swamp (headwater versus valley infill), location and orientation of an upland swamp and the vegetation sub-communities within a swamp.

Valley infill swamps are much more susceptible to impacts (DoP 2008). Valley infill swamps tend to be much more reliant on groundwater flows, and are usually located within lower sections of catchment where flow accumulation is much higher. They tend to support larger areas of vegetation sub-communities reliant on permanent or temporary waterlogging, and as such any loss in groundwater is likely to have a more significant effect on these swamps when compared to headwater swamps. Headwater swamps usually have much lower flow accumulation throughout the swamp, and any areas of wetter vegetation sub-communities are likely to occur in areas of increased flow accumulation, rockbars resulting from benching of sandstone terraces or seepage from perched ephemeral groundwater systems. Thus, unless fracturing results in significant changes in flow accumulation or loss of groundwater, or fracturing of rockbars impacts to headwater swamps are less likely to occur.

The location and orientation of a swamp in relation to longwall geometry is also likely to alter a swamps susceptibility to impact (EarthTech 2003). Swamps located parallel to a longwall and in areas of low tilts and strains are less likely to undergo changes in gradient due to tilts and / or fracturing resulting from strains. Swamps spanning multiple longwall panels undergo significant and multiple changes in gradient and strains, and are most susceptible to impact.

Finally, the vegetation sub-communities within a swamp also determine a swamps susceptibility to impact. Vegetation sub-communities reliant on permanent (Tea-tree Thicket MU43) or frequent (Cyperoid Heath MU44c) waterlogging are most susceptible to losses of groundwater flows (Keith *et al.* 2006). Other vegetation communities are less reliant on groundwater flows and are likely to be able to withstand some losses in groundwater, provided there is a sufficient surface flow and water build up during times of high rainfall to kill any trees that may grow.

Table 14: Assessment of risk factors for swamps of 'special significance' in Wonga East

Upland Swamp	Swamp type	Location and orientation	Vegetation sub-communities	Max compressive strain (mm / m)	Max tensile strain (mm / m)
CCUS1	Headwater	Spanning Area 1 LW3 and adjacent pillar. Flow pathway oriented along longwall panel.	MU42, MU43, MU44b, MU 44c	-6.79	2.65
CCUS4	Headwater	Spanning Longwall 6. Flow pathway oriented perpendicular to longwall panel.	MU42, MU43, MU44c	-8.03	4.63
CCUS5	Headwater	Spanning Longwalls 7 and 8, straddling pillar. Flow pathway oriented perpendicular to longwall panel.	MU42, MU43, MU44a	-8.03	4.74
CCUS10	Headwater	Spanning Area 2 LW 9 and adjacent pillar. Flow pathway oriented perpendicular to longwall panel.	MU42, MU43, MU44c	-8.74	4.60
CRUS1	Headwater	Majority of swamp is located outside longwalls, with	MU42, MU43	-7.20	4.34

		only small upper reaches located above Longwall 6. No substantial flow above longwall.			
CRUS2	Headwater	Not located above longwalls.	MU42, MU43, MU44c	0	0
CRUS3	Headwater	Not located above longwalls.	MU42, MU43, MU44a, MU44b, MU44c	0	0

Table 15: Assessment of risk factors for swamps of 'special significance' in Wonga West

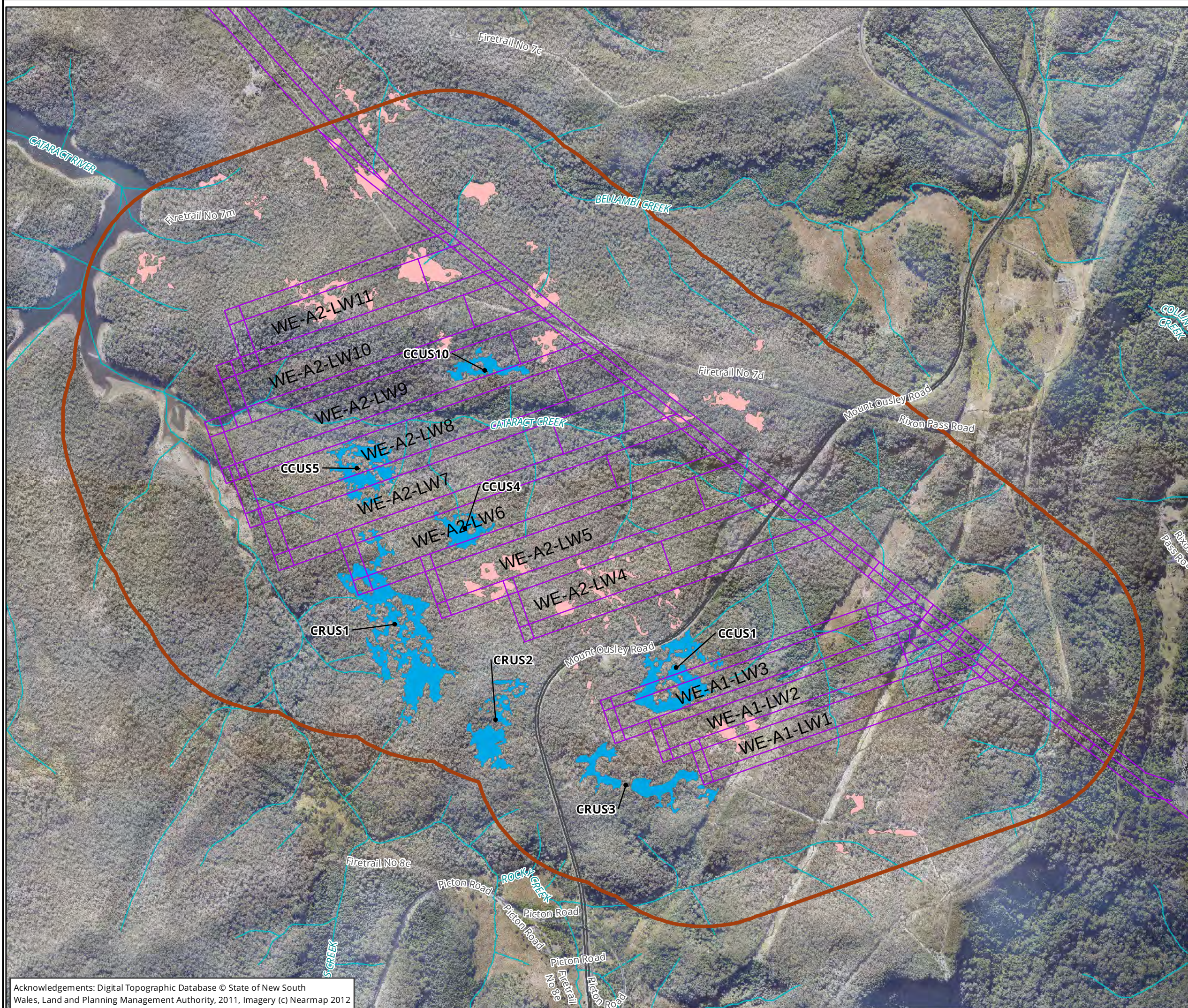
Upland Swamp	Swamp type	Location and orientation	Vegetation sub-communities	Max compressive strain (mm / m)	Max tensile strain (mm / m)
LCUS1	Headwater / valley infill	Not located above longwalls.	MU42, MU43, MU44b	0	0
LCUS6	Headwater / valley infill	Not located above longwalls.	MU42, MU43, MU44a, MU44b, MU44c	0	0
LCUS8	Headwater / valley infill	Upper extent of headwater swamp located above Area 3 LW1 (mostly above pillar). Flow pathway oriented perpendicular to longwall panel.	MU42, MU43, MU44a, MU44b	-2.64	2.75
LCUS27	Headwater	Not located above longwalls.	MU42, MU43, MU44b	0	0
WCUS1	Valley infill	Not located above longwalls.	MU42, MU43, MU44c	0	0
WCUS4	Headwater / valley infill	Headwater swamp located above Longwall	MU43, MU44a, MU44b, MU44c	-6.97	5.03

		13, with flow pathway oriented perpendicular to longwall. Valley infill swamp not located above longwall.			
WCUS7	Valley infill	Located above pillar for Longwalls 14 and 15. Flow pathway oriented perpendicular to longwalls.	MU42, MU43, MU44c	-0.01	5.45
WCUS11	Headwater	Located above western extent of Longwall 13. Flow pathway oriented parallel to longwall.	MU42, MU43, MU44	-3.81	5.35

Based on this assessment risk factors relating to compressive and tensile strains, and comparison of data above to strains observed at other locations, we can make the following conclusions:

- Upland swamps CRUS1, CRUS2, CRUS3, LCUS1, LCUS6, LCUS27, WCUS1, and valley infill section of WCUS4 do not show significant risk factors that would indicate susceptibility to impact.
- Upland swamps CCUS1 may be subject to strains that would result in fracturing of the bedrock below this swamp. Areas of Cyperoid Heath (MU44c) located above Longwall 3, are particularly susceptible to any loss of groundwater in this area.
- Upland swamp CCUS4 may be subject to strains that would result in fracturing of the bedrock below this swamp. However, the location of the base of this swamp in areas subject to lower levels of strains indicates that impacts may be reduced.
- Upland swamp CCUS5 may be subject to strains that would result in fracturing of the bedrock below this swamp. This upland swamp spans two longwalls and a degree of compressive and tensile strains. Further, vegetation sub-communities within this swamp are reliant on benching in the sandstone, creating rockbars that are likely to hold back sections of Cyperoid Heath (MU44c) and Tea-tree Thicket (MU43).
- Upland swamp CCUS10 may be subject to strains that would result in fracturing of the bedrock below this swamp. The swamp spans a large variation in strains and is reliant on benching of sandstone to maintain areas of Cyperoid Heath (MU44c) and Tea-tree Thicket (MU43).

- There is some potential for fracturing of the bedrock below the headwater section of LCUS8; however, it is likely to be limited in extent and degree given the location of this swamp largely above the pillar for Area 3 LW1. Further, this section of the swamp supports sub-communities that are less reliant on presence of permanent and frequent groundwater, and provided surface flows are maintained to a sufficient level to ensure trees are killed impacts are unlikely to be significant.
- Upland swamp WCUS4 may be subject to strains that would result in fracturing of the bedrock below this swamp. The lower sections of the headwater swamp are subject to greatest strains, and these areas are particularly susceptible to impact as they support areas of Tea-tree Thicket (MU43) and Cyperoid Heath (MU44c).
- Upland swamp WCUS7 is likely to be subject to tensile strains sufficient to result in fracturing of bedrock below this swamp. This could result in fracturing of bedrock along Wallandoola Creek. There is substantial iron staining in this section of Wallandoola Creek. The cumulative impacts of mining cannot be adequately assessed.
- Upland swamp WCUS11 may be subject to strains that would result in fracturing of the bedrock below this swamp. However, this swamp supports only small areas of Tea-tree Thicket (MU43) at the base of the swamp that will be subject to small tensile strains. Areas subject to maximum strains support sub-communities that are less reliant on presence of permanent and frequent groundwater, and provided surface flows are maintained to a sufficient level to ensure trees are killed impacts are not predicted to be significant.



Legend

Special Significance

- Yes
- No

Survey Area

- Wonga East Study Area
- Longwalls

Figure 8: Upland Swamps of 'Special Significance' in Wonga East

0 0.15 0.3 0.45 0.6 0.75
Kilometers

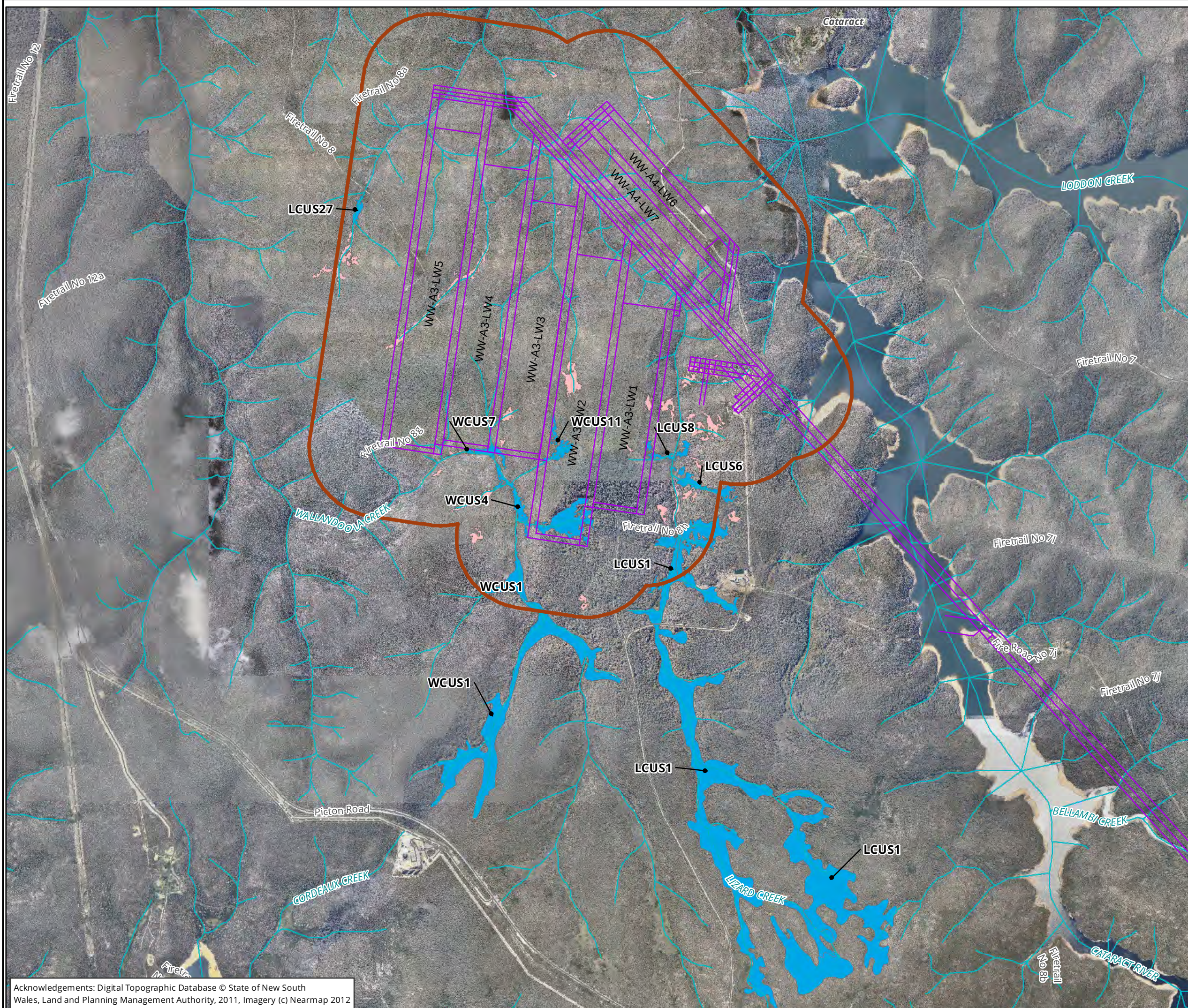
Scale: 1:15,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56



Ballarat, Brisbane, Canberra, Melbourne,
Sydney, Wangaratta & Wollongong

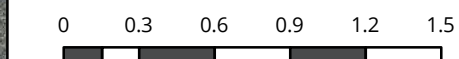
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Date: 05 October 2012,
Checked by: NMG, Drawn by: apritchard
Location: P:\15000s\15094\Mapping\Report Figures\15094 F8 Wonga East Significance

Acknowledgements: Digital Topographic Database © State of New South Wales, Land and Planning Management Authority, 2011, Imagery (c) Nearmap 2012



- Legend**
- Special Significance**
- Yes
 - No
- Survey Area**
- Wonga West Study Area
 - Longwalls

Figure 9: Upland Swamps of 'Special Significance' in Wonga West



Scale: 1:30,000 @ A3
 Coordinate System: GDA 1994 MGA Zone 56



Ballarat, Brisbane, Canberra, Melbourne,
 Sydney, Wangaratta & Wollongong

Matter: 15094,
 Date: 05 October 2012,
 Checked by: NMG, Drawn by: apritchard
 Location: P:\15000s\15094\Mapping\Report Figures\15094 F9 Wonga West Significance

Acknowledgements: Digital Topographic Database © State of New South Wales, Land and Planning Management Authority, 2011, Imagery (c) Nearmap 2012

5. Conclusions and Recommendations

An analysis of potential impacts to upland swamps based on data located above is provided below, along with conclusion on the risk of negative environmental consequences.

OEH (2012) states that negative environmental consequences for upland swamps considered to be of 'special significance' are undesirable. If negative environmental consequences to upland swamps of 'special significance' are predicted to occur mine plans should be adjusted so that negative environmental consequences are unlikely.

Table 16 provides recommendations for all upland swamps within the study area. Recommendations are based on reduction of impacts for all upland swamps to ensure objectives outlined in OEH (2012) can be achieved and negative environmental consequences for upland swamps of 'special significance'

Table 16: Conclusion of Risk Assessment and Recommendations

Upland Swamp	Conclusion	Recommendation
CCUS1	The initial risk assessment indicated that subsidence criteria were sufficient to indicate a risk of negative environmental consequences according to OEH (2012). A comparative analysis using limited available data indicated that vertical movement in CCUS1 would be unlikely to trigger negative environmental consequences. Flow accumulation modelling indicates that a reduction in flow accumulation, particularly to an area of Cyperoid Heath (MU44c) in the southeast, could occur. There is potential for this to result in drying of this area and change in vegetation composition. Risk factors that indicate potential for dewatering of CCUS1 are present. Strains are greatest beneath an area of Cyperoid Heath (MU44c) and fracturing of bedrock beneath this swamp is considered likely to occur. CCUS1 is considered to be at <i>significant</i> risk of negative environmental consequences.	Adjust the layout in respect of Area 1 LW3 to avoid and minimise impacts to CCUS1.
CCUS4	The initial risk assessment indicated that subsidence criteria were sufficient to indicate a risk of negative environmental consequences according to OEH (2012). A comparative analysis using limited available data indicated that vertical movement in CCUS4 would be unlikely to trigger negative environmental consequences. Groundwater monitoring data indicates presence of shallow groundwater levels, with recharge following rainfall to near surface. No drying observed. Flow accumulation modelling indicates that there is a small	Potential for impacts is considered low. Detailed monitoring of groundwater and vegetation in CCUS4 should be undertaken, particularly in areas subject to greatest change. Detailed triggers relating to changes in gradient, groundwater monitoring and / or observational monitoring should be developed, and if triggered

	potential for changes (both decreases and increases in flow accumulation) and that this may result in small scale changes to the distribution of vegetation sub-communities. Risk factors that indicate potential for dewatering of CCUS4 are present. However, the base of this swamp, where water dependent vegetation communities occur and rockbar is present, will be subject to lower levels of strains and risk of fracturing. CCUS1 is considered to be at <i>low</i> risk of negative environmental consequences.	measures to minimise impacts should be considered.
CCUS5	The initial risk assessment indicated that subsidence criteria were sufficient to indicate a risk of negative environmental consequences according to OEH (2012). A comparative analysis using limited available data indicated that vertical movement in CCUS5 would be unlikely to trigger negative environmental consequences. Groundwater monitoring data indicates presence of shallow groundwater levels, with recharge following rainfall to near surface. No drying observed. Flow accumulation modelling predicts that the western and middle sections of the swamp will undergo minimal changes in flow accumulation. The eastern section of this swamp will undergo a significant reduction in flow accumulation and changes in vegetation composition may result due to drying of these areas. Strains are sufficient to induce fracturing of the bedrock beneath CCUS5. The presence of rockbars holding back areas of Cyperoid Heath (MU44c) and Tea-tree Thicket (MU43) indicate a greater risk of potential for harm to this swamp if fracturing occurs. CCUS5 is considered to be at <i>significant</i> risk of negative environmental consequences.	Adjust the layout in respect of Area 2 LW7 and LW8 to avoid and minimise impacts to CCUS5. If this is not feasible, detailed monitoring of CCUS5 should be undertaken during the extraction of Longwalls 7 and 8. Detailed triggers relating to changes in gradient, groundwater monitoring and / or observational monitoring should be developed, and if triggered measures to minimise impacts should be considered.
CCUS10	The initial risk assessment indicated that subsidence criteria were sufficient to indicate a risk of negative environmental consequences according to OEH (2012). A comparative analysis using limited available data indicated that vertical movement in CCUS10 would be unlikely to trigger negative environmental consequences. Flow accumulation modelling indicates that there is unlikely to be a significant change post-mining. Strains in CCUS10 are sufficient to result in fracturing of	Potential for impacts is considered to be low, minor changes to layout will reduce the potential for impacts to CCUS10. If this is not feasible, detailed monitoring of CCUS10 should be undertaken during the extraction of Longwall 9. Detailed triggers relating to changes in gradient, groundwater monitoring and / or observational monitoring should be

	bedrock beneath this swamp. CCUS10 is considered to be at <i>low</i> risk of negative environmental consequences.	developed, and if triggered measures to minimise impacts should be considered.
CRUS1	The initial risk assessment indicated that subsidence criteria were sufficient to indicate a risk of negative environmental consequences according to OEH (2012). A comparative analysis using limited available data indicated that vertical movement in CRUS1 would be unlikely to trigger negative environmental consequences. Groundwater data indicates presence of shallow groundwater, recharging after rainfall but drying rapidly during periods of low rainfall. Flow accumulation modelling indicates that there is unlikely to be a significant change post-mining. Analysis of swamp type, location and orientation of the swamp, vegetation sub-communities and compressive tilts and strains indicates that this upland swamp does not contain risk factors increasing the risk of fracturing and dewatering. CRUS1 is considered to be at <i>low</i> risk of negative environmental consequences.	Potential for impacts is considered low. Minor changes to layout will reduce predicted impact to negligible.
CRUS2	The initial risk assessment indicated that CRUS2 was not at risk of negative environmental consequences. A comparative analysis using limited available data indicated that vertical movement in CRUS2 would be unlikely to trigger negative environmental consequences. Flow accumulation modelling indicates that there is unlikely to be a significant change post-mining. Analysis of swamp type, location and orientation of the swamp, vegetation sub-communities and compressive tilts and strains indicates that this upland swamp does not contain risk factors increasing the risk of fracturing and dewatering. CRUS2 is considered to be at <i>negligible</i> risk of environmental consequences.	Proceed to mining and monitoring.
CRUS3	The initial risk assessment indicated that CRUS3 was not at risk of negative environmental consequences. A comparative analysis using limited available data indicated that vertical movement in CRUS3 would be unlikely to trigger negative environmental consequences.	Proceed to mining and monitoring.

	Flow accumulation modelling indicates that there is unlikely to be a significant change post-mining. Analysis of swamp type, location and orientation of the swamp, vegetation sub-communities and compressive tilts and strains indicates that this upland swamp does not contain risk factors increasing the risk of fracturing and dewatering. CRUS3 is considered to be a <i>negligible</i> risk of negative environmental consequences.	
LCUS1	The initial risk assessment indicated that LCUS1 was not at risk of negative environmental consequences. A comparative analysis using limited available data indicated that vertical movement in LCUS1 would be unlikely to trigger negative environmental consequences. Groundwater monitoring data indicates presence of shallow groundwater, that will dry out following periods of low rainfall. Flow accumulation modelling predicted a significant increase in flow accumulation in the downstream section of the valley infill swamp, but that due to high levels of flow accumulation currently this is unlikely to result in any changes to this swamp. Analysis of swamp type, location and orientation of the swamp, vegetation sub-communities and compressive tilts and strains indicates that this upland swamp does not contain risk factors increasing the risk of fracturing and dewatering. LCUS1 is considered to be a <i>negligible</i> risk of negative environmental consequences.	Proceed to mining and monitoring.
LCUS6	The initial risk assessment indicated that LCUS6 was not at risk of negative environmental consequences. A comparative analysis using limited available data indicated that vertical movement in LCUS6 would be unlikely to trigger negative environmental consequences. Flow accumulation modelling predicted a significant increase in flow accumulation in the downstream section of the valley infill swamp, but that due to high levels of flow accumulation currently this is unlikely to result in any changes to this swamp. Analysis of swamp type, location and orientation of the swamp, vegetation sub-communities and compressive tilts and strains indicates that this upland swamp does not	Proceed to mining and monitoring.

	contain risk factors increasing the risk of fracturing and dewatering. LCUS6 is considered to be a <i>negligible</i> risk of negative environmental consequences.	
LCUS8	The initial risk assessment indicated that subsidence criteria were sufficient to indicate a risk of negative environmental consequences according to OEH (2012). A comparative analysis using limited available data indicated that LCUS8 will be subject to vertical movement (SMax) similar to that seen in previously impacted upland swamps. Flow accumulation modelling predicted a significant increase in flow accumulation in the downstream section of the valley infill swamp, but that due to high levels of flow accumulation currently this is unlikely to result in any changes to this swamp. Analysis of strains indicated that the headwater sections of this swamp may be subject to fracturing. However the location of the swamp above the pillar for Area 3 LW1 and the drier sub-communities within this swamp indicate that impacts are unlikely to be significant. LCUS8 is considered to be at a <i>low</i> risk of negative environmental consequences.	Potential for impacts is considered low. Detailed monitoring of groundwater and vegetation in LCUS8 should be undertaken, particularly in areas subject to greatest change. Detailed triggers relating to changes in gradient, groundwater monitoring and / or observational monitoring should be developed, and if triggered measures to minimise impacts should be considered.
LCUS27	The initial risk assessment indicated that LCUS27 was not at risk of negative environmental consequences. A comparative analysis using limited available data indicated that vertical movement in LCUS27 would be unlikely to trigger negative environmental consequences. Flow accumulation modelling indicates that there is unlikely to be a significant change post-mining. Analysis of swamp type, location and orientation of the swamp, vegetation sub-communities and compressive tilts and strains indicates that this upland swamp does not contain risk factors increasing the risk of fracturing and dewatering. LCUS27 is considered to be at a <i>negligible</i> risk of negative environmental consequences.	Proceed to mining and monitoring.
WCUS1	The initial risk assessment indicated that WCUS1 was not at risk of negative environmental consequences. A comparative analysis using limited available data indicated that vertical movement in WCUS1 would be	Proceed to mining and monitoring.

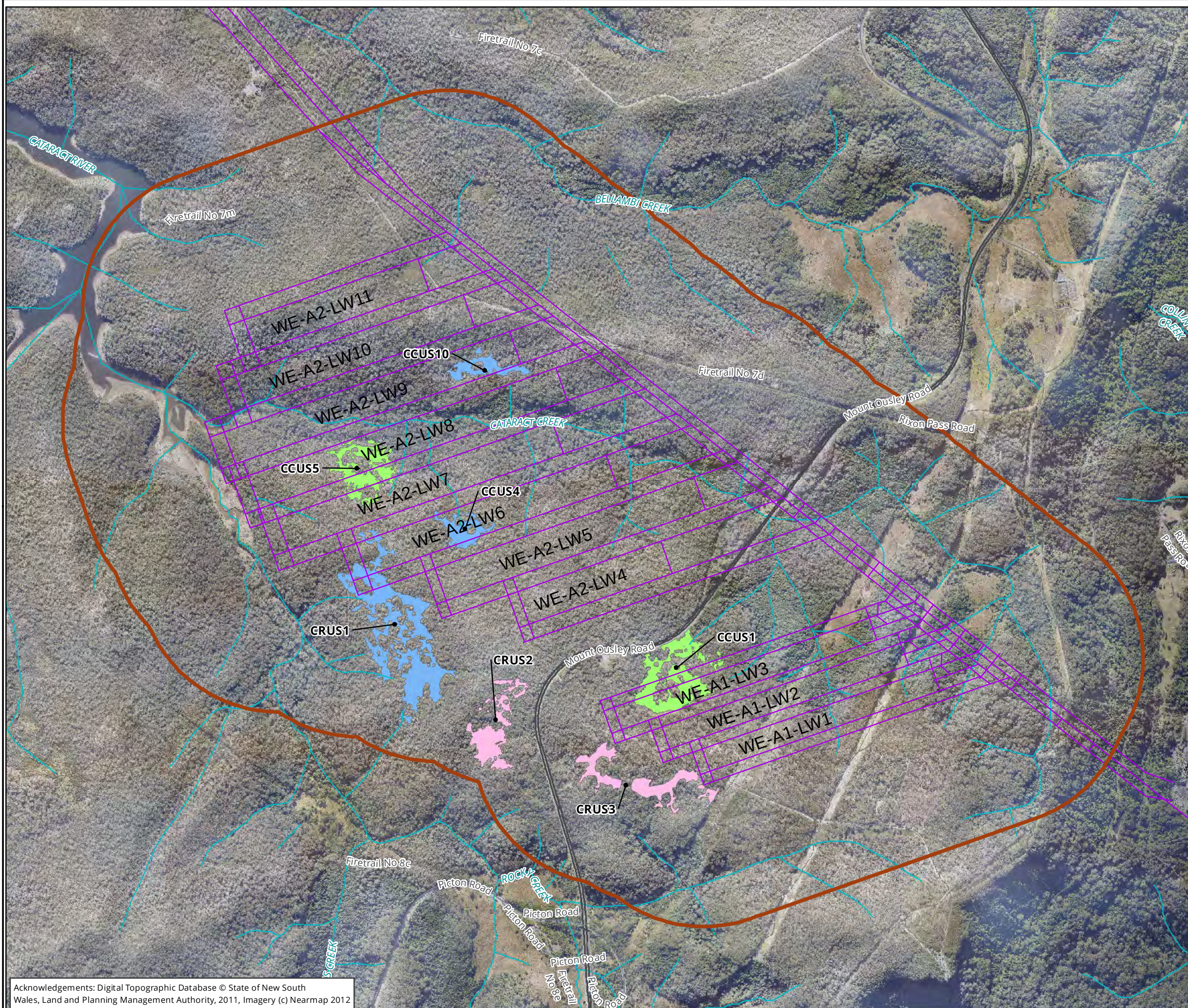
	unlikely to trigger negative environmental consequences. Groundwater monitoring indicates this swamp is in direct contact with stream seepage along Wallandoola Creek. Flow accumulation modelling indicates that there is unlikely to be a significant change post-mining. Analysis of swamp type, location and orientation of the swamp, vegetation sub-communities and compressive tilts and strains indicates that this upland swamp does not contain risk factors increasing the risk of fracturing and dewatering. WCUS1 is considered to be at a <i>negligible</i> risk of negative environmental consequences.	
WCUS4	The initial risk assessment indicated that subsidence criteria were sufficient to indicate a risk of negative environmental consequences according to OEH (2012). A comparative analysis using limited available data indicated that WCUS4 will be subject to vertical movement (SMax) similar to that seen in previously impacted upland swamps. Groundwater monitoring data indicates presence of shallow groundwater, that will dry out following periods of low rainfall. Flow accumulation modelling indicated that mining may result in a change in flow accumulation pathways, resulting in reduction in flow accumulation along the southern boundary of this swamp. This may impact on an area of Cyperoid Heath (MU44c). However, the localised occurrence of this vegetation sub-community is the result of a rockbar at this location and any is unlikely to result in a significant effect. Analysis of swamp type, location and orientation of the swamp, vegetation sub-communities and compressive tilts and strains indicates that the valley infill section of this upland swamp does not contain risk factors increasing the risk of fracturing and dewatering. However headwater sections of this swamp are likely to be impacted by fracturing of bedrock and areas of Tea-tree Thicket (MU43) and Cyperoid Heath (MU44c) are likely to be susceptible to impact and potential for change. WCUS4 valley infill swamp is considered to be at <i>negligible</i> risk of environmental consequences. WCUS headwater swamp is considered to be at <i>moderate</i>	Adjust the layout in respect of Area 3 LW2 to avoid and minimise impacts on headwaters of WCUS4.

	risk of negative environmental consequences.	
WCUS7	The initial risk assessment indicated that subsidence criteria were sufficient to indicate a risk of negative environmental consequences according to OEH (2012). A comparative analysis using limited available data indicated that WCUS7 will be subject to vertical movement (SMax) similar to that seen in previously impacted upland swamps. Flow accumulation modelling indicates that there is unlikely to be a significant change post-mining. There is potential for fracturing of bedrock beneath this upland swamp. There is iron staining within this section of Wallandoola Creek and the cumulative impacts of subsidence cannot be adequately ascertained. Taking a precautionary approach there WCUS7 is considered to be at a <i>moderate</i> risk of negative environmental consequences.	Adjust the layout in respect of Area 3 Longwalls 3 and 4 to reduce predicted strains to WCUS7 and Wallandoola Creek.
WCUS11	The initial risk assessment indicated that subsidence criteria were sufficient to indicate a risk of negative environmental consequences according to OEH (2012). A comparative analysis using limited available data indicated that WCUS11 will be subject to vertical movement (SMax) similar to that seen in previously impacted upland swamps. Groundwater monitoring data indicates presence of shallow groundwater, that will dry out following periods of low rainfall. Flow accumulation modelling indicates that there is unlikely to be a significant change post-mining. Strains are longwall orientation indicate potential for fracturing of bedrock beneath this swamp. However areas likely to be subject to greatest impact do not support vegetation sub-communities reliant on permanent or frequent waterlogging. WCUS11 is considered to be at <i>low</i> risk of negative environmental consequences.	Potential for impacts is considered low. Detailed monitoring of groundwater and vegetation in WCUS11 should be undertaken, particularly in areas subject to greatest change. Detailed triggers relating to changes in gradient, groundwater monitoring and / or observational monitoring should be developed, and if triggered measures to minimise impacts should be considered.

The final risk of impact for upland swamps of 'special significance' within the study area is shown in Figure 10 and Figure 11.

Based on an analysis of potential impacts to upland swamps within the study area using multiple criteria we conclude:

- There is a negligible likelihood of negative environmental consequences for seven (7) upland swamps within the study area, including CRUS2, CRUS3, LCUS1, LCUS6, LCUS27, WCUS1 and WCUS4-vfs. NRE can proceed to mining and monitoring in these areas.
- There is a low likelihood of negative environmental consequences for five (5) upland swamps within the study area, including CCUS4, CCUS10, CRUS1, LCUS8 and WCUS11. NRE may wish to consider undertaking monitoring in conjunction with minor changes to longwall layout to reduce impacts to these swamps.
- There is a moderate likelihood of negative environmental consequences for two (2) upland swamps within the study area, including WCUS4-hws and WCUS7. NRE should consider implementation of suitable impact avoidance, minimisation and mitigation measures to reduce impacts to these swamps.
- There is a significant likelihood of negative environmental consequences for two (2) upland swamps within the study area, including CCUS1 and CCUS5. NRE to consider changes to the mine layout and / or suitable avoidance and mitigation measures to reduce the impacts to these swamps.



Legend

Impact

- Significant
- Moderate
- Low
- Negligible

Survey Area

- Wonga East Study Area
- Longwalls

Figure 10: Final Risk Assessment for Upland Swamps in Wonga East

0 0.15 0.3 0.45 0.6 0.75
Kilometers

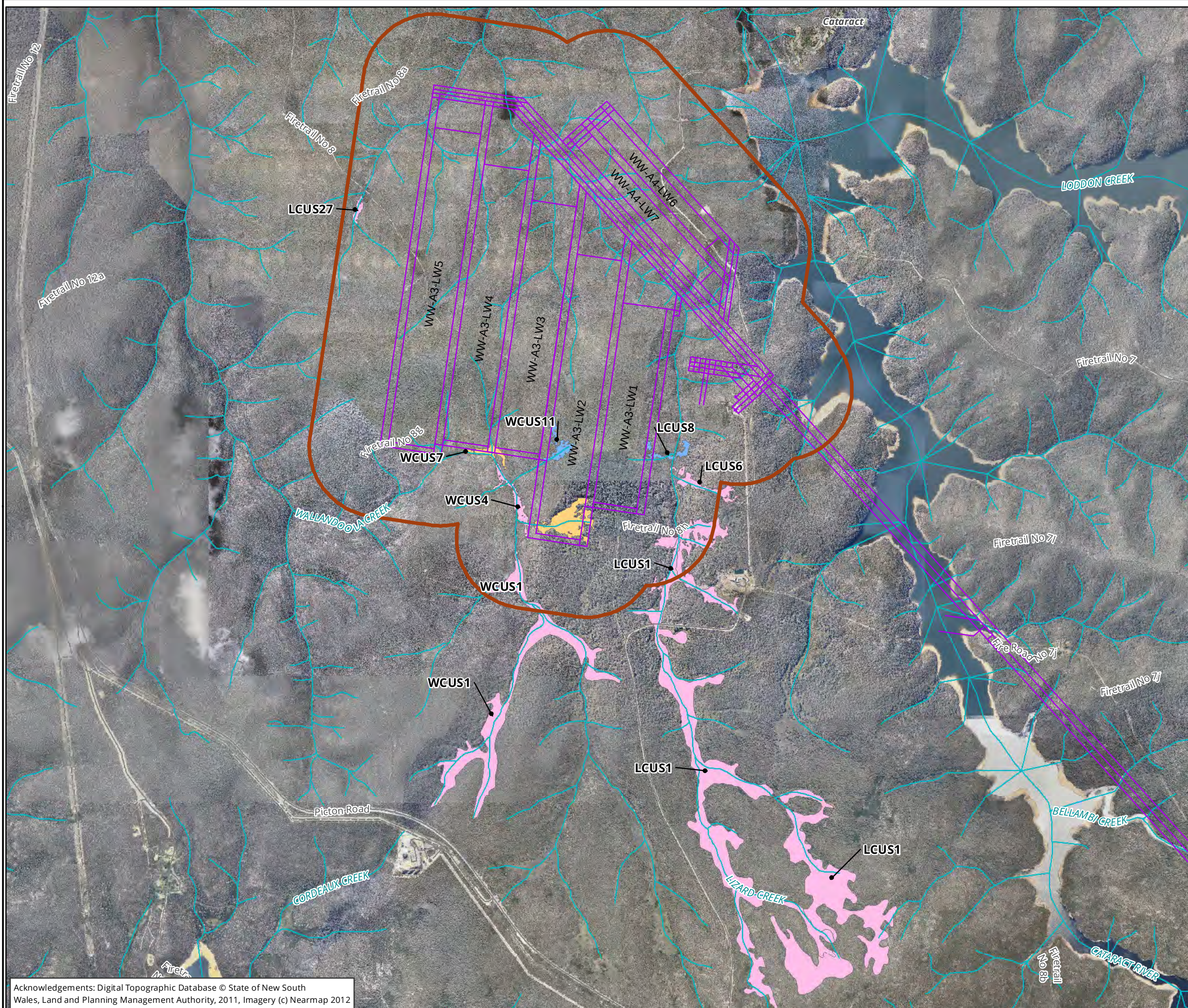
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Coordinate System: GDA 1994 MGA Zone 56



Ballarat, Brisbane, Canberra, Melbourne,
Sydney, Wangaratta & Wollongong

Matter: 15094,
Date: 05 October 2012,
Checked by: NMG, Drawn by: apritchard
Location: P:\15000s\15094\Mapping\Report Figures\15094 F10 Wonga East Impact

Acknowledgements: Digital Topographic Database © State of New South Wales, Land and Planning Management Authority, 2011, Imagery (c) Nearmap 2012



Legend

Impact

- Significant
- Moderate
- Low
- Negligible

Survey Area

- Wonga West Study Area
- Longwalls

Figure 11: Final Risk Assessment for Upland Swamps in Wonga West

0 0.3 0.6 0.9 1.2 1.5

Kilometers

Scale: 1:30,000 @ A3

Coordinate System: GDA 1994 MGA Zone 56

biosis

Biosis Pty Ltd

Ballarat, Brisbane, Canberra, Melbourne, Sydney, Wangaratta & Wollongong

Acknowledgements: Digital Topographic Database © State of New South Wales, Land and Planning Management Authority, 2011, Imagery (c) Nearmap 2012

Matter: 15094,
Date: 05 October 2012,
Checked by: NMG, Drawn by: apritchard
Location: P:\15000s\15094\Mapping\Report Figures\15094 F11 Wonga West Impact

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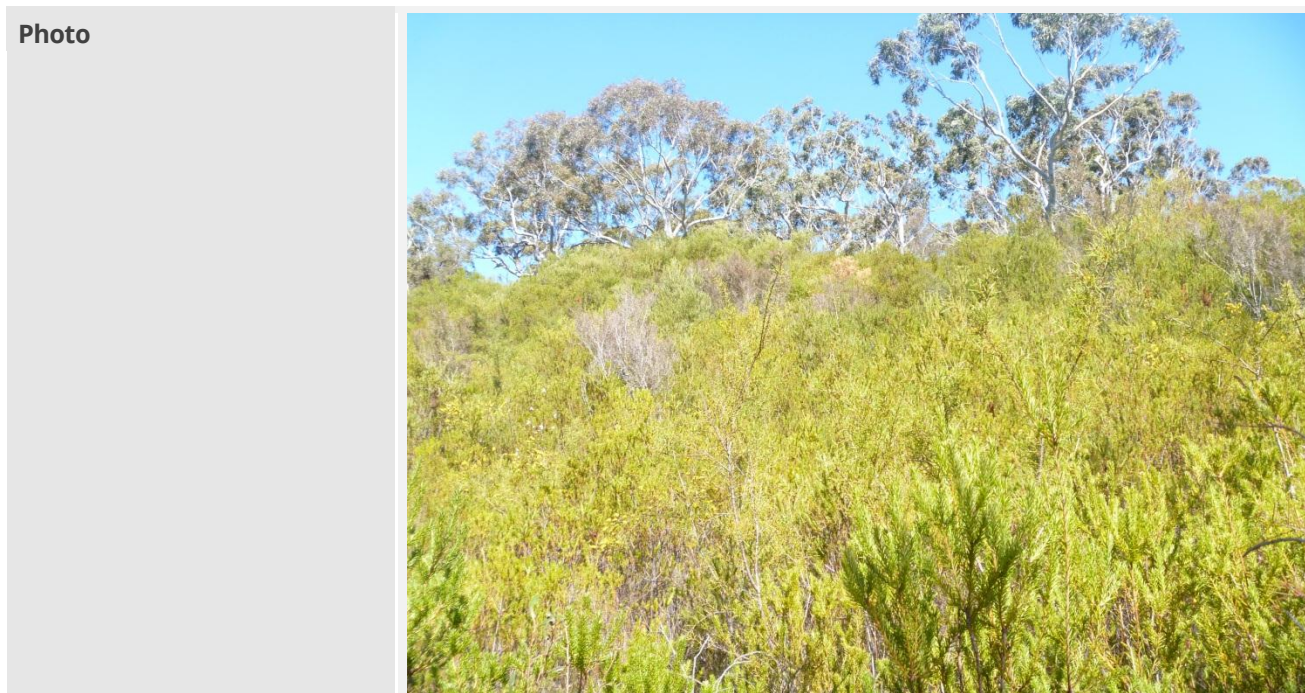
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Appendices

Appendix 1: Detailed Data for Upland Swamps

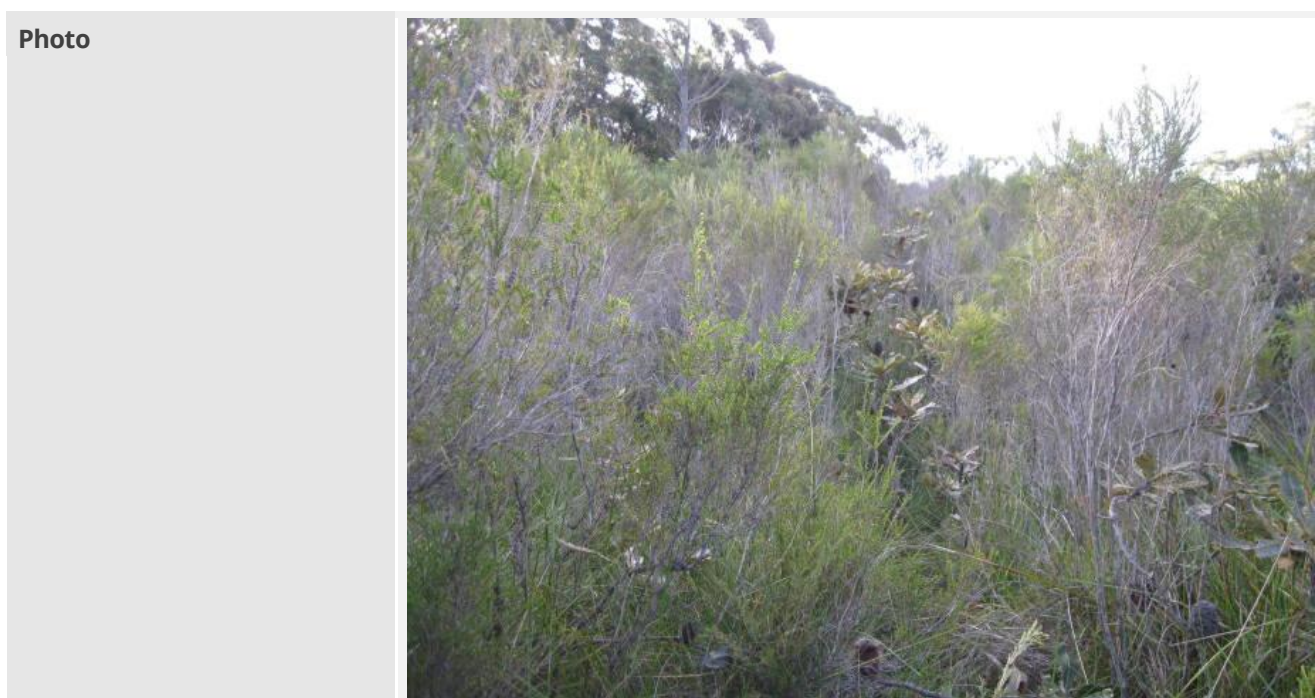
Bellambi Creek Upland Swamp 1 (BCUS1)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.16
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	

Bellambi Creek Upland Swamp 2 (BCUS2)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.89
Vegetation communities	Banksia Thicket (MU42)
Special significance	No



Bellambi Creek Upland Swamp 3 (BCUS3)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.12
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Bellambi Creek Upland Swamp 4 (BCUS4)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	2.20
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43)
Special significance	No



Bellambi Creek Upland Swamp 5 (BCUS5)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.96
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43)
Special significance	No
Photo	

Bellambi Creek Upland Swamp 6 (BCUS6)

Area	Wonga East
Swamp type	Headwater
Size (ha)	1.37
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43)
Special significance	No
Photo	

Bellambi Creek Upland Swamp 7 (BCUS7)

Area	Wonga East
Swamp type	Headwater
Size (ha)	0.62
Vegetation communities	Banksia Thicket (MU42)
Special significance	No



Bellambi Creek Upland Swamp 8 (BCUS8)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.66
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Bellambi Creek Upland Swamp 9 (BCUS9)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.27
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Bellambi Creek Upland Swamp 10 (BCUS10)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.41

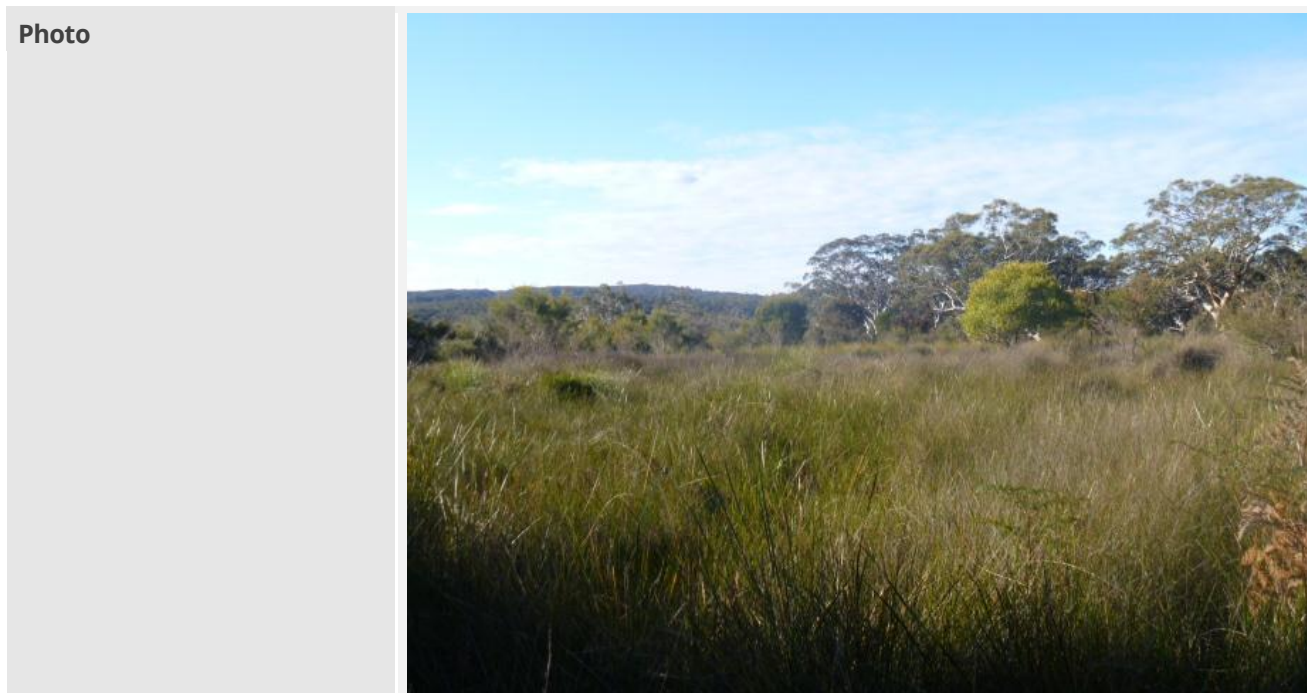
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Bellambi Creek Upland Swamp 11 (BCUS11)

Area	Wonga East
Swamp type	Headwater
Size (ha)	0.26
Vegetation communities	Banksia Thicket (MU42), Restioid Heath (MU44b)
Special significance	No
Photo	

Cataract Creek Upland Swamp 1 (CCUS1)

Area	Wonga East
Swamp type	Headwater
Size (ha)	4.81
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43), Restioid Heath (MU44b), Cyperoid Heath (MU44c)
Special significance	Yes – Statutory threshold, Closely proximate habitat, Complexity



Cataract Creek Upland Swamp 2 (CCUS2)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	1.21
Vegetation communities	Sedgeland (MU44a), Restioid Heath (MU44b)
Special significance	No
Photo	No

Cataract Creek Upland Swamp 3 (CCUS3)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.55
Vegetation communities	Banksia Thicket (MU42), Sedgeland (MU44a)
Special significance	No
Photo	No

Cataract Creek Upland Swamp 4 (CCUS4)	
Area	Wonga East
Swamp type	Headwater

Size (ha)	1.77
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43), Cyperoid Heath (MU44c)
Special significance	Yes – Statutory threshold, Closely proximate habitat, Complexity
Photo	No

Cataract Creek Upland Swamp 5 (CCUS5)

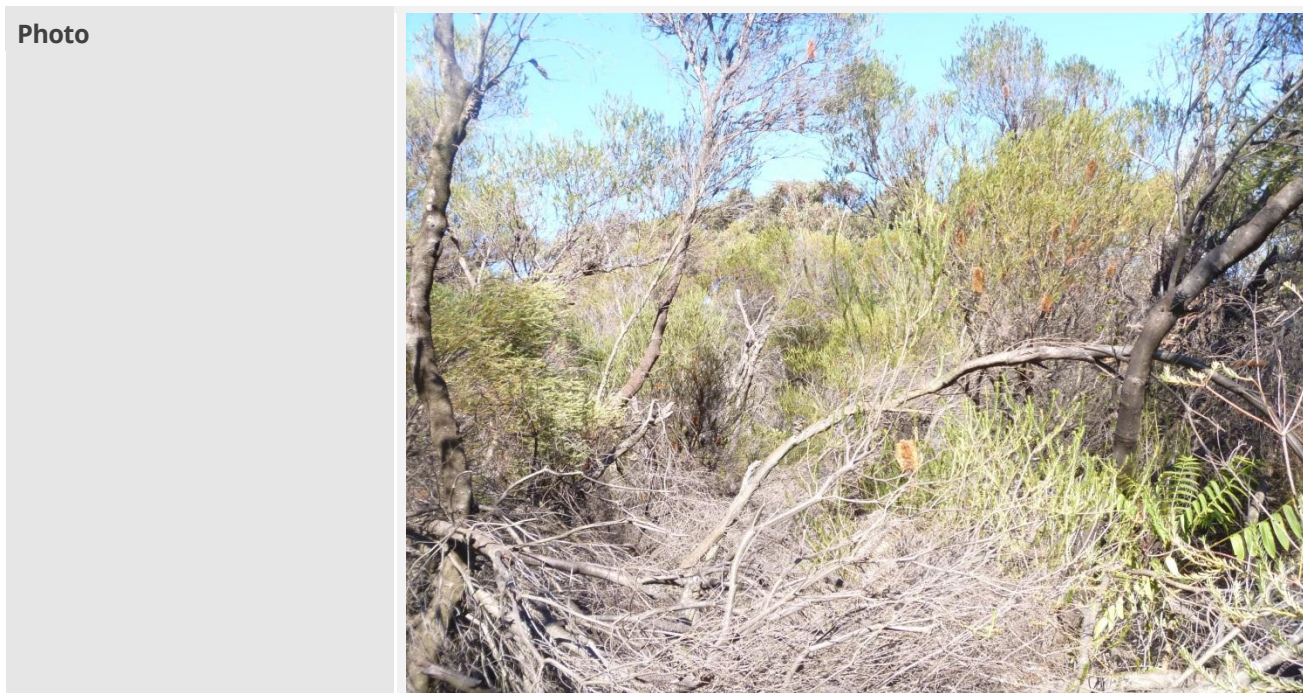
Area	Wonga East
Swamp type	Headwater
Size (ha)	3.45
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43), Sedgeland (MU44a)
Special significance	Yes – Statutory threshold, Closely proximate habitat, Complexity
Photo	

Cataract Creek Upland Swamp 6 (CCUS6)

Area	Wonga East
Swamp type	Headwater
Size (ha)	2.05
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Cataract Creek Upland Swamp 7 (CCUS7)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	1.32
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	

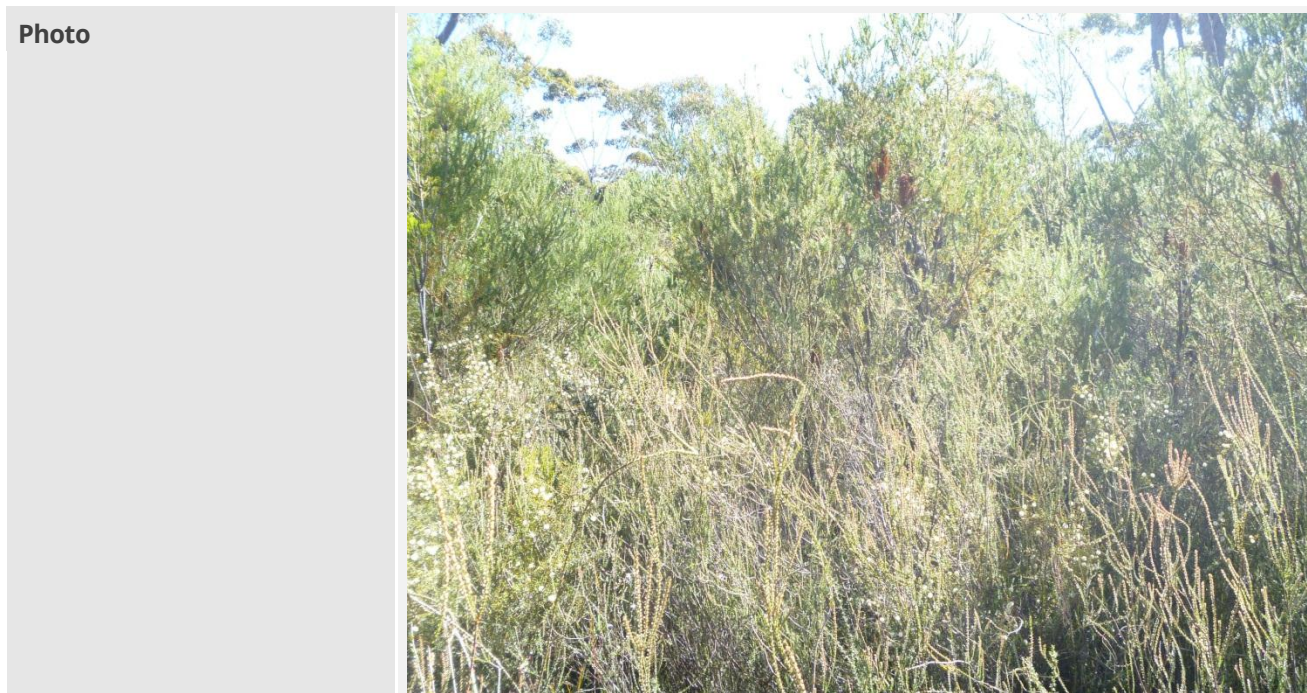
Cataract Creek Upland Swamp 8 (CCUS8)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.46
Vegetation communities	Banksia Thicket (MU42)
Special significance	No



Cataract Creek Upland Swamp 9 (CCUS9)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.76
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	

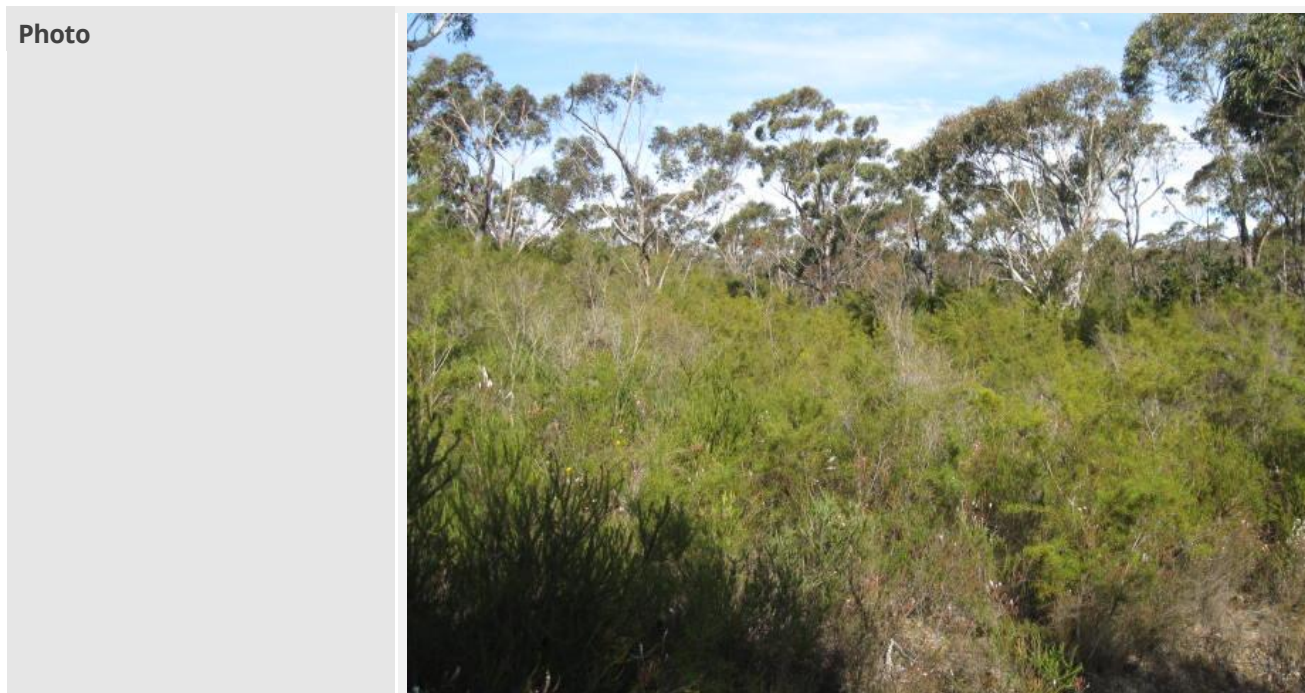
Cataract Creek Upland Swamp 10 (CCUS10)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	1.63
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43), Cyperoid Heath (MU44c)
Special significance	Yes – Statutory threshold, Closely proximate habitat, Complexity
Photo	

Cataract Creek Upland Swamp 11 (CCUS11)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.34
Vegetation communities	Banksia Thicket (MU42)
Special significance	No



Cataract Creek Upland Swamp 12 (CCUS12)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	1.84
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Cataract Creek Upland Swamp 13 (CCUS13)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.26
Vegetation communities	Banksia Thicket (MU42)
Special significance	No



Cataract Creek Upland Swamp 14 (CCUS14)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.37
Vegetation communities	Restioid Heath (MU44b)
Special significance	No
Photo	

Cataract Creek Upland Swamp 15 (CCUS15)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.06
Vegetation communities	Tea-tree Thicket (MU43)
Special significance	No
Photo	No

Cataract Creek Upland Swamp 16 (CCUS16)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.87
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	

Cataract Creek Upland Swamp 17 (CCUS17)	
Area	Wonga East
Swamp type	Headwater
Size (ha)	0.07

Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Cataract Creek Upland Swamp 18 (CCUS18)

Area	Wonga East
Swamp type	Headwater
Size (ha)	0.05
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Cataract Creek Upland Swamp 19 (CCUS19)

Area	Wonga East
Swamp type	Headwater
Size (ha)	0.04
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Cataract Creek Upland Swamp 20 (CCUS20)

Area	Wonga East
Swamp type	Headwater
Size (ha)	0.55
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Cataract Creek Upland Swamp 21 (CCUS21)

Area	Wonga East
Swamp type	Headwater
Size (ha)	0.05

Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Cataract Creek Upland Swamp 22 (CCUS22)

Area	Wonga East
Swamp type	Headwater
Size (ha)	0.31
Vegetation communities	Banksia Thicket (MU42), Restioid Heath (MU44b)
Special significance	No
Photo	

Cataract Creek Upland Swamp 23 (CCUS23)

Area	Wonga East
Swamp type	Headwater
Size (ha)	1.44
Vegetation communities	Banksia Thicket (MU42), Sedgeland (MU44a)
Special significance	No
Photo	No

Cataract River Upland Swamp 1 (CRUS1)

Area	Wonga East
Swamp type	Headwater
Size (ha)	9.84
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43)
Special significance	Yes – Statutory threshold, Closely proximate habitat, Size
Photo	

Cataract River Upland Swamp 2 (CRUS2)

Area	Wonga East
Swamp type	Headwater
Size (ha)	3.12
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43), Cyperoid Heath (MU44c)
Special significance	Yes – Statutory threshold, Closely proximate habitat, Complexity
Photo	No

Cataract River Upland Swamp 3 (CRUS3)

Area	Wonga East
Swamp type	Headwater
Size (ha)	3.42
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43), Sedgeland (MU44a),

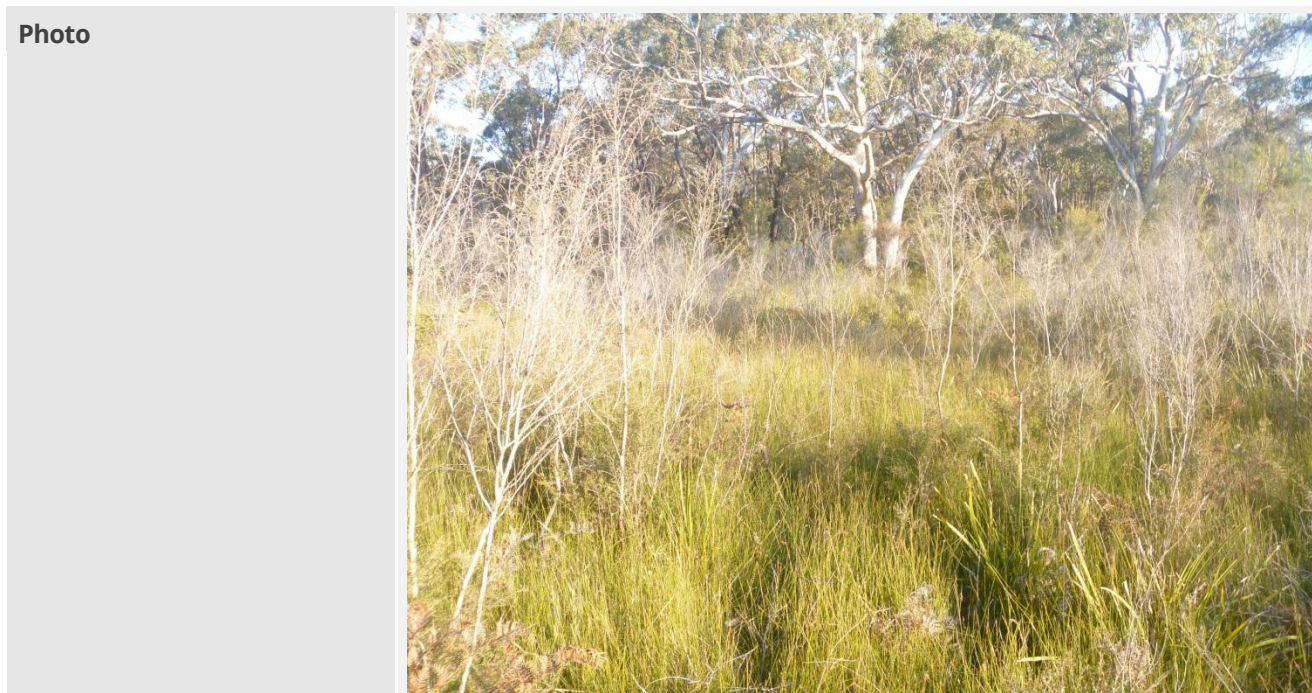
	Restioid Heath (MU44b), Cyperoid Heath (MU44c)
Special significance	Yes – Statutory threshold, Closely proximate habitat, Complexity
Photo	No

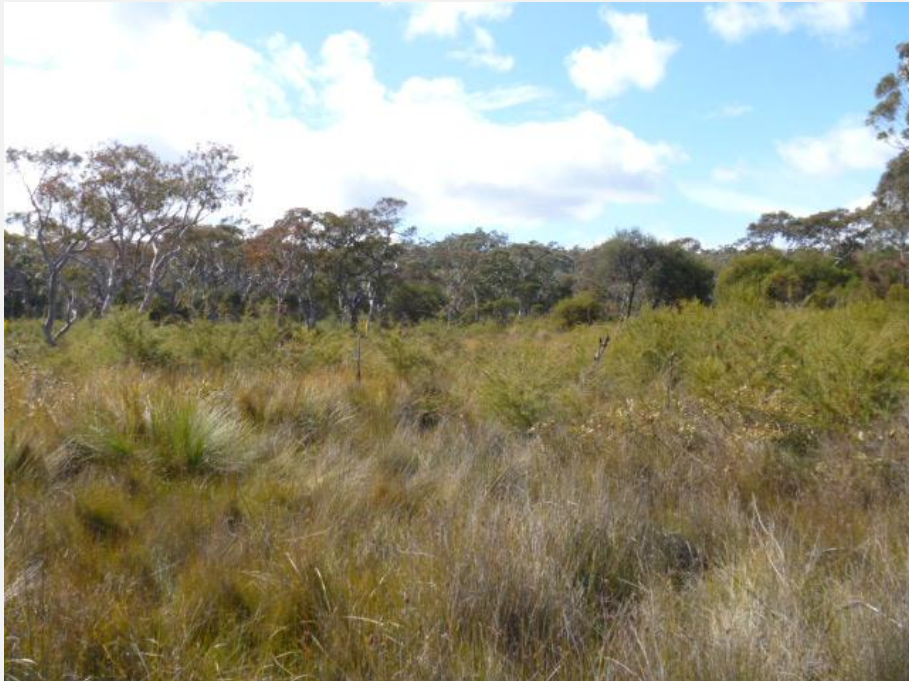
Cataract River Upland Swamp 4 (CRUS4)

Area	Wonga East
Swamp type	Headwater
Size (ha)	0.37
Vegetation communities	Sedgeland (MU44a)
Special significance	No
Photo	

Cataract River Upland Swamp 5 (CRUS5)

Area	Wonga East
Swamp type	Headwater
Size (ha)	0.13
Vegetation communities	Sedgeland (MU44a)
Special significance	No



Lizard Creek Upland Swamp 1 (LCUS1)	
Area	Wonga West
Swamp type	Headwater /Valley infill
Size (ha)	129.89
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43), Restioid Heath (MU44b)
Special significance	Yes – Statutory threshold, Closely proximate habitat, Size, Complexity
Photo	

Lizard Creek Upland Swamp 2 (LCUS2)

Area	Wonga West
Swamp type	Headwater
Size (ha)	0.74
Vegetation communities	Restioid Heath (MU44b)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 3 (LCUS3)

Area	Wonga West
Swamp type	Headwater
Size (ha)	0.56
Vegetation communities	Restioid Heath (MU44b)
Special significance	No
Photo	

Lizard Creek Upland Swamp 4 (LCUS4)

Area	Wonga West
Swamp type	Valley infill
Size (ha)	0.83

Vegetation communities	Tea-tree Thicket (MU43)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 5 (LCUS5)

Area	Wonga West
Swamp type	Headwater
Size (ha)	0.60
Vegetation communities	Restioid Heath (MU44b)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 6 (LCUS6)

Area	Wonga West
Swamp type	Headwater / Valley infill
Size (ha)	3.74
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43), Sedgeland (MU44a), Restioid Heath (MU44b), Cyperoid Heath (MU44c)
Special significance	Yes – Statutory threshold, Closely proximate habitat, Complexity
Photo	

Lizard Creek Upland Swamp 7 (LCUS7)

Area	Wonga West
Swamp type	Headwater
Size (ha)	0.41
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 8 (LCUS8)

Area	Wonga West
Swamp type	Headwater / Valley infill
Size (ha)	2.09
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43), Sedgeland (MU44a), Restioid Heath (MU44b)
Special significance	Yes – Statutory threshold, Closely proximate habitat, Complexity
Photo	No

Lizard Creek Upland Swamp 9 (LCUS9)

Area	Wonga West
Swamp type	Headwater
Size (ha)	0.20
Vegetation communities	Restioid Heath (MU44b)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 10 (LCUS10)

Area	Wonga West
Swamp type	Headwater
Size (ha)	2.71
Vegetation communities	Banksia Thicket (MU42), Sedgeland (MU44a), Restioid Heath (MU44b)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 11 (LCUS11)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	0.35
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 12 (LCUS12)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	1.68
Vegetation communities	Banksia Thicket (MU42), Restioid Heath (MU44b)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 13 (LCUS13)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	0.22
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 14 (LCUS14)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	0.91
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 15 (LCUS15)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	0.43
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 16 (LCUS16)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	0.06
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 17 (LCUS17)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	1.16
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 18 (LCUS18)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	2.53
Vegetation communities	Banksia Thicket (MU42), Restioid Heath (MU44b)
Special significance	No



Lizard Creek Upland Swamp 19 (LCUS19)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	0.21
Vegetation communities	Restioid Heath (MU44b)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 20 (LCUS20)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	0.24
Vegetation communities	Restioid Heath (MU44b)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 21 (LCUS21)	
Area	Wonga West
Swamp type	Headwater

Size (ha)	0.11
Vegetation communities	Restioid Heath (MU44b)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 22 (LCUS22)

Area	Wonga West
Swamp type	Headwater
Size (ha)	0.26
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 23 (LCUS23)

Area	Wonga West
Swamp type	Headwater
Size (ha)	0.08
Vegetation communities	Restioid Heath (MU44b)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 24 (LCUS24)

Area	Wonga West
Swamp type	Headwater
Size (ha)	0.35
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 25 (LCUS25)

Area	Wonga West
Swamp type	Headwater

Size (ha)	3.34
Vegetation communities	Banksia Thicket (MU42), Restioid Heath (MU44b)
Special significance	No
Photo	

Lizard Creek Upland Swamp 26 (LCUS26)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	3.09
Vegetation communities	Tea-tree Thicket (MU43), Restioid Heath (MU44b)
Special significance	No



Lizard Creek Upland Swamp 27 (LCUS27)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	1.04
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43), Restioid Heath (MU44b)
Special significance	Yes – Statutory threshold, Closely proximate habitat, Complexity
Photo	

Lizard Creek Upland Swamp 28 (LCUS28)

Area	Wonga West
Swamp type	Headwater
Size (ha)	1.00
Vegetation communities	Banksia Thicket (MU42), Restioid Heath (MU44b)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 29 (LCUS29)

Area	Wonga West
Swamp type	Headwater
Size (ha)	0.34
Vegetation communities	Restioid Heath (MU44b)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 30 (LCUS30)

Area	Wonga West
Swamp type	Headwater
Size (ha)	0.07
Vegetation communities	Restioid Heath (MU44b)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 31 (LCUS31)

Area	Wonga West
Swamp type	Headwater
Size (ha)	0.25
Vegetation communities	Banksia Thicket (MU42), Restioid Heath (MU44b)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 32 (LCUS32)

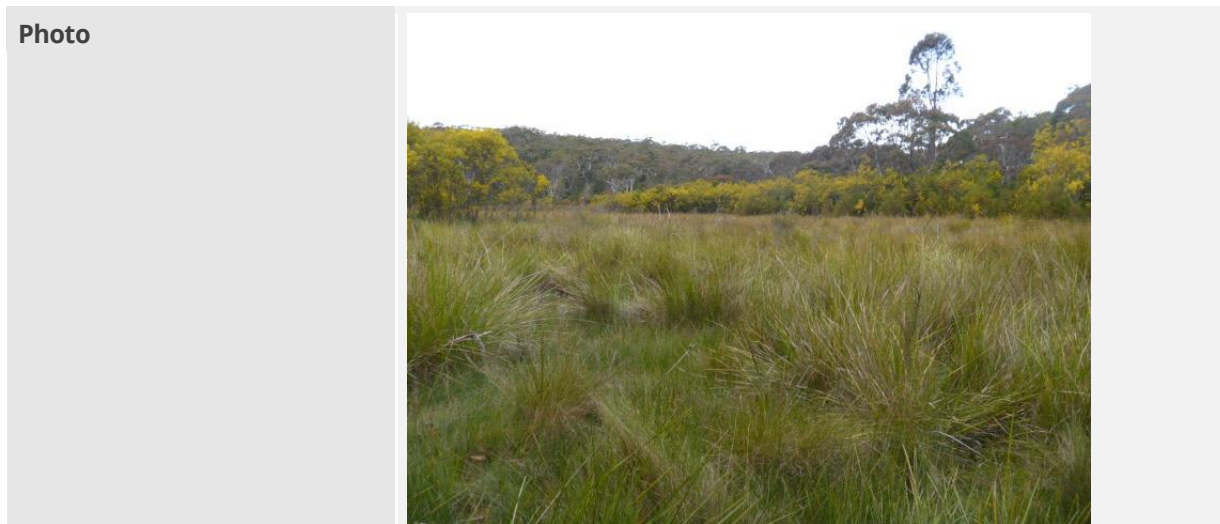
Area	Wonga West
Swamp type	Headwater
Size (ha)	0.31
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Lizard Creek Upland Swamp 33 (LCUS33)

Area	Wonga West
Swamp type	Headwater
Size (ha)	0.35
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Wallandoola Creek Upland Swamp 1 (WCUS1)

Area	Wonga West
Swamp type	Valley infill
Size (ha)	36.16
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43), Cyperoid Heath (MU44c)
Special significance	Yes – Statutory threshold, Closely proximate habitat, Size, Complexity



Wallandoola Creek Upland Swamp 2 (WCUS2)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	0.52
Vegetation communities	Restioid Heath (MU44b)
Special significance	No
Photo	

Wallandoola Creek Upland Swamp 3 (WCUS3)	
Area	Wonga West
Swamp type	Headwater

Size (ha)	0.71
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	

Wallandoola Creek Upland Swamp 4 (WCUS4)	
Area	Wonga West
Swamp type	Headwater / Valley infill
Size (ha)	11.08
Vegetation communities	Tea-tree Thicket (MU43), Sedgeland (MU44a), Restioid Heath (MU44b), Cyperoid Heath (MU44c)
Special significance	Yes – Statutory threshold, Closely proximate habitat, Size



Wallandoola Creek Upland Swamp 5 (WCUS5)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	0.23
Vegetation communities	Restioid Heath (MU44b)
Special significance	No
Photo	No

Wallandoola Creek Upland Swamp 6 (WCUS6)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	0.55
Vegetation communities	Tea-tree Thicket (MU43), Restioid Heath (MU44b)
Special significance	No
Photo	No

Wallandoola Creek Upland Swamp 7 (WCUS7)	
Area	Wonga West
Swamp type	Valley infill

Size (ha)	1.97
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43), Cyperoid Heath (MU44c)
Special significance	Yes – Statutory threshold, Closely proximate habitat, Complexity
Photo	No

Wallandoola Creek Upland Swamp 8 (WCUS8)

Area	Wonga West
Swamp type	Headwater
Size (ha)	0.24
Vegetation communities	Banksia Thicket (MU42)
Special significance	No
Photo	No

Wallandoola Creek Upland Swamp 9 (WCUS9)

Area	Wonga West
Swamp type	Valley infill
Size (ha)	0.27
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43)
Special significance	No
Photo	No

Wallandoola Creek Upland Swamp 10 (WCUS10)

Area	Wonga West
Swamp type	Headwater
Size (ha)	0.21
Vegetation communities	Restioid Heath (MU44b)
Special significance	No
Photo	No

Wallandoola Creek Upland Swamp 11 (WCUS11)

Area	Wonga West

Swamp type	Headwater
Size (ha)	2.79
Vegetation communities	Banksia Thicket (MU42), Tea-tree Thicket (MU43), Restioid Heath (MU44b)
Special significance	Yes – Statutory threshold, Closely proximate habitat, Complexity
Photo	

Wallandoola Creek Upland Swamp 12 (WCUS12)	
Area	Wonga West
Swamp type	Headwater
Size (ha)	0.82
Vegetation communities	Tea-tree Thicket (MU43), Restioid Heath (MU44b)
Special significance	No

Photo



Appendix 2: Swamp Matrix

Swamp Name	Area	SwampType	Statutory	Size (ha)	Complexity	Cluster	Scientific	Special Significance	Located above longwall	Depth of cover (m)	Panel width (m)	Ration DoC : Panel width	Previously mined by	Previously subsided by	Predicted subsidence (m)	Tensile strain (mm / m)	Compressive strain (mm / m)	Tilt (mm / m)	Valley Closure
BCUS1	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.16	MU42	Wallandoola	No		No	282	0				0.00	0.00	0.00	0.00	0.00
BCUS10	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.41	MU42	Wallandoola	No		No	317	0				0.00	0.00	0.00	0.00	0.00
BCUS11	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.26	MU42, MU44b	Wallandoola	No		LW11	299	149	2.01			-0.88	4.14	-7.43	17.07	0.00
BCUS2	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.89	MU42	Wallandoola	No		Mainroad	286	0				0.00	0.00	0.00	0.00	0.00
BCUS3	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.12	MU42	Wallandoola	No		No	288	0				0.00	0.00	0.00	0.00	0.00
BCUS4	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	2.20	MU42, MU43	Wallandoola	No		LW11	282	149	1.89			-0.81	4.24	-6.48	17.43	0.00
BCUS5	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.96	MU42, MU43	Wallandoola	No		No	291	0				0.00	0.00	0.00	0.00	0.00
BCUS6	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	1.37	MU42, MU43	Wallandoola	No		Mainroad	307	0				0.00	0.00	0.00	0.00	0.00
BCUS7	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.62	MU42	Wallandoola	No		Mainroad	319	0				0.00	0.00	0.00	0.00	0.00
BCUS8	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.66	MU42	Wallandoola	No		No	320	0				0.00	0.00	0.00	0.00	0.00
BCUS9	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.27	MU42	Wallandoola	No		No	318	0				0.00	0.00	0.00	0.00	0.00

CCUS1	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	4.81	MU42, MU43, MU44b, MU44c	Wallandoola	No	Yes	LW3	250	101	2.47			-0.40	2.65	-6.79	11.38	0.00
CCUS10	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	1.63	MU42, MU43, MU44c	Wallandoola	No	Yes	LW9	286	149	1.92			-1.00	4.60	-8.74	21.39	0.00
CCUS11	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.34	MU42	Wallandoola	No		LW10	289	151	1.91			-0.47	4.37	1.61	17.58	0.00
CCUS12	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	1.84	MU42	Wallandoola	No		LW11	306	149	2.05			-0.88	4.24	-7.47	17.50	0.00
CCUS13	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.26	MU42	Wallandoola	No		No	328	0				0.00	0.00	0.00	0.00	0.00
CCUS14	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.37	MU44b	Wallandoola	No		No	224	0				0.00	0.00	0.00	0.00	0.00
CCUS15	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.06	MU43	Wallandoola	No		No	262	0				0.00	0.00	0.00	0.00	0.00
CCUS16	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.87	MU42	Wallandoola	No		No	334	0				0.00	0.00	0.00	0.00	0.00
CCUS17	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.07	MU42	Wallandoola	No		No	259	0				0.00	0.00	0.00	0.00	0.00
CCUS18	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.05	MU42	Wallandoola	No		No	257	0				0.00	0.00	0.00	0.00	0.00
CCUS19	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.04	MU42	Wallandoola	No		No	254	0				0.00	0.00	0.00	0.00	0.00
CCUS2	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	1.21	MU44a, MU44b	Wallandoola	No		LW1, LW2	240	101	2.38			-0.39	2.77	-6.59	11.42	0.00
CCUS20	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.55	MU42	Wallandoola	No		No	260	0				0.00	0.00	0.00	0.00	0.00

CCUS21	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.05	MU42	Wallandoola	No		No	267	0				-0.43	4.57	-2.49	19.94	0.00
CCUS22	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.31	MU42, MU44b	Wallandoola	No		No	338	0				0.00	0.00	0.00	0.00	0.00
CCUS23	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	1.44	MU42, MU44a	Wallandoola	No		LW5	275	147	1.87			-0.99	4.41	-8.04	20.04	0.00
CCUS3	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.55	MU42, MU44a	Wallandoola	No		LW5	275	147	1.87			-0.99	4.52	-8.04	20.31	0.00
CCUS4	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	1.77	MU42, MU43, MU44c	Wallandoola	No	Yes	LW6	281	147	1.91			-1.00	4.63	-8.03	21.04	0.00
CCUS5	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	3.45	MU42, MU43, MU44a	Wallandoola	No	Yes	LW7, LW8	293	155	1.89			-1.00	4.74	-8.03	21.30	0.00
CCUS6	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	2.05	MU42	Wallandoola	No		LW4	264	149	1.77			-1.02	4.79	-8.05	21.95	0.00
CCUS7	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	1.32	MU42	Wallandoola	No		No	276	0				0.00	0.00	0.00	0.00	0.00
CCUS8	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.46	MU42	Wallandoola	No		Mainroad	279	0				0.00	0.00	0.00	0.00	0.00
CCUS9	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.76	MU42	Wallandoola	No		Mainroad	285	0				0.00	0.00	0.00	0.00	0.00
CRUS1	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	9.84	MU42, MU43	Wallandoola	No	Yes	LW6	271	147	1.85			-0.89	4.34	-7.20	17.51	0.00
CRUS2	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	3.12	MU42, MU43, MU44c	Wallandoola	No	Yes	No	257	0				0.00	0.00	0.00	0.00	0.00
CRUS3	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	3.42	MU42, MU43, MU44a, MU44b, MU44c	Wallandoola	No	Yes	No	234	0				0.00	0.00	0.00	0.00	0.00

CRUS4	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.37	MU44a	Wallandoola	No		No	219	0				0.00	0.00	0.00	0.00	0.00
CRUS5	Wonga East	Headwater swamp	Coastal Upland Swamp EEC	0.13	MU44a	Wallandoola	No		No	217	0				0.00	0.00	0.00	0.00	0.00
LCUS1	Wonga West	Headwater / valley infillswamp	Coastal Upland Swamp EEC	129.89	MU42, MU43, MU44b	Wallandoola	No	Yes	No	441	0				-0.87	0.00	0.00	0.00	0.00
LCUS10	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	2.71	MU42, MU44a, MU44b	Wallandoola	No		No	479	0				-0.22	0.00	0.00	0.00	0.00
LCUS11	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.35	MU42	Wallandoola	No		No	485	0				-0.55	0.00	0.00	0.00	0.00
LCUS12	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	1.68	MU42, MU44b	Wallandoola	No		LW12	487	385	1.26			-3.02	3.95	-4.59	9.51	0.00
LCUS13	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.22	MU42	Wallandoola	No		Mainroad	471	0				0.12	0.00	0.00	0.00	0.00
LCUS14	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.91	MU42	Wallandoola	No		Mainroad	467	0				-0.05	0.00	0.00	0.00	0.00
LCUS15	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.43	MU42	Wallandoola	No		Mainroad	475	0				0.03	0.00	0.00	0.00	0.00
LCUS16	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.06	MU42	Wallandoola	No		No	474	0				-0.06	0.00	0.00	0.00	0.00
LCUS17	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	1.16	MU42, MU43	Wallandoola	No		Mainroad	477	0				-0.77	0.00	0.00	1.70	0.00
LCUS18	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	2.53	MU42, MU44b	Wallandoola	No		LW13	495	385	1.29			-3.30	4.04	-3.43	4.45	0.00
LCUS19	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.21	MU44b	Wallandoola	No		LW14	473	375	1.26			-3.33	-4.04	-5.56	11.99	0.00

LCUS2	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.74	MU44b	Wallandoola	No		No	491	0				-0.52	0.00	0.00	2.43	0.00
LCUS20	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.24	MU44b	Wallandoola	No		LW15	489	385	1.27			-2.18	4.13	-1.39	4.69	0.00
LCUS21	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.11	MU44b	Wallandoola	No		LW15	484	385	1.26			-3.29	-3.64	-3.97	1.86	0.00
LCUS22	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.26	MU42	Wallandoola	No		No	467	0				-0.29	0.00	0.00	0.00	0.00
LCUS23	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.08	MU44b	Wallandoola	No		No	466	0				-0.10	0.00	0.00	0.00	0.00
LCUS24	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.35	MU42	Wallandoola	No		No	468	0				0.00	0.00	0.00	0.00	0.00
LCUS25	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	3.34	MU42, MU44b	Wallandoola	No		LW15, LW16	474	395	1.20			-3.30	9.98	-7.29	13.57	0.00
LCUS26	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	3.09	MU43, MU44b	Wallandoola	No		No	470	0				0.00	0.00	0.00	0.00	0.00
LCUS27	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	1.04	MU42, MU43, MU44b	Wallandoola	No	Yes	No	473	0				0.00	0.00	0.00	0.00	0.00
LCUS28	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	1.00	MU42, MU44b	Wallandoola	No		Mainroad	464	0				-1.85	4.71	1.76	9.15	0.00
LCUS29	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.34	MU44b	Wallandoola	No		No	465	0				-0.75	5.17	4.00	6.55	0.00
LCUS3	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.56	MU44b	Wallandoola	No		No	478	0				-0.03	0.00	0.00	0.00	0.00
LCUS30	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.07	MU44b	Wallandoola	No		No	462	0				0.00	0.00	0.00	0.00	0.00

LCUS31	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.25	MU42, MU44b	Wallandoola	No		No	463	0				0.00	0.00	0.00	0.00	0.00
LCUS32	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.31	MU42	Wallandoola	No		No	462	0				0.00	0.00	0.00	0.00	0.00
LCUS33	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.35	MU42	Wallandoola	No		Mainroad	478	0				-0.19	0.00	0.00	0.00	0.00
LCUS4	Wonga West	Valley infill swamp	Coastal Upland Swamp EEC	0.83	MU43	Wallandoola	No		No	490	0				-0.48	0.00	0.00	0.00	0.00
LCUS5	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.60	MU44b	Wallandoola	No		No	487	0				-0.13	0.00	0.00	0.00	0.00
LCUS6	Wonga West	Headwater / valley infillswamp	Coastal Upland Swamp EEC	3.74	MU42, MU43, MU44a, MU44b, MU44c	Wallandoola	No	Yes	No	478	0				-0.96	0.00	0.00	1.93	0.00
LCUS7	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.41	MU42	Wallandoola	No		No	487	0				-0.21	0.00	0.00	0.00	0.00
LCUS8	Wonga West	Headwater / valley infillswamp	Coastal Upland Swamp EEC	2.09	MU42, MU43, MU44a, MU44b	Wallandoola	No	Yes	LW12	490	385	1.27			-2.66	2.75	-2.64	9.15	0.00
LCUS9	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.20	MU44b	Wallandoola	No		LW12	499	385	1.30			-3.29	-3.88	-4.81	5.09	0.00
WCUS1	Wonga West	Valley infill swamp	Coastal Upland Swamp EEC	36.16	MU42, MU43, MU44c	Wallandoola	No	Yes	No	469	0				-0.72	0.00	0.00	0.00	0.00
WCUS10	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.21	MU44b	Wallandoola	No		No	487	0				-1.06	0.00	0.00	0.00	0.00
WCUS11	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	2.79	MU42, MU43, MU44b	Wallandoola	No	Yes	LW13	503	385	1.31			-3.27	5.35	-3.81	8.02	0.00
WCUS12	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.82	MU43, MU44b	Wallandoola	No		LW14	499	375	1.33			-3.22	4.50	-2.74	4.07	0.00

WCUS2	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.52	MU44b	Wallandoola	No		No	489	0				0.00	0.00	0.00	0.00	0.00
WCUS3	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.71	MU42	Wallandoola	No		No	487	0				-0.90	0.00	0.00	0.00	0.00
WCUS4	Wonga West	Headwater / valley infillswamp	Coastal Upland Swamp EEC	11.08	MU43, MU44a, MU44b, MU44c	Wallandoola	No	Yes	LW13	494	385	1.28			-3.35	5.03	-6.97	10.58	0.00
WCUS5	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.23	MU44b	Wallandoola	No		No	487	0				-1.07	0.00	0.00	0.00	0.00
WCUS6	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.55	MU43, MU44b	Wallandoola	No		No	491	0				-0.94	0.00	0.00	0.00	0.00
WCUS7	Wonga West	Valley infill swamp	Coastal Upland Swamp EEC	1.97	MU42, MU43, MU44c	Wallandoola	No	Yes	LW14	492	375	1.31			-2.19	5.45	-0.01	10.70	0.00
WCUS8	Wonga West	Headwater swamp	Coastal Upland Swamp EEC	0.24	MU42	Wallandoola	No		LW14	497	375	1.33			-2.81	-0.11	-6.27	10.24	0.00
WCUS9	Wonga West	Valley infill swamp	Coastal Upland Swamp EEC	0.27	MU42, MU43	Wallandoola	No		No	489	0				-1.55	5.18	4.00	8.60	0.00

ATTACHMENT C

Response to Individual Submissions

DIVISION OF RESOURCES AND ENERGY

COMMENT	RESPONSE
A revised SMP will be required to address LW5.	Currently both an Extraction Plan for DP&I and an SMP for DRE are required once planning approval has been received.
The proposed modification should be reflected in the existing NRE NO.1 Colliery operations and environmental management. DRE recommends approval with the inclusion of the conditional requirements for a Mining Operations Plan and an Annual Environmental Management Report to the satisfaction of the Director General of the Department of Trade and Investment, Regional Infrastructure & Services.	Any management plans that are approved by DP&I will be updated where management of subsidence impacts are required to be added for LW5. The current MOP will be amended to include LW4 & 5 and MG 6, 7 & 8 in its approved form if the application is approved by DP&I. The outcomes of the management of subsidence with regard to LW4 & 5 will be reported in the AEMR
The granting of any development consent modification should be subject to the following provisions: • The proponent should amend the Mining Operations Plan, to include the proposed project, to the satisfaction of the DRE.	The current MOP will be amended to include LW4 & 5 and MG 6, 7 & 8 in its approved form if the application is approved by DP&I. The outcomes of the management of subsidence with regard to LW4 & 5 will be reported in the AEMR
• The proponent should review the proposed activities in the Annual Environmental Management Report to the satisfaction of the DRE.	This will be added to the AEMR as relevant
• Integrated rehabilitation and environmental management reporting is to be captured in the existing Mining Operations Plan and Annual Environmental Management Report to the satisfaction of the DRE.	The current MOP will be amended to include any changes to rehabilitation that may result from LW4 & 5 and MG 6, 7 & 8 in its approved form if the application is approved by DP&I. The outcomes of the management of subsidence with regard to LW4 & 5 will be reported in the AEMR
• The proponent should commence discussions with DRE on the requirements for the preparation and submission of a Mining Operations Plan and the Annual Environmental Management Report.	If approval is given, NRE will be required to submit an SMP application to DRE. It's understood by NRE that this SMP application will form an addendum to the existing approved MOP. This will be confirmed and environmental performance will be reported in the AEMR
• It is recommended that the applicant be required to undertake a further period of background flora and fauna monitoring before the commencement of mining of LW5 such that the requirement for 2 years of background monitoring has been achieved; or	Biosis has been undertaking baseline monitoring of upland swamp CRHS1 since Autumn 2011. Monitoring is undertaken in Spring and Autumn. As of the end of Spring 2012 two years baseline data will be available for CRHS1. Following requests from OEH in early 2012 Biosis commenced monitoring of CCHS3 and CCHS4 (as well as other swamps within Gujarat's lease area) in Autumn 2012. One year baseline data will be available prior to the commencement of mining on LW5. Despite a lack of two years baseline data from CCHS3 and CCHS4, any changes to vegetation composition resulting from changes in hydrology are likely to lag behind any subsidence effects. Data analysis looks for changes in flora species richness and species diversity, as well as looking at indicator species. In addition, Biosis has undertaken detailed mapping of vegetation sub-communities within CCHS3 and CCHS4. If subsidence effects do result in impacts to vegetation in these upland swamps, impacts can be assessed long term by comparing vegetation mapping undertaken just prior to or at the commencement of mining with vegetation mapping post-mining to determine whether impacts to vegetation communities within these upland swamps has resulted from the extraction of coal from Longwalls 4 and 5.
• Satisfy DRE that sufficient data has been collected to differentiate potential impacts from mining from natural variation, particularly on CCHS 3 and CCHS4 swamp vegetation.	For underground operational reasons NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impact predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Biosis has been undertaking baseline monitoring of upland swamp CRHS1 since Autumn 2011. Monitoring is undertaken in Spring and Autumn. As of the end of Spring 2012 two years baseline data will be available for CRHS1. Following requests from OEH in early 2012 Biosis commenced monitoring of CCHS3 and CCHS4 (as well as other swamps within Gujarat's lease area) in Autumn 2012. One year baseline data will be available prior to the commencement of mining on LW5. Despite a lack of two years baseline data from CCHS3 and CCHS4, any changes to vegetation composition resulting from changes in hydrology are likely to lag behind any subsidence effects. Data analysis looks for changes in flora species richness and species diversity, as well as looking at indicator species. In addition, Biosis has undertaken detailed mapping of vegetation sub-communities within CCHS3 and CCHS4. If subsidence effects do result in impacts to vegetation in these upland swamps, impacts can be assessed long term by comparing vegetation mapping undertaken just prior to or at the commencement of mining with vegetation mapping post-mining to determine whether impacts to vegetation communities within these upland swamps has resulted from the extraction of coal from Longwalls 4 and 5.

DAMS SAFETY COMMITTEE

COMMENT	RESPONSE
The Dams Safety Committee has received a copy of the Application to modify NRE #1 Colliery's Preliminary Works Project approval. The area addressed in the modification impacts on the Cataract Notification Area. Maingates 6, 7 & 8 enter the Notification Area. Cataract Dam is a major water supply dam which is prescribed by the Dams Safety Committee. The Committee is currently regulating mining within the Cataract Notification Area which surrounds the Cataract Dam, using its powers under the Dams Safety Act 1978 and the Mining Act. The proposed mining lies partly within the notification area and as such an application to the Dams Safety Committee to mine within the notification area will be required.	A DSC application for Maingates 6, 7 & 8 will be lodged as soon as possible.
Together with concerns for the safety of the Dam itself, the Committee has concerns for the security of the stored waters.	Noted
These concerns are heightened by the lack of information generally and the inaccuracies in the subsidence report.	NRE acknowledges that there are some issues with the information provided in the EA. This is addressed in a general sense in the section on Information Adequacy in this Response Report.
Information the Committee requires before making a decision about mining within a Notification Area includes but is not limited to: • A geology report on the area - o There is none in the EA. • From the reports in the EA, which included past workings, it is obvious that structures have interrupted the Bulli and Balgownie workings in the Wonga East area. There is no discussion of the likely impact of structures on subsidence or the possible loss of storage via a structure to the mine. There is some mention of the water courses in the Wonga East area being in the Bulgo Sandstone. That is the aquitard Bald Hill Claystone is not present. There is no surface geology to confirm this fact. Impacts on ground water and surface waters depend on the Bald Hill Claystone being intact. There is no geology report that says that it is present in the area.	More detailed information will be provided to DSC as required during any DSC application for approval for Maingates 6, 7 & 8. SCT 2012 has addressed these issues of geology and the Bald Hill Claystone in Attachment A. Further information is also available in the sections of this Response Report titled Geology and Groundwater.
A groundwater model that addresses the possibility of losses from the reservoir as a result of mining. - o Pathways for loss , • Via structure to the workings. • Change in water pressure in Hawkesbury SS in Wonga East area results in a pressure differential that drives water from reservoir to escarpment. • Increased permeability of the Bulgo Sandstone in the beds of watercourses in the Wonga East area drains water to the workings. - o Ground water model has up to 50m of draw down in the Bulli Seam after mining in the East Area. As the Bulli seam has been extensively mined in this area it would have zero head. As it has zero head it therefore does not have 50m of head to lose. - o It is assumed that the Bald Hill Claystone maintains its aquitard properties (GeoTerra). Bald Hill Claystone does not appear to exist in the Cataract Creek.	More detailed information will be provided to DSC as required during any DSC application for approval for Maingates 6, 7 & 8. SCT 2012 has addressed these issues of geology and the Bald Hill Claystone in Attachment A. Further information is also available in the sections of this Response Report titled Geology and Groundwater.
The DSC has previously approved mining in the Bulli Seam below Cataract Reservoir at NRE#1 Colliery. Part of the approval to mine the Bulli seam below the reservoir included the installation of plugs to isolate the goaf area below the reservoir from the mine portals. The possibility of a connection from the Lake via the mine to the escarpment has not been addressed. The proposed drive of the Wongawilli roads below the Bulli and Balgownie extraction will bypass the location of plugs in the Bulli seam (proposed extraction is to the east of plug location), designed to contain an inflow of lake water into the mine and prevent it from draining the reservoir. The lack of contingency planning for a worst case (and complete reliance on the subsidence prediction that no hydraulic connection to the surface will be made) is of great concern to the Committee.	This issue will be managed in liaison with the DSC as part of an application for Maingates 6, 7 & 8.

NSW HERITAGE

COMMENT	RESPONSE
The Heritage Branch has reviewed the reports submitted including the Heritage Management Plan (HMP) dated 15 April 2012 which forms part of the project documentation and it is noted that a 2011 ERM report identifies there are no historic heritage sites identified within the project area however, the State Heritage Listed Cataract Dam and South Bulli Colliery (both items historic heritage items) are located nearby.	Correct. The dam wall is located well outside any potential area affected by far field movements from this application.
Accordingly, Section 6.3.2 of the HMP details the procedure to be followed in the event of the discovery of historic cultural material. This is considered adequate.	Noted. Comment directed to DP&I
Therefore, the Heritage Branch has no comments on this Environmental Assessment as this time. Should there be any alterations to the project scope or impacts on the identified heritage, or any additional heritage items discovered during works, the Heritage Branch would be pleased to comment further at that time.	Noted. Comment directed to DP&I

NSW OFFICE OF WATER

COMMENT	RESPONSE
Reference is made to your letter dated 7 August 2012 to the NSW Office of Water, a division within the NSW Department of Primary Industries, regarding the above matter. It is advised that the Office of Water has a number of substantial concerns with respect to this application, as follows, and as such cannot support approval of the application.	Noted. Comment directed to DP&I
The Environmental Assessment (EA) makes references to previous project and Subsidence Management Plan (SMP) documentation submitted as part of various applications to the Department of Planning and Infrastructure and to the Division of Resources and Energy within the Department of Trade & Investment, Regional Infrastructure & Services. These applications include the project approval (MP10_0046) for the NRE NO.1 Colliery Preliminary Works Project, the application for Stage 2 Major Expansion (MP09_0013) which has been withdrawn following failure at test of adequacy of the Environmental Impact Statement, and the SMP application for Longwalls 4 and 5 for which approval for LW4 was granted.	MP09_0013 was withdrawn in consultation with DP&I in order to allow the project to be split into the Preliminary Works (MP 10_0046) and Underground Expansion Project Pt3A applications. Both these applications are current.
The current EA has not provided surface water and groundwater assessments or Water Management Plan documentation. The updated subsidence predictions are within the same range as the previous assessments, which were determined in 2011 to be deficient.	Appendix J was submitted as an example of how an Extraction Plan would look for the project if approved. This was clearly stated in Section 1.2 of the EA. The updated subsidence predictions were based on partial data from LW4 extraction and thus reflect actual subsidence experience.
The Office of Water provided comment on all these previous assessments and on the Water Management Plan (WMP) to the Department of Planning and Infrastructure, the Division of Resources and Energy, and to Gujarat NRE Coking Coal Ltd. These comments have iterated the concerns of the Office of Water to the assessments and to the WMP. As yet the Office of Water has not been provided with an updated WMP or SMP, to the satisfaction of the Office of Water, as required by the approval conditions to MP10_0046 for Longwall4.	MP10_0046 was not modified as part of the SMP application for LW4. The SMP process is a separate approval under Pt5 of the Environmental Planning and Assessment Act 1979. Nor is NRE able to find any condition in the LW4 SMP approval that holds the requirement to provide the Office of Water with an updated WMP or SMP, to the satisfaction of the Office of Water.
The WMP provided as supplementary documentation dated 31 August 2012 was for the preliminary works project (MP10_0046) only, which relates only to the proposed construction of Longwalls 4 and 5 first workings, Wonga Mains first workings, P and R Drifts first workings and H Panel. The current modification application (MP10_0046 Mod 1) is for Longwalls 4 and 5 second workings and the main gates for Longwalls 6 to 8. The WMP has not been updated for the current application.	As stated in Section 1.2 of the EA, Appendix J was included to give an example of what the content and structure of an Extraction Plan might be. The Water Management Plan will be updated as part of an Extraction Plan & SMP application should the modification application be approved.
Four of the piezometers installed into the sandstone have failed due to mining of the associated longwalls and there is no information on the installation of new piezometers to monitor groundwater in deeper aquifers in longwalls approved in the previous project approval or for the modification application. Water level data was only provided up until 2009 and water quality data was only presented for surface water courses and with only median values provided. Previous correspondence by the Division of Resources and Energy to Gujarat NRE Coking Coal Ltd dated 6 April 2012 with regard to the SMP approval for LW4 has reiterated these concerns about lack of information presented in the Environmental Management Plan and associated plans.	Geoterra provided data plots and groundwater information based on data provided by NRE up to the relevant closing period of the EA.
As yet no supplementary or updated information has been provided for review, including within the current EA, with the prediction outcomes being ambiguous and non-specific, due to lack of clearly demonstrated subsidence and imparted strain prediction methodology, lack of proper geomorphic description and risk assessment to affected rivers and minor watercourses, and lack of consistent and sufficiently rigorous groundwater impact assessment.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. Geoterra provided data plots and groundwater information up to the relevant closing period of the EA, based on data provided by Gujarat monitoring teams. Ongoing groundwater, stream and swamp data is continually being collected and will be presented in incremental updates as and when the data becomes available from the Gujarat monitoring teams.
Until the required work has been undertaken to adequately characterise the impact area and to assess the potential impacts and trigger criteria, the Office of Water whilst being aware that LW4 has current SMP approval, cannot support the approval of this application.	Noted. Comment directed to DP&I

OFFICE OF ENVIRONMENT AND HERITAGE

COMMENT	RESPONSE
The NSW Government has invested heavily in time, resources and money to review mining proposals in the Southern Coalfields. This includes a number of major assessments such as: • Dendrobium Commission of Inquiry • Southern Coalfield Inquiry • Metropolitan Coal PAC • Bulli Seam PAC In each case significant deficiencies have been identified in the information provided by Industry to Government on which to base decisions that balance the environmental, social and economic benefits and costs of these proposals.	Noted. Comment directed to DP&I
Gujarat NRE does not currently have an approved extraction plan in place for the expansion project with the exception of LW4 which was approved under a Subsidence Management Plan (SMP) approval under Part 5 of the EPA Act. OEH/EPA previously commented on the Draft SMP for Longwalls 4 and 5 Draft Conditions and supporting Review of Environmental Factors, concluding that the proposal could not be supported.	Noted. Comment directed to DP&I
The Gujarat NRE expansion is currently being assessed in 2 stages under Part 3A of the Environmental Planning and Assessment Act 1979 (EPA Act). The Environmental Assessment (EA) (ERM 2011) for the Stage1 Preliminary Works was deemed to be inadequate in a number of areas by a number of Government agencies. In particular, the subsidence prediction methodology was heavily criticised by a variety of agencies, including OEH (formerly DECCW), as was the lack of baseline data and underestimation of potential environmental impacts associated with various iterations of the mine plan.	It is noted that the inadequacy process is designed to ensure the maximum possible amount of data and other information is available for assessment bodies and community to gain an understanding of a proposal. To NRE's knowledge inadequacies are found in every EA submitted to planning and are not all able to be met in either a reasonable time or for good economic or scientific reason. Neither inadequacies nor criticism on purely environmental grounds should form the basis for judgement of an EA. Rather the EA should be judged on whether it is considered to reasonably have met the relevant Objectives of the Environmental Planning and Assessment Act 1979.
The Planning Assessment Commission (PAC) in assessing the Stage 1 Preliminary Works application commented that "the Commission considers that separation of project applications where the primary purpose of the first is to facilitate the second could lead to lack of public confidence in the NSW assessment and regulatory systems and must be considered undesirable." (PAC 2011).	This current approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE for commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
Figure 1 of the EA (above) illustrates this is the first of many planned longwalls in this area. Also the modification includes the development of Maingates 6, 7 and 8 which will be preparatory to longwall mining. OEH is concerned that this project could facilitate the future expansion project ahead of the full assessment of the larger mine domain that Gujarat will eventually seek. The current process of seeking incremental approvals is a piecemeal approach that does not consider the full cumulative impacts of the mining operation.	This current approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE for commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
OEH's main concern with this EA is the potential impact the proposed mining will have on streams, aquifers and swamps and consequent impacts for threatened species and communities not only above Longwalls 4 and 5 but Within the whole mining domain.	Noted. Comment directed to DP&I
The Environmental Assessment (Cardno 2012) is not restricted to the modification works but includes sections detailing the original expanded mine (including discussions on Wonga West which is approximately 9 km to the west - north-west) as well as new material specific to the reconfigured Longwalls 4 and 5 layouts. The resulting EA is an inconsistent integration of parts of the planned expanded mine plan, parts specific to Longwalls 4 and 5, some new opinions and minor surveys conducted by consultants, with virtually no presentation of baseline monitoring data for the area (e.g. groundwater levels in rock aquifers or upland swamp EECs; flow data for Cataract Creek etc).	These issues are addressed in Information Quality section of this Response Report
One of the more recent pieces of work to be included in this EA is a review of the original expanded mine proposal (and Government agency comments) by Pells Consulting (2011 Appendix E of the Longwall4 & 5 EA). While the Pells' report expresses differences of opinion in regards to subsidence predictions and probabilities of pillar runs, the consultant also identifies significant shortfalls in the assessment of impacts to groundwater aquifers, streams and swamps (see below). This is an independent peer-review of the original EA for the NRE Stage 2 expanded mine plan that was deemed to be inadequate by a number of Government agencies. The report also identifies significant deficiencies. However, these inadequacies have not been addressed in the current EA.	As outlined above, Biosis has completed a detailed impacts assessment for upland swamps as a part of Gujarat's Major Expansion Project. This impact assessment used the initial risk assessment and comparative analysis methods, as required by OEH (2012), as well as an assessment of groundwater, flow accumulation and strains to assess impacts to upland swamps. This assessment method is more robust than any other undertaken within the Southern Coalfield. This assessment has identified that upland swamps located above Longwalls 4 and 5 are unlikely to be subject to negative environmental outcomes. Any comments or suggestions from agency and peer reviews will be addressed in the EA or Extraction Plan
At a meeting with Gujarat and Biosis (26 April 2012) it was identified that the subsidence methodology for the current EA had not changed since the submission of the EA. Therefore Gujarat NRE is continuing to promote mining projects based on subsidence predictions that have been heavily criticised by Government agencies, including Infrastructure and Investment's Chief Subsidence Engineer. This appears to be a highly "experimental" approach to mining in this domain given the extreme lack of information on: • Cumulative effects of multiple extracted seams; • Potential for old pillar collapse; • Lack of confining aquicludes / aquitards in important areas (ie eroded Bald Hill claystone layer within nearby Cataract Creek); • Presence of faults; • Inadequate description of prediction methodology and absence of calibration/validation; and • Relevant supporting documentation and baseline data (and provided within a suitable timeframe to enable review).	These issues are addressed by SCT 2012 in Attachment A of this Response Report. NRE is unable to modify its subsidence model without significant risk to the operations in terms of the time it would take to undertake this task. The use of actual LW4 subsidence data has provided much needed data to allow recalibration of the model to more accurately predict the subsidence from LW5.

Pells's review (2011) of the subsidence modelling recommended that a range of subsidence values be provided given the inherent uncertainties in mining in this area. Notable in this is that subsidence computations undertaken by Pells for the Wonga East domain give stress levels ranging from 3-14 mm/m.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. NRE is unable to modify its subsidence model without significant risk to the operations in terms of the time it would take to undertake this task. The use of actual LW4 subsidence data has provided much needed data to allow recalibration of the model to more accurately predict the subsidence from LW5.
The PAC panel for the Bulli Seam Operations review (NSW PAC 2010 p120) has set out subsidence criteria that should be applied individually to identify swamps that may be at risk of negative environmental consequences. These criteria are as follows: • all swamps subject to systematic tensile strains >0.5mm/m • all swamps subject to systematic compressive strains >2 mm/m • all swamps with depth of cover less than 1.5 times longwall panel width • all swamps subject to tilt (transient or final) >4 mm/m • all swamps subject to a predicted valley closure of >200 mm • all swamps subject to a 'maximum observed closure strain' >7.0 mm/m.	Noted. Comment directed to DP&I
The subsidence predictions for LW5, which undermines upland swamp CCHS3 and is adjacent to CCHS4, clearly exceed these thresholds. Seedsman Geotechnics (2012) predicts maximum tilt at 17 mm/m, with strains anticipated to be between 12 mm/m compression to 10 mm/m tension (Seedsman 2012) in LW5. As such these swamps are clearly at risk of negative environmental consequences from the proposal.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Cchs3 will potentially be affected by tensile and compressive strains, however, as all monitoring to date has established that it is not a groundwater dependent swamp, this limits the potential risk of subsidence adversely affecting its groundwater supply or storage capacity, as it is predominantly reliant on overland surface flow recharge. CCHS4 is located outside of the predicted limits of subsidence, as provided by Seedsman (2012) for LW5. Therefore the risk of negative environmental consequences for this upland swamp is predicted to be negligible. There is some potential for fracturing of bedrock below CCHS3. Monitoring of groundwater levels in this upland swamps have indicated that this upland swamp is dry. Some upland swamps are reliant on rainfall and surface water flows, and perched ephemeral water tables may be absent or may dry out during periods of low rainfall. Based on this data we deduce that CCHS3 is likely to be such a swamp, and thus fracturing of the bedrock below CCHS3 is unlikely to have a significant impact on the vegetation communities within this swamp. In addition, this upland swamp is no longer considered to be of 'special significance' based on detailed mapping and assessment of upland swamps undertaken by Biosis for Gujarat's Major Expansion Project.
Of additional concern is that the presence of faults in the area have not been addressed appropriately or sufficiently allowed for in predictions of impact. At the meeting with Gujarat and Biosis (26 April 2012) it was also identified that two faults (the Rixons Pass fault and an unnamed fault lying near or under Cataract Creek) constrained mining in the area. The presence of these faults could exacerbate regional groundwater aquifer depressurization both to the north and south of the proposed Longwalls 4 and 5. These faults could also lead to wide variations in subsidence and its related impacts. I This fault does not appear to be identified in Pells (2011) assessment of faults in this vicinity. Pells (2011) however, states (p18) that "The EA and its various appendices give due consideration to the stratigraphy of the near horizontal Triassic strata above Permian coal seams. However, documentation of important geological structures such as faults, joint swarms and igneous intrusions is very limited, and consideration of such structures on surface deformations, groundwater flow, and impacts on creeks and swamps, is not adequate."	These issues are addressed by SCT 2012 in Attachment A of this Response Report. LW5 has been shortened to the east to avoid undermining the fault. A highly weathered doleritic (now entirely clay) dyke has been mapped over LW5, however due to its highly weathered state, it is not anticipated to potentially cause hydraulic connection through subsidence to aquifers beneath the Bald Hill Claystone, as the weathered dyke is very "plastic" and predominantly contains swelling montmorillonite and illitic clay minerals. The weathered dyke does not intersect Cataract Creek within the subsidence zone of LW4 or LW5 and is not anticipated to potentially cause any adverse effects through hydraulic connection from the subsidence zone over LW4 or LW5 to the creek.
It is notable that Pells (2011) and the EA (Cardno 2012 & Seedsman 2012) all identify predicted strains from the current mine plan that exceed threshold levels likely to fracture rock strata and potentially have negative environmental consequences for upland swamp EECs, streams and groundwater aquifers. In addition, these adverse environmental consequences could be exacerbated due to the presence of faults.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. CCHS4 is located outside of the predicted limits of subsidence, as provided by Seedsman (2012) for LW5. Therefore the risk of negative environmental consequences for this upland swamp is predicted to be negligible. There is some potential for fracturing of bedrock below CCHS3. Monitoring of groundwater levels in this upland swamps have indicated that this upland swamp is dry. Some upland swamps are reliant on rainfall and surface water flows, and perched ephemeral water tables may be absent or may dry out during periods of low rainfall. Based on this data we deduce that CCHS3 is likely to be such a swamp, and thus fracturing of the bedrock below CCHS3 is unlikely to have a significant impact on the vegetation communities within this swamp. In addition, this upland swamp is no longer considered to be of 'special significance' based on detailed mapping and assessment of upland swamps undertaken by Biosis for Gujarat's Major Expansion Project. The potential effects from subsidence on the streams and aquifers has been assessed through use of a groundwater model that represents the pre and post subsidence groundwater systems over the proposed workings, and the model has assessed that there will be some impacts on the groundwater levels and stream flows, however the effects on stream flow are not anticipated to be adverse. LW5 has been shortened to the east to avoid undermining the fault. A highly weathered doleritic (now entirely clay) dyke has been mapped over LW5, however due to its highly weathered state, it is not anticipated to potentially cause hydraulic connection through subsidence to aquifers beneath the Bald Hill Claystone, as the weathered dyke is very "plastic" and predominantly contains swelling montmorillonite and illitic clay minerals. The weathered dyke does not intersect Cataract Creek within the subsidence zone of LW4 or LW5 and is not anticipated to potentially cause any adverse effects through hydraulic connection from the subsidence zone over LW4 or LW5 to the creek.
Pells (2011: Appendix E) provided an assessment of the groundwater components of the original expanded mine EA (ERM 2011). Major conclusions were that the available data did "not support a confident assessment on impacts to surface water systems" and that it "would be difficult for the monitoring to perceive and quantify impacts to surface water features from mining." It noted that there were a number of reasons that the role of the Bald Hill claystone in reducing mining impacts had been overstated. It concluded that "the examination of sensitivity (the range of possible predictions that can occur under the current level of uncertainty) has not been adequately addressed in the EA" and did not address the range set out in the PAC report for the Bulli Seam Operations.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. The Preliminary Works application involves first workings in various locations across the NRE lease area that is not anticipated to have adverse effects on stream flow or groundwater systems. The proposed LW5 does not underlie Cataract Creek and its subsidence zone is not anticipated to adversely affect Cataract Creek. The updated stream flow monitoring sites installed in Cataract Creek are designed to monitor changes in stream flow in the potential subsidence affected reach. The Bald Hill Claystone is not described in the Geoterra assessment as an "aquiclude" or impermeable layer, but as an "aquitard" or a layer with low intrinsic permeability that restricts the hydraulic connection between the aquifers above and below the BHCS. Based on prior

	experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers Sensitivity parameters were assessed in the groundwater model. Although the model was used to assess the entire NRE lease area, its conclusions were extrapolated to the more limited area of LW4 and LW5.										
OEH also has significant concerns about the influence of mining on groundwater aquifers and their implications for baseflow to streams and the maintenance of threatened aquatic species habitat. In the nearby Dendrobium mine, drawdowns of up to 40m in the Scarborough sandstone, 50m in the Bulgo sandstone and 25m in the Hawkesbury sandstone have been measured (Heritage Computing 2012). It is noted that predicted drawdowns provided in the original expanded mine EA (ERM 2011) and summarised in Table 4 of Pells (2011) are in many cases lower than the maximum drawdowns actually observed over the nearby Dendrobium mine.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. It is not reliable to extrapolate the results of a model in a different area at Dendrobium, with different geological, geomorphological, hydraulic parameter, depth of cover etc conditions to the NRE1 lease area. The NRE1 model has been specifically set up for the NRE1 lease area and surrounds.										
Given the peer-review of the Pells' report (2011) that identified significant flaws in the groundwater assessment for the expanded mine plan, it would reasonably be expected that such flaws are addressed in the EA for Longwalls 4 and 5; Maingates 6, 7 and 8. There is however no new groundwater assessment for the current EA (or presentation of baseline data that OEHL is aware is being collected), with the section of the main report dealing with groundwater still referring to the groundwater section of the expanded mine EA (ERM 2011) as simply being "consistent" with the proposed project modification (p53 of Cardno 2012).	A reduced area model specifically set up for Longwalls 4 and 5 was not prepared, however the predictions from the model were used to guide the potential effects on LW4 and LW5, along with experience gained from the authors and other's monitoring of surface water and groundwater systems in the Southern Coalfield as to the anticipated effects from subsidence on the groundwater and streams associated with extraction of LW4 and LW5. Two additional groundwater bores have been installed adjacent to LW4 and LW5, and data collection from the existing stream, swamp and groundwater monitoring sites are continually being used to update the baseline observations and to assist in prediction of subsidence effects on the subject systems.										
Reference to Geoterra (2012; Appendix I of the current EA) identifies that it is specific to swamp CRHS1 which does not lie above either LW4 or 5. As such, Geoterra's conclusions for CRHS1 are not transferrable to any swamps that lie directly above longwall panels (i.e. CCHS3).	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. The Geoterra assessment does not extrapolate what could or could not occur to Crhs1 to Cchs3 and Cchs4 that lie within the potential LW4 / LW5 subsidence area										
Aquifer drawdowns need much greater assessment with regards to their environmental consequence. Apart from their intrinsic value, the ecosystem services that upland swamps and groundwater aquifers provide in keeping rivers and streams flowing during periods of low rainfall are vitally important in protecting downstream ecosystems. Decreases to the groundwater levels in swamp and groundwater aquifers are likely to reduce and/or change the location of baseflow discharges, thereby affecting groundwater dependent and stream ecosystems.	The groundwater modelling conducted provides a sufficient aid to assessing the potential effects on streams and regional groundwater systems. It should be noted that no model will, or can, provide a "definite" assessment as it is a mathematical representation of a complex, natural system. The model's purpose is to provide a "guide" to what could happen, within the bounds of the model's mathematical limitations. A detailed analysis of flow accumulation for all upland swamps was undertaken as a part of the detailed impact assessment for upland swamps of 'special significance' as outlined above. This assessment modelled pre- versus post-mining based on detailed ground contours provided by LiDAR data and subsidence predictions from Seedsman (2012). This impact assessment determined that impacts to upland swamps located above Longwalls 4 and 5 were unlikely to occur, and that flow accumulation was unlikely to be altered by mining. This assessment does not take into consideration any changes to base flows as a result of fracturing of bedrock below swamps. However groundwater monitoring data from CCHS3 has shown that this upland swamp unlikely to be reliant on perched ephemeral groundwater, but is likely to be reliant on surface water flows and rainfall. As such any fracturing of bedrock below this upland swamp is unlikely to alter baseflow discharges.										
In assessing the proposal for mining of Longwalls 4 and 5 it is instructive to review the SMP approval conditions granted in March 2012 for Longwall4 as a guide to the likely performance measures relevant to swamps and biodiversity (threatened species) in this area. These are reproduced below: <table border="1"> <thead> <tr> <th>Feature</th><th>Performance measure</th></tr> </thead> <tbody> <tr> <td>Swamps</td><td></td></tr> <tr> <td>Coastal upland swamps including swamps labelled CRHS1, CCHS3 and CCHS4</td><td> Negligible* environmental consequences including: - Negligible change in size of swamp - Negligible change in the functioning of the swamp - Negligible change to the composition or distribution of species in the swamp - Negligible drainage of water from the swamp, or redistribution of water within the swamp </td></tr> <tr> <td>Biodiversity</td><td></td></tr> <tr> <td>Threatened species, populations and ecological communities</td><td>Negligible environmental consequences</td></tr> </tbody> </table> In this context "Negligible" is defined as small, unimportant, such as to be not worth considering. The assessment of whether the proposal can meet such performance measures is driven by the prediction of subsidence and estimation of the risk of that subsidence	Feature	Performance measure	Swamps		Coastal upland swamps including swamps labelled CRHS1, CCHS3 and CCHS4	Negligible* environmental consequences including: - Negligible change in size of swamp - Negligible change in the functioning of the swamp - Negligible change to the composition or distribution of species in the swamp - Negligible drainage of water from the swamp, or redistribution of water within the swamp	Biodiversity		Threatened species, populations and ecological communities	Negligible environmental consequences	Noted. Comment directed to DP&I
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Biodiversity											
Threatened species, populations and ecological communities	Negligible environmental consequences										

resulting in damage to features of special significance.	
The EA clearly identifies the natural features of special significance in the proposal area. OEH strongly supports the application of criteria developed by the Metropolitan and Bulli Seam PACs to identify upland swamps of special significance and concurs with the conclusions in the EA that swamps CRHS1, CCHS3 and CCHS4 each meet multiple criteria of special significance. OEH's own assessment of these swamps against the criteria is included below.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. As outlined above, Biosis has completed a detailed impacts assessment for upland swamps as a part of Gujarat's Major Expansion Project. This assessment looked at detailed vegetation mapping of all upland swamps, as well as flow accumulation modelling. An assessment of special significance was undertaken using criteria outlined in OEH (2012). This assessment identified that, although CCHS4 and CRHS1 would still be considered of 'special significance' using these revised criteria, CCHS3 is no longer considered to be 'special significance' as it is comprised of two upland swamps within two different catchments, and neither of these upland swamps meets criteria for size or complexity as outlined in OEH (2012).
OEH notes there are discrepancies in the areas of upland swamp referred to in the Main Report for CCHS3 (1.7 ha in size) versus the ERM (Appendix H) reference (2.6 ha in size) that should be addressed.	Agreed. NRE has undertaken significant extra work on assessing the ecology of the application areas to remove issues of difference over swamp type, characteristics, size and distribution. Mapping of CCHS3 undertaken by ERM identified areas of Fringing Eucalypt Woodland and Sandstone Scribbly Gum Woodland. This mapping relied, in part, on mapping by NPWS (2003), which provides indicative mapping of upland swamps only. This mapping was initially refined by Biosis when attempting to establish monitoring points within this upland swamp, and areas of Fringing Eucalypt Woodland and Sandstone Scribbly Gum Woodland at the downstream extent of CCHS3 were removed. Detailed and accurate mapping of upland swamps has now been undertaken. This mapping has identified that CCHS3 is 0.48 hectares. Areas of upland swamp previously identified as CCHS3, but within a separate catchment area, total 1.43 hectares.
Upland swamps CCHS3 and CCHS4 are natural features of 'Special Significance' and they are clearly at risk of negative environmental consequences from LW5. Given that this application also includes works for Main Gates 6, 7 and 8 it is anticipated that further impacts are proposed as a result of additional longwalls to the north. The proposal cannot demonstrate that it can meet performance measures of 'negligible environmental consequences' for these features, which is the best-practice standard currently recognised following many years of detailed iterative investigations and reviews into the impacts of longwall coal mining in the Southern Coalfields.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Detailed assessment of upland swamps has identified that CCHS3 is not considered to be of 'special significance' based on criteria outlined within OEH (2012). In addition groundwater monitoring has indicated that this upland swamp is unlikely to be reliant on perched ephemeral groundwater, and thus impacts to CCHS3 are considered unlikely to occur. Thus it is deemed that this upland swamp is at negligible risk of negative environmental consequences as a result of extraction of coal from LW4 and 5. Detailed impacts assessment undertaken as a part of Gujarat's Major Expansion Project has assessed the risk of negative environmental consequences to CCHS4. Based on initial risk assessment, comparative analysis, assessment of groundwater, flow accumulation modelling and assessment for risk of fracturing resulting from strains concluded that CCHS4 was at a low risk of negative environmental consequences for extraction of all longwalls associated with the Major Expansion Project. Based on the location of CCHS4 outside of the predicted limits of subsidence for LW5 we conclude that CCHS3 and CCHS4 are at negligible risk of negative environmental consequences as a result of extraction of coal from LW4. In addition, the relocation of the start position for LW5 will further reduce the potential for impacts.
The upland swamp at greatest risk is identified as CCHS3. Given these upland swamp EECs are identified as such they should be afforded special protection by way of a negligible impact criteria in any mine approval conditions. In order to be able to meet the performance measures the proposal needs to be modified, either by altering the mining parameters (panel width, pillar width) where	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved.

mining is carried out beneath the swamps of special significance, or by shortening the longwalls to avoid subsidence impacts to these swamps.	As outlined above, Biosis has completed a detailed impacts assessment for upland swamps as a part of Gujarat's Major Expansion Project. This assessment, using criteria outlined in OEH (2012) concluded that CCHS3 is not considered to be of 'special significance'. In addition groundwater monitoring data from CCHS3 has indicated that this upland swamp is unlikely to be reliant on perched ephemeral groundwater and this fracturing of the bedrock below this swamp is unlikely to result in a negative environmental outcome.
Pells (2011) review concluded that groundwater modelling could not provide definitive answers on the impacts to streams and swamps. It was considered "probable" that there will be negative impacts on at least five swamps above the Wonga West workings, namely WCHS1, WCHS2, ICHS3, ICHS4 and WCF52 but was unable to qualify the impacts.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. The groundwater modelling conducted provides a sufficient aid to assessing the potential effects on streams and regional groundwater systems. It should be noted that no model will, or can, provide a "definite" assessment as it is a mathematical representation of a complex, natural system. The model's purpose is to provide a "guide" to what could happen, within the bounds of the model's mathematical limitations.
A major part of the problem in considering such conclusions is that Pells' (2011) focus was for the broader mine plan and is 'not necessarily specific to the reconfigured Longwalls 4 and 5; Maingates 6, 7 and 8 (the subject of the current EA; Cardno 2012). Monitoring over the nearby Dendrobium mine has, however, clearly revealed adverse impacts on upland swamp EECs. If the relatively impermeable base of upland swamps is fractured, then any perched aquifer is likely to drain downwards into the fracture network, thereby altering natural groundwater levels within the swamp and leading to increased desiccation. The similarity of impacts in Dendrobium Swamps 12 and 15b to impacts measured in Kangaroo Creek swamp on the Newnes Plateau as a result of longwall mining (DECCW 2010) reveal some consistent patterns of longwall mining impacts on swamps. Not only is the absolute level of the aquifer being affected (ie loss of permanent perched aquifer), but the groundwater level recessions in response to rainfall after undermining are very abrupt when compared to recessions prior to undermining.	Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows: "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at VWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7. In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C." Although changes to groundwater levels in Swamp 15b have been observed o changes to vegetation composition within this upland swamp have been observed. In addition, CCHS3 is unlikely to be reliant on ephemeral groundwater and as such is less susceptible to fracturing of the bedrock below this upland swamp. CCHS3 is also not considered to be of 'special significance' according to criteria outlined in OEH (2012).
Given the existence of vulnerable and endangered species in Cataract Creek a negligible impact criteria should also apply to Cataract Creek in any mine approval conditions. Because of the high level of uncertainty in environmental outcomes if mining proceeds, remediation of any impacts to upland swamps or Cataract Creek should be mandated in any mine approval conditions and a bond instituted that would allow for remediation should the Proponent not undertake such remediation.	Noted. Comment directed to DP&I
As identified earlier, predicted subsidence parameters (especially strains) exceed threshold levels likely to fracture rock strata and could potentially have negative environmental consequences for upland swamp EECs, streams and groundwater aquifers.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. The groundwater modelling conducted provides a sufficient aid to assessing the potential effects on streams and regional groundwater systems. It should be noted that no model will, or can, provide a "definite" assessment as it is a mathematical representation of a complex, natural system. The model's purpose is to provide a "guide" to what could happen, within the bounds of the model's mathematical limitations.
If baseflows to Cataract Creek from groundwater aquifers or perched swamp aquifers are impacted by the current mining proposal, then this is likely to lead to adverse impacts on a range of threatened species within Cataract Creek. This includes a number of ground dwelling frogs (e.g. Stuttering Barred Frog2 and Giant Burrowing Frogs3) and Macquarie perch', the latter confirmed to be present in the lower reaches of Cataract Creek. 2 The Stuttering Frog Mixophyes balbus is listed as an endangered species under the NSW TSC Act and vulnerable under the Commonwealth EPBC Act. 3 The Giant Burrowing Frog (Heleioporus australiacus) is listed as vulnerable under both the EPBC Act and NSW TSC Act. 4 The Macquarie perch is listed as an endangered species under the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) and vulnerable under the NSW Fisheries Management Act 1994. Endangered species under the EPEC Act are a matter of national environmental significance.	In response to encouragement from OEH, SCA, NOW and DRE, NRE has installed two piezometer boreholes to the east of LW4 with the specific intent of assessing the characteristics of near surface groundwater in the vicinity of Cataract Creek. Biosis has undertaken detailed mapping of frog habitat within Wonga East, including mapping of breeding pools and potential breeding habitat. This detailed assessment has identified that potential breeding habitat within the area of potential impact is limited in extent. Cataract Creek does not provide suitable breeding habitat for the Giant Burrowing Frog. In addition, monitoring to date has not recorded the Barred Stuttering Frog within Cataract Creek, although suitable habitat is present. Given the limited number of know contemporary records for this species, if it was recorded within Cataract Creek it should be afforded all protection.

The EA does not assess whether any of the streams within the proposal area could be considered to have special significance as per the findings of the PAC (2009, 2010). Significant streams on sandstone of the Woronora Plateau are considered to be those that are: • 3rd order and above that have permanent flow • 1st or 2nd order streams associated with swamps as part of their headwaters (as an indicator of streams with permanent flow).	These issues are addressed by SCT 2012 in Attachment A of this Response Report. NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Upland swamp CCHS3 and three small areas of upland swamp located over LW4 are located above the upper headwaters of two tributaries of Cataract Creek. The drainage lines below these swamps are poorly defined and do not contain flowing water. CCHS4 is located at the headwaters of a tributary of Cataract Creek. A waterfall is located at the base of this upland swamp. CCHS4 is the only upland swamp directly associated with a 1st order stream. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. On the basis that the 4th order reach of Cataract Creek downstream of the freeway is significant, the development of a stream management plan, with setting of appropriate triggers and adherence to these triggers to avoid the cracking of Cataract Creek will be required through an adaptive management process
Cataract Creek is a 3rd order stream at the western end of the SMP area and two of the 1st order tributaries that flow north from swamps CCHS3 and CCHS4 may also meet the definition of special significance.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Upland swamp CCHS3 and three small areas of upland swamp located over LW4 are located above the upper headwaters of two tributaries of Cataract Creek. The drainage lines below these swamps are poorly defined and do not contain flowing water. CCHS4 is located at the headwaters of a tributary of Cataract Creek. A waterfall is located at the base of this upland swamp. CCHS4 is the only upland swamp directly associated with a 1st order stream. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. On the basis that the 4th order reach of Cataract Creek downstream of the freeway is significant, the development of a stream management plan, with setting of appropriate triggers and adherence to these triggers to avoid the cracking of Cataract Creek will be required through an adaptive management process
The Biodiversity Management Plan (BMP) (Appendix J) states that "if fracturing occurs remediate as soon as possible", and the Trigger Action Response Plan (TARP) states that if predictions are exceeded impact mitigation measures will be implemented. However, there is no detail on what these remediation or impact mitigation measures will be. Given the lack of certainty about the effectiveness of such practices the BMP should also include a discussion of potential offset mechanisms that may be invoked should impact occur and remediation be impractical or unsuccessful.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Remediation measures for upland swamps are unlikely to be successful, should impacts occur. Thus the use of offsets is a potential option available. The use of offsets in NSW is governed by the Principles for Use of Biodiversity Offsets in NSW (OEH 2011). OEH outlined 13 principles that provide a useful framework for the consideration of the use of offsets. The NSW BioBanking scheme provides a framework for the objective determination of offset requirements in NSW. This scheme provides a framework and methodology for determining any offsets that may be required to offset any residual impacts. If impacts are detected in upland swamps located above Longwalls 4 and 5 the NSW BioBanking scheme can be used to determine any offset requirements. The difficulty will be in sourcing and securing offsets that meet the 'like for like' principle. The majority of upland swamps are located on public land, with limited potential offsets sites located on private land. That said, land managed by Gujarat west of Mt Ousley Road currently supports a number of upland swamps that could provide potential offsets sites. These upland swamps are currently impacted by recreational motor vehicles, particularly motorbikes, and substantial work would be required to adequately protect these sites as required. However should impacts be detected as a result of extraction of coal from Longwalls 4 and 5, these areas provide potential offsets sites.

There is a high (but unquantified) risk to EECs and groundwater aquifers which could lead to major impacts in this area, including a potential loss of water to nearby Cataract Creek. Based on previous experience (Lower Cataract River, Marhnye's Hole, Waratah Rivulet) any proposed remediation of impacts is likely to be small in nature, expensive and difficult to apply in these forested areas. There is also currently no known method of remediating swamps that have been dewatered due to longwall mining fracturing underlying rock strata. Any impacts to EECs are therefore unlikely to be remediated and we are looking at a scenario of loss if significant impacts do eventuate from this mine plan. If mining is approved, negligible impact criteria should be applied to swamp CCHS3, CCHS4, Cataract Creek and any impacts deemed not negligible should have mandatory remediation conditions.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. We agree that any remediation of impacts to upland swamps is likely to be difficult and Biosis is unaware of any attempts, successful or unsuccessful, to remediate upland swamps impacted by subsidence. As outlined above, the use of offsets provides a potential alternative to remediation for upland swamps. However it should be noted that as CCHS3 is not considered to be of 'special significance' it is not protected from risk of negative environmental consequences. On the basis that the 4th order reach of Cataract Creek downstream of the freeway is significant, the development of a stream management plan, with setting of appropriate triggers and adherence to these triggers to avoid the cracking of Cataract Creek will be required through an adaptive management process
While an adaptive management approach to mining given the wide variety of unknowns in this area could be contemplated, it potentially introduces a high risk to environmental assets (including upland Swamp EECs) that overly the mining domain.	NRE believes that a combination of mine layout redesign and adaptive management can be utilised to protect identified sensitive features.
The Bulli Seam PAC report (2010) made reference to a NSW Land and Environment Court finding on the definition of adaptive management, stating it was not a "suck it and see, trial and error approach to management but an iterative approach involving explicit testing of the achievement of defined goals. Through feedback to the management process, the management procedures are changed in steps until monitoring shows that the desired outcome is obtained. The monitoring program has to be designed so that there is statistical confidence in the outcome". (Newcastle and Hunter Valley Speleological Society Inc v. Upper Hunter Shire Council and Stoneco Pty Limited [201 OJ NSW LEC 48].	Noted. Comment directed to DP&I
Virtually no baseline monitoring data has been provided in the current EA (Cardno 2012) and for some sites there is not even 12 months worth of data by which to assess impact (let alone recovery if that indeed occurs). Given the lack of baseline monitoring and inadequate details on type and adequacy of this monitoring or clear and effective management feedback loops in the EA, OEH is of the view that the proposed mining in its current format adopts a 'trial and error' approach to mining impact management. As such, it places much if not all of the risk of adverse outcomes on significant environmental assets.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. We agree that any remediation of impacts to upland swamps is likely to be difficult and Biosis is unaware of any attempts, successful or unsuccessful, to remediate upland swamps impacted by subsidence. As outlined above, the use of offsets provides a potential alternative to remediation for upland swamps. However it should be noted that as CCHS3 is not considered to be of 'special significance' it is not protected from risk of negative environmental consequences. Additional installation of 10 swamp piezometers in the Cataract Creek, Cataract River and Bellambi Creek catchments has occurred, along with an open standpipe piezometer and an array of vibrating wire piezometers adjacent to LW4 has occurred since March 2012. In addition, 8 stream water level / water quality sites have been installed, with 7 of those installed for over, or virtually, 2 years. Volumetric water flow monitoring has also commenced since March 2012, whilst the previous stream water level data collected prior to the installation of the volumetric monitoring sites will be able to be back calculated to volumetric flows as soon as sufficient flow duration data is attained. Prior to mining LW5, stream, swamp and groundwater management plans will be derived and adhered to that will facilitate the adaptive management of the proposed LW5 extraction so that adverse impacts on these systems will be avoided
As a minimum, detailed hydrological monitoring must be implemented at all swamps identified in the project approval, and preferably all swamps in the larger project area. The key performance measure that links all other performance measures is • Negligible drainage of water from the swamp, or redistribution of water within the swamp. If this performance measure is met then the likelihood of all other performance measures being met is high, as any changes in size, function or composition of the swamp will be driven by loss or change in water quantity, quality and distribution. Similarly for threatened species that are considered swamp specialists, if there are negligible changes in water within the swamp then there are unlikely to be consequences for any populations as habitat condition and structure is unlikely to change. Stream dependant frogs, particularly Littlejohn's Tree Frog, may be an exception if stream flows are lost or diverted after they leave a swamp.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. We agree that any remediation of impacts to upland swamps is likely to be difficult and Biosis is unaware of any attempts, successful or unsuccessful, to remediate upland swamps impacted by subsidence. As outlined above, the use of offsets provides a potential alternative to remediation for upland swamps. However it should be noted that as CCHS3 is not considered to be of 'special significance' it is not protected from risk of negative environmental consequences.
The EA does not include 2 years of baseline monitoring as required. OEH considers that the Proponent needs to take a longer term view of its operations and establish required monitoring programs well ahead of time to enable the information needs for environmental assessment to be met. If monitoring has commenced in the area prior to mining, as required by the approvals process, then the results of that monitoring should be presented as the baseline against which the performance of the mining will be measured.	Additional installation of 10 swamp piezometers in the Cataract Creek, Cataract River and Bellambi Creek catchments has occurred, along with an open standpipe piezometer and an array of vibrating wire piezometers adjacent to LW4 has occurred since March 2012. In addition, 8 stream water level / water quality sites have been installed, with 7 of those installed for over or almost 2 years. Volumetric water flow monitoring has also commenced since March 2012, whilst the previous stream water level data collected prior to the installation of the volumetric monitoring sites will be able to be back calculated to volumetric flows as soon as sufficient flow duration data is attained. Prior to mining LW5, stream, swamp and groundwater management plans will be derived and adhered to that will facilitate the adaptive management of the proposed LW5 extraction so that adverse impacts on these systems will be avoided. We agree that remediation of impacts to upland swamps are likely to be difficult and Biosis is unaware of any attempts, successful or unsuccessful, to remediate upland swamps impacted by subsidence. As outlined above, the use of offsets provides a potential alternative to remediation for upland swamps. However it should be noted that as CCHS3 is not considered to be of 'special significance' it is not protected from risk of negative environmental consequences.
In order that OEH can provide adequate comment on relevant management plans and EAs, OEH requests the following information: • All baseline raw monitoring data (piezometer levels, pool levels, flow gauging, vegetation sampling, aquatic ecology sampling etc)	This information will be provided

used in or cited for the various Management Plans for this proposal.	
The following references cited in the Management Plans: • Geoterra, in prep Gujarat NRE Coking Coal Ltd NRE NO.1 Colliery Stream Assessment • Geoterra, in prep Gujarat NRE Coking Coal Ltd NRE NO.1 Colliery Groundwater Assessment • Golder Associates, 2011 Groundwater Modelling Results at NRE No.1, Technical Memorandum • WRM Water & Environment, 2011 NRE No.1 Colliery Surface Water Modelling • Biosis Research (2009). NRE Gujarat Targeted Herpetological Surveys. Report for ERM Australia. • Cardno Ecology Lab (2010). Aquatic Ecology Monitoring for Gujarat No. 1 Mine. Report for Gujarat NRE. • EcoLogical (2009). Wonga East and Wonga West Threatened Fauna Habitat Assessment. Report for ERM Australia.	Noted
It is the view of OEH that the upland swamps in the project area are part of the Temperate Highland Peat Swamps on Sandstone EEC listed under the Commonwealth EPBC Act. It is highly likely that at least some, if not all, of the swamps meet the criteria for this community. This EA should be referred to the Australian Government for assessment. It should also be noted that the Commonwealth determination is being reviewed for this community and a new draft determination for 'Peaty Swamps on Sandstone' specifically includes upland swamps on the Woronora Plateau.	Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPac.
The assessment undertaken for the proposed modification application states that it is highly unlikely that the proposed works will impact on any registered Aboriginal objects within the proposed mining area. It states that as a result of previous monitoring of axe grinding grooves and engravings on sandstone rock platforms/outcrops, changes in site conditions have only been recorded at one site, where cracking occurred to the platform, but not to the axe grinding grooves or engraving.	The impact identified was located in Metropolitan Colliery's lease area and involved cracking to a rock platform on which the Aboriginal site 52-02-0258, Flat Rock Creek 57 (axe grinding grooves) were located. There was no damage to the site itself
Further, OEH had a meeting with the Proponent regarding LW4 HMP on 23rd April 2012. As a result of this meeting, it was confirmed that Gujarat NRE will continue to monitor Aboriginal objects to identify if there will be impact to them as a result of mining activities.	Correct
Previous comments by OEH/EPA regarding the protection of Aboriginal Cultural Heritage are still relevant, namely, that the performance measures for ACH are aligned with the Bulli Seam Project PAC recommendations, particularly with regard to the quantification of impacts/potential impacts to ACH as a result of mining. Further, the monitoring programme must include any Aboriginal objects that may be impacted by mining activities and that the mining footprint for these purposes includes the maximum extent of predicted subsidence.	The monitoring and management of any cultural heritage sites identified as potentially at risk of impact from subsidence effects will be monitored in accordance with an approved Extraction Plan & SMP.

ROADS AND MARITIME SERVICES (RMS)

COMMENT	RESPONSE
RMS notes the proposed modification does not involve any increase in the traffic generation of the colliery.	Correct
RMS notes a technical committee has been set up between representatives of NRE and RMS to resolve issues related to the subject project.	This is correct. The committee involves ongoing communication, data provision by NRE and regular meetings to discuss subsidence related issues.
Given the above, RMS will not object to the development project subject to the following comments being included in the conditions of development consent: • All proposed modifications to MP10_0046 shall be submitted to the relevant Technical Committee for approval. RMS' does not object to the modification subject to the satisfaction of the Committee.	Any changes related to the management of subsidence in areas of interest to RMS will not occur without full consultation and the consent of the committee.

SYDNEY CATCHMENT AUTHORITY (SCA)

COMMENT	REPOSE
I refer to your letter dated 7 August 2012 inviting the Sydney Catchment Authority (SCA) to make a written submission and provide any recommended conditions for approval of the NRE NO.1 Colliery-Preliminary Works Project modification	Noted.
The SCA's submission in relation to the modification (attached) seeks to clarify the approval process, reiterates past comments as to the need for appropriate modelling and monitoring of the environmental impact, and proposes that performance standards be set to quantify impacts. It proposes recommended conditions that seek to provide greater protection to Cataract River, Cataract Creek and the associated uplands swamps and catchment.	Noted.
The SCA also provides the following general comments on the approach for planning approval by the applicant. 1. Approval process The Subsidence Management Plan, Water Management Plan and Part 5 application for longwall4 have previously been approved by the Department of Resource and Energy. The SCA understands that the mining of LW4 commenced in April 2012 and is more than halfway complete. It is unclear as to the need for another approval for longwall4 and why the Stage-1 Preliminary Works Project is being modified to include Stage-2 Major Expansion Project components when a previous assessment by all Government agencies identified significant deficiencies, uncertainties and lack of confidence in the environmental assessment of that part of the project.	LW4 has been included in this application in order to transition it into the planning system under a major planning approval.
2. Integrated assessment The SCA considers it is better practice for 'mining companies to consolidate their proposed mining activities for a major project into one planning application rather than undertaking this in a piecemeal fashion. A consolidated application enables determining authorities and others to assess the totality of the environmental and other impacts as part of a single process. This is particularly relevant when seeking to understand cumulative impacts and for the consent authority to coordinate the technical inputs provided by agencies. The SCA considers that it is appropriate for the first workings for longwalls 6, 7 and 8 to be assessed as part of the assessment of future secondary extraction as part of the Stage-2 Major Expansion Project. This would enable the entirety of the impacts of the longwalls to be assessed, and a more integrated approach to be taken to the management of impacts.	Noted. Comment directed to DP&I
3. Performance monitoring Information contained in the modification Environmental Assessment (EA) report is inadequate for the SCA to be satisfied that the project will not have an adverse impact on Cataract Reservoir and its catchments which forms part of Sydney's drinking water supply. Deficiencies in the EA include inconsistent data, statements and interpretations; an absence of any revised information relating to groundwater and surface water assessment; inadequate surface water, groundwater and swamp baseline monitoring data; and uncertainty regarding subsidence predictions for LW5 and the unresolved potential ecological impacts of this subsidence.	The main issue that seems to have contributed to the issues described are that the project is a subset of a proposed much larger project. As such some of information that provided context in relation to the larger proposed project was not available. NRE acknowledges that it can improve the quality of its documentation and will endeavour to do so in liaison with DP&I for future applications. 10 additional swamp piezometers have been installed, 2 more groundwater bores and stream water volumetric flow monitoring sites have been added to the previous monitoring suite, all of which continue to be monitored.
4. Way forward The SCA would appreciate being involved in any further environmental assessment and consultation process associated with the project and the opportunity to comment on any draft conditions. The SCA in particular requests that any Subsidence Monitoring Program, Catchment Monitoring Program, Water Management Plan, Land Management Plan, Asset Management Plan, Adaptive Management Plan, Contingency Plan and Rehabilitation Management Plan and associated components and drawings be provided to the SCA for review and comment.	Noted. Comment directed to DP&I
1. Location of Mining Area and Relationship to Areas of Interest to the SCA The Project general arrangement and areas of interest to the SCA and the reasons for interest are summarised below: • Longwalls 4 and 5 - this part of the Project has the potential to impact on the parts of Cataract River, Cataract Creek and associated upland swamps and catchments. All of these lands are owned by the SCA and are part of the SCA's Special Areas. • Maingates 6, 7 and 8 and future secondary extraction of longwalls 6, 7 and 8 - this part of the Project is located within the Cataract Dam Notification Area specified by the NSW Dams Safety Committee. Mining in these areas has the potential to impact on Cataract Dam, Cataract Reservoir, Cataract River, Cataract Creek and associated swamps and catchments. The dam, reservoir and all of the lands are owned by the SCA and are part of SCA's Special Areas. Within the SCA's area of operations the SCA supports a precautionary and adaptive management approach, and the adoption of best practice and recommendations as identified in the 2010 Planning Assessment Commission Report on Bulli Seam Operations and 2008 NSW Southern Coalfield Inquiry. These best practice and recommendations relate to improved assessment and regulatory processes, subsidence impact management, the prediction of subsidence effects and impacts, and appropriate environmental baseline information.	Noted. Comment directed to DP&I
2. The SCA's Principles for Managing Mining Impacts The SCA has developed a set of principles that underpin its decision making in relation to mining and coal seam gas activities. The principles establish the outcomes the SCA considers as essential to protect the drinking water supplies to the four and half million people of Sydney, Illawarra, Blue Mountains, Southern Highlands and the Shoalhaven regions. The principles are listed below: i. Protection of water quantity Mining and coal seam gas activities must not result in a reduction in the quantity of surface and groundwater inflows to storages or loss of water from storages or their catchments. ii. Protection of water quality Mining and coal seam gas activities must not result in a reduction in the quality of surface and ground water inflows to storages. iii. Protection of water supply infrastructure The integrity of the SCA's water supply infrastructure must not be compromised. iv. Protection of human health Mining and coal seam gas activities must not pose increased risks to human health as a result of using water from the drinking water catchments.	Noted. Comment directed to DP&I

v. Protection of ecological integrity The ecological integrity of the Special Areas must be maintained and protected. vi. Sound and robust evidence regarding environmental impacts Information provided by proponents, including environmental impact assessments for proposed mining and coal seam gas activities, must be detailed, thorough, scientifically robust and holistic. The potential cumulative impacts must be comprehensively addressed.	
3. Performance Measures for Key Aspects Cataract Reservoir and Cataract Creek and their catchments form part of Sydney's drinking water supply catchment. To ensure the protection of water quality and quantity and catchment health the SCA recommends the following performance criteria should be achieved: Catchment yield to Cataract Reservoir • negligible reduction to the quality or quantity of water resources reaching the reservoir • no connective cracking between the surface and the mine Cataract Reservoir • negligible leakage from the reservoir • negligible reduction in the water quality of the reservoir Cataract River and Cataract Creek - Negligible environmental consequences, including: • negligible diversion of flows or changes in the natural drainage behaviour of pools • negligible gas releases and iron staining beyond current status, and • negligible increase in turbidity. Headwater Upland Swamps (CRHS1, CCHS3 and CCHS4) - Negligible environmental consequences including: • negligible change in the size of swamp • negligible change in the functioning of swamp • negligible change to the composition or distribution of species within swamp, and • negligible drainage of water from swamp or redistribution of water within swamp.	Noted. Comment directed to DP&I
4. SCA's Assessment and Recommendations The SCA has undertaken a detailed review of the modification Environmental Assessment (EA) and notes that this includes revised information. However the data draws on information from the original draft EA for the Stage-2 Major Expansion Project that the SCA and other agencies considered to be inadequate. The identified deficiencies in the modification EA include: • The modification EA provides revised predictions for vertical subsidence, tilt and strain for longwalls 4 and 5 that are within same range as in the draft EA for Stage-2 Major Expansion Project in the Wonga east. The modification EA does not provide revised estimates for subsidence, strains, tilts, valley closure and upsidence for Cataract River, Cataract Creek and upland swamps CCHS3 and CCHS4. The SCA acknowledges that the LW4 has been significantly shortened and excludes mining under a dyke and Corrimall Fault, and is therefore less likely to have a significant impact on the surface environmental features as long as "pillar run" risk is as predicted. However, the subsidence predictions for LW5 have not considered the presence of dykes and faults in the application area. The modification EA in fact states that as a result of ongoing operational and geological investigations, faulting and other geological matters may result in further shortening of LW5. Given that LW5 is located under earlier Bulli and Balgownie extractions and the limited empirical subsidence data relating to multi-seam longwall mining, coupled with a network of NW-SE trending faults and dyke features in the Wonga East Area, the SCA is of the opinion that these are likely to result in variable and complex degrees of interaction across the mining area. This could present a serious impediment to reasonably predicting surface subsidence profiles with a fair degree of accuracy, irrespective of the prediction methodology employed. The SCA therefore considers the subsidence predictions for LW5 are inadequate and should be revised to include impacts of local geological anomalies in the application area. Only once these geological investigations are complete and the longwall plan is revised (including appropriate setbacks to Cataract Creek and Cataract River to achieve the SCA's performance criteria - see Section 3 above), would it be possible for the SCA to properly assess the impacts of the proposal on catchment and water quality and quantity.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The modification EA does not contain any revised information relating to the impacts on groundwater. The original groundwater assessment in the draft EA for Stage-2 Major Expansion Project had significant deficiencies as previously identified by the SCA. These deficiencies were also identified by the Pells Consulting review of the Stage-2 Major Expansion Project draft EA. The SCA considers the groundwater assessment should be revised to include: - o a revision of groundwater modelling based on adequate and scientifically rigorous groundwater monitoring data - o sensitivity analysis of groundwater modelling that reflects the level of uncertainty in hydro-geological parameters (hydraulic conductivity and storage), the absence of the Bald Hill Claystone aquitard, the presence of local geological anomalies, as well as the uncertainty in subsidence predictions for LW5 - o a review of the assessment of the impacts on streams and swamps based on the results of the sensitivity analysis, and - o better characterisation and monitoring of shallow groundwater systems, particularly dependency of streams on groundwater.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. Although additional groundwater monitoring data has become available since the model was developed, it is not considered that the additional data invalidates the assumptions and parameters used in the model, and as such it does not require updating. It is considered that sufficient sensitivity analyses were conducted. Based on the SGPL subsidence predictions it is anticipated that the Bald Hill Claystone will not be breached by vertically connected fracturing. Although the model was not run on the basis that the BHCS is breached, it would be a reasonable assumption that if it was, there could be significant adverse effects on the overlying shallow groundwater and surface water systems that may require modification of the mine layout and extraction plans. The groundwater depressurisation effect on streams flows was conducted using best practice industry standard methodologies and is assessed to adequately represent the potential effects on stream flows in the area.
The modification EA does not provide revised estimates for subsidence, strains, tilts, valley closure and upsidence along Cataract River and Cataract Creek. It provides subsidence predictions and impacts on the upland swamp CRHS1 but does not provide these for swamps CCHS3 and CCHS4. Monitoring of the Cataract River has still not been undertaken, and there is limited monitoring data for stream flow and upland swamps. The modification EA does not address performance criteria defined for water resources (catchment yield and reservoir integrity and quality), watercourses, swamps and flora and fauna. Proposed longwalls 4 and 5 are located under the earlier Balgownie extractions and the SCA is therefore concerned whether the SCA recommended performance criteria (negligible environmental consequences) for Cataract River, Cataract Creek and associated swamps can be achieved. Given the uncertainties in	These issues are addressed by SCT 2012 in Attachment A of this Response Report. NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Biosis has undertaken detailed mapping of frog habitat within Wonga East, including mapping of breeding pools and potential breeding habitat. This detailed assessment has identified that potential breeding habitat within the area of potential impact is limited in extent. Cataract Creek does not provide suitable breeding habitat for the Giant Burrowing Frog. In addition, monitoring to date has not

the subsidence predictions for LW5, the SCA considers that the predictions and assessment of impacts on surface water and associated swamps may not be valid. The SCA considers that the assessment of surface water and uplands swamps should be revised and be based on: - o revised subsidence predictions for LW5 incorporating local geological anomalies, and - o incorporate adequate and scientifically rigorous surface water and swamp monitoring data.	recorded the Barred Stuttering Frog within Cataract Creek, although suitable habitat is present. Given the limited number of know contemporary records for this species, if it was recorded within Cataract Creek it should be afforded all protection. Upland swamp CCHS3 and three small areas of upland swamp located over LW4 are located above the upper headwaters of two tributaries of Cataract Creek. The drainage lines below these swamps are poorly defined and do not contain flowing water. CCHS4 is located at the headwaters of a tributary of Cataract Creek. A waterfall is located at the base of this upland swamp. Biosis has just completed a comprehensive assessment of all upland swamps as a part of Gujarat's Major Expansion Project., including upland swamps located above Longwalls 4 and 5. This included the use of LIDAR data to identify upland swamps, detailed ground-truthing and mapping of all vegetation sub-communities within upland swamps. The revised Upland Swamp Environmental Impact Assessment Guidelines (OEH 2012) were used to identify upland swamps of 'special significance' within the study area. An impact assessment was undertaken using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock. This assessment identified that CCHS3 (referred to as CCUS3 in the revised impact assessment), previously mapped as one larger upland swamp, actually consists of two upland swamps that are reliant on divergent flow pathways, and are contained within different catchments. Detailed assessment of these upland swamps also identified that neither supports Tea-tree Thicket (MU43). Therefore neither upland swamp meets criteria for special significance as defined by OEH (2012). In addition, groundwater monitoring of CCHS3 has not recorded any groundwater within this upland swamp. It is likely that CCHS3 is dry for most of the year and is largely reliant on surface water flows and rainfall. The impacts of fracturing of the bedrock below this upland swamp are unlikely to result in the loss of groundwater within this upland swamp. CCHS4 contains Banksia Thicket (MU42), Tea-tree Thicket (MU42) and Cyperoid Heath (MU44c) and is thus considered to be of 'special significance'. Thus a detailed impact assessment was undertaken. This identified that the predicted subsidence associated with the overall project would be unlikely to result in significant changes to the swamp. The rockbar associated with this upland swamp is located outside of the predicted limits of subsidence for LW5 and is unlikely to be impacted as a result of the extraction of coal from LW4 or 5. The Geoterra assessment does not extrapolate what could or could not occur to Crhs1 to Cchs3 and Cchs4 that lie within the potential LW4 / LW5 subsidence area. The Sydney Drinking Water SEPP NorBE will be referenced in future reports. There has been no observed adverse effect on the water supply within the Cataract Reservoir based on influent stream water monitoring into the reservoir that has been conducted in Cataract, Lizard or Wallandoola Creeks. Monitoring of the Cataract River commenced in March 2012, along with additional stream flow monitoring sites and 10 additional swamp monitoring sites. NRE will conform to the SCA performance criteria by preparing and adhering to stream, swamp and groundwater management plans with appropriate triggers that will be used to provide adaptive management methods to the proposed extraction
The modification EA includes a revised ecological assessment for longwalls 4 and 5. The ecological assessment states that the predicted subsidence under upland swamp CCHS3, which overlies the zone of maximum predicted subsidence for LW5, is not anticipated to result in subsidence induced erosion, or generate any significant change in the potential for ponding. Yet it states that tensile and compressive strains may result in fracture in the Hawkesbury Sandstone to approximately 15 m below the surface which has the potential to result in changes in surface waters and groundwater availability. The EA further states that strains of a greater magnitude than those predicted have not resulted in adverse consequences on overlaying swamps and quotes a GeoTerra 2012 draft report for longwalls 4 and 5 Stream, Swamps and Groundwater Management Plan (GMP). The modification EA neither provides the GMP nor any data on what constitute strains of a greater magnitude and any reference for unaffected swamps. It is unclear as to what subsidence and groundwater predictions and assessment have been used for the ecological assessment. Given the uncertainties in the subsidence predictions and inadequate groundwater and surface water monitoring and assessment, the SCA considers that the revised ecological assessment predictions may not be valid or represent the range of possible impacts identified by the modelling.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Biosis has undertaken detailed mapping of frog habitat within Wonga East, including mapping of breeding pools and potential breeding habitat. This detailed assessment has identified that potential breeding habitat within the area of potential impact is limited in extent. Cataract Creek does not provide suitable breeding habitat for the Giant Burrowing Frog. In addition, monitoring to date has not recorded the Barred Stuttering Frog within Cataract Creek, although suitable habitat is present. Given the limited number of know contemporary records for this species, if it was recorded within Cataract Creek it should be afforded all protection. Upland swamp CCHS3 and three small areas of upland swamp located over LW4 are located above the upper headwaters of two tributaries of Cataract Creek. The drainage lines below these swamps are poorly defined and do not contain flowing water. CCHS4 is located at the headwaters of a tributary of Cataract Creek. A waterfall is located at the base of this upland swamp. Biosis has just completed a comprehensive assessment of all upland swamps as a part of Gujarat's Major Expansion Project., including upland swamps located above Longwalls 4 and 5. This included the use of LIDAR data to identify upland swamps, detailed ground-truthing and mapping of all vegetation sub-communities within upland swamps. The revised Upland Swamp Environmental Impact Assessment Guidelines (OEH 2012) were used to identify upland swamps of 'special significance' within the study area. An impact assessment was undertaken using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock. This assessment identified that CCHS3 (referred to as CCUS3 in the revised impact assessment), previously mapped as one larger upland swamp, actually consists of two upland swamps that are reliant on divergent flow pathways, and are contained within different catchments. Detailed assessment of these upland swamps also identified that neither supports Tea-tree Thicket (MU43). Therefore neither upland swamp meets criteria for special significance as defined by OEH (2012). In addition, groundwater monitoring of CCHS3 has not recorded any groundwater within this upland swamp. It is likely that CCHS3 is dry for most of the year and is largely reliant on surface water flows and rainfall. The impacts of fracturing of the bedrock below this upland swamp are unlikely to result in the loss of groundwater within this upland swamp. CCHS4 contains Banksia Thicket (MU42), Tea-tree Thicket (MU42) and Cyperoid Heath (MU44c) and is thus considered to be of 'special significance'. Thus a detailed impact assessment was undertaken. This identified that the predicted subsidence associated with the overall project would be unlikely to result in significant changes to the swamp. The rockbar associated with this upland swamp is located outside of the predicted limits of subsidence for LW5 and is unlikely to be impacted as a result of the extraction of coal from LW4 or 5.

The SCA's assessment has identified various inconsistencies in data, a lack of clarity, the use of inconsistent statements and judgements that affect prediction and assessment in the EA (such as the depth of cover, width of longwall pillars and the size of swamp CCHS3). The Statement of Commitment in the modification EA refers to a Water Management Plan (WMP) for longwalls 4 and 5, yet the EA includes a WMP for LW4 only. Some sections of the modification EA still refer to all longwalls in Wonga east which were part of Stage-2 Major Expansion Project even though the modification EA is for longwalls 4 and 5 only. Appendix J - Biodiversity Management Plan includes impacts on upland swamps for LW4 only. Such inconsistencies and incomplete information should be addressed.	The main issue that seems to have contributed to the issues described are that the project is a subset of a proposed much larger project. As such some of information that provided context in relation to the larger proposed project was not available. NRE acknowledges that it can improve the quality of its documentation and will endeavour to do so in liaison with DP&I for future applications.
The modification EA provides a comparison between the impact assessment of this modification project with the original Stage-1 Preliminary Works Project impact assessment. This is incorrect and misleading because the secondary extraction of longwalls 4 and 5 were part of Stage-2 Major Expansion Project, not Stage-1 Preliminary Works Project ie the original impact assessment of longwalls 4 and 5 was contained in the draft EA for Stage-2 Major Expansion Project.	The subsidence impact predictions as well as management and mitigation measures are for the extraction of LW5 only and don't replace or override any of the impact prediction or management measure for V Mains or other extraction mentioned in the Preliminary Works EA. It was felt necessary to compare the potential impacts as this was a modification of the existing approved Preliminary Works Pt3A. However, the criticism is accepted. The LW5 subsidence predictions should be read as stand alone.
The SCA recommends: revision to the subsidence predictions, for LW5 which should include impacts of faults and dykes in the application area and appropriate setbacks from Cataract Creek and Cataract River to ensure the SCA's performance criteria for the Cataract River, Cataract Creek and associated upland swamps and catchment can be met	These issues are addressed by SCT 2012 in Attachment A of this Response Report. See also the section of this Response Report titled Groundwater, Surface Water and Flora & Fauna.
revision to the groundwater modelling and groundwater assessment should be based on adequate and scientifically rigorous baseline monitoring data including consideration of the integrity of the Bald Hill Claystone	
revision to the impacts of subsidence on streams and swamps should be based on revised subsidence predictions and adequate baseline monitoring data, and	The revised subsidence predictions were based on data that was available from the monitoring of LW4.
revision to the ecological assessment should be based on revised subsidence, groundwater and surface water assessment.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. The Geoterra assessment does not extrapolate what could or could not occur to Crhs1 to Cchs3 and Cchs4 that lie within the potential LW4 / LW5 subsidence area. The Sydney Drinking Water SEPP NorBE will be referenced in future reports. There has been no observed adverse effect on the water supply within the Cataract Reservoir based on influent stream water monitoring into the reservoir that has been conducted in Cataract, Lizard or Wallandoola Creeks. Monitoring of the Cataract River commenced in March 2012, along with additional stream flow monitoring sites and 10 additional swamp monitoring sites. NRE will conform to the SCA performance criteria by preparing and adhering to stream, swamp and groundwater management plans with appropriate triggers that will be used to provide adaptive management methods to the proposed extraction Biosis has undertaken detailed mapping of frog habitat within Wonga East, including mapping of breeding pools and potential breeding habitat. This detailed assessment has identified that potential breeding habitat within the area of potential impact is limited in extent. Cataract Creek does not provide suitable breeding habitat for the Giant Burrowing Frog. In addition, monitoring to date has not recorded the Barred Stuttering Frog within Cataract Creek, although suitable habitat is present. Given the limited number of know contemporary records for this species, if it was recorded within Cataract Creek it should be afforded all protection. Upland swamp CCHS3 and three small areas of upland swamp located over LW4 are located above the upper headwaters of two tributaries of Cataract Creek. The drainage lines below these swamps are poorly defined and do not contain flowing water. CCHS4 is located at the headwaters of a tributary of Cataract Creek. A waterfall is located at the base of this upland swamp. Biosis has just completed a comprehensive assessment of all upland swamps as a part of Gujarat's Major Expansion Project., including upland swamps located above Longwalls 4 and 5. This included the use of LIDAR data to identify upland swamps, detailed ground-truthing and mapping of all vegetation sub-communities within upland swamps. The revised Upland Swamp Environmental Impact Assessment Guidelines (OEH 2012) were used to identify upland swamps of 'special significance' within the study area. An impact assessment was undertaken using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock. This assessment identified that CCHS3 (referred to as CCUS3 in the revised impact assessment), previously mapped as one larger upland swamp, actually consists of two upland swamps that are reliant on divergent flow pathways, and are contained within different catchments. Detailed assessment of these upland swamps also identified that neither supports Tea-tree Thicket (MU43). Therefore neither upland swamp meets criteria for special significance as defined by OEH (2012). In addition, groundwater monitoring of CCHS3 has not recorded any groundwater within this upland swamp. It is likely that CCHS3 is dry for most of the year and is largely reliant on surface water flows and rainfall. The impacts of fracturing of the bedrock below this upland swamp are unlikely to result in the loss of groundwater within this upland swamp. CCHS4 contains Banksia Thicket (MU42), Tea-tree Thicket (MU42) and Cyperoid Heath (MU44c) and is thus considered to be of 'special significance'. Thus a detailed impact assessment was undertaken. This identified that the predicted subsidence associated with the overall project would be unlikely to result in significant changes to the swamp. The rockbar associated with this upland swamp is located outside of the predicted limits of subsidence for LW5 and is unlikely to be impacted as a result of the extraction of coal from LW4 or 5.
5. SCA's Suggested Requirements for Conditions The SCA requests the Proponent be required to respond to all the matters raised above, and that this additional information be considered by the Department in the preparation of the Director General's Environmental Assessment Report. The SCA requests the opportunity to review the response.	Noted. Comment directed to DP&I
Should project approval be recommended, the SCA requests that the following requirements be included in the approval conditions to ensure the SCA's performance criteria for the Cataract River, Cataract Creek and associated upland swamps and catchment are achieved: 1. A schedule of Performance Measures - the SCA expects the approval to include a schedule of performance measures for water resources; watercourses and built features (see Section 3 above for specifics). It is important that specified performance measures are	Noted. Comment directed to DP&I

measurable, meaningful and compliance testable.	
2. The development of a Catchment Monitoring Program relevant to this project prepared in consultation with and to the satisfaction of the SCA. The program must be approved within 3 months of an approval or prior to the Proponent carrying out any second workings whichever is the earliest. The Catchment Monitoring Program and Extraction Plans must consider the relevant recommendations of Sections 18.2.2, 18.2.3, 18.2.4 and 18.2.5 of the recent report on the Bulli Seam Operations Project (PAC July 2010).	Noted. Comment directed to DP&I
3. The preparation of an Extraction Plan for LW5 - the SCA expects the approval to include a requirement for extraction plans similar to that specified in the Metropolitan Coal Project approval (Schedule 3 - conditions 6 and 7) - but relevant to this project. The Extraction Plan should include a Water Management Plan, a Land Management Plan, a Contingency Plan, a Subsidence Monitoring Program, and an Adaptive Management Plan that is linked to monitoring programs, and should be prepared in consultation with and to the satisfaction of the SCA.	Noted. Comment directed to DP&I
4. Rehabilitation Objectives - the Proponent should achieve the following rehabilitation objectives: • for all SCA catchment infrastructure works - repair/restore to pre-mining condition or equivalent, and • for all 3rd order watercourses and above located within the project area- restore surface flow and pool holding capacity as soon as reasonably practicable to premining levels.	Noted. Comment directed to DP&I
5. The preparation of a Rehabilitation Management Plan in consultation with and to the satisfaction of the SCA, prior to carrying out second workings.	Noted. Comment directed to DP&I
6. The identification of Environmental Offsets necessary to compensate for either predicted or non-predicted impacts on natural features, where such impacts are nonremediable.	Noted. Comment directed to DP&I

WOLLONGONG CITY COUNCIL

COMMENT	RESPONSE
1. Land Use Strategy Comments for consideration by the Director-General within any project approval Land Use Planning has no strategic objections or comments to the modifications proposed.	Noted
3. Traffic It is noted that there will be no additional transportation of coal to PKCT and no increase in the number of visitor or employee vehicles to the Colliery. In view of the above there are unlikely to be any additional traffic impacts arising from the proposed modification.	Correct
4. Environment Council has previously identified potential environmental risks to the subsurface from extractive mining activity may impact the undisturbed native bushland on Woronora Plateau, several upland swamps, local creeks and drainage tributaries resulting in changes to geochemistry and water quality, reduction in humidity of soil and subsoil of riparian zones. The predicted subsidence of 1 to 2 meters in vertical magnitude may result in fracturing and tilting of subsurface rock strata along LW4 and 5 that will impact the hydrostatic level of perched and regional aquifers, and may affect other infrastructure such as roads, fire trails and electricity transmission lines. Should a modified project approval be issued the following conditions are requested for consideration: • All environmental monitoring results are to be reviewed and audited every 6 months. • All results and scientific explanation to be shown on NRE Web site and be accessible to the public. • If any change in environmental parameters is recorded, the remedial solution and the necessary action are to be placed on the NRE web site for public access.	All issues mentioned will be part of both an Extraction Plan and SMP Application and will be completed in liaison with all relevant stakeholders. As required by MP10_0046, NRE places all monitoring data, End of Panel Reports and other information on its website.
5. Stormwater No objection or comment to the modified proposal provided the project is undertaken in accordance with the updated schedule of commitments.	Noted
6. Geotechnical The proposed amendments have minimal significance to the geotechnical aspects of the modified development as described.	Noted.
10. Heritage Initial comments and recommendations made for MP-2010/46 are considered still to be pertinent to the modification application with no additional matters raised.	Noted.

ILLAWARRA RESIDENTS FOR RESPONSIBLE MINING

COMMENT	RESPONSE
The Preliminary Works Project at No 1 Colliery Russell Vale was deemed contentious by several State Government agencies who stated they "do not consider it good practice to separate elements of the proposed new mining area into separate projects resulting in the assessment being undertaken in a piecemeal fashion". GNRE have again fractionated the development in applying for a Modification to longwall under their Preliminary Works Development Approval. This longwall application clearly is not preliminary works and should be included in the Expansion Project Application that we have been told will be completed and put on exhibition in October this year.	This approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
They have also stated that the ongoing viability of the mine is the reason for the Modification. This is an erroneous statement as GNRE have an approval to remove remnant coal from the V Panels in the Bulli Seam but would rather pursue their longwall option. They have failed to assemble and submit the appropriate documentation for their Expansion development application. GNRE were requested on 18 August 2009 by the Director General of DoP+I to provide adequate information to support their Expansion DA. This information has still not been submitted. Clearly the time has been protracted by GNRE, for it has now been three years since the Director General's Requirements for the expansion were issued. In fact, GNRE appears to be unwilling or unable to apply for expansion to longwall mine through the appropriate processes. It is clear that GNRE is in fact attempting to incrementally establish their expansion project for this mine and we argue that this piecemeal approach is not consistent with good planning.	This is correct. NRE does have approved to remove remnant coal from both the V-Mains and P & O Panels. All leases contain a resource recovery clause that allows the DRE to consider a Colliery's reasoning for not extracting a coal resource that is currently considered to be commercially viable. NRE does have approved to remove remnant coal from both the V-Mains and P & O Panels. NRE is currently not progressing that extraction due to medium and long-term coal prices, these panels are not currently economic to extract utilising first working and pillar extraction methods This request in 2009 for further information as part of an adequacy assessment was related to a previous application that was withdrawn in liaison with DP&I to be resubmitted as s Preliminary Works and Major Underground Expansion Pt3A's.
The current proposal seeks to exploit the now repealed but nonetheless persistent 'modification' provisions of Part 3A to establish an NRE 1 expansion project in a piecemeal manner. This strategy circumvents cumulative impact considerations and sidesteps the greater scrutiny that an expansion project application would attract - scrutiny which would occur within the changed legislative landscape.	While Pt3A of the Environmental Planning and Assessment Act 1979 has been repealed the Pt3A provisions continue to apply to approved Pt3A projects including allowing them to be modified. However, this approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
The Division of Resources and Energy (DRE) approved a Subsidence Management Plan (SMP) for Longwall (LW) 4 on 26 March 2012, subject to meeting certain conditions and additional documentation. This was subsequently approved 30 July 2012 (long after the mining had commenced). This approval by DRE is now the subject of an ongoing Land and Environment Court case instigated by IRRM addressing the legality of the approval under clause 8K of the Environmental Planning and Assessment Act. Gujarat has endeavoured to exploit clause 8K counter to its intent to 'bring-in' mines that were operating outside the approval process. The clause was not intended to allow new approvals. It would seem arguments of mine viability and job losses persuaded DoP+I to grant mining approval. Brinkmanship of this kind should not compel decision making.	Noted. Comment directed to DP&I
LW5 SMP was not approved because it was seen by DRE to be problematic given its likely impacts. It is odd that in the current proposal Gujarat are seeking further approval for LW4, given it seems now to have been completely extracted. The Environmental Assessment contains no information about the outcomes of LW4.	LW4 has been included in this application in order to transition it into the planning system under a major planning approval.
The Department of Planning and Infrastructure advertised the Modification for public consultation and only allowed for a time frame of three weeks for submissions. (GNRE had advised concerned residents that the period was four weeks but later said that was their error on their part.) This is insufficient time to read and digest a 900 plus page document and then make an informed submission on such a large and complex application, particularly when a large portion of the documentation is missing or nonexistent. Significant parts of Appendix J only became available on the DoP+I Website on Wednesday August 29. A revised EA was sent to only one individual on Friday August 31.	Noted. Comment directed to DP&I
The DoP+I refused many requests, made for many reasons, to extend the deadline. Working members of the public with family and other personal obligations have limited time in which to respond to project proposals. Recognising this, two elected Members of Parliament supported the request for a deadline extension. These DoP+I refusals stand in stark contrast to the willingness of the DoP+I to accommodate and facilitate the interests of the proponent.	Noted. Comment directed to DP&I

The documentation on exhibition in this modification is incomplete and misleading. Inadequacies in this documentation include the following: missing SMP Management Plans not on exhibition on website; "approved Management Plans" cited in the Environmental Assessment Report that do not exist; a Statement of Commitment that changed 2 ½ weeks into the 3 week exhibition period; and, Extraction Plan missing.	<u>Inadequacies in this documentation</u> It is assumed that the missing SMP management plans refers to Appendix J of the EA. The SMP plans were included as an indication of the content and format of a future Extraction Plan should the current modification application be approved. NRE is unsure of which website that the objector is referring to, NRE or DP&I. The information is on the NRE website and has been generally available for the period of the public exhibition. Further, emails with links to allow download of the entire EA were sent to a number of interested persons that have indicated a desire to be contacted when this type of information is available. A number of IRRM members are on this list. <u>References to 'approved management plans'</u> The references made throughout the document were intended to reflect NRE's intent to adhere to future approved Management Plans as required by MP10_0046 Pt3A approval conditions. This was communicated to representatives of the IRRM. <u>Statement of Commitments</u> Changes were made to the Statement of Commitments for three reasons: 1) The first change was made as a result of interpretation issues surrounding management plan references brought to both NRE and DoPI's attention by a members of IRRM on 22 August 2012. The original text was intended to reflect NRE's intent to adhere to future approved Management Plans as required by MP10_0046 Pt3A approval conditions. These plans have not yet been approved by the Department of Planning & Infrastructure but, when approved, will become a part of the Statement of Commitments and therefore enforceable as such. Members of the IRRM pointed this out and were advised of the intent of the wording. The wording was changed to minimise confusion. 2) There were also errors that were picked up in the Statement of Commitments by the public where NRE had failed to highlight in red some additions to the Statements of Commitments. As soon as this was pointed out NRE addressed the errors and reposted the corrected Statement of Commitments. 3) Some of the lines of the original Statement of Commitments were left out of the modification application because there was no intent to change them. The Timings column was similarly omitted so that only Statements that were going to be changed were in the modification. This was explained to a representative of IRRM who indicated to NRE that this may cause some to come to the conclusion that NRE was attempting to hide issues. As a result of these criticisms, and in liaison with DoPI, NRE updated its Statement of Commitments to address any issues of confusion, or implications of non-transparency. This occurred late in the process
In GNRE's Modification there are numerous references to Management Plans (MPs). These MP's are either associated with the SMP for LW4 or required under GNRE Preliminary Works DA. The SMP MP's were specified in the Mod EA as being included in Appendix J but in fact this information was not included on the DoP+I website in its entirety (Public Safety, Heritage, Water, Electrical Transmission Lines MP's). The MP's required under the Preliminary Works DA are actually not yet approved (over four months overdue) and are not available to the public during this public exhibition stage of the modification planning process (Noise, Air Quality & Greenhouse Gas, Traffic, Surface Facilities, Water MP's). This is a gross oversight on the part of the DoP+I and very misleading documentation on the part of GNRE. These missing MP's are the areas that have the most impact on the surrounding community. How is it possible that the public can be asked to comment on an application that relies on supportive documentation that is not even available to them?	The SMP documents were included in Appendix J of the EA. The SMP plans were included as an indication of the content and format of a future Extraction Plan should the current modification application be approved. NRE was informed by a member of IRRM on 22 August 2012 that there were some plans missing from the DP&I website. NRE informed DP&I on 23 August 2012 and this issue was resolved. The information is on the NRE website and has been generally available for the period of the public exhibition. Further, emails with links to allow download of the entire EA were sent to a number of interested persons that have indicated a desire to be contacted when this type of information is available. A number of IRRM members are on this list. The other management plans required to be produced by the Preliminary Works Pt3A had been prepared and were under assessment by DoPI at the time. They were related to the original Pt3A application and there was no intent to modify the plans related to the surface facilities as there was no intensification of site activities proposed as part of the modification application
It should also be noted that an Extraction Plan and Subsidence Monitoring Plan were also stated as being included in the notorious Appendix J but is missing in not only the DoP+I website but also the viewable hard copies.	As stated in Section 1.2, Appendix J was included to give an example of what the content and structure of an Extraction Plan might be. The Appendix J appears on the DP&I website. It was also available in electronic form on the NRE website and all hardcopies were printed with Appendix J as a stand alone folder containing all the relevant management plans. NRE can't comment as to whether the objector was able to access a full copy of the EA including all appendices.
The plan illustrations presented are poor representations of mining extent. The LW4 + 5 extents should be clearly defined by hatching rather than a fine red line that is hardly perceivable when printed in colour and virtually invisible when printed in black and white.	Noted. This comment has been passed on to Cardno and will be considered in future applications
It should be also noted that the Statement of Commitments included in the Mod DA have been amended with the additional amendments shown in red. However there are a large number of items that have been added that have not been highlighted. Such as- NRE will undertake regular meetings with the CCC, to provide timely and accurate information on major approvals issues and general operational aspects of the Colliery. And also items have been deleted and not noted, such as- "GNRE will conduct regular community liaison meetings and provide regular updates to the community both during construction and operation of the project." This unacknowledged removal and replacement of information gives a totally different meaning to their commitment. Under the new Mod Statement of Commitment, GNRE will do all their dissemination of community information through the CCC only and they are no longer obligated to have meetings or provide newsletters. These omissions and errors are not minor details; they have major implications for the people that live around the mine and other concerned citizens. When these errors and omissions were pointed out to DoP+I, the officer looking after this application replaced the Statement of Commitments documentation on the website with a different document. This was done on Friday 31 August just before 5.00pm, and just 3 days or 1 working day before the close of the exhibition period. It is difficult to understand how this can even be legal. For this reason alone the exhibition should be cancelled, all documentation should be withdrawn and checked and the exhibition period should begin again once a complete set of documents is available.	Changes were made to the Statement of Commitments for three reasons: 1) The first change was made as a result of interpretation issues surrounding management plan references brought to both NRE and DoPI's attention by a members of IRRM on 22 August 2012. The original text was intended to reflect NRE's intent to adhere to future approved Management Plans as required by MP10_0046 Pt3A approval conditions. These plans have not yet been approved by the Department of Planning & Infrastructure but, when approved, will become a part of the Statement of Commitments and therefore enforceable as such. Members of the IRRM pointed this out and were advised of the intent of the wording. The wording was changed to minimise confusion. 2) There were also errors that were picked up in the Statement of Commitments by the public where NRE had failed to highlight in red some additions to the Statements of Commitments. As soon as this was pointed out NRE addressed the errors and reposted the corrected Statement of Commitments. 3) Some of the lines of the original Statement of Commitments were left out of the modification application because there was no intent to change them. The Timings column was similarly omitted so that only Statements that were going to be changed were in the modification. This was explained to a representative of IRRM who indicated to NRE that this may cause some to come to the conclusion that NRE was attempting to hide issues. As a result of these criticisms, and in liaison with DoPI, NRE updated its Statement of Commitments to address any issues of confusion, or implications of non-transparency. This occurred late in the process

The Environmental Assessment Report (EAR) contains Impact Comparison and Mitigation Measures. The objective of the comparisons appears to be to enable the reader to compare the impact of the modifications to the original approval. However, the modification relates to activities so different from the original approval as to render the comparisons meaningless. Firstly, the mining location is different, secondly the mining method is different and, thirdly, the affected features are different. How is it possible to make a comparison? Are the new Impact Comparison and Mitigation Measures going to override the old ones and if so does this mean that the V Panels are not going to be mined? The scale of murkiness of the information here underscores the argument that this should never have been allowed to proceed as a modification. It should have been a separate development application.	The subsidence impact predictions as well as management and mitigation measures are for the extraction of LW5 only and don't replace or override any of the impact prediction or management measure for V Mains or other extraction mentioned in the Preliminary Works EA. It was felt necessary to compare the potential impacts as this was a modification of the existing approved Preliminary Works Pt3A. However, the criticism is accepted. The LW5 subsidence predictions should be read as stand alone. NRE does have approved to remove remnant coal from both the V-Mains and P & O Panels. NRE is currently not progressing that extraction due to medium and long-term coal prices, these panels are not currently economic to extract utilising first working and pillar extraction methods
GNRE have been reprimanded by DRE for poor and misleading documentation of their SMP submission for LW4 + 5. However, DoP+I has allowed similar poor documentation of this Modification to pass their scrutiny.	NRE has been advised by DRE via a letter on 23 August 2012 that it's LW4 & 5 SMP application was based on a "community consultation process that falls short of community expectations and industry best practice. As such DRE request that the Colliery enhance their community consultation process going forward." Further the letter requested a resubmission of the community consultation process that would address all the consultation requirements of the SMP Guidelines for Applications for Subsidence Management Approvals. This request has been somewhat overtaken by events related to the submission of the LW4 & 5 and MG 6,7 & 8 Pt3A modification application. DRE has recently advised NRE that while an SMP is still required to be lodged for the extraction of LW5. This will be undertaken as a parallel but separate application to the Extraction Plan that will be required by DP&I
How much has to be wrong with a modification submission before the DoP+I acknowledge that a mistake has been made and that the application should be removed from public exhibition, amended and re-advertised? We are deeply disappointed that DoPI has allowed this to occur. Once the errors in the documentation had been pointed out, the exhibition should have been cancelled and it should not have recommenced until all the problems with the documentation had been rectified.	Noted. Comment directed to DP&I
We have not commented on the replacement Statement of Commitments. It is totally unacceptable to change the documents on exhibition at the 11th hour.	Changes were made to the Statement of Commitments for three reasons: 1) The first change was made as a result of interpretation issues surrounding management plan references brought to both NRE and DoPI's attention by a members of IRRM on 22 August 2012. The original text was intended to reflect NRE's intent to adhere to future approved Management Plans as required by MP10_0046 Pt3A approval conditions. These plans have not yet been approved by the Department of Planning & Infrastructure but, when approved, will become a part of the Statement of Commitments and therefore enforceable as such. Members of the IRRM pointed this out and were advised of the intent of the wording. The wording was changed to minimise confusion. 2) There were also errors that were picked up in the Statement of Commitments by the public where NRE had failed to highlight in red some additions to the Statements of Commitments. As soon as this was pointed out NRE addressed the errors and reposted the corrected Statement of Commitments. 3) Some of the lines of the original Statement of Commitments were left out of the modification application because there was no intent to change them. The Timings column was similarly omitted so that only Statements that were going to be changed were in the modification. This was explained to a representative of IRRM who indicated to NRE that this may cause some to come to the conclusion that NRE was attempting to hide issues. As a result of these criticisms, and in liaison with DoPI, NRE updated its Statement of Commitments to address any issues of confusion, or implications of non-transparency. This occurred late in the process
We request and expect an investigation into this matter.	Noted. Comment directed to DP&I
The Longwalls 4 and 5 are located under the Sydney Water Catchment managed Metropolitan Special Area. The NSW Government made a commitment to securing the Sydney water system by putting into place the 2006 Metropolitan Water Plan. The NSW Government is developing a Strategic Regional Land Use Policy (SRLUP) that unfortunately does not recognize drinking water security as a priority. The Sydney Catchment Authority (SCA) managed Special Areas, which provide water for more than 4.5 million people, are not recognized in the SRLUP program.	Noted. Comment directed to DP&I
Bizzarely, the Government may include the Special Areas in a SRLUP review of the Southern Highlands, notwithstanding the facts that the principle land uses are very different and the number of dependent people is very different.	Noted. Comment directed to DP&I
In the interim, the Government provides no effective protection for the Special Areas, with water security and biodiversity conservation taking second place to short term revenue considerations. The concerns and recommendations of the SCA and DECCW/OEH are all too often overlooked by the DoPI and PAC. In turn the recommendations of the PAC may be overlooked by the DoPI and Director General.	Noted. Comment directed to DP&I
The SCA manages 16,000 square kilometers, 21 dams and supplies more than 2.5 million megalitres of water to customers in Sydney, the Blue Mountains, Illawarra, Southern Highlands and the Shoalhaven, who make up around 60 per cent of the population of NSW.	Noted. Comment directed to DP&I
The 15 year life of the NRE 1 coal mine sharply contrasts the never ending need for high quality drinking water and biodiversity fostering and protection. The natural assets above the coal seams are essential, irreplaceable and priceless.	Noted. Comment directed to DP&I
There is now an extensive public domain record of the damage toll inflicted by longwall mining on our drinking water catchments and associated infrastructure. Detailed and graphic accounts are provided for instance in the Southern Coalfield Inquiry report and submissions, the NSW Planning Assessment Commission (PAC) reports and submissions for the Metropolitan Coal and Bulli Seam Operations (BSO) projects, reports from the Total Environment Centre and numerous journal publications, such as that from Martin Krogh. Most recently it has become clear that drawdown associated with longwall mining has contributed to the drying of the ancient and World Heritage listed Thirlmere Lakes, which form part of the Warragamba catchment.	Noted. Comment directed to DP&I
Whilst this is not widely recognised in the broader community, this lack of recognition facilitates project approvals that would otherwise be very widely opposed. In contrast there is wide-spread concern and consequential opposition to coal seam gas mining. In the course of a previous campaign in relation to the No 1 Colliery, including the compilation of a petition of over 750 signatures, IRRM members have spoken to hundreds, (and most likely well over a thousand) local residents. We estimate that 95% of people we have spoken to are not aware that mining is taking place beneath the catchment area of their water supply and at least 75% find this fact unacceptable.	Noted. Comment directed to DP&I

Risk assessment is no more than an estimate of the risk of subsidence based on available information and in Appendix E Professor Philip Pells points out that there is little precedent of multi seam longwall mining upon which to base this estimate. The precedents cited are only observances of subsidence effects in the short term. Do any of the experts know what the cumulative effect of undermining of the swamps and watercourses may be in 50, 100 or even 200 years time? Irrespective of the risk assessment of the various experts cited, we argue that the water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged and uncompromised, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime. The lingering persistence of Part 3A does not and will not excuse the profound ethical and moral failure of our Government's continuing to approve damage to our catchments and their ecosystems.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. There is currently limited data on the long term impacts of subsidence on upland swamps and creeks. There is, however, some data from mining operations where upland swamps and / or creeks have been undermined. It is known that not all undermined creeks and upland swamps are impacted, and it appears to depend on a number of factors. A review of potential risk factors for impacts to upland swamps is provided in an updated upland swamp impact assessment report prepared for Gujarat NRE as a part of their major expansion project. Upland swamps located above Longwalls 4 and 5 are not considered to be at risk of negative environmental outcomes as a result of subsidence from extraction of coal from Longwalls 4 and 5. The risk assessment identified that subsidence associated cracking of the base of swamps can pose a risk to the water levels and water holding capacity of swamps, and therefore a process of assessing the significance of each subject swamp, and assessing which swamps need to be protected, and the measures required to do so have been identified and need to be adhered to as part of an overall swamp management strategy.
The impacts of longwall mining on the rivers, streams, groundwater, swamps and other ecosystems that underpin the Special Area catchments are now well known and include the following: Y Loss of surface flows and water levels. Complete drying of pools and desiccation of wetlands. Connectivity between pools lost or diminished with surface water being lost to the subsurface and groundwater flow. Notable 'case study' examples include the Cataract River, Georges River, Waratah Rivulet, Native Dog Creek and Wongawilli Creek. YYY Y Redirections of flows away from the local catchment area as a result of increased fracturing, permeability and porosity. Y Increased frequency, duration and magnitude of aquatic and wetland habitat drying. Loss of in-stream and wetland habitats. Risks to endangered species. Y Drainage of near surface aquifers as a result of seam dewatering and propagating strata depressurization. Y Loss of water quality as a result of fracturing. Increased levels of iron oxides, manganese salts, metal sulphides and electrical conductivity. Lower dissolved oxygen. Y Increased sedimentation in stored waters such as the Woronora Reservoir. Y Simplification of remaining in-stream habitat as a result of the growth of iron oxidising bacteria evident as a rusty-coloured mass in the water. Y Release of gas into the water column and out into the atmosphere. Oxidation of gas may lead to the death of riparian vegetation and in-stream fauna.	Noted. Comment directed to DP&I
Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects. These reports recognize the importance of swamps both as sponge-like water stores and filters, and as biodiversity pools of very high conservation value.	Noted. Comment directed to DP&I
As the Gujarat environmental assessment report (EA) observes, the Coastal Upland Swamps of the Sydney Basin Bioregion were listed as an Endangered Ecological Community (EEC) under the NSW Threatened Species Conservation (TSC) Act in March of this year. In 2005 longwall coal mining was listed as a Key Threatening Process under the TSC Act. Both listings provide details of damage caused by longwall mining.	Correct. The listing has been considered in the EA.
The listing of the swamps under the Commonwealth Environmental Protection and Biodiversity Conservation (EPBC) Act anticipated in the PAC's BSO report is expected within the next few months.	Noted
Alarmingly the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reports serious impacts on swamps 12, 15b and 16. Swamps in this area were identified in the PAC assessment of the BSO proposal as key indicators of risk to the swamps. The evidence that swamps cannot be safely undermined is overwhelming. Remediation of swamps is not possible and there are no examples of 'self-healing'.	Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows.. <i>"The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in:</i> <i>1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or</i> <i>2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or</i> <i>3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and</i> <i>4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment.</i> <i>Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C."</i> NRE is unaware of any literature that states that remediation is impossible or that there is no evidence of swamps self healing but would welcome the forwarding of any expert opinions and scientific papers that advocate this point of view. Reductions in groundwater at a number of piezometers in proximity to Swamps 12 and 15b have been recorded in Dendrobium Area

	3A, as reported in the end of panel report. To date, no impacts to the vegetation composition within these upland swamps has been recorded.
Swamps CRHS1, CCHS3 and CCHS4 have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. Recommendation 18 of the Metropolitan Coal PAC report includes the following; "swamps of special significance will be protected from negative environmental consequences". Aboriginal site 52-3-0322 is located on the edge of CRHS1 and Aboriginal site 52-3-0320 is on the edge of CCHS3. CCHS3 and CCHS4 overlie LW5 and CRHS1 is within the subsidence zone of LW5. Swamp CRHS1 is about 75 metres from the end of LW5 and so well within the impact zone defined by the 35 degree angle of draw accepted for the Southern Coalfield. Approving Longwalls 4 and 5 would approve the loss of swamps CCHS3, CCHS4, CRHS1 and other nearby swamps. If there is any uncertainty, it is the question of how long it will take for these swamps to be lost.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Biosis has just completed a comprehensive assessment of all upland swamps as a part of Gujarat's Major Expansion Project., including upland swamps located above Longwalls 4 and 5. This included the use of LiDAR data to identify upland swamps, detailed ground-truthing and mapping of all vegetation sub-communities within upland swamps. The revised Upland Swamp Environmental Impact Assessment Guidelines (OEH 2012) were used to identify upland swamps of 'special significance' within the study area. An impact assessment was undertaken using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock. This assessment identified that CCHS3 (referred to as CCUS3 in the revised impact assessment), previously mapped as one larger upland swamp, actually consists of two upland swamps that are reliant on divergent flow pathways, and are contained within different catchments. Detailed assessment of these upland swamps also identified that neither supports Tea-tree Thicket (MU43). Therefore neither upland swamp meets criteria for special significance as defined by OEH (2012). In addition, groundwater monitoring of CCHS3 has not recorded any groundwater within this upland swamp. It is likely that CCHS3 is dry for most of the year and is largely reliant on surface water flows and rainfall. The impacts of fracturing of the bedrock below this upland swamp are unlikely to result in the loss of groundwater within this upland swamp. CCHS4 contains Banksia Thicket (MU42), Tea-tree Thicket (MU42) and Cyperoid Heath (MU44c) and is thus considered to be of 'special significance'. Thus a detailed impact assessment was undertaken. This identified that the predicted subsidence associated with the overall project would be unlikely to result in significant changes to the swamp. The rockbar associated with this upland swamp is located outside of the predicted limits of subsidence for LW5 and is unlikely to be impacted as a result of the extraction of coal from LW4 or 5. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.
The Subsidence Monitoring Plan for Longwalls 4 and 5 (Appendix J) states that the NSW Division of Resources and Energy (DRE) requires performance criteria with negligible environmental consequences for the swamps CRHS1, CCHS3 and CCHS4, including; • negligible change in the size of the swamp; • negligible change in the functioning of the swamp • negligible change to the composition or distribution of species within the swamp; • negligible drainage of water from the swamp, or redistribution of water within the swamp.	Noted. Comment directed to DP&I

The PAC specifies negligible to mean "small and unimportant so as not to be worth considering". Satisfying the DRE criteria is clearly not possible for the swamps within the subsidence zone of LW5 and is unlikely to be possible for CRHS1 which is within the immediate vicinity of the longwalls and within the subsidence impact zone of LW5.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Revised Upland Swamp Environmental Assessment Guidelines (OEI 2012) require mining projects to result in no negative environmental outcomes for upland swamps of 'special significance'. 'Special significance' criteria are defined in OEI (2012). As outlined above, Biosis has completed a detailed impacts assessment for upland swamps as a part of Gujarat's Major Expansion Project. This assessment identified that CCHS3 is not considered of 'special significance' as it does not contain Tea-tree Thicket (MU43) and is not of sufficient size to meet this criteria. CCHS4 is considered to be of 'special significance' but is unlikely to be subject to negative environmental outcomes as a result of extraction of coal from Longwalls 4 and 5. CRHS1 is located outside of the predicted limits of subsidence. In addition Gujarat NRE will be relocating the start line for LW5, further reducing the potential for impacts to this upland swamp.
It is no longer acceptable to justify mining under or near the fragile upland swamps on the basis of further risk assessment. Doing so would be no more than a thin and transparent apology for continuing to acquiesce to the interests and hubris of the proponent, and the revenue focused expectations of the Government. Doing so would insult the intelligence and concern of the community.	Noted. Comment directed to DP&I
The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been recognised by the PAC as having "highly significant values" making it "worthy of protection" (Bulli Seam Operations report, 2010).	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. As outlined above, Biosis has completed a detailed impacts assessment for upland swamps as a part of Gujarat's Major Expansion Project. This assessment has identified that upland swamps located above Longwalls 4 and 5 are unlikely to be subject to negative environmental outcomes. Relocating LW5 to the start line of LW4 will avoid causing adverse impacts on Crhs1. The eastern half of swamp Cchs3 will still be directly undermined, and swamp Cchs4 will be partially within the 20mm subsidence zone of LW5. As yet Geoterra have not been provided with subsidence predictions for the amended LW5 layout. Cchs3 has been investigated by shallow piezometer installation studies and has been identified as being located in very shallow, dry, sandy soils with no identified moist peaty / humic content and is assessed as not being a groundwater dependent swamp. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. Biosis is currently undertaking monitoring of Cataract Creek for threatened frog species. To date, no threatened frog species have been recorded within Cataract Creek. Cataract Creek is within a potential zone of strains that may cause cracking in the adjacent creek bed due to extraction of LW5. Development of, and adherence to an adaptive management plan that developed and adheres to specified triggers to avoid the cracking, and associated through flow and water quality changes of Cataract Creek bed will be required
Low order streams play a vital role in connecting upland swamps to higher order streams. Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5 and is presumably associated with swamp CCHS3 over LW5. There is also a first order stream emerging from the northern side of swamp CCHS4.	First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek
Subsidence, increased strata permeability and strata depressurization risks redirection and loss of surface and ground water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. Recent work by Professor Philip Pells (Thirlemere Lakes report and addenda, and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be counted on to protect surface and near surface waters from depressurization and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers
In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction. The severe damage to two kilometres of the Waratah Rivulet provides another example of modeling and prediction failure. The widths of the longwalls that caused the catastrophic damage to the Waratah Rivulet were much the same as the width of Longwalls 4 and 5. Importantly, the notionally 'protective' overburden was greater at Waratah Rivulet than exists in this proposal. Compounding the admitted uncertainty of modeling single seam subsidence, there appears to be little precedent for valid prediction or modeling for this proposed multi-seam mining. Additional subsidence factors of up to 80% have been suggested for double seam mining. No such factors are invoked for triple seam mining, presumably because of the lack of precedent. As far as we are aware there are no examples of triple seam mining in the Southern Coalfield. Risks and uncertainties of this kind are unacceptable in relation to our water supplies and the need for biodiversity conservation.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.

The Gujarat EA is misleading in several respects, for instance it asserts that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. The Geoterra report refers specifically to CRHS1, which is not located above the longwalls, and actually makes no mention of those swamps which lie directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence due to Longwall 4. There is no mention of the impact of LW4 on swamps. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area, not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels. Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The proposed development cannot be considered in isolation. It is the first part of a plan to longwall mine a much larger area. The proposal's inclusion of operational gateroads 6, 7 and 8 clearly flags the applicant's intention to mine much more extensively.	This current approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE. For commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
Peabody Energy used a 'foot-in-the-door' approach in establishing roads and other infrastructure ahead of the assessment of the Metropolitan Colliery expansion proposal. This reflects an assumption of approval and/or the intent to leverage approval.	This current approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE. For commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
The Mod optimistically states; "modeled subsidence induced cracking could potentially affect stream flow in the reaches overlying and downstream of the proposed workings, although the anticipated stream flow losses would have little impact on the Cataract Reservoir water storage volume". It is neither responsible or acceptable to consider the impacts of LW4 and 5 on the end-point storage reservoir in isolation. The need for cumulative assessments is now firmly established and widely recognized. The need is starting to be addressed in the development of the Aquifer Interference Policy and the Strategic Regional Land Use Policy. There is a need to assess impacts on quantity and quality. There is a need to assess impacts in the context of prolonged drought.	Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through.
Furthermore, the Subsidence Monitoring Plan for Longwalls 4 and 5 (Appendix J) states that the NSW Division of Resources and Energy (DRE) requires performance criteria with negligible environmental consequences including; Ynegligible diversion of flows or changes in the natural drainage behaviour of pools; Ynegligible gas releases and iron staining; and Ynegligible increase in water turbidity.	Noted. Comment directed to DP&I
In its assessment of the BSO proposal the PAC specifies negligible to mean "small and unimportant so as not to be worth considering" and further states: "The Panel therefore recommends that the definition of "negligible impact" for rivers and streams should be: "no diversion of flows, no change in the natural drainage behaviour of pools, minimal iron staining, minimal gas releases and continued maintenance of water quality at its premining standard".	Noted. Comment directed to DP&I
Expectations of 'self-healing' are wishful thinking. There are very few examples where this has occurred and as far as we are aware there are no examples where it has been complete. Self-healing did not take place at Waratah Rivulet or at Wongawilli Creek for example. Water quality is lowered when re-directed water subsequently emerge downstream, having been contaminated by leached minerals and salts from new fracture surfaces. Re-directed water may be lost from the catchment.	Self healing of a river was observed at the Bargo River downstream of the Picton Weir for a significant length however self healing does not appear to occur rapidly in sediment poor stream or a river system which is why grouting is being used to fill sub-surface cracking to allow water to continue to pass over the surface. Water that passes beneath the stream bed through sub-surface cracking and re-emerges is not lost to the catchment. NRE will not rely on self healing of stream bed cracks to remediate stream flow changes, as it may, or may not, ameliorate any subsidence effects. If cracking does adversely affect stream flow in Cataract Creek, anthropogenic intervention, such as crack grouting may be required, however adaptive management measures should be used to intervene before cracking and overland flow changes of a major creek bed is induced.
The water catchment and its fragile habitats and ecosystems are not ours to risk.	Noted. Statement directed to DP&I
The Pells Report- "The prediction of the impacts of subsidence on swamps, creeks, groundwater and infrastructure depends on the accuracy of the subsidence predictions themselves. However, it is a fact that these predictions of subsidence, and in particular tilts and ground surface strains, is fraught with uncertainty. The main reason for this is the impact of geological structures, often unknown,	See Attachment A

and, in the case of multi-seam mining is exacerbated by limited precedent.* This statement is very illuminating and damning in itself.	
This three tier mining is to the best of our knowledge unprecedented and gives rise to many problems and concerns in regard to predicting subsidence under our water catchment area. It also brings with it significant concerns about being able to cease mining immediately should a major subsidence event occur. Longwall mining is a very destructive method and is very difficult to stop part way through a panel if events which should mandate cessation occur.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. Until LW4, to the best of NRE's knowledge, it would appear that triple seam mining has not occurred in Southern Coalfield previously. The fact that something has not been done before doesn't necessarily mean it is too risky. Multi-seam mining is a common practice in Europe, particularly the UK. Significant effort, time and cost has been spent on monitoring over the last 3 years in the area proposed to be mined. Further work continues to further refine and improve both data collection and interpretation. This information contained in the SMP plans in Appendix J contain all the monitoring and mitigation measures that were proposed and undertaken for LW4. These measures will be extended and improved for LW5 as part of an Extraction Plan & SMP plan application
The modification includes LW4, this longwall section is in fact almost completely extracted. The predicted subsidence for LW4 could be used in the prediction of subsidence for LW5 and others in the area. It would also be useful information to give the public so they can make an informed decision on the Modification. We have obtained verbal figures from GNRE staff about subsidence dimensions of LW4 so far: First working subsidence was predicted to be 20mm, whereas the actual subsidence was 28mm; Longwall mining subsidence was predicted to be 200mm, whereas the actual subsidence was 1280mm. So it can be seen that the predictions are clearly unreliable. First workings a 40% error and in Longwall mining a 540% error. We contend that GNRE consultants must now go back to the drawing board and base their predictions on actual results and factor in significantly greater uncertainty to their modeling due to the statistically inadequate sample size.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The Mod EA states- "with the volume of coal production and transportation per annum as per the approved project - air quality impacts (and Greenhouse Gas) per annum are as per the approved project." The framing of this application as a modification to the Preliminary Works DA, opens up the Preliminary Works DA to scrutiny. The fact is that a good proportion of residents dispute the appropriateness of the approval of the Preliminary Works DA in relation to these very factors because this approval did not take into account the close proximity of the colliery site to residential areas. The Mod EA also states the noise will be monitored- "in accordance with NRE's approved Air Quality & Greenhouse Gas Management Plan." However at the time of this Mod the MP has not been approved and the submission of this plan for approval is in fact over four months overdue, rendering the current project non-compliant. This is unacceptable.	The references made throughout the document were intended to reflect NRE's intent to adhere to future approved Management Plans as required by MP10_0046 Pt3A approval conditions. This was communicated to representatives of the IRRM.
GNRE have stated in their Mod EA that they will investigate opportunities to capture and/or reuse ventilation gases but gives no time frame or any tangible commitment. Their Preliminary Works DA mentioned the same statement but put a 2015 timeframe on it, one year after the expiration of this DA.	The greenhouse gas emissions as a result of the proposal will remain the same as predicted in the Preliminary Works Pt3A. There is currently no full capacity Reverse Thermal Oxidation (RTO) plant for underground coal mines in Australia. The BHP pilot plant at Westcliff Colliery draws only 10% of ventilation air capacity through a fresh air interface, and is being used to determine if the process is viable due to the large ventilation volumes, and consequently relatively small percentage of CH4, required for underground coal mining. There is no approved design for connecting the mine ventilation air directly to an RTO plant that will mitigate risk potential risks from a heat source at 960 degrees Celsius. The percentage of CH4 in the ventilation must exceed 0.2% in order to commence the oxidation process, and ideally needs to be in the order of 1% to be able to generate electricity. Currently NRE No.1 Mines Ventilation Air Methane (VAM) is in the order of 0.3% CH4, which is marginal for a sustained RTO process and impractical for power generation. It is not until we mine west of fault adjacent LW11 that the in seam CH4 concentration is predicted to increase. In seam drilling, currently planned for later next year when the mains have advanced towards the fault, will quantify the in seam gas make and concentration to determine the suitability of an RTO process. Hence the current 2015 target date for actioning control measures for VAM.
GNRE have mentioned in press releases that they, "are developing new underground roadways separate from the old and existing mine workings, supports the sealing off of these old workings and prevents waste gases from being included in our mines ventilation system", as a means of reducing their total GHG emissions. We believe that GNRE should be held responsible and accountable for all GHG emissions from their mine; they hold the mining lease for the area and must be required to fulfill all associated responsibilities, when they seek to exploit the privileges that the lease entails. It is right and appropriate that they take responsibility for the emissions related to the entire mining lease, irrespective of which of the coal seams is emitting the Greenhouse gases.	Sealing off the old working areas of the mine will allow the seam gas to equalise in the old goafs, and be contained separate to the new workings. This undiluted seam gas can then be captured in underground pipe ranges under negative, or suction, pressure to be directed to a surface plant for treatment by converting the CH4 to CO2. Any leakage underground around the seals, or through goafs and overlying workings, will form only a small percentage of our normal mine ventilation air and be recorded as part of our Green House Gas mine emissions.
The coal seams of the Illawarra are known to be gassy and typically release 10 or more cubic metres of gas for each tonne of extracted coal. The composition of the gas varies from being primarily methane to primarily carbon dioxide. Assuming all of the fugitive gas is carbon dioxide, a considerably weaker greenhouse gas than methane, the coal to be extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes of fugitive carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project	The measured in-situ volume of gas in the area of LW4 and 5 and MG 6,7 & 8 is round 3 cubic metres per tonne in-situ.
The DoP+I stated in the Director- General's EA to the PAC- "It must be noted that if the project was not allowed to proceed, the resultant gap in the coking coal supply would be almost certainly filled by another coal resource either in NSW, Australia or overseas. In other words, removing the GHG emissions from the project would not likely result in any decrease in global CO2 emissions." We dispute this and maintain that the existence of other suppliers should not absolve a corporation, or a state, or a state government from its environmental responsibilities to do what it can to reduce Greenhouse Gas emissions.	Noted. Comment directed to DP&I
The Mod EA states- "with the volume of coal production and transportation per annum as per the approved project - air quality impacts (and Greenhouse Gas) per annum are as per the approved project." but the dust is ongoing and of concern to local residents. It also states the noise will be monitored- in accordance with NRE's approved Air Quality & Greenhouse Gas Management Plan." However, with this MP also at the time of this Mod the MP has not been approved and is in fact over four months overdue, rendering the current project non-compliant. This is unacceptable.	In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/5/2012. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. The intention of the statement in the modification application regarding the 'approved management plan' was to indicate that the ongoing operation of the Colliery would be managed in accordance with the DP&I mandated Air Quality & Greenhouse Gas management plan as approved. It was not meant to infer that the plan had been approved at the time of the lodgement of the EA.

The air quality monitoring mentioned in the Preliminary Works DA only mentions monitoring particulate matter down to 10 microns (PM10). As the mining industry and NSW State Government are currently aware, the real concern is particulate matter smaller than 2.5 microns (PM2.5). We believe it is time that this industry and the State government showed appropriate due diligence and took some responsibility for the impacts of coal mining on the health of the community.	NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
All insoluble particulates are a danger to our health but it is extensively documented that diesel fumes, coal and silica dust are of special concern and 10 micron particulate matter causes less severe health effects than finer particles below 2.5 microns. Yet the mines in NSW are only required to record particulate matter to 10 microns. Dust has always been problematic at this mine (probably due to the close proximity to residential areas that GNRE bought into and to the fact that they bought antiquated infrastructure) and GNRE need to demonstrate that they have the ability to operate this mine under 2012 regulations and afford an acceptable amenity to the surrounding community.	NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust. New trucks compliant with the Euro 5 standard for emissions control are being purchased by NRE's trucking contractor. Euro 5 regulatory standard regulates emissions from all combustion engines with the goal to limit as much as possible the negative impact of road vehicles on the environment and health. The Regulation covers a wide range of pollutant emissions: carbon monoxide (CO), non-methane hydrocarbons and total hydrocarbons, nitrogen oxides (NOx) and particulates (PM). It covers tailpipe emissions, evaporative emissions and crankcase emissions. It sets limits for emissions from diesel vehicles as follows •carbon monoxide: 500 mg/km; •particulates: 5 mg/km (80 % reduction of emissions in comparison to the Euro 4 standard); •nitrogen oxides (NOx): 180 mg/km (20 % reduction of emissions in comparison to the Euro 4 standard); •combined emissions of hydrocarbons and nitrogen oxides: 230 mg/km.
The ERM (2009) Air Quality Assessment was inadequate. It was based on data gathered 6km from Gujarat NRE No. 1 Colliery Mine site and monitoring points were not even considered by the mine or DoPI to be placed in local areas for accurate assessment for the mine and the local resident's/community's information.	In order to gain a better understanding of the local dust issues, NRE has placed some depositional dust gauges in 4 locations in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
The failure to locate monitors in the immediate neighbourhood notwithstanding, results for monitors 6 kms away indicated the maximum 24 hour average PM10 would be exceeded. If it is to be exceeded 6kms away the effects on the residents in close proximity must be assessed, readings will be far greater in a 1 km radius-which is residentially populated - especially along the NRE's coal haulage route. If monitoring points were within the 1 km radius, then results would indicate the mine representing the greatest potential source of dust emissions, and the maximum 24 hour average PM10 would, indeed, be exceeded - well beyond the allowable 5 days exceedance limit.	In order to gain a better understanding of the local dust issues, NRE has placed some depositional dust gauges in 4 locations in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
NRE states, Odour levels, PM10, TSP and dust concentrations that were predicted at the receiver (as per original EA), and were modeled to meet the long term air quality criteria. This criteria is only met, on the results of the receiver 6km away, which renders the results invalid for the local community area around the mine. Implementing of real time air quality monitoring equipment has still not been put into place as per approval requirements. Only when real time air quality monitoring is implemented can accurate relevant air quality monitoring data be presented. DoPI should reject this proposal until required air quality monitoring is in place, as per approval requirements, for relevant appropriate assessment.	In order to gain a better understanding of the local dust issues, NRE has placed some depositional dust gauges in 4 locations in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review.

	Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
The Mod EA states- "The production volumes and associated transportation activities are as per the approved project. Hence the proposed modification works are unlikely to result in noise impacts beyond those previously assessed." However, the noise problems for residents around the mine are ongoing and of legitimate concern to local residents. The Mod EA also states the noise will be monitored- "in accordance with NRE's approved Noise Management Plan." Once again, at the time of this Mod the MP has not been approved and is in fact over four months overdue, rendering the current project noncompliant. This is unacceptable and invalidates this application.	In accordance with Schedule 3, Condition 16 of MP 10_0046 approval, the Noise Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 16/5/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. The intention of the statement in the modification application regarding the 'approved management plan' was to indicate that the ongoing operation of the Colliery would be managed in accordance with the DP&I mandated Air Quality & Greenhouse Gas management plan as approved. It was not meant to infer that the plan had been approved at the time of the lodgement of the EA.
The mine infrastructure at GNRE No1 Colliery has an exhaust fan (in fact the only exhaust fan from the Wongawilli Seam) located only a few hundred meters from residential areas. We have been informed by GNRE that this exhaust portal could have up to five fans located on it. At the moment there are only two and the noise is creating significant concerns in the area. Countless complaints have been made to the mine and the Office of Environment and Heritage (OEH) but there has been no resolution or even progress on this issue. Due to its proximity to residences, the fan portal should be relocated to a shaft on top of the escarpment to move this noise generator to a more distant location.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. Distance is not always a good indicator of impact from noise sources. The fan noise from the Wongawilli Colliery portal construction fan was heard in Horsley at a distance of approximately 3km yet was not heard by the Colliery's closest neighbours less than 1km away. This was due to a variety of reasons include the low frequency and tonal characteristics of the noise, topography, wind direction and temperature inversions. The matter was dealt with rapidly, in liaison with the EPA, by erecting acoustic screens around the fan. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for this equipment without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit as per its Preliminary Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will be developed to implement the audit recommendations.
Where noise monitoring receivers were placed by the proponent does not give an accurate reading for all community areas due to the topography of the land and "sound corridors", which then can give very different readings and impacts within a very short distance of each other. The Environmental Risk Assessment states there are mitigating measures currently implemented to reduce noise and vibration; there is no evidence to support this.	The current locations have been chosen on the basis of topography to provide the best coverage of the site. The community has been given time to comment but NRE has received no comments to date.
All documentation refers to the "previous approved project" but the supporting documentation is not provided and current noise mitigation measures appear to be nonexistent. For example, a member of IRRM had to inform the mine of a collapsed conveyor belt bearing. The mine was notified of the noise caused by the conveyor belt problem 2 days after the noise began. The mine had not been able to independently identify and address their noise pollution. This demonstrates that monitoring, mitigation and appropriate preventative measures are not being practiced.	An audit by Somerset risk identified a need for a Code of Practice and audit system including a truck induction. This has been in operation for 12 months and has been added to the mine work order system for auto generation. Also a regular PKCT meeting is held with NRE and the trucking contractors where a monthly report is presented and any issues discussed and actioned.
DoPI should reject this application until the previous approved project requirements and noise/vibration mitigation measures are put into place and are proved to be adequate.	Noted. Comment directed to DP&I
With Gujarat NRE No. 1 Colliery's approved project (as per the original EA) it states that there are no proposed changes to the existing transport arrangements and states there is an approved Traffic management Plan. This is not currently in place or approved.	In accordance with Schedule 3, Condition 28 of MP 10_0046 approval, the Traffic Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. The intention of the statement in the modification application regarding the 'approved management plan' was to indicate that the ongoing operation of the Colliery would be managed in accordance with the DP&I mandated Traffic management plan as approved. It was not meant to infer that the plan had been approved at the time of the lodgement of the EA.
The transport of coal by truck to Port Kembla Coal terminal is a contentious issue and one that not only affects the residents in the immediate vicinity of the mine, but also those that drive along the same route as the trucks. The following comments relate to the Traffic Management Plan (Item 14, p. 20)	Noted. Comment directed to DP&I
A. Trucking during PKCT approved hours. GNRE only have approval for 7am-10pm Mon-Fri and 8am-6pm Sat & Sun, PKCT coal receival hours are 24/7. This point must be correctly written. It is totally unacceptable for this mine to be transporting coal 24/7. Preliminary works DA states - The Proponent shall only load coal or coal reject onto trucks, or transport it off site by road between 7am to 10pm, Monday to Friday and between 8 am to 6 pm on Saturdays, Sundays and public holidays.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. NRE will comply with Condition 25 of Schedule 2 of the Preliminary Works Pt3A approval with regard to trucking of coal to the Coal Terminal
B. Obey legal speed limits, includes self-imposed 50km/h on Bellambi Lane. Legal speed limits on other parts of haulage route are not currently being obeyed. Bellambi lane Self-imposed 50km/h limit is continually being ignored by some drivers. The self-imposed limit is not enforceable by law; some drivers know and blatantly ignore the limit. Evidence from a privately purchased and operated radar gun has been provided of one driver traveling at 66 km/hour (6km/hr above the legal speed limit). However, despite numerous complaints to GNRE and the transport company there has still been no resolution.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. Self imposed 50km/h speed limit is a part of Driver's Code of Conduct. NRE & Brindles (Trucking Contractor) regularly delivering TBT talks to all trucks drivers regarding requirements of Driver's Code of Conduct. NRE has commenced coal distribution auditing program to ensure all drivers are following the requirements of Driver's Code of Conduct. Also, all the trucks have satellite tracking. So, NRE & Brindles (Trucking Contractor) can monitor the speed of trucks at all times.
The Self-imposed 50km/h speed limit was, in fact, requested by local residents to the mine who consulted continuously with the mine and the transport company, to ensure the safety of our children, family, friends and local work colleagues.	Noted. Comment directed to DP&I
There have been several near misses with coal trucks tailgating along the Northern distributor, and coming to the Bellambi lane turn off, where some cars stopped for a pedestrian to cross at the crossing and the coal truck nearly smashing into the stopped cars.	NRE has been unaware of these incidents

Past environmental managers and officers and also the current approvals manager have consistently implied or claimed that it is not GNRE's responsibility to control the trucks that transport their coal. This is erroneous and irresponsible. The contractors and consultants of GNRE are GNRE's responsibility. We have been told by Office of Heritage and Environment that all complaints should be directed at the mine and not the contractor (consultants).	NRE is held fully accountable by the EPA with regard to the actions of its contractors. This matter was discussed with IRRM and other community members at a recent community information day about the LW4 & 5 and MG 6, 7 & 8 application. The point was made during this discussion that despite significant controls, Codes of Practice, audits, a warning system, and other methods to manage the performance of the trucking contractors, any system depends on human beings will always be affected by human error or attitude. In that context, 100% compliance 100% of the time cannot be guaranteed for any system. However, updates to the management plans are ongoing; any issues raised are included in the work order sheets. A recent example of the evolving management of truck related issues related to complaints of trucks leaving NRE with uncovered loads involved NRE undertaking a coal cover CCTV audit. Both NRE and the trucking company also regularly check the truck behaviour on the coal route at random on the haulage days
C. Ensure drivers are vigilant regarding separation distances. When drivers are returning to the mine along the northern distributor and up Bellambi lane there is no legal separation distance maintained between these trucks, there are constantly 2 or 3 trucks together often tailgating each other. This has the potential for a major accident, with an innocent road users at serious risk of harm. Current monitoring of this is nonexistent.	Both NRE and the trucking company also regularly check the truck behaviour on the coal route at random on the haulage days. NRE will review its current practices and make updates to management plans, Codes of Conduct and other processes in an attempt to prevent unlawful behaviour by trucking contractors.
D. Compression Braking Compression braking should not be restricted to just PKCT entrance; it should be extended to entire haulage route, where residents are being affected. This should also include all trucks entering the mine (including contractors etc.)	Due to the very slight inclines coal transportation along Bellambi Lane the northern distributor requires no compression braking. The only exception to this may be a need to use this option along Springhill road but only when trucks are loaded.
E. Covering all loads. This requirement has been breached on numerous occasions since the original approval, and has been reported to OEH by the public (not GNRE). The requirement of automatic tarping systems on all coal trucks hauling coal to PKCT needs to be included in the plan. The current inconsistent load coverage and holes in tarps causes ejection of coal from the load. This may cause serious harm to other road users. This also causes coal to fall to the road, which then gets crushed by further traffic and turns to coal dust.	Auto coal covers have been fitted to all coal haulage trucks since NRE started operations 7 years ago. After one complaint in 2007 regarding a coal cover not being in place instigated the fitting of a CCTV at Bellambi Lane intersection as well as a sign reminding drivers to cover their loads. This has now been added to the audit system. Also a points system is in place whereby the drivers receive a warning when any justified complaints are recorded (3 warnings result in dismissal). PKCT are also notified of any issues in the Monthly report document. A flashing dash board warning light is being fitted to all the haulage trucks to indicate when the coal cover is not in place as well as installation of increased signage for continued compliance
F. Washing all trucks prior to leaving the site that travel on unsealed or dirty roads. All trucks must be washed upon leaving the site, regardless of road condition, or where they have traveled on site. If truck the wash facility cannot be utilized, no truck should leave the site. This should be the same as it is at the PKCT.	All trucks travel through a wheel wash then are again cleaned by a second truck wash. Coal from unloading at PKCT can get caught on the draw bar between the truck and dog/trailer and return to site. NRE has targeted this coal for removal prior to trucks leaving NRE. As some trucks vary in height further improvements are ongoing including the installation of a spray bar with multi jets which are set at different heights. with changes to truck combinations. The truck wash now uses fresh water to minimise the drag out of coal and dust on truck tyres to Bellambi Land. Truck wash upgrades should be completed at the PKCT by late November 2012 and this should result in cleaner trucks travelling back from PKCT. Since an issue recently with unwashed trucks leaving the site due to failure of the wheel wash, operations are now suspended if the truck wash units are not working. This has been included in the management plans
This Traffic Management plan was a requirement of the original approval and ALSO of the PKCT 24/7 application. Gujarat NRE No. 1 Colliery is still non-compliant with these requirements, therefore any further applications should be rejected by DoPI until full compliance.	In accordance with Schedule 3, Condition 28 of MP 10_0046 approval, the Traffic Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12.
Houses and surrounding land and businesses are continually covered with coal dust from the trucks and the coal dust on the roads. Dust storms are continuously being formed with the coal trucks movements which exacerbate the coal dust on homes and personal property; eg: washing on the line, cars parked in driveways, on outdoor furniture and in ceilings and homes.	NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan .
For example, the day the coal trucks ran out from the mine while the truck washing facility was out of order, these pollution/air quality/dust problems were significantly exacerbated. Nothing was done about this issue, until one member of the public reported it to the EOH and GNRE continued to operate in non-compliance with regulations when the deficiency was reported to the EPO by the public.	NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan .
Road street sweeper protocol needs to be put into place on a daily/2nd daily occurrence to minimize coal dust in this residential area.	NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area;

	(6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will be incorporated into NRE's Traffic Management Plan .
Concerns regarding truck noise include: -When coal trucks drive along Bellambi Lane, there is constant noise which disturbs the neighborhood. - Coal trucks rattle constantly while being driven - tail gates especially,-no changes have been made since the first application. The intersection at the corner of Bellambi lane and the Princes Hwy (entrance to the mine) is progressively getting rougher; when a coal truck goes through the intersection, the tailgate and/or any loose mechanical part rattles and vibrates, clangs and bangs. - There is constant brake squealing/lock up, when coal trucks are slowing/stopping; braking noise is very loud, and is magnified at night time- there has been little change for community since First Application. -When there is a ship in port there is a "push" to deliver the coal to the PKCT faster, this means more noise due to increase of trucks on the road at these times. This also means engine noise is magnified, especially at night.	The resealing of Bellambi Lane has improved the body rattle noise. Any excess noise is identified and the truck removed from haulage till the repairs are complete. A recent example is the mud guard on truck and dog trailer was reported to be rattling. The mud flap repaired within a short time of the report.
Concerns regarding truck safety include: -Even though there is a "code of conduct", a large percentage of truck drivers do not adhere to this policy. -Vehicles entering their properties and customers entering places of business have nearly been "mowed" down by the trucks, where the drivers have not realized that this is what is happening (they appear to assume that the cars are turning at the traffic lights further ahead). -Some of the trucks have been witnessed skidding through the RED traffic lights as they have been speeding and could not slow down properly, and have had to "Lock Up" their brakes to stop, which they cannot do before the stop line -The trucks have been witnessed deliberately driving through the red light to avoid having to wait.	RTA have made changes to the traffic light sequence at both Bellambi Lane intersections for a smoother transition. A 50 km/h self imposed speed limit has been introduced with a GPS tracking system along Bellambi Lane to try to eliminate issues of truck drivers exceeding this agreed speed limit. Further feedback on additional issues in this area will be examined and if additional solutions are available they will be implemented.
The management plans do not take into account or consider any of these points. They do not address the problems and therefore they require modification.	The truck and site managers are in regular contact. Any management plan and process changes are made with consultation with both the Environmental and OH and S Managers The transport management plan completed in consultation with PKCT, WCC, OEH and RTA and submitted to DoPI for their approval on 31/08/12. Also, the traffic management plans covers all the issues raised by members of IRRM.
Since approval for the mine to re-open, and extension of haulage hours to PKCT, quality of life as we had before, is not to 2012 standards, we seem to be going back in time. The only time we have peace from the coal trucks, is when they are not hauling coal and Bellambi Lane returns to a "normal" suburban street.	Noted. Comment directed to DP&I
GNRE have been struggling with how to get coal off of this site from day one. In eight years they still haven't mastered it, in fact recently they extracted 250,000 tons of coal in a quarter for the first time and it was hell for the residents in the area. GNRE have an expansion development approval in place to increase it to 3million tons per annum and they are talking up to 4million tons in public presentations. Given that this mine is serviced solely by trucks down Bellambi Lane and that their record to date has been appalling, we demand that this situation be fixed immediately or that all mining is to cease at this site.	Noted. Comment directed to DP&I
It can't be difficult to ensure that the trucks leaving this mine are clean, covered, in good mechanical condition and that the drivers obey the recommended guidelines. If GNRE cannot monitor a simple publicly visible aspect like this, how can we trust them to monitor and report the damage they are creating in the water catchment area.	Noted. Comment directed to DP&I
There are no speed cameras, vibration monitors, dust monitors or surveillance cameras down Bellambi Lane. Given the problem that these trucks cause, GNRE should show some responsibility and due diligence and get it fixed.	Noted. Comment directed to DP&I
A Community Consultative Committee has finally been set up after a long hard fought battle by IRRM and community members. GNRE were trying to supplant the DoP+I CCC model with "their own strategy". (This strategy was going to include a 50 strong panel, members selected by GNRE's consultant and run by GNRE themselves.) It is now curious that GNRE stated in their Mod EA- "Previous to establishing a CCC, NRE undertook interviews with the community utilising an independent third party to assist in understanding the community's key interests. NRE identified some key steps in Community Engagement as follows: Step 1 – Identifying stakeholders / community of interest and the role they can play in Gujarat NRE's community engagement. Step 2 – Interview those key community stakeholders and research / understand their interests and experience of effective community engagement. Step 3 – Determine from these key community areas/groups, what is believed to constitute effective community engagement and interpret the key messages. Step 4 – Build community engagement with the community utilising Community Engagement Principles drawn from Step 2 - Community Interviews. Step 5 – Integrate the above into a Community Consultative Committee." This statement suggests that GNRE were attempting to broker an accord rather than trying to deny the community of an independently chaired, proven model that is the minimum requirement of every mine in NSW. It is even more curious that while this process of an alternative community consultation strategy was going on, GNRE was in the process of an approval SMP with DRE containing seriously misleading documentation allegedly reporting community consultation. They also neglected to mention this fact when they gave the community involved an update of their approval process.	1) CCC has been established. 2) Approvals based Community Information Days are undertaken 3) 2 general Community Information Days per year

The Mod contains a Statement of Commitment that is misleading and largely erroneous. The Statement contains unacknowledged removal and replacement of information that gives a totally different meaning of their commitment. Under the new Mod Statement of Commitment, GNRE will now do all their dissemination of information to the CCC and they will no longer be bound to having meetings or provide newsletters to the community as stated in the Preliminary Works DA. This is a not an appropriate way to consult or inform the community. The CCC is a mechanism that was required to be set up by following the DoP+I CCC guidelines. If GNRE wish to vary from the approved model then they should make submission to the members of that CCC and the community. There are numerous things that GNRE could put in place that would enhance the effectiveness of the information dissemination. GNRE and their consultants have put together, with the community's time, effort and assistance, a 70 page document on good communication. They should now enhance the current community consultation strategy by implementing some - or even all - of these measures!	Changes were made to the Statement of Commitments for three reasons: 1) The first change was made as a result of interpretation issues surrounding management plan references brought to both NRE and DoPI's attention by a members of IRRM on 22 August 2012. The original text was intended to reflect NRE's intent to adhere to future approved Management Plans as required by MP10_0046 Pt3A approval conditions. These plans have not yet been approved by the Department of Planning & Infrastructure but, when approved, will become a part of the Statement of Commitments and therefore enforceable as such. Members of the IRRM pointed this out and were advised of the intent of the wording. The wording was changed to minimise confusion. 2) There were also errors that were picked up in the Statement of Commitments by the public where NRE had failed to highlight in red some additions to the Statements of Commitments. As soon as this was pointed out NRE addressed the errors and reposted the corrected Statement of Commitments. 3) Some of the lines of the original Statement of Commitments were left out of the modification application because there was no intent to change them. The Timings column was similarly omitted so that only Statements that were going to be changed were in the modification. This was explained to a representative of IRRM who indicated to NRE that this may cause some to come to the conclusion that NRE was attempting to hide issues. As a result of these criticisms, and in liaison with DoPI, NRE updated its Statement of Commitments to address any issues of confusion, or implications of non-transparency. This occurred late in the process With regard to ongoing consultation NRE will continue with informal communications such as email, phone and face to face communications in order to respond to complaints or enquiries. In terms of broader consultation, at a minimum, NRE will utilise the following methods: 1) CCC 2) Approvals based Community Information Days are undertaken 3) 2 general Community Information Days per year
The Mod section starts off with a disjoint statement that the community (presumably residential area) was built around the mine and because of its proximity to the site they will incur most of the impacts. This mine actually has the closest above ground infrastructure to homes of any mine in the Illawarra. This mine has very antiquated infrastructure. This mine in the past actually sold off land for residential development. This mine is one of the few remaining mines that rely solely on trucks to transport coal to PKCT. This transportation is done through residential areas. This mine was on the verge of closing down in 2000 and was bought by the current owner in the full knowledge that there are residential areas in close proximity and that the infrastructure was not up to modern operational standards. This mine was purchased for future operations and seeks approvals for development and operations in 2012 and must be compliant under the strictest regulations possible because of its close proximity to the existing built up residential area – a residential area that pre-dates the ownership of the mine by its present proprietors.	Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWP&C to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward. In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. NRE has proposed air & noise monitoring program into their Noise and Air & GHG Management plans to ensure compliance with their Preliminary Works Project approval conditions for air & noise compliance monitoring requirements. These plans have submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time air & noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise and Air & GHG Management plans from DoPI. NRE have taken additional steps ensure compliance with their EPL Licence Conditions and improved transport management which are following: (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan.
GNRE's public relations and media arm repeatedly raises the point of the employment it provides in defense of its operations and its expansion. No-one wants to see people's jobs under threat. It is disappointing to note that GNRE's Mod EA states- "The proposed modification will have a range of positive social and economic impacts to the local area, including: maintaining current employment of approximately 222 employees." Their Preliminary Works DA stated that there were to be 259 employees plus 78 contractors, a total of 337 jobs. The 222 employees is 115 down from the stated in the Preliminary Works DA and yet there is no explanation of why this has occurred. Is it because the mine are now using their longwall machine or are they further cutting costs because of their economic situation? Either way this drastic reduction in employment at the mine should not go overlooked or undisclosed; losing 34% of its workforce in a modification to any development approval is a major concern. It is also a further point supporting the rejection of this proposal so that GNRE can focus on completing the first workings extraction that it claimed it would complete when it gained the Preliminary Works approval.	It has been explained to IRRM members that the employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements: 1) Operational viability dictated by coal prices and operating costs 2) Gaining approvals to allow ongoing proposed operations in a timely manner Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occur or upgrades of equipment take place.
Community funding commitments are not addressed in this modification. The Preliminary Works DA documents \$0.1m-\$0.15m commitment to specified groups over two years, is this funding to remain and why isn't it being extended under this modification?	The community support commitments have not been modified as part of this application. Gujarat NRE supported 21 different community groups and sporting organizations to the sum of \$1,386,027.91 well above \$0.1m-\$0.15m. Gujarat NRE is and always will be committed to being a good corporate citizen.
The mine is located in a sensitive escarpment area. Gujarat NRE should be more sensitive to the beautiful environment they operate in. The visible components included in this application should not be limited to the new items but should also address the existing structures. The existing zincalume shed is the most obvious of these and should be upgraded to reflect the intent of the Illawarra Strategic Management plan and the current DCP/LEP of Wollongong City Council. The shed should in the least be painted or over clad to soften the impact against the escarpment.	Noted. Comment directed to DP&I
IRRM Inc is a group of concerned individuals who have followed GNRE's operations and activities since the corporation took over the Russell Vale Colliery and related mining leases. Many of us are neighbours of the mine and are intimately acquainted with the Colliery's activities and impacts. We now share the increasingly widespread view that that DoP+I expresses atleast degree of 'regulatory capture' and fails to meet its responsibilities to the broader NSW community under the Planning Act. An accumulated pro-proponent culture within the DoP+I is reinforced by the Government having an inherent revenue driven conflict of interest.	Noted. Comment directed to DP&I

Proponents apply pressure to Government by emphasizing royalty revenues, capital investment and jobs. The royalties lost in sterilizing sensitive areas of the catchment are very small relative to annual State revenues and likewise the number of jobs is small relative to the regional workforce. Capital investment may be in equipment manufactured overseas and profits primarily go offshore. It is not reasonable to assume that other opportunities would not emerge.	Economic benefits to a community are a valid issue to be considered in assessing applications and area a relevant concern of the NSW Government as stated in the Objects of the Environmental Planning and Assessment Act 1979 as follows: The objects of this Act are: (a) to encourage: (i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment, (ii) the promotion and co-ordination of the orderly and economic use and development of land, (iii) the protection, provision and co-ordination of communication and utility services, (iv) the provision of land for public purposes, (v) the provision and co-ordination of community services and facilities, and (vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and (vii) ecologically sustainable development, and (b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and (c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.
Proponents and Government do not fully assess the impact costs of mining, which include increasingly evident and largely quantifiable health and utility infrastructure costs to the tax payer and largely unquantifiable short and long term environmental and social costs. In assessing mining royalty benefits, proponents and Government do not take into consideration the increasingly recognized health costs of coal combustion. The toxins and compounds produced when coal is burnt include mercury, sulfur dioxide, nitrous oxides and fine particulates which penetrate deep into our lungs. It is folly not to assess the full life cycle costs of coal mining and usage.	NRE produces coal primarily for the coking coal market. Coking coal is used for the production of steel. There is no other currently viable method of steelmaking. If global demand for steel diminishes due to new materials becoming available then the demand for coking coal will similarly diminish. The production of coking coal is to meet a global demand for steel, which includes Australia. NRE's extraction of coking quality coal doesn't create the demand it only meets the demand.
The SCA estimates that more than 90% of the Special Areas will be undermined in the next twenty years. In ignoring the concerns and recommendations of the SCA, DECCW/OEH and community, the DoP+I appears to calculate that if the Special Areas are degraded, a new filtering plant or desalination plant can replace the lost natural resource. A desalination plant costs some \$2 billion dollars and twenty years of state royalties might cover that cost, depending on the future of coal market. No amount of royalties could ever replace the environmental loss.	Noted. Comment directed to DP&I
Irrespective of any merits or drawbacks of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery. They have demonstrated that they are incapable of self-regulation. They are either unwilling or lacking the resources to bring the antiquated infrastructure at the Russell Vale Colliery up to modern standards and demonstrate no wish to do so.	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPaC to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward. In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. NRE has proposed air & noise monitoring program into their Noise and Air & GHG Management plans to ensure compliance with their Preliminary Works Project approval conditions for air & noise compliance monitoring requirements. These plans have submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time air & noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise and Air & GHG Management plans from DoPI. NRE have taken additional steps ensure compliance with their EPL Licence Conditions and improved transport management which are following: (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan. As part of the Preliminary Works Pt3A approval was given to upgrade existing mine infrastructure including surface conveyors and coal handling infrastructure, coal sizing, screening, crushing and load-out facilities, site noise and dust controls and as stockpile for ROM coal. This upgrade is currently underway and is required to meet modern standards with regard to its environmental impact. The Preliminary Works Pt3A approval sets the site criteria that must not be exceeded for air quality, noise etc. The upgrade of equipment is not related to any reduction in NRE workforce
A test for the suitability of GNRE to carry out the extraction proposed in this Modification is that the almost complete extraction of LW4, as far as we are aware, has been a failure. The public was informed that an error in alignment of the longwall machine resulted in clay contaminated coal.	IRRM via the CCC and Community Information Day were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.
YThe Sydney Water Catchment Special Area is not an appropriate location for an experiment in third tier mining, with two tiers of longwall mining. The risk to the affected swamps, creeks, watercourses, habitats, ecosystems and threatened species is unacceptable.	Until LW4, to the best of NRE's knowledge, it would appear that triple seam mining has not occurred in the Southern Coalfield previously. The fact that something has not been done before doesn't necessarily mean it is too risky. Multi-seam mining is a common practice in Europe, particularly the UK. Significant effort, time and cost has been spent on monitoring over the last 3 years in the area proposed to be mined. Further work continues to further refine and improve both data collection and interpretation. This information contained in the SMP plans in Appendix J contain all the monitoring and mitigation measures that were proposed and undertaken for LW4. These measures will be extended and improved for LW5 as part of an Extraction Plan & SMP plan application

YA residential area, with homes, families, children and older citizens just a few hundred metres from coal stockpiles, coal seam exhaust fans and other antiquated polluting infrastructure is not an appropriate place for a colliery. The point is emphasized by the lack of any other coal transport options except trucks.	NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan.
YIrrespective of any merits or drawbacks of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery, as previously mentioned. They have demonstrated that they are incapable of self-regulation. They are either unwilling or lacking the resources to bring the antiquated infrastructure at the Russell Vale Colliery up to modern standards.	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPaC to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. NRE has proposed air & noise monitoring program into their Noise and Air & GHG Management plans to ensure compliance with their Preliminary Works Project approval conditions for air & noise compliance monitoring requirements. These plans have submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time air & noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise and Air & GHG Management plans from DoPI. NRE have taken additional steps ensure compliance with their EPL Licence Conditions and improved transport management which are following: (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan. As part of the Preliminary Works Pt3A approval was given to upgrade existing mine infrastructure including surface conveyors and coal handling infrastructure, coal sizing, screening, crushing and load-out facilities, site noise and dust controls and as stockpile for ROM coal. This upgrade is currently underway and is required to meet modern standards with regard to its environmental impact. The Preliminary Works Pt3A approval sets the site criteria that must not be exceeded for air quality, noise etc. The upgrade of equipment is not related to any reduction in NRE workforce
There is more to consider than royalties and a small number of jobs.	Agreed. However, economic issues are a primary concern of the NSW Government as embodied in the Environmental Planning & Assessment Act 1979 and should be considered in balance alongside other issues. The Objects of the Act with regard to economic development are: <i>The objects of this Act are:</i> (a) <i>to encourage:</i> (i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment, (ii) the promotion and co-ordination of the orderly and economic use and development of land,
For these four reasons and the many more outlined in this submission, we ask for this Modification proposal to be rejected.	Noted. Request to DoPI by IRRM

NATIONAL PARKS ASSOCIATION (NPA)

COMMENT	RESPONSE
The Illawarra Branch of the NPA has over 130 members and like other branches of the NPA it is engaged in both conservation work and conducting outdoor activities with the aim of fostering appreciation and protection of our natural heritage. The branch has a special interest in the Illawarra Escarpment, and is concerned about possible threats to its ecosystems and biodiversity.	Noted. Comment. Overview of NPA organisation
NPA Illawarra submit that the Gujarat NRE Modification Application 1 to MP10_0046 should be rejected because it presents significant potential such threats. Our concerns are outlined in the following submission.	Noted. Request to DoPI
The Illawarra Escarpment is an iconic feature of the Illawarra region, providing a spectacular natural backdrop to the adjacent coastal urban areas. It is located approximately 60 kilometres south of Sydney, and the escarpment extends from Royal National Park south for approximately 50 kilometres. The Woronora Plateau lies above the escarpment and is an important part of the water catchment area for the Sydney area.	Noted. Description of area subject to objection
Both the escarpment and the Plateau are biodiversity "hot-spots" for plants and wildlife and many of its plant communities are rare or restricted to the Illawarra. The National Parks Association of NSW (NPANSW) has for some time been advising the government of the need to provide protected connectivity between the current parks and reserves of the area. Protection is needed to ensure the survival and recovery of endangered species, and secure vegetated connectivity is needed to nurture biodiversity as habitats are displaced by the increasing influence of climate change.	Noted. Comment directed to DP&I
There are some areas of the Plateau which are particularly "special" and in March 2012 they have been declared to be endangered under the Threatened Species Conservation Act: these areas are the Coastal Upland Swamps. There are seven upland swamps in the vicinity of the mining area and NRE LW5 is proposed to go directly underneath the swamp CCHS3 and underneath parts of CCHS4 and CRHS1.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. As outlined above, Biosis has completed a detailed impacts assessment for upland swamps as a part of Gujarat's Major Expansion Project.. This assessment has identified that upland swamps located above Longwalls 4 and 5 are unlikely to be subject to negative environmental outcomes.
The upland swamps have been formed over many thousands of years and are dependent on water (rainfall and groundwater) for their existence. Losing them will mean a huge loss of biodiversity, of plants and animals found nowhere else in the world. NPANSW considers the swamps to be sufficiently important that we are beginning the process of applying for Ramsar listing. (Ramsar is the most important international treaty for the conservation and sustainable utilization of wetlands).	Noted. Comment directed to DP&I
NPA Illawarra submits that the longwall mining underneath the upland swamps should not be allowed to proceed. In the risk assessment for the project it was deemed that longwall mining should not go underneath Mt Ousley Rd, as it was considered too risky, due to the strains on the road surface and possible subsidence and yet it is proposed to mine under the upland swamps.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. The decision not to mine near Mt Ousley Rd but to mine near and beneath swamps was made on the basis of risk assessment using the input of a variety of experts in ecology and hydrology. Piezometer installation and water level monitoring studies conducted to date, swamp Cchs3 is not assessed as being a groundwater dependent ecosystem as the swamp has a very shallow, sandy, dry soil profile, with the swamp predominantly maintained by surface overland runoff. As outlined above, Biosis has completed a detailed impacts assessment for upland swamps as a part of Gujarat's Major Expansion Project. This assessment uses the impact assessment guidelines of OEH (2012) to identify upland swamps of 'special significance' and then undertake detailed impact assessment using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock. This impact assessment has identified that upland swamps located above Longwalls 4 and 5 are unlikely to be subject to negative environmental outcomes. Based on these guidelines Gujarat can proceed to mining and monitoring. Detailed monitoring of vegetation composition within CCHS3, CCHS4 and CRHS1 will be undertaken throughout the life of the mine.
How should we make a balance between the economic benefits of the project and the state of our world in the future? Do we consider roads more important than biodiversity? Humans can exist without roads but not without biodiversity. We submit that the economic benefits to society from this additional longwall mining by Gujarat NRE are far outweighed by the risk of highly adverse effects to the special environments of the Woronora Plateau.	Noted. Comment directed to DP&I
Gujarat NRE gained approval for Preliminary works on the No. 1 colliery in October 2011. On February 24 2012 the company announced to the Sydney Stock Exchange that they were commencing mining of LW4 on March 13th. On 26 March 2012 they gained approval for LW4 but not LW5. Looking at the proposed modification it follows a similar business plan of developing Maingates 6,7 and 8 in spite of the fact that no approval has been given for the major expansion. It would appear that the overall business plan of Gujarat NRE is to go ahead with their expansion, purchase and commission machinery and get approvals later.	This approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
BHP Billiton has recently been in the process of seeking an extension for its Olympic Dam Project. The company prepared an extensive EIS, released in 2009, followed by 14 weeks allowed for public consultation. The submissions received resulted in a response by BHP Billiton in a further Supplementary EIS and final approvals were received from the governments involved. This demonstrates the process which should happen, rather than the course which Gujarat NRE has chosen. BHP Billiton has now decided not to go ahead with the expansion as first planned, but this is a business decision based on sound (and legal) approval processes.	Noted. Comment directed to DP&I
It appears that Gujarat is assuming that they will gain approval for their major expansion project in spite of the fact that it runs very close to or underneath the Cataract dam and in spite of the demonstrated previous damage to the water systems of the Woronora Plateau caused by longwall mining.	NRE understands that it requires approval to undertake its operations and that those operations must be managed to minimise environmental impact. The NSW Planning process does not guarantee approval and that risk is borne by NRE given that it must substantially invest between application and approval if given, to ensure that it is not faced with the significant operational costs associated with no coal production.
The public has only been allowed 3 weeks to make submissions, despite a number of requests for extensions. It appears to us that the EA main report text does not accurately reflect some of the findings made in the Consultants' reports in the Appendices but the time available does not permit a proper analysis. For example, Pells (Appendix E) expresses concerns as to the impermeability of the Bald Hill claystone. It is to be hoped that the PAC will be able to commit time to studying any discrepancies. We also note the difficulty of using the Appendices, which have been prepared for the original modification then updated.	The Public Exhibition period was determined by DP&I. The Bald Hill Claystone is not described in the Geoterra assessment as an "aquiclude" or impermeable layer, but as an "aquitard" or a layer with low intrinsic permeability that restricts the hydraulic connection between the aquifers above and below the BHCS. These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
In 2008 the NSW Department of Planning published the important document Impacts of underground coal mining on natural features in	Noted

the Southern Coalfield: strategic review. The review detailed the many environmental impacts of underground coal mining. The Waratah rivulet is a demonstrated example of the damage caused which cannot be remediated, in spite of efforts to do so. There is also evidence that subsidence has caused the collapse of overhanging valley walls and has affected groundwater. The review made a number of recommendations which seem to have been entirely ignored by Gujarat NRE, for example early consultation with stakeholders, increased monitoring and back analysis. The Community Consultative Committee only had its first meeting in August 2012.	
The company has recently purchased LIDAR monitoring equipment to assess subsidence effects but has not released any evidence to show that it has been monitoring water tables, subsidence, vegetation loss etc since planning and carrying out the mining of LW4, which the company says is now completed.	The LIDAR data was used to improve NRE's understanding of the terrain in which it was proposing to mine. The LIDAR data will also provide NRE with a baseline topography to compare to post mining topography. It has already proved useful in improving NRE's understanding of swamp boundaries and stream and river courses. NRE is also undertaking significant ecological, surface water, groundwater, visual, survey and archaeological monitoring as part of this proposal and the future Underground Expansion Project Pt3A Biosis has used LiDAR data to undertake detailed mapping of upland swamps as a part of Gujarat's Major Expansion Project. Biosis has been undertaking monitoring of upland swamps CCHS3, CCHS4, CRHS1 as well as other upland swamps within Gujarat's lease area to monitor vegetation composition within these upland swamps. If subsidence effects result in impacts to upland swamps any changes to vegetation composition within upland swamps is likely to lag behind. Biosis uses species richness and diversity indicators to determine whether successional change is occurring.
Gujarat NRE is already having a damaging impact on the community including noise, dust, stockpiles of unwashed coal, health impacts from coal mining, the visual impact of the works, transport by trucks etc. We will however focus on the environmental impacts of the proposed modifications, particularly on the effects of subsidence on the Coastal upland swamps and on the creeks feeding Cataract Dam. There are, of course, further environmental implications on the wider environment such as the amounts of greenhouse gases emitted from these "gassy" mines and by the transport of coal.	Noted. Summary of objections
As outlined in Section 1 above, coastal upland swamps are vital for Sydney's clean drinking water supply. They are also unique and irreplaceable. According to the NSW Scientific Committee: Coastal Upland Swamp in the Sydney Basin Bioregion is the name given to the ecological community in the Sydney Basin bioregion associated with periodically waterlogged soils on Hawkesbury sandstone plateaus, generally where mean annual rainfall exceeds 950 mm. Coastal Upland Swamp is generally associated with soils that are acidic and vary from yellow or grey mineral sandy loams with a shallow organic horizon to highly organic spongy black peats with pallid subsoils. They vary in depth from a few centimetres to at least 4 metres...	Noted. Comment directed to DP&I
The 2008 Dept of Planning Review on Southern Coalfields states that "It is therefore the Panel's view that the issue of, and mechanisms associated with swamp impacts from mining-induced subsidence is an extremely complex one, for which there is no simple generic explanation at the present time. On the evidence available, it would appear that there is a distinct possibility that undermining of valley infill swamps has or will cause drainage, water table drop and consequent degradation to swamp water quality and associated vegetation. But without additional research, this remains only a possibility, which is complicated by a number of other non-mining factors in most instances.	Noted. Comment directed to DP&I
The land on which the Gujarat coal lease exists is owned by the Sydney Catchment Authority and is part of the Special Areas providing drinking water to Sydney. The public is not permitted access to the Special Areas. Some SCA areas have been protected by the Nor Be regulations of SEPP 58 which state that developments in catchments must have a Neutral or Beneficial effect on the water. However, Part 3A applications were exempted from the Nor Be test. Obviously the project under consideration would not pass the test.	Noted. Comment directed to DP&I
Wollongong City Council's LEP 2009 classifies the land as E2, Environmental Conservation, making virtually any development inappropriate. Furthermore the EA itself states that the land is currently in good condition: "The surface is covered by relatively undisturbed natural bushland containing creeks and small wetlands." However, a company spokesperson informed us that one of the upland swamps has been damaged and that the company has been fined \$1500 by EPA as a result. We have not had time to follow up on the accuracy of this statement, but submit that it is unacceptable for such damage to occur.	During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. The establishment of subsidence monitoring lines has resulted in removal 0.685 hectares of Banksia Thicket (MU42) as well as approximately 50 Pultenaea aristata. No ground disturbance has occurred and the vegetation will regenerate naturally over time. This area is being monitored by NRE.
Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek. These streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5. Low order streams play a vital role in connecting upland swamps to higher order streams.	Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. Upland swamp CCHS3 and three small areas of upland swamp located over LW4 are located above the upper headwaters of two tributaries of Cataract Creek. The drainage lines below these swamps are poorly defined and do not contain flowing water. CCHS4 is located at the headwaters of a tributary of Cataract Creek. A waterfall is located at the base of this upland swamp. First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek. These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Multi seam mining is the process which will occur for this project, since the Wongawilli seam lies under the Bulli and Balgownie seams	Until LW4, to the best of NRE's knowledge, it would appear that triple seam mining has not occurred in the Southern Coalfields

which have previously been mined and collapsed. The Subsidence Report (Appendix A - Seedsman) makes it clear that multi seam mining such as this is a new and uncertain process and that subsidence effects will certainly occur. Seedsman recommends a risk management approach to operation. The modelling of subsidence is complicated by this multi seam environment and modeling is inherently uncertain. Despite this, the company appears to have made little effort to establish monitoring.	previously. The fact that something has not been done before doesn't necessarily mean it is too risky. Multi-seam mining is a common practice in Europe, particularly the UK. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Significant effort, time and cost has been spent on monitoring over the last 3 years in the area proposed to be mined. Further work continues to further refine and improve both data collection and interpretation. This information contained in the SMP plans in Appendix J contain all the monitoring and mitigation measures that were proposed and undertaken for LW4. These measures will be extended and improved for LW5 as part of an Extraction Plan & SMP plan application
Consider the statement such as the one following from Appendix A Seedsman, page 50: The many uncertainties with the subsidence prediction in the multiple seam layouts required in the 2 areas means that it is not appropriate to seek to quantify the subsidence deformations at this time. There will be a need to closely monitor the subsidence that develops as the walls are extracted and use this data to refine the controls. This statement does not appear to agree with the text of the EA. And from Appendix A, page 51: With regards to the pillar loadings in the overlying seams, it is not possible to accurately model the complex and possibly temporal changes in pillars stresses in the Bulli and Balgownie Seams. This is one of the reasons why we have avoided making detailed subsidence predictions and adopted the risk management approach of elimination in key areas. From Appendix A page 41: The mechanisms for valley closure and upsidence are not fully understood and are hence not amenable to an analytical engineering prediction. The raw data is not available in the public domain and only modified incremental data is presented. Extrapolation to multiple seams is fraught with problems	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The uncertainties outlined by Seedsman are added to by Appendix E - Pells report, but this is not reflected in the EA. For example Appendix E : Pells page 30: The available monitoring data does not provide a confident assessment of the water tables in the Upper Hawkesbury Sandstones across the site, and hence does not provide quantifiable insights into the groundwater dependency of streams. Similarly, there is no stream gauging data. The available data does not support a confident assessment on impacts to surface water systems, and it will be difficult for the monitoring to perceive and quantify impacts to surface water features from mining. And Pells page 47: We are of the view that groundwater modelling cannot provide definitive answers as to impacts on creeks and swamps. We consider that the modelling completed to date for the NRE No 1 project does not properly consider the likely ranges of permeability and storativity parameters, but notwithstanding this limitation, does indicate that the existing workings, and the proposed mining will have negative impacts on the groundwater regime.	The water table in the Hawkesbury Sandstone is monitored at numerous locations through the NRE lease area and does provide an indication of the groundwater dependency of the streams, which has also been assessed through visual inspection of the streams where groundwater seeps have been identified through water chemistry changes. Volumetric stream flow monitoring has been conducted in Lizard Creek at LC3, and has been augmented by additional, continuous flow monitoring assessments at pre-existing water level monitoring sites in Cataract, Lizard and Wallandoola Creeks since March 2012. Additional volumetric flow monitoring stations can be added if required in selected streams. The flow monitoring suite of sites will be used to define the baseline and post subsidence effects on stream flows in the subsidence areas.
The Precautionary principle has recently been used by the Department of Planning in regard to the development of wind farms: should it not also be used in the case of this Modification Application where considerable uncertainty exists in the area of multi seam mining? We submit that the economic benefits to society from this additional longwall mining by Gujarat NRE are far outweighed by the risk of highly adverse effects to the special environments of the Woronora Plateau and ask for this Modification Application to be rejected.	Noted. Comment directed to DP&I

SAVE OUR WATER CATCHMENTS (SOWC)

COMMENT	RESPONSE
At a public rally before the last election the Premier of NSW stated that the next Liberal and National Government would "... ensure mining cannot occur in any water catchment area and that any mining leases and exploration permits will reflect that common sense. No ifs, no buts, a guarantee."	Noted. Comment directed to DP&I
On December 1, 2011 the Premier told 2GB's Alan Jones: "I don't intend to allow — particularly after the drought we went through over a decade — mining or any other activity to threaten water resources."	Noted. Comment directed to DP&I
Note 1: As advised in the cover letter, this submission is to replace the submission of September 3. Note 2: This submission includes as an attachment a manuscript by Professor Philip Pells that is not to be placed on public exhibition	Noted. Comment directed to DP&I
General Comments The extent and impacts of the proposed additions to the Preliminary Works Project, reflected in the increased coal volumes, the introduction of use of longwalls and mining below two previously mined seams, the addition of new gate-roads and the use of documentation from the withdrawn expansion project, make it clear that this proposal cannot sensibly be regarded as simply a modification to the Preliminary Works project. Clearly Gujarat NRE is attempting to exploit the now repealed but nonetheless persistent 'modification' provisions of Part 3A legislation to incrementally establish its intended expansion project.	This current approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger Underground Expansion Project Pt3A application. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
The Sydney Catchment Authority and other agencies expressed similar concerns in commenting on the Preliminary Works proposal: "The SCA notes that the Wonga Mains Driveage is designed to obtain access to future mining areas. The SCA does not consider it good practice to separate elements of a proposed new mining area into separate Projects resulting in assessment being undertaken in a piecemeal fashion. The EA states that "NRE acknowledges that the construction of these access roadways and gateroads does not guarantee approval of longwall mining in the Wonga east area". Nevertheless, it is considered that prior approval of the driveage could result in considerable pressure being placed on assessing and approval authorities to approve future mining projects which could compromise water quality and water quality. The SCA considers that it would be more appropriate for the driveage to be assessed in conjunction with the assessment of future mining as part of Stage 2. This would enable the entirety of the impacts of this project to be assessed, and a more integrated approach to be taken to the management of impacts." Note that the use of bold font has been added here.	This current approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger Underground Expansion Project Pt3A application. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
The strategy being implemented by Gujarat circumvents cumulative impact considerations and side-steps the greater scrutiny that an expansion project application would attract - scrutiny which would occur within a changed legislative landscape. The persistence of the repealed Part 3A legislation does not and will not excuse the shameful ethical and moral failure of the consent authorities continuing to approve damage to our catchments and their ecosystems.	This current approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger Underground Expansion Project Pt3A application. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
Abusing section 75W of the Environmental Planning and Assessment Act In contrast to Section 96 of the Environmental Planning and Assessment (EP&A) Act, Section 75W provides no constraints on what might be proposed as a modification to an existing proposal - no matter how that proposal might offend the generally accepted understanding of the notion of a modification. Section 75W (s.75W) is part of the discredited and now repealed, in principle, Part 3A legislation. Unfortunately, as the current proposal demonstrates Part 3A and its excessive provisions lives on.	While Pt3A of the Environmental Planning and Assessment Act 1979 has been repealed the Pt3A provisions continue to apply to approved Pt3A projects including allowing them to be modified. The modification application does not expand the operation from either a surface operations or underground coal extraction volume perspective. The Colliery will still be constrained to the 1Mtpa limit approved as part of the Preliminary Works Pt3A.
Section 96 is consistent with the understanding of the notion of a modification in stating "the development to which the consent as modified relates is substantially the same development as the development for which consent was originally granted".	As above
The NSW Court of Appeal has commented on s.75W as follows (bold font added for clarity): "All that can be usefully said in the abstract is that the requirement for approval of a modification must be understood in the context of three factors. The first is that the subject matter of Pt 3A is defined by reference to major infrastructure developments, as identified by the Minister (or by a State environmental planning policy), as having State or regional environmental planning significance: s 75B. Secondly, the project is required to undergo environmental assessment and public consultation, of a kind not required of a modification. Construing s 75W in its context it is clear that the modification of an approval was something intended to have limited environmental consequences beyond those which had been the subject of assessment. (Given the powers of the Director-General, it cannot be said, of course, that only modifications which properly required no further environmental assessment were envisaged.)"	Noted. Comment directed to DP&I
The addition of longwall mining to the Preliminary Works Project would significantly change the nature of that project and its impact of the Metropolitan Special Area. The Preliminary Works Project does not involve longwall mining and does not involve longwall mining under existing works and previously mined seams. As Appendices A and E of the Gujarat Environmental Assessment (EA) makes clear, multi-seam longwall mining is a large step into the unknown that emphasizes the stark distinction between what is being proposed as a modification and the original project.	While Pt3A of the Environmental Planning and Assessment Act 1979 has been repealed the Pt3A provisions continue to apply to approved Pt3A projects including allowing them to be modified. The modification application does not expand the operation from either a surface operations or underground coal extraction volume perspective. The Colliery will still be constrained to the 1Mtpa limit approved as part of the Preliminary Works Pt3A.
That the current proposal cannot sensibly be regarded as modification is further highlighted by the more than 900 pages of environmental assessment material - some of which seems to be have been prepared for the expansion project. Emphasizing that the proposal is not simply a modification, the Preliminary Works reference to the use of Main Gates 4 and 5 is changed from being exploratory driveages to operational gateroads. The subsidence impacts referred to in the Water Management Plan of the belatedly updated Appendix J are those of the expansion project. For instance; "However up to 5m of depressurisation in the Hawkesbury Sandstone is predicted, which may generate up to 0.07ML/day reduction in flow to Cataract Creek, once all of the proposed panels in	The main issue that seems to have contributed to the issues described in many of the submissions are that the project is a subset of a proposed much larger project. As such some of the information that provided context in relation to the larger proposed project was not available. Further, information was integrated from the LW4 & 5 Subsidence Management Plan application. NRE acknowledges that this melding of information and contexts, as well as those who wished to submit not having access to the original EA for the Preliminary Works Pt3A which was being modified by this proposal has led to the EA causing some confusion. The fact that the EA had to be prepared and lodged rapidly also contributed to the issues experienced by those who wanted to comment on

Wonga East are mined." And "Subsidence at Wonga East was predicted using the SDPS model, with the Cataract Creek main channel predicted to subside by less than 200mm, with valley closure of up to 100mm and upsidence of up to 60mm (Seedsman Geotechnics, 2012)." Appendix A presents subsidence modelling for the expansion project.	the application. NRE will improve the quality of its documentation in liaison with DP&I for future applications.
Approval of the current proposal as a modification would further undermine confidence in the NSW planning assessment and regulatory system.	Noted. Comment directed to DP&I
Errors, omissions and misleading statements in the Gujarat EA The Gujarat Environmental Assessment (EA) is misleading, contains errors and refers to material that has not been provided.	The main issue that seems to have contributed to the issues described in many of the submissions are that the project is a subset of a proposed much larger project. As such some of the information that provided context in relation to the larger proposed project was not available. Further, information was integrated from the LW4 & 5 Subsidence Management Plan application. NRE acknowledges that this melding of information and contexts, as well as those who wished to submit not having access to the original EA for the Preliminary Works P13A which was being modified by this proposal has led to the EA causing some confusion. The fact that the EA had to be prepared and lodged rapidly also contributed to the issues experienced by those who wanted to comment on the application. NRE will improve the quality of its documentation in liaison with DP&I for future applications.
A particularly misleading error is the repeated statement that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. The Geoterra report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly or partially above the longwalls.	Biosis has just completed a comprehensive assessment of all upland swamps as a part of Gujarat's Major Expansion Project, including upland swamps located above Longwalls 4 and 5. This included the use of LIDAR data to identify upland swamps, detailed ground-truthing and mapping of all vegetation sub-communities within upland swamps. The revised Upland Swamp Environmental Impact Assessment Guidelines (OEH 2012) which require mining projects to result in no negative environmental outcomes for upland swamps of 'special significance' were used to identify upland swamps of 'special significance' within the study area. 'Special significance' criteria are defined in OEH (2012). An impact assessment was undertaken using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock. This assessment identified that CCHS3 (referred to as CCUS3 in the revised impact assessment previously mapped as one larger upland swamp, actually consists of two upland swamps that are reliant on divergent flow pathways, and are contained within different catchments. Detailed assessment of these upland swamps also identified that neither supports Tea-tree Thicket (MU43). Therefore neither upland swamp meets criteria for special significance as defined by OEH (2012). In addition, groundwater monitoring of CCHS3 has recorded short term, ephemeral groundwater level recharge events (<10cm over 3 weeks), however, the swamp predominantly has no groundwater contained in its shallow alluvium. It is likely that CCHS3 is largely reliant on surface water flows and rainfall. Groundwater monitoring data from CCHS3 has indicated that this upland swamp is unlikely to be reliant on perched ephemeral groundwater so the impacts of fracturing of the bedrock below this upland swamp are unlikely to result in the loss of groundwater CCHS4 contains Banksia Thicket (MU42), Tea-tree Thicket (MU42) and Cyperoid Heath (MU44c) and is considered to be of 'special significance'. A detailed impact assessment was undertaken that identified the predicted subsidence associated with the overall project would be unlikely to result in significant changes to the swamp. The rockbar associated with this upland swamp is located outside of the predicted limits of subsidence for LW5 and is unlikely to be impacted as a result of the extraction of coal from LW4 or 5.
The EA seems to provide no subsidence information, predicted or observed, for LW4. The EA suggests revised subsidence predictions for Longwalls 4 and 5 are provided in Appendix B, however the contours appear to be associated with LW5 only, though they extend over LW4. LW4 is believed to have been completed, yet there is no mention of the impacts of the longwall on swamps or whether the observe subsidence met or exceeded predictions. LW5 would reactivate and compound the subsidence of LW4, yet this is not mentioned or discussed. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1.	Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B
The EA does not explain why Longwalls 4 and 5 are being sought rather than other longwalls planned for the expansion project. Longwalls 1, 2 and 3 for instance are not shown or mentioned. The EA enigmatically suggests a 'suck it and see' approach to problematic geological formations and in Appendix E Pells comments on the lack of consideration of these challenges.	Longwalls 4 & 5 are being developed instead of 1, 2 or 3 due to proximity of the advance of the Wonga Mains and the higher coal quality available from these longwalls. Please see SCT 2012 in Attachment A for a response to the question regarding geological formations
The EA provides essentially no mitigation information. Instead, with limited clarity, the EA refers the reader to Appendix J as follows: "As per the Approved Project, including without limitation, updating relevant management and monitoring plans as an Extraction Plan and ongoing monitoring, with specific reference to the Plans of Management presented in Appendix J." The material referred to was not available until Wednesday August 29 - just a few days before the close of the limited exhibition period.	The material was available on the NRE website. DP&I were advised by NRE of missing information which was quickly rectified.
The subsidence management plans (SMPs) eventually exhibited on the DoPI Website were prepared for Gujarat's partially successful attempt to bypass the EP&A Act approval process by abusing transitional provisions of the Act. The attempt succeeded for LW4, but not LW5. That is, the SMPs for LW5 were rejected. The Biodiversity Management Plan is for both longwalls, whereas the Water Management Plan is for LW4 only. Other management plans referred to in the EA were required as part of the Preliminary Works Project and it seems plans were submitted late and some have not yet been approved - though the EA suggests otherwise.	The plans in Appendix J were provided to give an idea of what management practices were likely to be presented in an Extraction Plan should the proposal be approved. Many of the sections of the EA contained reference to mitigation measures that were intended to be further developed in Extraction Plans.
The Biodiversity Management Plan (BMP) belatedly provided in Appendix J seems to provide subsidence contours for LW4, however the vertical subsidence figures seem too small and are not explained. Appendix A appears to be a subsidence prediction and management document from Seedsman Geotechnics for the expansion project that provides no specific information for Longwalls 4 and 5. The longwalls are not labelled in most the diagrams and it's difficult to see how the current proposal relates to the modelling reported in Appendix A.	The main issue that seems to have contributed to the issues described in many of the submissions are that the project is a subset of a proposed much larger project. As such some of the information that provided context in relation to the larger proposed project was not available. Further, information was integrated from the LW4 & 5 Subsidence Management Plan application. NRE acknowledges that this melding of information and contexts, as well as those who wished to submit not having access to the original EA for the Preliminary Works P13A which was being modified by this proposal has led to the EA causing some confusion. The fact that the EA had to be prepared and lodged rapidly also contributed to the issues experienced by those who wanted to comment on the application. NRE will improve the quality of its documentation in liaison with DP&I for future applications.

The BMP advises that if fracturing occurs remediation should be undertaken as soon as possible, prioritising areas where fracturing has resulted in a loss of surface flows. The BMP observes; "To date remediation measures have been attempted at a number of sites with mixed results, and it is likely that many of these would not be applicable to natural features present in the LW4 SMP Area. Grouting in the majority of creeks and swamps in the LW4 SMP Area would be impractical and slope stabilisation works and drainage and erosion control would likely cause substantial damage to these natural features." Presumably the same is true of LW5.	For underground operational reasons, NRE will relocate the start position of LW5 adjacent to the LW4 start line. This will minimise potential impacts to the swamp CCHS4. CCHS3 will potentially be affected by tensile and compressive strains, however, as all monitoring to date has established that it is not a groundwater dependent swamp, this limits the potential risk of subsidence adversely affecting its groundwater supply or storage capacity, as it is predominantly reliant on overland surface flow recharge. CRHS1 is outside the predicted limits of subsidence resulting from extraction. See Figure 2 of the Response Report. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved.
In contrast the Water Management Plan confidently asserts successful remediation of subsidence damage in the Georges River and Waratah Rivulet. While the mining companies responsible for the remediation may make this claim, independent assessments disagree. Grouting can only be applied in a small number of favourable locations, as the BMP suggests, and where it has been applied it may be contributing to a redirection of subsurface flows away from the local catchment.	See SCT 2012 in Attachment A for a response to this issue.
The EA states that Geoterra have assessed that minor to no adverse change in flow and duration would be observed in seepage from the directly undermined swamps. Whereas the Water Management Plan belatedly provided in Appendix J suggests otherwise, commenting that the following would be within modelling predictions; fracturing of bedrock in ephemeral drainage lines that are directly undermined, up to 3 month lowering of pool water levels and swamp seepage discharge reduction greater than baseline variability.	Biosis has just completed a comprehensive assessment of all upland swamps as a part of Gujarat's Major Expansion Project, including upland swamps located above Longwalls 4 and 5. This included the use of LIDAR data to identify upland swamps, detailed ground-truthing and mapping of all vegetation sub-communities within upland swamps. The revised Upland Swamp Environmental Impact Assessment Guidelines (OEI 2012) which require mining projects to result in no negative environmental outcomes for upland swamps of 'special significance' were used to identify upland swamps of 'special significance' within the study area. 'Special significance' criteria are defined in OEI (2012). An impact assessment was undertaken using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock. This assessment identified that CCHS3 (referred to as CCUS3 in the revised impact assessment previously mapped as one larger upland swamp, actually consists of two upland swamps that are reliant on divergent flow pathways, and are contained within different catchments. Detailed assessment of these upland swamps also identified that neither supports Tea-tree Thicket (MU43). Therefore neither upland swamp meets criteria for special significance as defined by OEI (2012). In addition, groundwater monitoring of CCHS3 has recorded short term, ephemeral groundwater level recharge events (<10cm over 3 weeks), however, the swamp predominantly has no groundwater contained in its shallow alluvium. It is likely that CCHS3 is largely reliant on surface water flows and rainfall. Groundwater monitoring data from CCHS3 has indicated that this upland swamp is unlikely to be reliant on perched ephemeral groundwater so the impacts of fracturing of the bedrock below this upland swamp are unlikely to result in the loss of groundwater. CCHS4 contains Banksia Thicket (MU42), Tea-tree Thicket (MU42) and Cyperoid Heath (MU44c) and is considered to be of 'special significance'. A detailed impact assessment was undertaken that identified the predicted subsidence associated with the overall project would be unlikely to result in significant changes to the swamp. The rockbar associated with this upland swamp is located outside of the predicted limits of subsidence for LW5 and is unlikely to be impacted as a result of the extraction of coal from LW4 or 5.
The EA lacks an account of the local geology, for instance there is no mapping of the distance of the Bald Hill Claystone from the surface. The Water Management Plan indicates there are areas where it emerges at the surface. Pells provides an informative cross-section depiction that shows the Bald Hill Claystone rising towards the surface from west to east.	NRE has recently completed a piezometer installation in which geological profiling was completed. See SCT 2012 in Attachment A for more detail.
The Metropolitan Special Area is a Schedule 1 Area, not a Schedule 2 Area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	The Metropolitan Special Area is a Schedule 1 and not a Schedule 2 area. The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels.
.The planned expansion project has been determined to be a "controlled action" under the EPBC Act. Presumably this would also be the case for the proposed longwalls, yet there is no mention of this in the EA.	NRE is aware of all the TSC Act and EPBC listings mentioned and has incorporated this into its ecological assessments. Based on a review of the EPBC Act listing advice, Temperate Highland Peat Swamps on Sandstone THPSS it is NRE's opinion that the upland swamps within the project area do not meet the criteria for this threatened ecological community as follows. • they are outside of the altitudinal range, • no Woronora swamps are listed as components of the THPSS, nor are Woronora swamps mapped by DEH (2005) as part of the THPSS and • the swamps located above Longwalls 4 and 5 do not generate peat. Upland swamp CCHS3 is shallow in nature, with little peat development or organic material. Soils are shallow. CRHS1 and CCHS4 have deeper soils with increased organic content, although soils are predominantly mineral sands.
Subsidence In Appendix E of the Environmental Assessment (EA) provided by Gujarat, Professor Philip Pells cautions that subsidence prediction is fraught with uncertainty, in large part because of geological unknowns. Pells cites the following examples: · Appin Colliery LW703 – 33% to 52% over prediction. · Westcliff Colliery LW34 – 10% under prediction. · Tahmoor Colliery LW24A – 290% under prediction. · Tahmoor Colliery LW26 – 100% under prediction	See SCT 2012 in Attachment A for a response to this issue
Another well-known example is that of Waratah Rivulet, where modelling failed to predict dramatic subsidence impacts along a two kilometre section of this important water course. Modelling for the longwalls impacts was undertaken by MSEC using the Incremental Profile Method that Pells otherwise describes as "excellent". MSEC attributed the significantly under-predicted vertical displacement to the geology of the immediate roof strata and strata layers within 150m of the seam roof at Metropolitan Colliery. While events of this kind may be low in frequency, they have significant impact and cannot be ignored.	Noted. Comment to DP&I

The longwalls that caused the dramatic damage to the Waratah Rivulet were 158 metres wide and only slightly wider than the 145 metre width of Longwalls 4 and 5 in the current proposal. Significantly, the mined Bulli seam is around 450 metres below the surface in the vicinity of Waratah Rivulet and so about 100 metres deeper than the Wongawilli seam of Longwalls 4 and 5, which are about 330 metres below Cataract Creek. In principle, it would seem the Waratah Rivulet is better protected than the surface features above Longwalls 4 and 5.	See SCT 2012 in Attachment A for a response to this issue
Like LW4, the longwalls that damaged the Waratah Rivulet were approved via the approval of a SMP. A repetition of the damage inflicted on the Waratah Rivulet may be unlikely, but it can't be ruled out. The Gujarat project area has already been damaged by mining, as is evident in the Water Management Plan of Appendix J and is commented upon in Appendix E by Pells.	Noted. Comment directed to DP&I
Further highlighting the uncertainty of subsidence prediction, the PAC observes in its report[1] on the Bulli Seam Operations proposal that "strains are not necessarily uniformly distributed in accordance with theoretical predictions. For example, a predicted tensile strain of 1mm/m may eventuate in the field as a 5mm wide crack every 5m, or a 10mm wide crack every 10m."	Noted. Comment directed to DP&I
As far as we are aware there are no Southern Coalfield precedents for mining below two previously mined seams. Pells notes in Appendix E that MSEC propose a 10% to 20% increase of subsidence factors for the second mining, whereas Li recommends that a subsidence factor of 80% should be adopted for the second mining. No subsidence increase factors are suggested for a third mining, presumably because of a lack of precedent.	With regard to the risk associated with multi-seam mining particularly for a third level of mining. SCT is not aware of any previous mining in the Southern Coalfield where three seams have been mined directly above one another, except now from LW4 at NRE. There has been previous multi-seam mining in three seams in the Newcastle Coalfield at Wyee and Myuna (Wallarah, Great Northern, and Fassifern) and there may have been other sites in some of the older mines. The practice of multi-seam mining is quite common in the United Kingdom where SCT are aware of one site where up to nine seams were mined at the same colliery and in other countries such as China, Poland, Russia, and Germany. There does not appear to be any significant practical impediment to successfully conducting multi-seam mining and managing the resulting subsidence impacts. A risk based approach is an appropriate way to manage the uncertainties.
Given the examples noted by Pells and that of Waratah Rivulet, clearly subsidence prediction cannot prudently be viewed as anything more than an impact gambling guide of uncertain reliability. The discussion in Appendix A on multiple seam subsidence further emphasizes the significant uncertainties. It is interesting to read in this section that Gujarat advise "We are not willing to comply with the direction of the Sydney Catchment Authority to use the Li et al method."	Noted. Comment directed to DP&I
Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects.	Noted. Comment directed to DP&I
Groundwater Deep groundwater impacts arise as a result of 'goafing' and a consequential subsidence induced connected fracture zone above the goaf. The height of this zone cannot be reliably predicted, but in the Southern Coalfields it is believed to vary between 1 and 1.5 times the width of the longwall panel - for single seam mining. The extent of the highly connected zone following multi-seam mining will be increased by an amount that is not reliably known.	See SCT 2012 in Attachment A for comment on this issue.
Longwalls 4 and 5 are 145 metres wide and have a depth of cover ranging from approximately 320 m to 340 m (note the Gujarat EA incorrectly states on page 2 that longwalls 4 and 5 have lengths of approximately 530 m and 115 m respectively, and a depth of cover between 300 m and 340 m below previously extracted Bulli and Balgownie seams). The highly connected and freely draining zone would not be expected to extend more than 200 metres or so above the longwalls. This estimate however is based on single seam mining, whereas Longwalls 4 and 5 are below two previously mined seams.	See SCT 2012 in Attachment A for comment on this issue.
Given there is considerable uncertainty in estimating the likely extent of the highly connected and freely draining zone above Longwalls 4 and 5, there is a possibility that the zone may extend upwards beyond the Bald Hill Claystone. Accordingly it is not possible to entirely exclude the possibility of hydraulic connectivity from the surface to the underlying mine workings, with potentially significant impacts on shallow groundwater and surface water systems – and the mine.	See SCT 2012 in Attachment A for comment on this issue.
Irrespective of the extent of the highly connected and freely draining zone above Longwalls 4 and 5, shallow groundwater will be impacted by fracturing in the vicinity of the surface as a result of 'sagging beam' bending, shear, tensile (stretching) and compressive forces. These forces produce in a zone of vertical fracturing and horizontal shear impacts that typically extend 15 to 20 metres below the surface. The EA suggests surface fracturing of this extent and the Water Management Plan in Appendix J tortuously states "Mine subsidence can delaminate and/or dilate erosion surfaces and bedding planes within and between strata which occurs preferentially along the interface between lithologies with different elastic properties. Enhanced interfacial permeability is therefore possible at sub-cropping sandstone and outcropping shale interfaces." Though unclear, the latter sentence probably refers to the Bald Hill Claystone being exposed at the surface in various parts of the project area. This claystone layer would be damaged where it is within the surface fracture zone.	See SCT 2012 in Attachment A for comment on this issue.
The creation of a surface fracture zone will change near-surface groundwater flows and may accordingly lead to losses from the local catchment, as the SCA believes has occurred as a result of damage to the Waratah Rivulet [1,2] If the permeability of the strata immediately below the near surface fracture zone is increased, then shallow groundwater may also be redirected towards deeper flows and/or the highly connected and freely draining zone (assuming this hasn't extended to the surface fracture zone) that leads to the mine. Figure 1 depicts the Sydney Catchment Authority view of longwall mining impacts.	This is dealt with in the Sections of this report titled Geology and Drinking Water Supply. The issues raised are also addressed in SCT 2012 in Attachment A of this Response Report
In a publication arising from the 2010 Congress of the International Association of Hydrologists, the Sydney Catchment Authority makes the following comment in assessing the damage to the Waratah Rivulet caused by longwall mining: "If the fracture system has significant vertical extension and intersects one or more bedding planes, it is feasible that some water could join the regional groundwater flow system and water can be permanently lost to a neighbouring catchment. Alternatively, water could discharge several kilometers northeast on the cliff escarpment, where springs are known to occur." [2]	This is dealt with in the Sections of the Response Report titled Geology and Drinking Water Supply. The issues raised are also addressed in SCT 2012 in Attachment A of this Response Report
The SCA believes that water is being lost from the catchment under low-flow conditions. The paper also makes the following observation: "Prior to mining the streams in this area were usually connected-gaining, with groundwater level above the lowest streambed elevation. However, shallow piezometers located near the stream close to the edges of already mined longwall panels indicate that shallow groundwater close to the stream is affected by subsidence, causing the majority of groundwater levels to be below the streambed, causing the stream to be disconnected-losing with the diversion of surface water into subsurface voids." This of course has dire implications for swamps as well as streams	This is dealt with in the Sections of the Response Report titled Geology and Drinking Water Supply. The issues raised are also addressed in SCT 2012 in Attachment A of this Response Report

Figure 1. Sydney Catchment Authority depiction of the impact of longwall coal mining on the overlying sandstone and claystone layers, based on piezometric analysis of water flow changes. Subsidence breaks up the lower claystone layers and increases the permeability of the sandstone aquifers. Fresh and saline waters mix and water drains more readily into the coal mine. The graphic depicts the impacts of mining under the Waratah Rivulet and is representative of longwall mining impacts elsewhere in the Woronora Plateau. As a consequence the Waratah Rivulet has been transformed from a 'connected gaining stream' to a 'disconnected losing stream'.	Noted. Comment directed to DP&I
Fracturing and deformation of otherwise low permeability strata may provide hydraulic connectivity between aquifers, such that they can no longer be regarded as confined. Echoing the concerns of the SCA, Madden states that "increased lateral fracturing and connectivity within the same strata can be another consequence of subsidence movements, and in some situations may result in the diversion of stream flow and shallow groundwater away from the streams and the catchment of origin." [3(a)]	This is dealt with in the Sections of the Response Report titled Geology and Drinking Water Supply. The issues raised are also addressed in SCT 2012 in Attachment A of this Response Report
Subsidence and strata movements affect groundwater by deforming existing fractures, enlarging existing fracture apertures, creating new fractures, separating bedding planes and changing the hydraulic properties of the strata, such as porosity and permeability. Changes to hydraulic gradients, groundwater levels, and groundwater flow paths result. [3(a)] The SCA believes such changes have resulted in a loss of water from the Woronora Reservoir catchment.	This is dealt with in the Sections of the Response Report titled Geology and Drinking Water Supply. The issues raised are also addressed in SCT 2012 in Attachment A of this Response Report
Piezometer data from the Metropolitan Colliery (Bulli seam; 158 metre wide longwalls) in the vicinity of the Waratah Rivulet and Area 2 of the Dendrobium Colliery (Wongawilli seam; 245 metre wide longwalls) in the vicinity of Lake Cordeaux, show a subsidence induced increase in permeability in the zone between the highly connected and freely draining zone and the surface fracture zone.	The Bald Hill Claystone is not described in the Geoterra assessment as an "aquiclude" or impermeable layer, but as an "aquitard" or a layer with low intrinsic permeability that restricts the hydraulic connection between the aquifers above and below the BHCS. Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers.
The piezometer data also show that the highly connected and freely draining zone extends upwards through both the Wombarra and Stanwell claystone layers (respectively about 40 and 110 metres above the Wongawilli seam). These claystone layers are widely regarded as 'aquitards' and have been assumed to provide at least some protection from groundwater drainage and inflow into the mine beneath. As discussed below, Professor Pells and others question the industry preferred view of confined strata and of claystone layers acting as aquicludes. Work by Pells highlights the complex and variable character of the Bald Hill Claystone and finds that its permeability overlaps with that of the Hawkesbury Sandstone and other strata.	The Bald Hill Claystone is not described in the Geoterra assessment as an "aquiclude" or impermeable layer, but as an "aquitard" or a layer with low intrinsic permeability that restricts the hydraulic connection between the aquifers above and below the BHCS. Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers.
Reporting a detailed study in Area 2 of the Dendrobium Colliery, Madden states [3] the following: "The investigation showed that all aquifers and aquitards in the deep groundwater monitoring network are influenced by mining. There were groundwater level declines, changes to aquifer conditions and groundwater flow directions, and leakage from upper to lower stratigraphic units. The investigation has provided a greater understanding of the hydrologic and hydrogeologic response to longwall mining, which can broadly be applied to other underground mines using longwall mining techniques."	See SCT 2012 in Attachment A with regard to this issue. The Bald Hill Claystone is not described in the Geoterra assessment as an "aquiclude" or impermeable layer, but as an "aquitard" or a layer with low intrinsic permeability that restricts the hydraulic connection between the aquifers above and below the BHCS. Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers.
There are significant similarities between the Dendrobium Colliery and the Gujarat NRE 1 mine. Both mine the Wongawilli seam and both are in the immediate vicinity of stored water, streams and swamps. It would be highly irresponsible to ignore the lessons of Dendrobium. Madden comments on significant inflow events in 2007 and 2008 and subsequent inflow events have been recorded in the end of panel reports for the Dendrobium Colliery. The SCA has expressed concerns for water loss at the Gujarat NRE 1 mine, commenting on "... a reported loss of water in the vicinity of the V-Mains over subsided Bulli Seam workings."	The Bald Hill Claystone is not described in the Geoterra assessment as an "aquiclude" or impermeable layer, but as an "aquitard" or a layer with low intrinsic permeability that restricts the hydraulic connection between the aquifers above and below the BHCS. Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers.
The Bald Hill claystone, typically some 250 or so metres above the Wongawilli coal seam, has traditionally been viewed as an effective aquitard able to insulate surface and near-surface waters from the depressurisation impacts of longwall mining. Reflecting this view the Water Management Plan states "The depressurisation effects described below for the deep groundwater system is not anticipated to propagate up through to the Hawkesbury Sandstone, where the Bald Hill Claystone is present and maintains its low permeability."	The Bald Hill Claystone is not described in the Geoterra assessment as an "aquiclude" or impermeable layer, but as an "aquitard" or a layer with low intrinsic permeability that restricts the hydraulic connection between the aquifers above and below the BHCS. Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers. See SCT 2012 in Attachment A of the Response Report for a comment on this issue.
The industry preferred assumption that the Bald Hill Claystone acts as a protective aquitard or aquiclude has been contested since at least the time of the Reynolds Inquiry in the 1970s [4] Recent work by Pells [5,6] further strengthens the case that the 'aquitard insulation' assumption is unrealistic and that the claystone permeability overlaps with that of the overlying Hawkesbury sandstone. Pells confirms the finding of Reid in 1996 that "... permeabilities of the Bald Hill Claystone and the Hawkesbury Sandstone are of a similar order, despite their marked lithological differences. [7] Pells advises that the Bald Hill Claystone contains as many as eight soil profiles, is fissured and jointed, and is transgressed in places by faults and igneous intrusions. It is not safe to assume the Bald Hill Claystone insulates surface waters from dewatering impacts. The Water Management Plan seems to recognise this in stating "However up to 5m of depressurisation in the Hawkesbury Sandstone is predicted, which may generate up to 0.07ML/day reduction in flow to Cataract Creek,	The Bald Hill Claystone is not described in the Geoterra assessment as an "aquiclude" or impermeable layer, but as an "aquitard" or a layer with low intrinsic permeability that restricts the hydraulic connection between the aquifers above and below the BHCS. Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers.

once all of the proposed panels in Wonga East are mined." Pells points out monitoring data consistent with a vertical gradient propagating outwards from the mine area.	See SCT 2012 in Attachment A of the Response Report for a comment on this issue.
With permeability overlapping that of Hawkesbury Sandstone, the Bald Hill Claystone contains as many as eight soil profiles, is fissured and jointed, and is transgressed in places by faults and igneous intrusions. It is not safe to assume the Bald Hill Claystone insulates surface waters	See SCT 2012 in Attachment A of the Response Report for a comment on this issue.
The geological cross-section provided by Pells in Appendix E shows the Bald Hill Claystone rising to the surface from west to east, to 'break-out' at Cataract Creek. It seems likely then that the claystone layer will be fractured where it passes into the surface fracture zone, so increasing its permeability.	See SCT 2012 in Attachment A of the Response Report for a comment on this issue.
As Pells points out in Appendix E, it is reasonable to expect that Longwalls 4 and 5 will have an impact on near-surface ground-waters and surface waters, whether or not the highly connected and freely draining zone extends from the mine to the surface. As seam dewatering and drainage occurs a drawdown depressurisation wave will travel outwards from the mine and extend beyond the immediate subsidence zone. Though it may take some considerable time, it is reasonable to expect that at some point the thin aquifer that is swamp CRHS1 will be effected, even if it is not directly damaged by subsidence or upsidence.	See SCT 2012 in Attachment A of the Response Report for a comment on this issue.
The Swamps The Biodiversity Management Plan provided in Appendix J points out that all the swamps within the Wonga East domain of the NRE 1 mine form part of a medium sized swamp cluster located between Cataract Creek in the north and Cataract River to the south. Illustrating the importance of protecting the swamps, the SCA advises that inflows to the Woronora Reservoir from the Waratah Rivulet are greater than from the Woronora River because of the baseflow release of water from swamps in the vicinity of the Waratah Rivulet. In periods of reasonable rainfall the Waratah Rivulet provides 30% of the inflow to the Woronora Reservoir. Importantly, in dry times it provides up to 50% of the inflow to the reservoir. All of the swamps should be protected in the interests of long term water security.	Biosis has just completed a comprehensive assessment of all upland swamps as a part of Gujarat's Major Expansion Project, including upland swamps located above Longwalls 4 and 5. This included the use of LIDAR data to identify upland swamps, detailed ground-truthing and mapping of all vegetation sub-communities within upland swamps. The revised Upland Swamp Environmental Impact Assessment Guidelines (OEH 2012) which require mining projects to result in no negative environmental outcomes for upland swamps of 'special significance' were used to identify upland swamps of 'special significance' within the study area. 'Special significance' criteria are defined in OEH (2012). An impact assessment was undertaken using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock. This assessment identified that CCHS3 (referred to as CCUS3 in the revised impact assessment previously mapped as one larger upland swamp, actually consists of two upland swamps that are reliant on divergent flow pathways, and are contained within different catchments. Detailed assessment of these upland swamps also identified that neither supports Tea-tree Thicket (MU43). Therefore neither upland swamp meets criteria for special significance as defined by OEH (2012). In addition, groundwater monitoring of CCHS3 has recorded short term, ephemeral groundwater level recharge events (<10cm over 3 weeks), however, the swamp predominantly has no groundwater contained in its shallow alluvium. It is likely that CCHS3 is largely reliant on surface water flows and rainfall. Groundwater monitoring data from CCHS3 has indicated that this upland swamp is unlikely to be reliant on perched ephemeral groundwater so the impacts of fracturing of the bedrock below this upland swamp are unlikely to result in the loss of groundwater CCHS4 contains Banksia Thicket (MU42), Tea-tree Thicket (MU42) and Cyperoid Heath (MU44c) and is considered to be of 'special significance'. A detailed impact assessment was undertaken that identified the predicted subsidence associated with the overall project would be unlikely to result in significant changes to the swamp. The rockbar associated with this upland swamp is located outside of the predicted limits of subsidence for LW5 and is unlikely to be impacted as a result of the extraction of coal from LW4 or 5.
In March 2012 the Upland Swamps were listed by the NSW Scientific Committee as an Endangered Ecological Community (EEC) under the NSW Threatened Species Conservation (TSC) Act. In a lengthy summary of longwall mining impacts, the listing points out that longwall mining was listed as a Key Threatening Process under the TSC Act in 2005. A listing of the swamps under the Commonwealth Environmental Protection and Biodiversity Conservation Act is expected in the very near future and moves are afoot to obtain a RAMSAR listing. The swamps are exceptionally species rich with up to 70 plant species in 15m2 and are habitats of particular conservation significance for their biota. They present a biodiversity pool of global standing.	Noted.
The Gujarat proposal notes that there are seven upland swamps (referred to as CRHS1, CRHS2, CRHS3, CCHS1, CCHS2, CCHS3 and CCHS4) either directly above or in the very near vicinity of the proposed development. Of these CRHS1, CCHS3 and CCHS4 are highlighted as having "special significance status" under DECCW 2011 draft guidelines on upland swamps. CCHS3 (3.5 ha) and CCHS4 (1.8 ha) include Tea-Tree Thicket communities and the PAC points out Tea-Tree Thicket are a swamp community having the "most limited community in terms of occurrence and extent". Tea-Tree Thicket is rare because it requires a permanently wet habitat.	Biosis has just completed a comprehensive assessment of all upland swamps as a part of Gujarat's Major Expansion Project, including upland swamps located above Longwalls 4 and 5. This included the use of LIDAR data to identify upland swamps, detailed ground-truthing and mapping of all vegetation sub-communities within upland swamps. The revised Upland Swamp Environmental Impact Assessment Guidelines (OEH 2012) which require mining projects to result in no negative environmental outcomes for upland swamps of 'special significance' were used to identify upland swamps of 'special significance' within the study area. 'Special significance' criteria are defined in OEH (2012). An impact assessment was undertaken using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock. This assessment identified that CCHS3 (referred to as CCUS3 in the revised impact assessment previously mapped as one larger upland swamp, actually consists of two upland swamps that are reliant on divergent flow pathways, and are contained within different catchments. Detailed assessment of these upland swamps also identified that neither supports Tea-tree Thicket (MU43). Therefore neither upland swamp meets criteria for special significance as defined by OEH (2012). In addition, groundwater monitoring of CCHS3 has recorded short term, ephemeral groundwater level recharge events (<10cm over 3 weeks), however, the swamp predominantly has no groundwater contained in its shallow alluvium. It is likely that CCHS3 is largely reliant on surface water flows and rainfall. Groundwater monitoring data from CCHS3 has indicated that this upland swamp is unlikely to be reliant on perched ephemeral groundwater so the impacts of fracturing of the bedrock below this upland swamp are unlikely to result in the loss of groundwater CCHS4 contains Banksia Thicket (MU42), Tea-tree Thicket (MU42) and Cyperoid Heath (MU44c) and is considered to be of 'special significance'. A detailed impact assessment was undertaken that identified the predicted subsidence associated with the overall

	project would be unlikely to result in significant changes to the swamp. The rockbar associated with this upland swamp is located outside of the predicted limits of subsidence for LW5 and is unlikely to be impacted as a result of the extraction of coal from LW4 or 5.
Adding to the value of the swamps, Aboriginal site 52-3-0322 is located on the eastern margin of CRHS1 and Aboriginal site 52-3-0320 is mapped as occurring on the eastern margin of CCHS3.	With regard to this application, Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4 and will continue to be monitored if LW5 is approved. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted. The monitoring and management of any cultural heritage sites identified as potentially at risk of impact from subsidence effects will be monitored in accordance with an approved Extraction Plan & SMP.
CCHS3 and CCHS4 are in the vertical subsidence zone of LW5, with CCHS3 being directly undermined by LW5 where vertical subsidence is estimated to be 1.15 m, with up to 17 mm/m in tilt and between -10 to +12 mm/m strain. The NSW Planning Assessment Commission (PAC) has stated the following: "Fracturing of sandstone has generally been observed in the Southern Coalfield where the systematic tensile and compressive strains have exceeded 0.5 mm/m and 2 mm/m, respectively".	For underground operational reasons, NRE will relocate the start position of LW5 adjacent to the LW4 start line. This will minimise potential impacts to the swamp CCHS4. CCHS3 will potentially be affected by tensile and compressive strains, however, as all monitoring to date has established that it is not a groundwater dependent swamp, this limits the potential risk of subsidence adversely affecting its groundwater supply or storage capacity, as it is predominantly reliant on overland surface flow recharge. CRHS1 is outside the predicted limits of subsidence resulting from extraction. See Figure 2 of the Response Report. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved.
There can be no doubt that CCHS3 and CCHS4 will be impacted by LW5, possibly fatally. These swamps may have already suffered impacts from prior mining. Aboriginal site 52-3-0320 will also be very vulnerable to LW5.	For underground operational reasons, NRE will relocate the start position of LW5 adjacent to the LW4 start line. This will minimise potential impacts to the swamp CCHS4. CCHS3 will potentially be affected by tensile and compressive strains, however, as all monitoring to date has established that it is not a groundwater dependent swamp, this limits the potential risk of subsidence adversely affecting its groundwater supply or storage capacity, as it is predominantly reliant on overland surface flow recharge. CRHS1 is outside the predicted limits of subsidence resulting from extraction. See Figure 2 of the Response Report. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. With regard to this application, Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4 and will continue to be monitored if LW5 is approved. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted. The monitoring and management of any cultural heritage sites identified as potentially at risk of impact from subsidence effects will be monitored in accordance with an approved Extraction Plan & SMP.
The PAC makes the following observations in its report on the Bulli Seams Operations proposal[1]: "In the 18 months or so since the Metropolitan Coal Project information was collated, the focus of some government agencies and NGOs has been on gathering information on some swamps that have been recently undermined by longwalls. The information points to significant impacts on the hydrology of the swamps in question and the potential for serious environmental consequences. The swamps brought to the Panel's attention are Dendrobium Swamp 1, East Wolgan Creek Swamp-Newnes Plateau, Kangaroo Creek-Newnes Plateau, Junction Swamp-Springvale Colliery, Swamp 18-Elouera Colliery, and Swamp 32. In addition to these, the Panel observed that multiple swamps either side of an undermined (and severely impacted) reach of Lizard Creek appeared to be dry and undergoing compositional change from invasion by wattles and eucalypts. Swamps associated with the unaffected reaches of Lizard Creek did not show these same characteristics. This Panel and previous Panels[143] have sought examples of dessicated swamps that have not been undermined but none have been forthcoming to date. The limited monitoring data that is available is not adequate to preclude mining induced subsidence as the root cause of changes in the hydrology of at least some, if not all, of the swamps noted above. At this point in time, neither conventional nor unconventional subsidence effects, singly or in unison, can be eliminated as the source of changes in swamp hydrology	Noted
The PAC includes Swamp 1 in Dendrobium Area 2 as an example of an impacted swamp and clear evidence for this is provided in piezometer monitoring records. More recently monitoring of twenty seven shallow piezometers located within Swamps 12, 15a, 15b and 16 has shown impacts to swamps 12, 15B and 16 in Dendrobium Area 3A as a result of the passage of Longwall 7 earlier this year. The end-of-longwall report conservatively concludes "Based on the available data obtained from the piezometers and nearby rainfall stations, it appears that shallow groundwaters in Dendrobium Area 3A, particularly those associated with Swamp 15b in sub-catchment (of Sandy Creek) SC10C have been impacted by subsidence resulting from the mining of Longwall 7." The then DECW identified Dendrobium Area 3A as a reference area to monitor before approving further undermining of swamps.	Noted
The swamps are effectively wide but thin and fragile local aquifers inherently vulnerable to subsidence damage and dewatering effects. The evidence of harm to swamps caused by longwall mining is overwhelming. It is no longer credible or acceptable to take a 'Japanese whaling' approach and allow further harm to these Endangered Ecological Communities on the basis of yet further information gathering.	Biosis has just completed a comprehensive assessment of all upland swamps as a part of Gujarat's Major Expansion Project, including upland swamps located above Longwalls 4 and 5. This included the use of LIDAR data to identify upland swamps, detailed ground-truthing and mapping of all vegetation sub-communities within upland swamps. The revised Upland Swamp Environmental Impact Assessment Guidelines (OEI 2012) which require mining projects to result in no negative environmental outcomes for upland swamps of 'special significance' were used to identify upland swamps of 'special significance' within the study area. 'Special significance' criteria are defined in OEI (2012). An impact assessment was undertaken using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock. This assessment identified that CCHS3 (referred to as CCUS3 in the revised impact assessment previously mapped as one larger upland swamp, actually consists of two upland swamps that are reliant on divergent flow pathways, and are contained within different catchments. Detailed assessment of these upland swamps also identified that neither supports Tea-tree Thicket (MU43). Therefore neither upland swamp meets criteria for special significance as defined by OEI (2012). In addition, groundwater monitoring of CCHS3 has recorded short term, ephemeral groundwater level recharge events (<10cm over 3 weeks), however, the swamp predominantly has no groundwater contained in its shallow alluvium. It is likely that CCHS3 is

	largely reliant on surface water flows and rainfall. Groundwater monitoring data from CCHS3 has indicated that this upland swamp is unlikely to be reliant on perched ephemeral groundwater so the impacts of fracturing of the bedrock below this upland swamp are unlikely to result in the loss of groundwater CCHS4 contains Banksia Thicket (MU42), Tea-tree Thicket (MU42) and Cyperoid Heath (MU44c) and is considered to be of 'special significance'. A detailed impact assessment was undertaken that identified the predicted subsidence associated with the overall project would be unlikely to result in significant changes to the swamp. The rockbar associated with this upland swamp is located outside of the predicted limits of subsidence for LW5 and is unlikely to be impacted as a result of the extraction of coal from LW4 or 5.
The 2010 BSO report notes that DECW identified Dendrobium Area 3A as a reference area to monitor before approving further undermining of swamps. The May 2012 end of panel report for Dendrobium Longwall 7 in Area 3A shows damage to swamps 12, 15B and 16. The evidence of harm to swamps caused by longwall mining is overwhelming. It is no longer credible or acceptable to take a 'Japanese whaling' approach and allow further harm to these Endangered Ecological Communities on the basis of yet further information gathering.	Noted
The Subsidence Monitoring Plan for Longwalls 4 and 5 (Appendix J) states that the NSW Division of Resources and Energy (DRE) requires performance criteria with negligible environmental consequences for the swamps CRHS1, CCHS3 and CCHS4, including: · negligible change in the size of the swamp; · negligible change in the functioning of the swamp; · negligible change to the composition or distribution of species within the swamp; and · negligible drainage of water from the swamp, or redistribution of water within the swamp	Noted
The PAC specifies negligible to mean "small and unimportant so as not to be worth considering". Satisfying the DRE criteria is clearly not possible for the swamps within the subsidence zone of LW5 and may well not be possible for CRHS1 which is within the immediate vicinity of the longwalls and within the SMP zone and management/application area.	Noted. CRHS1 will not be impacted by the proposal
Swamp CRHS1 is well within the LW5 subsidence impact zone defined by the 35 degree angle of draw accepted for the Southern Coalfield. The swamp is 75 metres from the end of the longwall and the impact zone would extend outwards for at least 200 metres. Reflecting the extent of the impact zone, the length of LW4 has been curtailed to avoid impacts on Mt Ousley Road. Accordingly LW4, like LW5, is about 300m from Mt Ousley Road. In contrast CRHS1 is about 75m from LW5 - well within the 35 degree angle of draw subsidence impact zone. Risking harm to repairable public roads is not acceptable, but risking harm to priceless and irreparable natural feature is acceptable.	See SCT 2012 in Attachment A of the Response Report with regard to the extent of subsidence effects as a result of the extraction of LW4
Remediation of swamps is not possible and the PAC observes "For swamps there is no solid evidence that self-sealing occurs at all, or is 100 percent effective if it does occur." By the time monitoring has established swamp impacts it may well be too late to prevent the decline of the impacted swamp.	Detailed monitoring of vegetation composition within CCHS3, CCHS4 and CRHS1 will be undertaken throughout the life of the mine. NRE recognises that remediation of swamps is considered difficult but is unaware of any literature that states that remediation is impossible or that there is no evidence of swamps self healing but would welcome the forwarding of any expert opinions and scientific papers that advocate this point of view.
Figure 6. Shallow groundwater piezometer (blue line) readings before during and after mining of LW5 in Dendrobium Area 2. The piezometer stops responding to rain as a result of mining, with the water level dropping.	Noted.
The EA enigmatically states "Monitoring of perched groundwater within valley fill and upland in the broader study area, has been shown to fluctuate between no standing water after extended dry periods to approximately 1.8 m below ground surface." The meaning of this statement is unclear, but suggests significant impacts on swamps and/or near-surface waters (see Figure 6 for a relevant example). The Water Management Plan of the updated Appendix J describes difficulty in installing piezometers in the dry soils of CCHS3 and CCHS4. It may well be then that these swamps have already been damaged by previous mining. Approval of the current proposal would of course compound existing damage.	Biosis has just completed a comprehensive assessment of all upland swamps as a part of Gujarat's Major Expansion Project, including upland swamps located above Longwalls 4 and 5. This included the use of LIDAR data to identify upland swamps, detailed ground-truthing and mapping of all vegetation sub-communities within upland swamps. The revised Upland Swamp Environmental Impact Assessment Guidelines (OEI 2012) which require mining projects to result in no negative environmental outcomes for upland swamps of 'special significance' were used to identify upland swamps of 'special significance' within the study area. 'Special significance' criteria are defined in OEI (2012). An impact assessment was undertaken using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock. This assessment identified that CCHS3 (referred to as CCUS3 in the revised impact assessment previously mapped as one larger upland swamp, actually consists of two upland swamps that are reliant on divergent flow pathways, and are contained within different catchments. Detailed assessment of these upland swamps also identified that neither supports Tea-tree Thicket (MU43). Therefore neither upland swamp meets criteria for special significance as defined by OEI (2012). In addition, groundwater monitoring of CCHS3 has recorded short term, ephemeral groundwater level recharge events (<10cm over 3 weeks), however, the swamp predominantly has no groundwater contained in its shallow alluvium. It is likely that CCHS3 is largely reliant on surface water flows and rainfall. Groundwater monitoring data from CCHS3 has indicated that this upland swamp is unlikely to be reliant on perched ephemeral groundwater so the impacts of fracturing of the bedrock below this upland swamp are unlikely to result in the loss of groundwater CCHS4 contains Banksia Thicket (MU42), Tea-tree Thicket (MU42) and Cyperoid Heath (MU44c) and is considered to be of 'special significance'. A detailed impact assessment was undertaken that identified the predicted subsidence associated with the overall project would be unlikely to result in significant changes to the swamp. The rockbar associated with this upland swamp is located outside of the predicted limits of subsidence for LW5 and is unlikely to be impacted as a result of the extraction of coal from LW4 or 5.
Approving Longwalls 4 and 5 would approve the loss of the nearby swamps. The Gujarat EA states "If these subsidence effects result in changes to groundwater and drying of soils they may result in the loss of wetter sub-communities (Tea-tree Thicket) and contraction of Upland Swamps along with resultant encroachment of surrounding woodland communities." The EA foreshadows the loss of the swamps; swamps of special significance status and listed as Endangered Ecological Communities under the TSC Act.	Based on SCT 2012, NRE understands that any impacts to swamps are unlikely to become apparent until well after mining is complete which doesn't allow NRE time to make any significant change to the mining process. Trigger Action Response Plans (TARP) as a method of protecting swamps is not considered overly useful because many of the impacts are likely to be long term and difficult to detect without extended monitoring. A judgement call by NRE and state agencies based on the significance or otherwise of individual swamps and the flora and fauna associated with them is required to be made ahead of mining as part of Extraction Plan and SMP approvals.

Approving the development proposed by Gujarat will contradict the purpose of the March 2012 Endangered Ecological Community listing of the swamps under the NSW Threatened Species Conservation Act. The TSC Act listing declaration provides considerable detail on the importance of the swamps. As mentioned, the declaration lists longwall coal mining as a threat and points out that longwall coal mining has been listed as a Key Threatening Process under the TSC Act.	Noted
Approving the development proposed by Gujarat would ignore the repeated statements by the Sydney Catchment Authority (SCA) emphasising the vital role of the swamps in the Special Areas. The SCA's view of the importance of the swamps has been recognised and accepted by the PAC. The PAC states that the swamps "act as significant regional water stores providing baseflow to the drainage systems of the plateau". The PAC also states that it "regards the hydrology of swamps to be especially vulnerable in view of their thin plate-like structure" and "They are, in effect, very thin plate-like aquifers."	Noted
In discussing the role of the swamps the PAC states: "The conventional wisdom that the upland swamps are perched systems and not in contact with the underlying groundwater systems rests on very little hard evidence. Swamps in the Kangaloon area are reported in the EA as perched but these swamps are situated some 30 km to the south and are relatively small in areal extent. There is a real possibility that the larger swamps of the Woronora Plateau and the high density of swamps have, over the course of time, sustained an elevated water table that is very close to or connected with the base of swamps. Subsidence induced disturbance beneath swamps may have wider implication for regional groundwater flows." The PAC also observes that it and others have " ... sought examples of desiccated swamps that have not been undermined but none have been forthcoming to date."	Biosis has just completed a comprehensive assessment of all upland swamps as a part of Gujarat's Major Expansion Project, including upland swamps located above Longwalls 4 and 5. This included the use of LIDAR data to identify upland swamps, detailed ground-truthing and mapping of all vegetation sub-communities within upland swamps. The revised Upland Swamp Environmental Impact Assessment Guidelines (OEH 2012) which require mining projects to result in no negative environmental outcomes for upland swamps of 'special significance' were used to identify upland swamps of 'special significance' within the study area. 'Special significance' criteria are defined in OEH (2012). An impact assessment was undertaken using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock. This assessment identified that CCHS3 (referred to as CCUS3 in the revised impact assessment previously mapped as one larger upland swamp, actually consists of two upland swamps that are reliant on divergent flow pathways, and are contained within different catchments. Detailed assessment of these upland swamps also identified that neither supports Tea-tree Thicket (MU43). Therefore neither upland swamp meets criteria for special significance as defined by OEH (2012). In addition, groundwater monitoring of CCHS3 has recorded short term, ephemeral groundwater level recharge events (<10cm over 3 weeks), however, the swamp predominantly has no groundwater contained in its shallow alluvium. It is likely that CCHS3 is largely reliant on surface water flows and rainfall. Groundwater monitoring data from CCHS3 has indicated that this upland swamp is unlikely to be reliant on perched ephemeral groundwater so the impacts of fracturing of the bedrock below this upland swamp are unlikely to result in the loss of groundwater. CCHS4 contains Banksia Thicket (MU42), Tea-tree Thicket (MU42) and Cyperoid Heath (MU44c) and is considered to be of 'special significance'. A detailed impact assessment was undertaken that identified the predicted subsidence associated with the overall project would be unlikely to result in significant changes to the swamp. The rockbar associated with this upland swamp is located outside of the predicted limits of subsidence for LW5 and is unlikely to be impacted as a result of the extraction of coal from LW4 or 5.
Approving the development proposed by Gujarat will ignore the value of the swamp cluster located between Cataract Creek in the north and Cataract River to the south.	As discussed NRE has undertaken significant assessment work with regard to the swamps and potential impact on them
Approving the development proposed by Gujarat would ignore the expectation that the swamps will soon be listed under the Commonwealth Environmental Protection and Biological Conservation (EPBC) Act. The PAC summarises reasons for an EPBC listing of the swamps in its report on the BSO project.	Noted
Surface Waters The Subsidence Monitoring Plan for Longwalls 4 and 5 (Revision 7 of July 30 2012) states that the NSW Division of Resources and Energy (DRE) requires performance criteria with negligible environmental consequences including: · negligible diversion of flows or changes in the natural drainage behaviour of pools; · negligible gas releases and iron staining; and · negligible increase in water turbidity	Noted
The PAC specifies negligible to mean "small and unimportant so as not to be worth considering" and further states[1]: The Panel therefore recommends that the definition of "negligible impact" for rivers and streams should be: "no diversion of flows, no change in the natural drainage behaviour of pools, minimal iron staining, minimal gas releases and continued maintenance of water quality at its pre-mining standard".	Noted
"Acknowledging existing damage, Cataract Creek has been recognised by the Planning Assessment Commission (PAC) as having "highly significant values" making it "worthy of protection.[1]"	Noted. Cataract Creek is a 4 th order stream and thus is considered significant
Approximately 800 metres of Cataract Creek is located in the proposed subsidence management area. The creek passes over the north eastern first workings and is 30 metres from LW5. Cataract Creek is well within the 200 metre subsidence impact zone defined by the 35 degree angle of draw accepted for the Southern Coalfield.	On the basis that the 4th order reach of Cataract Creek downstream of the freeway is significant, the development of a stream management plan, with setting of appropriate triggers and adherence to these triggers to avoid the cracking of Cataract Creek will be required through an adaptive management process. NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact linked to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact linked to stopping and removing the longwall at the nearest Maingate cut through. See SCT 2012 in Attachment A of the Response Report with regard to subsidence footprint extent.
Figure 7. Loss of flow in Lizard Creek and Waratah Rivulet following longwall mining. Other examples include Cataract River, Georges River, Native Dog Creek and Wongawilli Creek.	Noted
As the Gujarat Environmental Assessment (EA) implies, Cataract Creek will suffer the now well documented impacts of subsidence in the region and these impacts will not be negligible. The Gujarat EA advises "it is not possible to exactly define the potential magnitude of these losses or the lengths of streams likely to be impacted." It is of note that the proposed panel widths are much the same as those responsible for the severe damage to the Waratah Rivulet and its tributaries. The depth of cover above the seam being mined is some	On the basis that the 4th order reach of Cataract Creek downstream of the freeway is significant, the development of a stream management plan, with setting of appropriate triggers and adherence to these triggers to avoid the cracking of Cataract Creek will be required through an adaptive management process. NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to:

100 metres greater at the Waratah Rivulet than at Cataract Creek.	1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact linked to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact linked to stopping and removing the longwall at the nearest Maingate cut through.
The Gujarat EA optimistically states "The impacts are likely to be restricted to short reaches where flow infiltrates into cracks in the bed, then reemerges further downstream." Some of the diverted flow may be lost from the Cataract catchment, as the Sydney Catchment Authority believes has occurred in the damaged section of the Waratah Rivulet in the Woronora Catchment. The optimistic expectations of the Gujarat EA do not constitute negligible impacts	NRE does not believe its extraction approach will cause significant impacts.
Low order streams play a vital role in connecting upland swamps to higher order streams. Evidently originating at the edge of swamps, two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. A first order stream is associated with swamp CCHS3 over LW5. There is also a first order stream emerging from the northern side of CCHS4.	First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek
Figure 8. Loss of flow in Wongawilli Creek following longwall mining.	Noted
Water protection required under the law The Environmental Assessment and Planning (EP&A) Act 1979 requires a consent authority to "refuse to grant consent to a development application relating to any part of the Sydney drinking water catchment unless the consent authority is satisfied that the carrying out of the proposed development would have a neutral or beneficial effect on the quality of water." Given the role of swamps, damage to swamps inescapably fails the Neutral or Beneficial Effect (NorBE) on water test, in contravention of the EP&A Act.	Noted. Comment directed to DP&I
In the interests of the proponent and consequential State revenue, and ignoring considerations of cumulative impacts, the meaning of neutral could of course be 'redefined' and blurred by the consent authority admitting some 'negligible' deviation from neutral and accepting some level of damage to swamps. The public could then have no respect for the consent authority or the legislative framework within which it operates. Cumulative impacts cannot be ignored.	Noted. Comment directed to DP&I
Biodiversity As mentioned the Coastal Upland Swamps of the Sydney Bioregion has been listed as an Endangered Ecological Community under the NSW Threatened Special Conservation (TSC) Act. The listing by the NSW Scientific Committee summarises the impacts of subsidence on these complex and biologically rich communities. Most of the Coastal Upland Swamps of the Sydney Bioregion are located on the Woronora Plateau, most of those are within the Schedule 1 Special Areas and most of those are within the Metropolitan Special Area.	NRE is aware of all the TSC Act and EPBC listings mentioned and has incorporated this into its ecological assessments. Based on a review of the EPBC Act listing advice, Temperate Highland Peat Swamps on Sandstone THPSS it is NRE's opinion that the upland swamps within the project area do not meet the criteria for this threatened ecological community as follows. • they are outside of the altitudinal range, • no Woronora swamps are listed as components of the THPSS, nor are Woronora swamps mapped by DEH (2005) as part of the THPSS and • the swamps located above Longwalls 4 and 5 do not generate peat. Upland swamp CCHS3 is shallow in nature, with little peat development or organic material. Soils are shallow. CRHS1 and CCHS4 have deeper soils with increased organic content, although soils are predominantly mineral sands. We understand that this is currently being addressed by the DSEWPaC.
The Biodiversity Management Plan (BMP) provided in the updated Appendix J points out that swamps CRHS2, CRHS3, CCHS1, CCHS2 and CCHS4 are mapped as potential habitats for the Giant Burrowing Frog and Littlejohn's Tree Frog, which are listed as vulnerable under the TSC Act and the Commonwealth Environmental Protection and Biodiversity Conservation (EPBC) Act. The BMP tabulates a number of other fauna and flora species listed as endangered, threatened or vulnerable under TSC and/or EPBC Acts.	Biosis has undertaken detailed mapping of frog habitat within Wonga East, including mapping of breeding pools and potential breeding habitat. This detailed assessment has identified that potential breeding habitat within the area of potential impact is limited in extent. Cataract Creek does not provide suitable breeding habitat for the Giant Burrowing Frog. In addition, monitoring to date has not recorded the Barred Stuttering Frog within Cataract Creek, although suitable habitat is present. Given the limited number of known contemporary records for this species, if it was recorded within Cataract Creek it will be afforded all protection.
There is increasing recognition of the importance of protecting and nurturing biodiversity; this widely acknowledged need can no longer be dismissed as an irritating obsession of fringe 'greenies'. The CSIRO for instance has recently released a report recommending an expansion of national parks as a response to the threat to biodiversity posed by climate change. Coal mine emissions of course contribute to global warming. Biodiversity, like water, is fundamentally essential; coal is not.	Noted
Economic Benefit Annually coal mining in the Southern Coalfields contributes approximately 10% of the State's coal mining royalties, which provide approximately 2-3% of the total State revenues. The Southern Coalfields employ 2,500 people of some 180,000 employed in the region. Employment levels have declined with the introduction of improved machinery and equipment, as is the case for Gujarat NRE.	Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95% or \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million or about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine (not including contractors) who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution.
Substantial sums of money are invested in mining equipment, but much of that equipment is manufactured overseas. The longwall machine recently purchased by Gujarat for instance was made in China. Most coal mining companies are either multinationals or entirely foreign owned, and their profits largely flow overseas.	NRE Coking Coal Ltd is a publically listed company on the ASX. Its primary ownership is Indian, however, NRE is only one of three Australian listed companies with majority foreign ownership operating in the Southern Coalfields
In promoting the purported benefits of coal mining, proponents and Government fail to fully assess the impact costs of mining, which include increasingly evident and largely quantifiable health and utility infrastructure costs to the tax payer and largely unquantifiable short and long term environmental and social costs. The toxins and compounds produced when coal is burnt include mercury, sulfur dioxide, nitrous oxides and fine particulates which penetrate deep into our lungs. Coal combustion is a leading driver of climate change. It is folly not to assess the full life cycle costs of coal mining and usage.	Noted. Comment directed to DP&I
In contrast to the readily assessed and relatively limited benefit of longwall coal mining, the ongoing inter-generational value of protecting the catchments that currently provide water to some five million people and harbour high biodiversity communities cannot be financially assessed.	Noted. Comment directed to DP&I

The value of the Special Areas goes beyond the provision of high quality drinking water; a role which in principle could be augmented or replaced by filtration and/or desalination plants. Sydney has already had to invest \$2 billion in a desalination plant to meet water supply demands during drought. Southern Coalfield royalties might pay for the plant over twenty years or more, but the tax payer continues to pay for the very high operating costs.	Noted. Comment directed to DP&I
The relevant irony of the Special Areas and Dharawal National Park After more than two decades of community lobbying, in March 2012 the NSW Coalition Government declared the Dharawal National Park, so honouring a pre-election commitment. This followed the lapsing of coal mining leases that had apparently prevented the previous Labor Government from honouring its 1993 pre-election commitment to establish the national park. Mining is banned within the Dharawal National Park.	Noted. Comment directed to DP&I
In effect the declaration of the Dharawal National Park 'absorbed' and replaced the Dharawal State Conservation Area and the Dharawal Nature Reserve. While mining is possible within state conservation areas, in practice it would require closure of otherwise publicly accessible areas. BHP Billiton's large and complex Bulli Seam Operations (BSO) project nonetheless proposed mining beneath the then Dharawal State Conservation Area.	Noted. Comment directed to DP&I
The area defined by what was the Dharawal State Conservation Area and Nature Reserve largely coincides with the Sydney Catchment Authority managed Schedule 2 O'Hares Creek Special Area, which was declared in April 1927. Prior to the declaration of the Dharawal National Park, the O'Hares Creek Catchment of the O'Hares Creek Special Area had been recognised by the Federal Government as being of National Environmental Significance, with National Estate listing.	Noted. Comment directed to DP&I
The BSO proposal posed a significant dilemma for the then Labor State Government and a public relations challenge for BHP Billiton. Approving the BSO project would yield royalties, but this would require finally abandoning a long standing Labor commitment to protect the area. It would also require closing the state conservation area to the general public - an area for which there was a compelling case, and strong community demand, for full protection from mining.	Noted. Comment directed to DP&I
In this context, in July 2010 the NSW Planning Assessment Commission released a highly critical assessment of the BSO Project. The BSO report rejected BHP-Billiton's environmental provisions, recognised the importance of the area's natural surface features, set negligible-impact benchmarks for natural features such as rivers, streams and the upland swamps and criticised the process by which environmental impact assessments (EAs) are provided by project proponents.	Noted. Comment directed to DP&I
Evidently accepting that there was very little realistic prospect of ever gaining mining approval, in October 2010 BHP-B abandoned its plans to extract coal from the Dharawal State Conservation Area and eighteen months later Dharawal National Park was declared and mining was banned within its borders - to the centre of the Earth.	Noted. Comment directed to DP&I
The declaration of the Dharawal National Park exposed a significant irony. The Schedule 2 O'Hares Creek Special Area sits between the Schedule 1 Woronora Special Area on its northern border and the much larger Schedule 1 Metropolitan Special Area on its southern border. While the natural features that are protected within the National Park know no nothing of borders, unauthorised public access to the neighbouring Schedule 1 Special Areas is not permitted. The Schedule 1 Special Areas are intended to protect the immediate catchment area for the SCA managed water reservoirs.	Noted. Comment directed to DP&I
The O'Hares Creek Special Area has a relatively small Coastal Upland Swamp community; in contrast the Metropolitan Special Areas harbours a large community, most of which is concentrated in its north eastern corner just over the southern boundary of the O'Hares Creek Special Area. Four swamps clusters are regarded by the NSW Office of Environment and Heritage as having particular significance in providing large contiguous areas of related habitat; all are the in the Metropolitan Special Area.	Noted. Comment directed to DP&I
Ironically, with all of its runoff going into the Georges river, the declaration of the Dharawal National Park does nothing to protect the drinking water supply for Greater Sydney, the Illawarra or Southern Highlands. Just over the fence in the Schedule 1 Special Areas next door, from where the public is banned, mining companies daily damage the catchments.	Noted. Comment directed to DP&I
Ironically, the declaration of the Dharawal National Park does nothing to protect the drinking water supply for Greater Sydney, the Illawarra or Southern Highlands. All of the runoff from Dharawal runs into the Georges River, making no contribution to the region's water supply. While mining is now banned in the Schedule 2 O'Hares Creek Special Area (Dharawal National Park), mining is not banned in the adjacent Metropolitan and Woronora Schedule 1 Special Areas. Mining continues to cause damage daily in the Schedule 1 Special Areas.	Noted. Comment directed to DP&I
In effect, the Schedule 1 Special Areas are 'fenced-off' special mining areas where mining companies may carry out catchment-damaging operations out of sight of the banned general public. Conversely, next door in the Dharawal National Park mining companies are banned so that the general public can enjoy a picnic - with no risk them harming the catchments.	Noted. Comment directed to DP&I
The longwalls sought by Gujarat are in the Metropolitan Special Area, where the public is banned. The longwalls are not in a state conservation area that would have to be closed to allow mining to safely proceed, and where the public would otherwise see the damage the PAC approves.	Noted. Comment directed to DP&I
Comments on Gujarat NRE Gujarat NRE have established a track record of non-compliance. Management plans required for the approved Preliminary Works project have been months overdue and the company was months late in establishing a Community Consultative Committee (CCC). The formation of a CCC in accord with DoPI guidelines by a fixed date was a requirement of the Preliminary Works project approval.	Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWP&C to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward. In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause non-compliance. In respect of staff availability issues, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. An additional two Environment and Community Officers have also been employed. NRE is also committed to ensuring that going forward approvals and environmental compliance are focused on achieving best practice.
Six months into the approval period for the Preliminary Works project, prompted by concerns raised by the community, the DoPI initiated a compliance investigation in April of this year. Four months later there has been no finding and no penalty. At the time of writing, the first anniversary of the three year project is just a few weeks away.	Noted. Comment directed to DP&I

Gujarat have twice been penalised \$1,500 by the EPA and the SCA has very recently fined Gujarat \$1,500 for damage caused to swamp and Pultenaea aristata during the establishment of subsidence monitoring equipment for LW4.	During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. The establishment of subsidence monitoring lines has resulted in removal 0.685 hectares of Banksia Thicket (MU42) as well as approximately 50 Pultenaea aristata. No ground disturbance has occurred and the vegetation will regenerate naturally over time. This area is being monitored by NRE.
Some three months into the project approval period and three months before the due date, Gujarat attempted to form an alternative to the conventional Community Consultative Committee (CCC) utilised by other mining companies. Gujarat relentlessly sought to impose what was clearly an unwieldy community advisory system that was not in accord with the DoPI CCC guidelines. A group of community members selected by Gujarat as an engagement framework development oversight and design group (Community Review Team) repeatedly advised the company that the CCC alternative being pursued was not in accord with DoPI guidelines, would not be functional and was not acceptable. Gujarat ignored the advice and requests of the oversight group and in doing so made it clear that the company was not sincerely engaging in a consultation process. Remarkably, the company suggested to the DoPI that it was the community that sought a CCC alternative.	NRE did not establish its CCC in the timeframe specified by the MP10_0046 Pt3A approval.
Though having refused to meet with community representatives to discuss their concerns, the DoPI eventually agreed with their position and a conventional CCC has since been formed. A CCC was required to have been formed and operating by April 13 2012; it was instead formed in July and its first meeting was held on the 21st of August - some 10 months into the projects three year approval period.	A CCC was established and began operating by end of July 2012. The first CCC meeting was held on 21 August 2012
The DoPI will be well aware that the account of the formation of the CCC given in the EA is incorrect and very misleading. The account suggests a company acting in accord with requirements and sympathetic to the interests of the community. The correspondence between the company, DoPI and community representatives makes it clear however that this not the case. It is disappointing and disturbing that the DoPI appears to knowingly accept the misleading account given in the EA.	This Response Report outlines numerous activities that NRE is undertaking in order to respond to the concerns of resident and other stakeholders. NRE accepts that it can improve its community consultation and responses and intends to do so.
A pattern is emerging that reveals Gujarat have adopted a step-by-step approach to expanding their NRE 1 mine, having so far failed to successfully submit an application for the expansion project. A Part 3A application titled "NRE No. 1 Mine Project (MP09_0013) was submitted in early 2009 for "for the consolidation of its existing operations, continuation of operations and upgrade of associated surface facilities at NRE No. 1 Colliery". Director-General's environmental assessment requirements were issued in March 2009. At some unknown point this project application was withdrawn. An "Underground Expansion Project" application was submitted by Gujarat in August 2009, apparently again under MP 09_0013 and again for the "consolidation of its existing operations, continuation of operations and upgrade of associated surface facilities at NRE No. 1 Colliery". The application included a preliminary Environmental Assessment (EA) and this document is available from the DoPI Website. Director-General requirements were issued in the same month. The DoPI received a draft EA for the expansion project in February 2011. There appear to have been no further submissions for MP09_0013 from Gujarat. A substantial amount of the material in Appendix J of the current Modification application would appear to be associated with the Underground Expansion Project.	There has been no intention by the company to deliberately create a confusing approvals situation. NRE's preference would have been for one application to address the mines future activities. The original Pt3A application for the development of Wonga East & West and the upgrade of the No.1 Colliery surface infrastructure was submitted by NRE in 2009 but was then withdrawn in liaison with DP&I to be resubmitted as both the Preliminary Works and Major Underground Expansion Pt3A's. This was to facilitate approval of some minor extraction and surface facility preparation while the likely lengthier approval for longwalls was processed. This current approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger Underground Expansion Project Pt3A application. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
The Preliminary Works proposal was submitted as a Part 3A application (MP10_0046) in March 2010 to extract remnant coal reserves within stipulated mining areas, and augment and upgrade existing infrastructure including surface facilities. The application was approved in October 2011, in spite of agency opposition and opposition from Wollongong Council. As mentioned, a number of management plans required under the approval are believed to remain outstanding and there are submitted plans that have yet to be approved.	Revised management plans were submitted by 31 August 2012 to DP&I in consultation with various agencies.
Seeking to side-step the need for approval under the Environmental Planning and Assessment Act 1979 (EP&A Act), sometime around September 2011 Gujarat submitted a subsidence management plan (SMP) for Longwalls 4 and 5 to the Division of Resources and Energy (DRE) in the Department of Trade and Investment. On 24 February 2012 Gujarat advised the Australian Stock Exchange that they intended to commence mining of LW4 from 13 March 2012. The DRE approved a SMP for Longwall (LW) 4 on 26 March 2012, subject to meeting certain conditions and the provision of additional documentation. LW5 was not approved, being directly beneath significant upland swamps.	This current approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations.
Gujarat have succeeded in being able to abuse a transitional legislative provision (clause 8K) put in place to address the problem posed by a small number of mines operating without EP&A Act approval for historical reasons. Apparently unhappy with the use of the transitional legislation, the DoPI initially refused to endorse the DRE approval of the LW4 SMP. Following a subsequent series of meetings with Gujarat, the DoPI changed its mind.	Noted. Comment directed to DP&I
The provisions of the transitional legislation were to end on the 31st of December 2011, however the termination date was changed to March and then the 31st of July and then September 30th this year. The current modification proposal to add Longwalls 4 and 5 to the Preliminary Works project was submitted in August 2012	Noted
The transitional provisions exploited by Gujarat were not intended to allow the introduction of new longwalls and the legality of the approval is currently the subject of a 'David and Goliath' court challenge by the community group Illawarra Residents for Responsible Mining.	The lawfulness of the approval of LW4 is being challenged by Illawarra Residents for Responsible Mining
It is surely reasonable to suggest that the legislative provisions of NSW should not be subverted to facilitate the commercial imperatives of developers. It is surely reasonable to suggest that the DoPI should act in the public interest and not yield to the commercial imperatives of developers.	Noted. Comment directed to DP&I

Comments on the Role of the Department of Planning and Infrastructure The environmental assessment (EA) for the current proposal lacked referenced material and contained errors and misleading statements. The EA referred to material in Appendix J that became available on the Department of Planning and Infrastructure's (DoPI's) Web site on Wednesday August 29. The DoPI were unaware that material was missing until members of the public expressed concern. When the missing management plan information was pointed out to the DoPI, the presumptive, dismissive and bewildering response was that the general public did not need to see these documents and few would want to see them.	Noted. Comment directed to DP&I
A corrected commitments section of the proponents Environmental Assessment was provided by the DoPI to one person late in the afternoon of Friday August 31. This revision does not appear to have been made available on the Department's Web site and seems to have appeared on the proponent's site sometime between Friday August 31 and the closing date of Monday September 3.	Noted. Comment directed to DP&I
The EA refers to approved management plans that it seems have not been approved (discussed further below). With omissions, misleading statements and corrections made 'on the run', this proposal was clearly not ready for public exhibition.	Noted. Comment directed to DP&I
The SCA expresses similar concerns about the Preliminary Works proposal; "The SCA is concerned there are discrepancies in the EA including different mine layouts for the V-Mains; inconsistent Wallandoola Creek characterization plans; and no groundwater monitoring within the V-Mains area".	Noted. Comment directed to DP&I
Failure to comply with the Preliminary Works project approval requirements and a number of other issues led to a DoPI compliance investigation being initiated earlier this year. As noted above, to date there has no finding or penalty.	Noted. Comment directed to DP&I
The DoPI's evident tolerance of Gujarat's tardiness, omissions and misleading statements is sharply contrasted by its dismissive responses to the concerns of the public. The current Modification proposal has more than 900 pages of documentation associated with it, yet it was made available for public comment for just three weeks. Perplexed members of the public requested an extension of the submission deadline, pointing out the extensive documentation and that working members of the community with family and other personal commitments had little time in which to read, absorb and comment on the proposal. The Department refused the extension requests, suggesting instead that initial submissions be submitted by the fixed deadline with the option of subsequently providing a revised submission. This concession provides little relief for those making submissions, with most preferring not to take a staged approach.	Noted. Comment directed to DP&I
In responding to the requests for a deadline extension, the DoPI commented that it was only obliged to provide a two week exhibition period. Evidently the community was to be grateful for the generosity of a three week submission period. Gujarat initially advised that the exhibition period was four weeks, but amended that advice when it learned the DoPI period was three weeks. Another mistake it seems.	Noted. Comment directed to DP&I
While the DoPI refused to grant a deadline extension to the general public, it readily tolerates late submissions from Gujarat. When community representatives requested a meeting with DoPI to discuss their concerns with the approach Gujarat was taking to the formation of a CCC, they were refused.	Noted. Comment directed to DP&I
It is difficult to conclude other than that the NSW assessment and regulatory system, as manifested in the DoPI, is biased in favour of the developer. It is difficult to conclude other than that the DoPI's determination to facilitate the interests of the project proponent, in contrast to its dismissive response to the concerns of the general public, reflects regulatory capture.	Noted. Comment directed to DP&I
The Federal Senate Inquiry into the management of the Murray Darling Basin and the impacts of coal seam gas highlighted the long standing concern that governments and their agencies act under a corrupting conflict of interest. That is, the adjudicator and regulator is also the recipient of revenues from project proponents. Senator Edwards asks an industry spokesperson "how long do you think it is going to be before the community expects there to be an independent umpire for regulation of this industry and what have you with regard to the current problem where the recipient of significant royalties and benefits from the coal seam mining—gas explosion in terms of growth—is also the regulator of all the environmental and community issues?"[8]	Noted. Comment directed to DP&I
The community is of course very well aware of this conflict of interest. While the PAC is formally an independent body set up in response to community concerns, noting its members are appointed by the Minister for Planning and Infrastructure by a selection process that is not given on the PAC Website, the DoPI is an agency of government. The DoPI is pivotal in determining proposal outcomes and the specification and adjudication of approval conditions and requirements. The DoPI may or may not accept the recommendations of the PAC. For instance the PAC made the following recommendation in its report on the Metropolitan Expansion Project; "The Panel recommends that a specific program be developed between the Sydney Catchment Authority (SCA) and the Proponent to further investigate the existence or otherwise of catchment yield impacts." That recommendation was not included in the conditions of approval for the contentious project and that recommendation has not otherwise been acted upon.	Noted. Comment directed to DP&I
Suggestive of the concerns of Senator Edwards, in its report on the Bulli Seam Operations (BSO) project the PAC commented on the lack of credibility in having proponents select and fund consultants to undertake environmental assessments. That clearly corrupting system remains in place.	Noted. Comment directed to DP&I
As government agencies the SCA and OEH provide expert advice and recommendations that the DoPI may choose to accept or set aside; there is a substantial history of the latter. The DoPI explains their liberty as necessary in considering the 'bigger picture'. Few beyond the concerned community will be aware of this hierarchy in the NSW assessment and regulatory system. Choice modelling manipulations aside, most would expect that if the SCA determined that a proposal posed an unacceptable risk to the Special Areas, then that activity would not be allowed to proceed.	Noted. Comment directed to DP&I
Instead however the DoPI may judge that a degradation of the Special Areas is acceptable when balanced against its assessment of revenue, investment and employment benefits - even if that might ultimately require a new filtration plant or perhaps a desalination plant. This was the response when a very senior member of the DoPI was asked in May of this year of the consequences if what is already known of the impacts of longwall mining were to be propagated across the leases held over the Special Area lands and waters. The SCA expects more than 90 percent of the Special Areas to be undermined over the next twenty years. Each project approval is a step towards that expectation.	Noted. Comment directed to DP&I
The front cover of this submission depicts the then Opposition Leader campaigning to protect water from coal mining. In Government and corrupted by royalty revenue that "common sense" is forgotten. The Premier and his ministers will argue that they have to take tough decisions to balance the budget. Maybe, but there is a limit to what can sensibly be sacrificed for the next budget and the following election. Biodiversity is far more important than coal. Water is far more important than coal.	Noted. Comment directed to DP&I

Comments on the role of the Planning Assessment Commission In its brief report recommending approval of Gujarat's Preliminary Works Project the PAC states "It is clear from the submissions and the assessment report that there are substantial concerns with the proposed future expansion project. However, the Commission has not seen this proposal and is in no position to form any view on it. Consequently, the Commission's decision on the project application before it cannot be construed as any form of endorsement of any aspect of this future expansion project. That said, the Commission considers that separation of project applications where the primary purpose of the first is to facilitate the second could lead to lack of public confidence in the NSW assessment and regulatory systems and must be considered undesirable. In this context it should be noted that major regulatory authorities and Wollongong City Council were among those submitters who raised the concern."	Noted. Comment directed to DP&I
That is, the PAC is well aware that there is a significant level of concern among relevant agencies such the SCA and Wollongong City Council and recognises that such concerns would not be groundless. The PAC nonetheless sets the agency concerns aside, with a determination not to know anything of the expansion project. The 'see no evil' attitude expressed in the PAC report contradicts its earlier recognition of the need for caution in considering environmental impacts, which was expressed in some detail in the report on the Bulli Seam Operations (BSO) project.	Noted. Comment directed to DP&I
Choosing to ignore the expansion project may perhaps be legally defensible within the current legislative framework in NSW and welcomed within Government, but it is not morally defensible and it surely offends basic common sense. That abdication of responsibility would be compounded if the PAC likewise buried its head in the coal of the Modification proposal	Noted. Comment directed to DP&I
The PAC is a tad late in recognising the risk of losing public confidence. Given the almost relentless and statistically unlikely record of project approvals, community confidence in the PAC is all but gone and community confidence in the DoPI is long gone.	Noted. Comment directed to DP&I
The PAC's stern statement that approval of the Preliminary Works cannot be construed as any form of endorsement of the planned expansion is a statement for the record that in practice means nothing. Gujarat would without doubt see approval of the Preliminary Works project as a step toward approval of the expansion project; the water has been tested and the next step towards expansion will follow. The current 'Modification' proposal is the third step, with DRE and DoPI having assisted with the 'tricky' second step around the obstacle that is the Environmental Planning and Assessment (EP&A) Act.	Noted. Comment directed to DP&I
The PAC approval of the Preliminary Works states: "The Commission is aware that development of this infrastructure could be used to pressure both decision makers and regulators in relation to this future expansion project. However, the Commission notes that the Proponent in response to these submissions confirmed that it would be developing the infrastructure at its own financial risk."	Noted. Comment directed to DP&I
Again a statement for the record that means nothing in practice. In approving the Preliminary Works project the PAC has initiated substantial investment in infrastructure needed for longwall mining in the Metropolitan Special Area. The history of PAC and DoPI approvals give Gujarat, and other mining companies, every reason to confidently expect follow-on approvals.	Noted. Comment directed to DP&I
That confidence can be found for example in Peabody undertaking mine works, installations and de-gassing well in advance of the announcement of the approval of its expansion of the Metropolitan Colliery. That confidence can be found in the PAC yielding to Peabody assertions of mine closure when setting requirements and recommendations for the approval of the expansion of the Metropolitan Colliery. That confidence can be found in PAC approval recommendations that are ignored by the DoPI. That confidence can be found in Gujarat's statements to the stock exchange. That confidence is reinforced by the DoPI evidently being readily swayed by Gujarat's arguments to accept the abuse of the transitional clause of the EP&A Act that has allowed LW4 to be mined under a DRE approved Subsidence Management Plan, though a continuation of section 74 of the Mining Act of 1992. The arguments that swayed the DoPI are unknown, but it seems likely they would have been centred around an imminent mine closure threatening jobs and State revenue, and the pressing need to accordingly leverage investment in the Preliminary Works project. That confidence would be further reinforced by the remarkable tolerance the DoPI have shown towards Gujarat's compliance failures.	Noted. Comment directed to DP&I
Setting aside the advice and recommendations of expert agencies such as the SCA and OEH aside, themselves Government agencies subject to Government policy and pressure, both undermines their credibility and brings their relevance and value into question. At the same time it erodes the credibility of the DoPI and PAC. It won't escape notice that while a member of the public face fines of \$44,000 for walking into the Schedule 1 Special Areas, the SCA has fined Gujarat \$1,500 for removing endangered swamp and Pultenaea aristata vegetation during LW4 operations.	Noted. Comment directed to DP&I
Many reasons have accumulated for the loss of "public confidence in the NSW assessment and regulatory systems".	Noted. Comment directed to DP&I
Conclusion In gaining Subsidence Management Plan approval to commence LW4 from the Division of Resources and Energy (DRE) with the support of the Department of Planning and Infrastructure (DoPI), Gujarat NRE have abused a transitional provision of the Environmental Planning and Assessment Act to bypass the approval process otherwise required of new mining projects. Following that precedent, Gujarat now seek to abuse section 75W of the discredited and repealed Part 3A legislation to further incrementally establish their expansion project, following the Planning Assessment Commission (PAC) approval of their Preliminary Works Project. The PAC approval set aside the concerns of the Sydney Catchment Authority (SCA), the Office of Environment and Heritage and Wollongong Council. With contortions suggestive of the desperation of a Banana Republic, the DRE, DoPI and PAC evidently value coal royalties more than long term water security and biodiversity protection.	Noted. Comment directed to DP&I
The current proposal has errors, misleading statements and is contains of an amalgam of subsidence management plans and expansion plan material. Gujarat have a record of non-compliance, misleading representations and have been fined by the SCA and the Environmental Protection Authority. Nonetheless, the statistically implausible track record of approvals by the assessment and consent agencies will give Gujarat sound cause for confidence that the current proposal will be approved.	These issues have been addressed previously throughout this response and in the Response Report generally
It may be twenty or thirty years before a coal mine is closed and begins to slowly fill with water; until then water will be lost from aquifers, streams and swamps. When the mine does fill many years later, aquifer cross-contamination and leaching from fracture zones will have degraded near surface groundwaters and surface waters. No rational person free of vested interest could conclude other than that coal mining contradicts the intent of the Special Areas and violates the provisions of the Environmental Planning and Assessment Act. No rational person would value coal more than water and biodiversity.	These issues have been addressed previously throughout this response and in the Response Report generally

Figure 9. Large bed rock fragments displaced following subsidence at the Waratah Rivulet.

Noted.

EDWARDS

COMMENT	RESPONSE
I write as a concerned citizen and near neighbour of the location of this Project.	Noted. Comment directed to DP&I
At the outset, I wish to record my concern at the unseemly haste with which this consultation has been forced forward by your Department. It is inconceivable that members of the public could properly digest the subject proposal and comment in detail given the voluminous and poor quality material constituting the application.	Noted. Comment directed to DP&I
Further, the proponent of the application has been permitted to change the documents during the course of this process and I am shocked to learn that material was added to the documentation late last Friday.	Changes were made to the Statement of Commitments for three reasons: 1) The first change was made as a result of interpretation issues surrounding management plan references brought to both NRE and DoPI's attention by members of the IRRM. The original text was intended to reflect NRE's intent to adhere to future approved Management Plans as required by MP10_0046 Pt3A approval conditions. These plans have not yet been approved by the Department of Planning & Infrastructure but, when approved, will become a part of the Statement of Commitments and therefore enforceable as such. Members of the IRRM pointed this out and were advised of the intent of the wording. The wording was changed to minimise confusion. 2) There were also errors that were picked up in the Statement of Commitments by the public where NRE had failed to highlight in red some additions to the Statements of Commitments. As soon as this was pointed out NRE addressed the errors and reposted the corrected Statement of Commitments. 3) Some of the lines of the original Statement of Commitments were left out of the modification application because there was no intent to change them. The Timings column was similarly omitted so that only Statements that were going to be changed were in the modification. This was explained to a representative of IRRM who indicated to NRE that this may cause some to come to the conclusion that NRE was attempting to hide issues. As a result of these criticisms, and in liaison with DoPI, NRE updated its Statement of Commitments to address any issues of confusion, or implications of non-transparency. This occurred late in the process
I have a written invitation to peruse the documents and continue to provide feedback whilst your assessment continues. Can I please have confirmation that the proponent will not now be permitted to modify this application any further? I shall be sending further comment when my time permits.	Noted. Comment directed to DP&I
I also wish to record my dismay that the standard of the proposal is one which I would fail under examination at the post-graduate level – given that it is supposed to be under the professional management of suitably qualified engineers this is deeply disturbing. The arguments in favour of the proposal are piece-meal and shoddy. Logic is flawed and insufficient critical thinking by the proponent is displayed. In fact, one might reasonably posit that the proponent does not actually expect the proposal to receive a level of scrutiny which would lead to the application being rejected based on its self-evident lack of merit! If the proponent actually expected proper scrutiny of this proposal to undermine the Sydney Water Catchment and Mt Ousley Rd one suspects that they would have ensured the application was at least superficially complete, but many documents referred to as part of the application simply either do not exist or have not been supplied for comment. This alone should have stalled your process – it should not be up to members of the public to draw to your attention flaws of this nature, that is what your staff should have done before proceeding to any public display.	The main issue that seems to have contributed to the issues described are that the project is a subset of a proposed much larger project. As such some of information that provided context in relation to the larger proposed project was not available. NRE acknowledges that it can improve the quality of its documentation and will endeavour to do so in liaison with DP&I for future applications.
The proposal in and of itself appears to seek approval for unsustainable elements of a much broader and very contentious expansion project by stealth –one piece at a time – and in the case of LW4 ex post facto.	This current approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE for commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
I call on you to instruct that all work on this site cease due to the many noncompliances with the existing approvals known to your staff and that work not be permitted to recommence until compliance in all aspects is demonstrated.	No comment. Objector request to DP&I
I would suggest that once the proponent has demonstrated that they can comply with the existing consents then a process should be established to properly approve the entire proposal which the proponent seeks via an open and complete development approval.	Noted. Comment directed to DP&I
The infrastructure at the site of this proposal is antiquated and inadequate to the operations which are in train at present in the context of sound management and forward planning. The only apparent upgrading of equipment is where it will allow shedding of staff – not where it affects the amenity of the surrounding community.	As part of the Preliminary Works Pt3A approval was given to upgrade existing mine infrastructure including surface conveyors and coal handling infrastructure, coal sizing, screening, crushing and load-out facilities, site noise and dust controls and as stockpile for ROM coal. This upgrade is currently underway. The upgrade of equipment is not related to any reduction in NRE workforce

The fact that the mine is in a residential area and must therefore be operated to a high standard of environmental management was clear to the proponent when they bought the mine - this is not a case where a long-standing operator may rely on historic "rights" under antique legislation. Most residents had been led to believe that the mine was being decommissioned at that time of transfer and have valid expectations that any resumption of operations under a new owner will be assessed against modern standards of operation and environmental assessments.	Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPaC to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. NRE has proposed air & noise monitoring program into their Noise and Air & GHG Management plans to ensure compliance with their Preliminary Works Project approval conditions for air & noise compliance monitoring requirements. These plans have submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time air & noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise and Air & GHG Management plans from DoPI. NRE have taken additional steps ensure compliance with their EPL Licence Conditions and improved transport management which are following: (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan.
I take issue with the validity of the following elements of the proposal: 1) Water Security: This proposal seeks consent for apparently unprecedented 3rd tier mining under the Sydney water catchment including a second longwall. According to the mine managers there is no evidence base from which a reasonable model for such mining can be constructed – the proposal is effectively guessing that it will all be ok and that this important area of water catchment probably won't be damaged. This must not be allowed to occur	The multi seam mining issues are addressed by SCT 2012 in Attachment A of this Response Report. Until LW4, to the best of NRE's knowledge, it would appear that triple seam mining has not occurred in the Southern Coalfield previously. The fact that something has not been done before doesn't necessarily mean it is too risky. Multi-seam mining is a common practice in Europe, particularly the UK. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Significant effort, time and cost has been spent on monitoring over the last 3 years in the area proposed to be mined. Further work continues to further refine and improve both data collection and interpretation. This information contained in the SMP plans in Appendix J contain all the monitoring and mitigation measures that were proposed and undertaken for LW4. These measures will be extended and improved for LW5 as part of an Extraction Plan & SMP plan application
2) Water quality: as above, there is no valid basis to build models capable of predicting how the upland swamps and waterways will be modified nor the effect this will have on water quality reaching reservoirs. This must not be condoned	An upland swamp specific water quality model has not been prepared. However, swamp piezometer, swamp overland outflow and stream water quality field and laboratory monitoring has and is being conducted, and to date, there have been no adverse water quality effects observed on stream flows entering Cataract Reservoir
3) Subsidence: undermining of Mt Ousley Rd near Cataract Creek is contemplated – or underway. Appropriate subsidence management plans are difficult or impossible for this 3rd tier (yet we are told that the Longwall was incorrectly aligned at the outset and the coal quality is compromised). LW4 is anecdotally reported to have exceeded predictions by over 500% yet it will undermine a major piece of public infrastructure. It is unsafe to proceed where the model has so abjectly failed	NRE will not be mining beneath Mt Ousley Rd These issues are addressed by SCT 2012 in Attachment A of this Response Report.
4) Greenhouse gas emissions: this issue is not addressed in a manner acceptable to any scientifically literate public authority or member of the public in 2012	Greenhouse Gas emissions have not changed from the predicted Scope 1 & 2 emissions in the Preliminary Works Pt3A. The methodology utilised in the estimation of emissions for the original Pt3A were calculated according to approved process and emissions factors from the following documents: 1) Commonwealth Department of Climate Change. <i>National Greenhouse and Energy Reporting (Measurement) Technical Guidelines 2008</i> 2) Commonwealth Department of Climate Change. <i>National Greenhouse Accounts (NGA) Factors 2009</i> The NGA Factors are designed to be consistent with the emissions estimates reported in <i>Australia's National Greenhouse Gas Inventory</i>
5) Air Quality and Noise Monitoring: This proposal does not address the valid concerns of the immediate neighbourhood.	Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPaC to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. NRE has proposed air & noise monitoring program into their Noise and Air & GHG Management plans to ensure compliance with their Preliminary Works Project approval conditions for air & noise compliance monitoring requirements. These plans have been submitted to DP&I for their approval on 31/08/12. Also, NRE has already placed a order for real time air & noise monitoring equipment to reduce lead time for this equipment without having an approval for their Noise and Air & GHG Management plans from DP&I. NRE have taken additional steps ensure compliance with their EPL Licence Conditions and improved transport management which are following: (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and;

	(9) All the above measures will be incorporated into NRE's Traffic Management Plan.
6) Traffic: GNRE disavow their responsibilities in this matter publicly and fail to properly address this in the development application.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. NRE will comply with Condition 25 of Schedule 2 of the Preliminary Works Pt3A approval with regard to trucking of coal to the Coal Terminal. NRE is held fully accountable by the EPA with regard to the actions of its contractors. This matter was discussed with IRRM and other community members at a recent community information day about the LW4 & 5 and MG 6, 7 & 8 application. The point was made during this discussion that despite significant controls, Codes of Practice, audits, a warning system, and other methods to manage the performance of the trucking contractors, any system depends on human beings who will always be affected by human error or attitude. In that context, 100% compliance 100% of the time cannot be guaranteed for any system.
The manifest failings of the proposal are evident on a cursory appraisal of the documents. Much that is required is simply not there, much of what is presented is biased or just plain wrong and then there is the material that is simply not there which is referred to remarkably as "approved" in anticipation even of its drafting let alone submission.	The main issue that seems to have contributed to the issues described are that the project is a subset of a proposed much larger project. As such some of the information that provided context in relation to the larger proposed project was not available. NRE acknowledges that it can improve the quality of its documentation and will endeavour to do so in liaison with DP&I for future applications.
As a member of the public validly concerned with this proposal, I trust that you will now dismiss this application from any further consideration pending completion and place any resubmitted properly constructed application open for public scrutiny and comment prior to proceeding with any assessment for approval.	Noted. Comment directed to DP&I

FRANK

COMMENT	RESPONSE
there is no clear indication of the development proposal. I could not locate drawings which show the extent of the works being proposed. How do you identify what the extent of the existing work is and what is being proposed. A simple plan would provide the most clearest picture. One that does not require extensive details but will communicate the idea quickly. One that will also identify its location and what is surrounding the proposal. Otherwise how would you know what is going on? This would also identify if there are additional facilities which would be required due to the works.	The main issue that seems to have contributed to the issues described are that the project is a subset of a proposed much larger project. As such some of the information that provided context in relation to the larger proposed project was not available. NRE acknowledges that it can improve the quality of its documentation and will endeavour to do so in liaison with DP&I for future applications. There are no additional surface works proposed as part of the proposal.
Given that there may be more employees would certainly impact on the car parking, amenities and traffic issues. Would hours of operation be changed?	The modification will not affect employee numbers and thus have no flow on effect with regard to traffic generation or on-site parking. No. 1 Mine is already a 24/7 operation with sufficient car parking and amenities to accommodate employees. The mine has historically operated with over 1200 personnel.
Most importantly what is the lifespan of the works and what are the rectification procedures once the work has been completed, i.e. are we looking at work for the next 2,5,20 years	This application doesn't modify the approved period of operation in the Preliminary Works Pt3A approval which is limited to 3 years from 13 October 2012 as per Condition 5, Schedule 2 of MP10_0046 Pt3A approval. The extraction of LW5 is anticipated to be completed within approximately 5 months of commencement based on the plan submitted for approval as part of this application. Any reduction of longwall length will reduce extraction time. Maingates 6, 7 & 8 are anticipated to be completed within the approved 3 year timeframe
Once the work has been completed does the applicant just abandon the work and walk away. Will this result in future environmental issues, site contamination, subsidence, gas build-up etc....Is there a possible future reuse of the facilities?	The current MOP will be amended to include any changes to rehabilitation that may result from LW4 & 5 and MG 6, 7 & 8 in its approved form if the application is approved by DP&I. The outcomes of the management of subsidence with regard to LW4 & 5 will be reported in the AEMR. Should approval be given for this project, the Extraction Plan/SMP will both require contingency plans up to and including offset undertakings to minimise or repair any impacts deemed unacceptable by regulators. Section 239 and Section 265 of the Mining Act will also allow the landholder (in this case SCA) to claim costs for repair, remediation, replacement of damage to land that affects the landowner's capacity to undertake its business. On this basis, within reason, the SCA can require remediation, repair or offset of any impacts beyond those anticipated or approved. In this sense the community is protected from bearing the responsibility of repair or having to put up with detrimental impacts. Further clarification of the protections afforded to the Special Areas are contained in NRE's Mining Leases as follows: • ML 1575 conditions 4,6,16,17,18,19,20,28,29,32 and Annexure • MPL271 conditions 2,7,12,13,14,15,25 • CCL 745 conditions 2,7,8,12,13,14,22,25 These conditions are all enforceable by DRE both through fines and Land & Environment Court action. Further, NRE, like all other mining lease holders is required to maintain a Security with DRE for rehabilitation costs and indemnify the Crown (including the SCA) against any "all actions, suits, claims and demands of whatsoever nature and all costs, charges and expense which may be brought against the lease holder or which the lease holder may incur in respect of any accident or injury to any Person or property..."
How does the information supplied on donations impact on this development (besides being a mandatory requirement). How does it impact on the approval of this development?	The inclusion of community donations reflects another element of the economic and social contributions that stem from NRE's mining activities.
Are the council or person approving (assessing) the project providing statements also, i.e. what religious background, citizenship etc...The fact that they have been disclosed shows that they are generous people....I imagine.	Noted. Comment directed to DP&I
The environmental statement needs further clarification and elaboration	The main issue that seems to have contributed to the issues described are that the project is a subset of a proposed much larger project. As such some of the information that provided context in relation to the larger proposed project was not available. NRE acknowledges that it can improve the quality of its documentation and will endeavour to do so in liaison with DP&I for future applications.
Have they complied with the current EPA requirements?	Following are the non-compliances with NRE's EPL Licence Condition O1, O2, and O3: 1. An incident involving a truck leaving the premises with an uncovered load on 8 September 2011. 2. An incident involving a truck not using the designated wheel wash due to it not being operational caused Dust Drag out onto Bellambi Lane on 2 May 2012.
Mining is considered to be part of the Australian asset. As such how do we locally benefit, both long term and short term. Understandably the locals are being employed but is it adding back into the community. Do the resources stay in Australia? etc. Are they employing any apprentices? What does the government provide if any in assistance?	NRE employs apprentices. Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occurs or upgrades of equipment take place. Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95%; \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million; about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution. entices • Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies. Gujarat NRE supported 21 different community groups and sporting organizations to the sum of \$1,386,027.91 well above \$0.1m-\$0.15m.

Your written reply to these issues would be welcomed. Your earnest comments and not legal, planning or political rhetoric would provide some honest and sincerity in your reply.

No comment. Request made by objector to DP&I

FULLER

COMMENT	RESPONSE
As shown by numerous research in Australia and overseas longwall mining is a threat to groundwater. Groundwater is a hugely valuable asset that is a foundation element in the ecological balance in our dry country. To risk underground aquifers through short term vision for one-off profits that are of negligible value long term is political stupidity. We strongly protest against any further mining rights being granted for Preliminary Works Project Mod 1 - Longwalls 4 and 5.	Noted. Comment directed to DP&I

GALLERY

(Form Letter)

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP 10_0046. The extent and impacts of the proposed additions to the Preliminary Works Project, reflected in the increased coal volumes and the use of documentation from the (withdrawn) expansion project, make it clear that this proposal cannot sensibly be regarded as simply a modification to the Preliminary Works project. Gujarat NRE (GNRE) is attempting to incrementally establish their expansion project.	The information in this project has been drawn from both the LW4 SMP and the current Underground Expansion Project Pt3A that is currently undergoing response to from adequacy review. This modification and approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees.
Given its errors and omissions, the Environmental Assessment Report (EA) for the current proposal is unacceptably misleading and confusing. That it has been released to the public reflects poorly on the Department of Planning and Infrastructure (DoPI). Furthermore, the DoPI failed to identify and act upon a number of non-compliance matters and it was left to community members to point out the failures in a series of complaints. While the DoPI clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. The EA and its associated documentation contain a large amount of material for which the general public were given only three weeks to respond. Requests for an extension to the public comment period were refused.	Noted. Comment directed to DP&I
I also strongly object to the proposal for the additional reasons given below. Longwall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been recognised by the Planning Assessment Commission (PAC) as having "highly significant values" making it "worthy of protection" (Bulli Seam Operations report, 2010). Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects. These reports recognise the importance of swamps both as water stores and filters, and as biodiversity pools of very high conservation value. I note with alarm that the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reports serious impacts on swamps 12, 15b and 16. The evidence that swamps cannot be safely undermined is overwhelming. Remediation of swamps is not possible and there are no examples of 'self-healing'.	For operational reasons NRE proposes to relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. CCHS3 may still be impacted by subsidence. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. LW5 to the start line of LW4 will avoid direct undermining of 3/4 of CCHS3, and CCHS4 will be not directly undermined but will be within the 20mm subsidence zone. Prior experience indicates that a swamp needs to be directly undermined to have a potential to be cracked, thus there is a reduced potential for CCHS3 to be cracked and a low likelihood that CCHS4 will be cracked by the amended LW5 extraction Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows.. "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C." These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Swamps CRHS1, CCHS3 and CCHS4 have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. Recommendation 18 of the Metropolitan Coal PAC report includes the following; "swamps of special significance will be protected from negative environmental consequences". Aboriginal site 52-3-0322 is located on the edge of CRHS1 and Aboriginal site 52-3-0320 is on the edge of CCHS3. CCHS3 and CCHS4 overly LW5 and CRHS1 is within the subsidence zone of LW5. Approving Longwalls 4 and 5 would approve the loss of these swamps.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat.

	We understand that this is currently being addressed by the DSEWPaC. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.
Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5. Low order streams play a vital role in connecting upland swamps to higher order streams.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Subsidence, increased strata permeability and strata depressurisation risks redirection and loss of surface and ground water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. Recent work by Professor Philip Pells (Thirlemere Lakes report and addenda, and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be counted on to protect surface and near surface waters from depressurisation and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction. The severe damage to two kilometres of the Waratah Rivulet provides another example of modelling and prediction failure. The widths of the longwalls that caused the catastrophic damage to the Waratah Rivulet were much the same as the width of Longwalls 4 and 5. Compounding this uncertainty, there appears to be little precedent for multi-seam mining, for which additional subsidence factors of up to 80% have been suggested. Such risks and uncertainties are unacceptable in relation to our water supplies and the need for biodiversity conservation.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The Gujarat EA is misleading in several respects, for instance it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. This report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence of LW4. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. Appendix J does not seem to contain monitoring and management plans referred to in the EA. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area for which SCA consent is required, it is not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels. Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	Noted. Comment directed to DP&I

The location of the Gujarat NRE No. 1 Colliery in a residential area is unacceptable. Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include; a coal stockpile located just 200m from people's homes; a resizing (crushing) facility; an enormous ventilation fan that blasts air from the underground mine directly at homes in West Corrimal; and, trucking of coal past people's homes to Port Kembla Coal Terminal.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; 2) Commencement of NRE Coal Distribution auditing program; 3) Upgrading all the trucks with dash board warning light to ensure covering of the load; 4) More signage to ensure covering of the load; 5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; 6) Dedicated water pipe line for truck washing facility; 7) Modification of existing truck washing facility to provide improved cleaning ; 8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; 9) All the above measures will incorporated into NRE's Traffic Management Plan.
Airborne particulates from coal mines are increasingly associated with serious respiratory and other health complaints. In particular, particulates smaller than 2.5 micrometres are known to damage health (NSW Environmental compliance and performance report: Management of dust from coal mine, Dept of Environment, Climate change and water NSW in collaboration with NSW Dept of Planning and Industry and Investment NSW, 2010, p3). This Modification proposal does not even measure or model small particulates. The only air quality monitoring data is from an air quality monitor located in Wollongong 6 kms away. The exposure to particulates of 2.5 microns and less may extend for kilometres and could reasonably be expected to impact on at least 1000 to 2000 homes in the area. It is unacceptable for DoPI and the Government of NSW allow this kind of exposure.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
Residents are also exposed to noise pollution from colliery operations and trucking. Countless complaints about noise remain unresolved.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Greenhouse Gas Emissions The coal seams of the Illawarra are known to be gassy and typically release 10 or more cubic metres of gas for each tonne of extracted coal. The composition of the gas varies from being primarily methane to primarily carbon dioxide. Assuming all of the fugitive gas is carbon dioxide, a considerably weaker greenhouse gas than methane, the coal to be extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes of fugitive carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project	The measured in-situ volume of gas in the area of LW4 and 5 and MG 6, 7 & 8 is round 3 cubic metres per tonne in-situ.
GNRE has demonstrated that it does not have the capacity and resources to operate this colliery. Since the Preliminary Works approval GNRE have proved that they are not capable of self regulation. They have failed to even comply with basic conditions imposed on them by DoPI and the PAC, including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April, 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent

alternative was months overdue. The EAs account of the so called consultation process is highly misleading.	issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. In respect of this, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. NRE is also committed to ensuring that going forward approvals and environmental compliance are focused on achieving best practice. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments to reduce lead time for these equipments without having an approval for their Noise Management plans from DP&I. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will developed to implement the audit recommendations.
It appears that extraction of LW4 (a component of this Modification application and an activity that is already virtually completed as a result of another very controversial approval process) has been problematic, due to longwall misalignment and that this error has resulted in the contamination of all the extracted coal. Not only is the subsidence much greater than predicted, the extracted coal has little value.	This issue has been discussed with IRRM representatives, the CCC and the general community at a recent Community Information Day on 23 August 2012. All these individuals and groups were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.
GNRE does not appear to have the resources, or the will to bring the antiquated infrastructure at No. 1 Colliery up to modern standards. Irrespective of the drawbacks or merits of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery.	• Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies.
I recognise that jobs and royalty revenues may be lost with the rejection of this entirely unacceptable proposal. (Although, I note that this modification cuts jobs from the Preliminary works commitment by about 100 jobs or a third of the No.1 Colliery workforce.) However, the broader community interest and inter-generational considerations are of greater significance. The number of jobs at stake is small relative to the regional work force and likewise the royalty revenues are very small relative to annual State and Federal incomes. The value of the natural assets that would be put in harm's way by this proposal cannot be sensibly quantified; they are priceless.	Employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements: 1) Operational viability dictated by coal prices and operating costs 2) Gaining approvals to allow ongoing proposed operations in a timely manner Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occur or upgrades of equipment take place. Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95%; \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million; about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution.

HEKS (Form Letter)

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP 10_0046. The extent and impacts of the proposed additions to the Preliminary Works Project, reflected in the increased coal volumes and the use of documentation from the (withdrawn) expansion project, make it clear that this proposal cannot sensibly be regarded as simply a modification to the Preliminary Works project. Gujarat NRE (GNRE) is attempting to incrementally establish their expansion project.	The information in this project has been drawn from both the LW4 SMP and the current Underground Expansion Project Pt3A that is currently responding to issues from adequacy review. This modification and approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
Given its errors and omissions, the Environmental Assessment Report (EA) for the current proposal is unacceptably misleading and confusing. That it has been released to the public reflects poorly on the Department of Planning and Infrastructure (DoPI). Furthermore, the DoPI failed to identify and act upon a number of non-compliance matters and it was left to community members to point out the failures in a series of complaints. While the DoPI clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. The EA and its associated documentation contain a large amount of material for which the general public were given only three weeks to respond. Requests for an extension to the public comment period were refused.	Noted. Comment directed to DP&I
I also strongly object to the proposal for the additional reasons given below. Longwall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply. The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been recognised by the Planning Assessment Commission (PAC) as having "highly significant values" making it "worthy of protection" (Bulli Seam Operations report, 2010). Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects. These reports recognise the importance of swamps both as water stores and filters, and as biodiversity pools of very high conservation value. I note with alarm that the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reports serious impacts on swamps 12, 15b and 16. The evidence that swamps cannot be safely undermined is overwhelming. Remediation of swamps is not possible and there are no examples of 'self-healing'.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. CCHS3 may still be impacted by subsidence. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. LW5 to the start line of LW4 will avoid direct undermining of 3/4 of CCHS3, and CCHS4 will be not directly undermined but will be within the 20mm subsidence zone. Prior experience indicates that a swamp needs to be directly undermined to have a potential to be cracked, thus there is a reduced potential for CCHS3 to be cracked and a low likelihood that CCHS4 will be cracked by the amended LW5 extraction. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows.. "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C." These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Swamps CRHS1, CCHS3 and CCHS4 have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. Recommendation 18 of the Metropolitan Coal PAC report includes the following; "swamps of special significance will be protected from negative environmental consequences". Aboriginal site 52-3-0322 is located on the edge of CRHS1 and Aboriginal site 52-3-0320 is on the edge of CCHS3. CCHS3 and CCHS4 overly LW5 and CRHS1 is within the subsidence zone of LW5. Approving Longwalls 4 and 5 would approve the loss of these swamps.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat.

	We understand that this is currently being addressed by the DSEWPaC. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.
Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5. Low order streams play a vital role in connecting upland swamps to higher order streams.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Subsidence, increased strata permeability and strata depressurisation risks redirection and loss of surface and ground water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. Recent work by Professor Philip Pells (Thirlemere Lakes report and addenda, and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be counted on to protect surface and near surface waters from depressurisation and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction. The severe damage to two kilometres of the Waratah Rivulet provides another example of modelling and prediction failure. The widths of the longwalls that caused the catastrophic damage to the Waratah Rivulet were much the same as the width of Longwalls 4 and 5. Compounding this uncertainty, there appears to be little precedent for multi-seam mining, for which additional subsidence factors of up to 80% have been suggested. Such risks and uncertainties are unacceptable in relation to our water supplies and the need for biodiversity conservation.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The Gujarat EA is misleading in several respects, for instance it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. This report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence of LW4. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. Appendix J does not seem to contain monitoring and management plans referred to in the EA. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area for which SCA consent is required, it is not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels. Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	Noted. Comment directed to DP&I

The location of the Gujarat NRE No. 1 Colliery in a residential area is unacceptable. Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include; a coal stockpile located just 200m from people's homes; a resizing (crushing) facility; an enormous ventilation fan that blasts air from the underground mine directly at homes in West Corrimal; and, trucking of coal past people's homes to Port Kembla Coal Terminal.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; 2) Commencement of NRE Coal Distribution auditing program; 3) Upgrading all the trucks with dash board warning light to ensure covering of the load; 4) More signage to ensure covering of the load; 5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; 6) Dedicated water pipe line for truck washing facility; 7) Modification of existing truck washing facility to provide improved cleaning ; 8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; 9) All the above measures will incorporated into NRE's Traffic Management Plan.
Airborne particulates from coal mines are increasingly associated with serious respiratory and other health complaints. In particular, particulates smaller than 2.5 micrometres are known to damage health (NSW Environmental compliance and performance report: Management of dust from coal mine, Dept of Environment, Climate change and water NSW in collaboration with NSW Dept of Planning and Industry and Investment NSW, 2010, p3). This Modification proposal does not even measure or model small particulates. The only air quality monitoring data is from an air quality monitor located in Wollongong 6 kms away. The exposure to particulates of 2.5 microns and less may extend for kilometres and could reasonably be expected to impact on at least 1000 to 2000 homes in the area. It is unacceptable for DoPI and the Government of NSW allow this kind of exposure.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
Residents are also exposed to noise pollution from colliery operations and trucking. Countless complaints about noise remain unresolved.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Greenhouse Gas Emissions The coal seams of the Illawarra are known to be gassy and typically release 10 or more cubic metres of gas for each tonne of extracted coal. The composition of the gas varies from being primarily methane to primarily carbon dioxide. Assuming all of the fugitive gas is carbon dioxide, a considerably weaker greenhouse gas than methane, the coal to be extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes of fugitive carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project	The measured in-situ volume of gas in the area of LW4 and 5 and MG 6, 7 & 8 is round 3 cubic metres per tonne in-situ.
GNRE has demonstrated that it does not have the capacity and resources to operate this colliery. Since the Preliminary Works approval GNRE have proved that they are not capable of self regulation. They have failed to even comply with basic conditions imposed on them by DoPI and the PAC, including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April, 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent

alternative was months overdue. The EAs account of the so called consultation process is highly misleading.	issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. In respect of this, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. NRE is also committed to ensuring that going forward approvals and environmental compliance are focused on achieving best practice. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments to reduce lead time for these equipments without having an approval for their Noise Management plans from DP&I. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will developed to implement the audit recommendations.
It appears that extraction of LW4 (a component of this Modification application and an activity that is already virtually completed as a result of another very controversial approval process) has been problematic, due to longwall misalignment and that this error has resulted in the contamination of all the extracted coal. Not only is the subsidence much greater than predicted, the extracted coal has little value.	This issue has been discussed with IRRM representatives, the CCC and the general community at a recent Community Information Day on 23 August 2012. All these individuals and groups were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.
GNRE does not appear to have the resources, or the will to bring the antiquated infrastructure at No. 1 Colliery up to modern standards. Irrespective of the drawbacks or merits of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery.	• Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies.
I recognise that jobs and royalty revenues may be lost with the rejection of this entirely unacceptable proposal. (Although, I note that this modification cuts jobs from the Preliminary works commitment by about 100 jobs or a third of the No.1 Colliery workforce.) However, the broader community interest and inter-generational considerations are of greater significance. The number of jobs at stake is small relative to the regional work force and likewise the royalty revenues are very small relative to annual State and Federal incomes. The value of the natural assets that would be put in harm's way by this proposal cannot be sensibly quantified; they are priceless.	Employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements: 1) Operational viability dictated by coal prices and operating costs 2) Gaining approvals to allow ongoing proposed operations in a timely manner Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occur or upgrades of equipment take place. Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95%; \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million; about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution.

HUXTABLE

COMMENT	RESPONSE
The proposed 3 level mining is too risky	This issue is addressed by SCT 2012 in Attachment A of this Response Report. Until LW4, to the best of NRE's knowledge, it would appear that triple seam mining has not occurred in the Southern Coalfield previously. The fact that something has not been done before doesn't necessarily mean it is too risky. Multi-seam mining is a common practice in Europe, particularly the UK. These issues are addressed by SCT 2012 in Attachment A of this Response Report. on o/s success of multi seam mining
The proposal claims that this will not be a significant impact on teh catchment above but: 1) it is not possible to be sure about this	No significant issues have been observed as a result of the extraction of LW4. NRE will assess the data from the LW4 monitoring and review its management plans and mitigation strategies for LW5. NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted. These issues are addressed by SCT 2012 in Attachment A of this Response Report.
2) the regime for measuring the impact on water catchment and wetlands is not defined	As stated in Section 1.2 of the EA, Appendix J was included to give an example of what the content and structure of an Extraction Plan might be. The Water Management Plan will be updated as part of an Extraction Plan & SMP application should the modification application be approved
3) the trigger points for contingent action are not defined	As stated in Section 1.2 of the EA, Appendix J was included to give an example of what the content and structure of an Extraction Plan might be. Each sub-plan contains a TARP to guide responses to changes in the monitored item or issue. The existing LW4 SMP plans will be updated as part of an Extraction Plan & SMP application should the modification application be approved
4) the community bears the [hit?] of having our catchment and our wetlands destroyed	Should approval be given for this project, the Extraction Plan/SMP will both require contingency plans up to and including offset undertakings to minimise or repair any impacts deemed unacceptable by regulators. Section 239 and Section 265 of the Mining Act will also allow the landholder (in this case SCA) to claim costs for repair, remediation, replacement of damage to land that affects the landowner's capacity to undertake its business. On this basis, within reason, the SCA can require remediation, repair or offset of any impacts beyond those anticipated or approved.. In this sense the community is protected from bearing the responsibility of repair or having to put up with detrimental impacts. Further clarification of the protections afforded to the Special Areas are contained in NRE's Mining Leases as follows: ML 1575 conditions 4,6,16,17,18,19,20,28,29,32 and Annexure A MPL271 conditions 2,7,12,13,14,15,25 CCL 745 conditions 2,7,8,12,13,14,22,25 These conditions are all enforceable by DRE both through fines and Land & Environment Court action. Further, NRE, like all other mining lease holders is required to maintain a Security with DRE for rehabilitation costs and indemnify the Crown (including the SCA) against any "all actions, suits, claims and demands of whatsoever nature and all costs, charges and expense which may be brought against the lease holder or which the lease holder may incur in respect of any accident or injury to any Person or property..."
5) the company has a poor record when it comes to doing what they promise environmentally	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPaC to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. NRE has proposed air & noise monitoring program into their Noise and Air & GHG Management plans to ensure compliance with their Preliminary Works Project approval conditions for air & noise compliance monitoring requirements. These plans have submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time air & noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise and Air & GHG Management plans from DoPI. NRE have taken additional steps ensure compliance with their EPL Licence Conditions and improved transport management which are following: (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ;

	(8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will be incorporated into NRE's Traffic Management Plan.
I wish to add more to my objection (attached.) to this application by Gujarat NRE to allow for longwall mining LW4+ 5 at No 1 Colliery in Russell Vale..	Noted
NOISE AND DUST The treatment of the local community to date by Gujarat shows that this company's approach is to get away with what it can.	NRE acknowledges that it can improve both its community consultation and community interaction, particularly with close neighbours. Significant effort has been undertaken recently to listen to and address neighbours reasonable concerns. Major investment is being made to ensure that air quality monitoring is best practice and that dust suppression techniques are both expanded and improved. NRE has also recently completed noise reduction works on its Pit Top ventilation fan which has reduced noise from its operation.
The noise and dust monitoring of operations to date has been totally inadequate. The monitoring is in the wrong place. There has been no "before" benchmark. The coal from Bellambi colliery is trucked down Bellambi lane. The company has claimed that it has no responsibility for the trucking contractors operations and has not controlled the trucking contractors properly. And because of the inadequate monitoring it is impossible to objectively assess the actual effect of the mining and trucking. The result has been significant loss of amenity for the local residents, with the onus of proof always on the residents.	Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward. In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. NRE has placed an order for real time air & noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise and Air & GHG Management plans from DoPI. NRE have taken additional steps ensure compliance with their EPL Licence Conditions and improved transport management which are following: (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will be incorporated into NRE's Traffic Management Plan. The Air Quality modelling undertaken for the Preliminary Works Pt3A applies to this modification as no increase in activity forms part of the application. The modelling for the Preliminary Works Pt3A was undertaken based on regional data availability as there was no available local or site air quality data at the time. The modelling was carried out in accordance with the Approved Methods and Guidance for the modelling and Assessment of Air Pollutants in New South Wales, DECC, August 2005. A full summary of the modelling method is contained in Annex I of the NRE No.1 Colliery - Preliminary Works Pt3A Environmental Assessment. NRE is held fully accountable by the EPA with regard to the actions of its contractors. This matter was discussed with community members at a recent community information day about the LW4 & 5 and MG 6, 7 & 8 applications. The point was made during this discussion that despite significant controls, Codes of Practice, audits, a warning system, and other methods to manage the performance of the trucking contractors, any system depends on human beings will always be affected by human error or attitude. In that context, 100% compliance 100% of the time cannot be guaranteed for any system.
It is a disgrace for state and local governments to let this sort of thing happen to residents when it is possible to do it better.	Noted. Statement with regard to government
A company that washes its hands of its responsibilities in this area is likely to try to avoid responsibility should problems arise with new mining.	In spite of some recent issues with non-compliances due primarily to staff turnover and temporary commercial issues, NRE is committed to complying with its approvals and has recently increased its environmental staff and is improving its environmental management practices to ensure that there are no further issues surrounding unintentional environmental impacts.
METHANE EMISSIONS The application does not address methane emissions and their GHG effect.	This issue is addressed in Section 7.5 of the Environmental Assessment of the modification application
MONITORING I submit that applications like this one must include for a monitoring regime with "before" and "AFTER" measurements that allow objective assessment of the claims of the application – for example "no significant noise increase" "no significant dust increase" "no significant water flow loss"	The current Preliminary Works Pt3A approval sets limits with respect to environmental outcomes for a variety of environmental issues such as noise, air quality etc. The outcomes form the basis upon which NRE has developed a series of management plans to achieve them. The plans are currently with DP&I for approval. The monitoring and management plans developed for the Preliminary Works apply to this modification as there is no intended intensification of activity on site above what was approved in the Preliminary Works Pt3A.
EFFECT ON THE ESCARPMENT The sandstone country around Sydney is unique beautiful country and its hanging lakes and streams are very valuable. Other countries do not trash their natural assets. Why do we? The application says that the expected subsidence and cracking is not a major problem. This is a value judgement. The application should quantify the expected and worst case subsidence and cracking and leave it to the community to make the value judgement.	Subsidence impact modelling and prediction utilises a conservative or worst case approach as part of its risk management processes. These issues are addressed by SCT 2012 in Attachment A of this Response Report.

WATER CATCHMENT The value we place on the water catchment is evidenced by the restrictions we place on individual access to the catchment area. World population will be over 9 billion soon. We need all our good water and topsoil, and more.	Noted. Comment directed to DP&I
The proposed mining is very close to Cataract dam. The maps showing mining extent do not show the extent of any methane depressurisation. The depressurisation would almost certainly extend under the dam.	Depressurisation of undisturbed coal has not been raised as a concern by any agency or experienced consultant.
The proposed mining technique(mining) will result in 3 voids over each other in an area where we KNOW that unexpected cracking and subsidence are quite likely. The risk of pile run has already been identified.	Should the proposal be approved NRE does not intend to modify its currently approved Area of Management which has been designed to ensure that any potential pillar run is both captured early and management measures put in place and restricted in its possible range by solid coal. NRE is currently undertaking geotechnical investigations in liaison with DRE to determine if the Pillar Run issue can be determined as a low to non-existent risk.
Gujarat has already made one mistake in its mining of LW4, resulting in a lot of coal being wasted. The coal mining industry does not have a good track record of predicting ,managing or responding to subsidence, water flow loss or gas leaks. It is left to others to point out problems. The onus of proof lies with the community. The disappearance of Thirimere lakes and bore water close to Tahmoor colliery is a case in point.	IRRM, the CCC and attendees of the Community Information Day were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls. Studies by both government agencies and a working panel appointed by the government have not established a link between mining at Tahmoor Colliery and water level changes in Thirimere Lakes. These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
The application has not identified a test regime to proactively identify whether unexpected additional subsidence is occurring or is likely to occur, or whether water flow into cataract dam is being significantly affected. The subsidence monitoring plan is missing from the application. Neither does the plan identify what measures the company would take in the event of a problem - or what would trigger such events.	As stated in Section 1.2 of the EA, Appendix J was included to give an example of what the content and structure of an Extraction Plan might be. The Subsidence Monitoring Plan was contained in the Subsidence Monitoring Plan in Appendix J
It is quite likely given the track record and the lackadaisical attitude to risk management that: a) Significant damage to the water catchment would not be discovered for a long time afterwards b) After the discovery, the onus of proof would be on the community to prove the damage. c) During this time further mining would continue and further damage would occur d) The damage would be irreparable	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPaC to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. NRE has proposed air & noise monitoring program into their Noise and Air & GHG Management plans to ensure compliance with their Preliminary Works Project approval conditions for air & noise compliance monitoring requirements. These plans have submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time air & noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise and Air & GHG Management plans from DoPI. NRE have taken additional steps ensure compliance with their EPL Licence Conditions and improved transport management which are following: (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan. Should approval be given for this project, the Extraction Plan/SMP will both require contingency plans up to and including offset undertakings to minimise or repair any impacts deemed unacceptable by regulators. Section 239 and Section 265 of the Mining Act will also allow the landholder (in this case SCA) to claim costs for repair, remediation, replacement of damage to land that affects the landowner's capacity to undertake its business. On this basis, within reason, the SCA can require remediation, repair or offset of any impacts beyond those anticipated or approved.. In this sense the community is protected from bearing the responsibility of repair or having to put up with detrimental impacts. Further clarification of the protections afforded to the Special Areas are contained in NRE's Mining Leases as follows: ML 1575 conditions 4,6,16,17,18,19,20,28,29,32 and Annexure A MPL271 conditions 2,7,12,13,14,15,25 CCL 745 conditions 2,7,8,12,13,14,22,25 These conditions are all enforceable by DRE both through fines and Land & Environment Court action. Further, NRE, like all other mining lease holders is required to maintain a Security with DRE for rehabilitation costs and indemnify the Crown (including the SCA) against any "all actions, suits, claims and demands of whatsoever nature and all costs, charges and expense which may be brought against the lease holder or which the lease holder may incur in respect of any accident or injury to any Person or property...."
It is one thing for a company to take such an approach but it is totally unacceptable for the NSW dept of planning, charged with managing changes for the benefit of the community as a whole, to accept such a risk on our behalf.	Noted. Comment directed to DP&I
I submit that if this company or any company wishes to mine the wongawilli seam in this location then it should be required to mine it by means that reduce the risk. One possibility is to leave more pillars.	Noted. Comment directed to DP&I
Yes, such mining would be more expensive. But the coal is high quality coking coal. It won't go away and its value will increase in future, not decrease. So what is the rush to mine it NOW, on the cheap?	Coal mining, like most other industry, is cash flow reliant. Coal mines are extremely expensive operations to run. If you are not mining coal and meeting contract commitments you receive no income. Without a continual supply of coal to meet contract obligations, coal mines can't sustain operations for a significant period before it becomes and economic necessity to either place the mine on care and maintenance to reduce costs and prevent the company from having to cease operations entirely. As such, the option of just leaving coal in the ground until some later time is simply not a commercially viable proposition for any company.
EMPLOYMENT If the Wongawilli seam were mined properly it would employ more people, not less	Longwall mining is considered world-wide as the most efficient method of coal extraction. It provides for >90% coal recovery whilst providing a safe and productive workplace.

It would employ more people to run the trucks cleanly and quietly and suppress dust, not less	New trucks compliant with the Euro 5 standard for emissions control are being purchased by NRE's trucking contractor. Euro 5 regulatory standard regulates emissions from all combustion engines with the goal to limit as much as possible the negative impact of road vehicles on the environment and health. The Regulation covers a wide range of pollutant emissions: carbon monoxide (CO), non-methane hydrocarbons and total hydrocarbons, nitrogen oxides (NO_x) and particulates (PM). It covers tailpipe emissions, evaporative emissions and crankcase emissions. It sets limits for emissions from diesel vehicles as follows •carbon monoxide: 500 mg/km; •particulates: 5 mg/km (80 % reduction of emissions in comparison to the Euro 4 standard); •nitrogen oxides (NO_x): 180 mg/km (20 % reduction of emissions in comparison to the Euro 4 standard); •combined emissions of hydrocarbons and nitrogen oxides: 230 mg/km. As well as reduced diesel emissions anecdotal evidence indicates that the trucks will be quieter.
It would employ more people to do proper environment monitoring, not less.	This is correct. In respect of this observation, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. NRE is also committed to ensuring that going forward approvals and environmental compliance are moving toward achieving best practice.
Doing things properly usually costs more. But the increased cost usually takes the form of increased employment. This means less profit for the miner but more benefits to the local community.	• Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies.
COMMUNITY DUTY The community did not force Gujarat to buy its long wall equipment. The community and the taxpayer does not have a duty to ensure Gujarat profitability .	Noted. Comment directed to DP&I
The community does however have a duty to protect its water catchments for the future.	Noted. Comment directed to DP&I
And the government does have a duty to provide objective information to the community to allow the community to make value judgements.	Noted. Comment directed to DP&I
SUMMARY This is not a decision between mining and not mining. It's a decision about whether to do things properly, carefully and in a way that maximizes benefit in the long run– or whether to run roughshod over the local community and risk our water catchment in order to rip it out NOW and on the cheap.	This current approvals approach has not evolved in a manner that is favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE for commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
I ask the planning department to reject this application.	Noted. Comment directed to DP&I

JACOBS
(Form letter)

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP 10_0046. The extent and impacts of the proposed additions to the Preliminary Works Project, reflected in the increased coal volumes and the use of documentation from the (withdrawn) expansion project, make it clear that this proposal cannot sensibly be regarded as simply a modification to the Preliminary Works project. Gujarat NRE (GNRE) is attempting to incrementally establish their expansion project.	The information in this project has been drawn from both the LW4 SMP and the current Underground Expansion Project Pt3A that is currently responding to issues from adequacy review. This modification and approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
Given its errors and omissions, the Environmental Assessment Report (EA) for the current proposal is unacceptably misleading and confusing. That it has been released to the public reflects poorly on the Department of Planning and Infrastructure (DoPI). Furthermore, the DoPI failed to identify and act upon a number of non-compliance matters and it was left to community members to point out the failures in a series of complaints. While the DoPI clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. The EA and its associated documentation contain a large amount of material for which the general public were given only three weeks to respond. Requests for an extension to the public comment period were refused.	Noted. Comment directed to DP&I
I also strongly object to the proposal for the additional reasons given below. Longwall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been recognised by the Planning Assessment Commission (PAC) as having "highly significant values" making it "worthy of protection" (Bulli Seam Operations report, 2010). Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects. These reports recognise the importance of swamps both as water stores and filters, and as biodiversity pools of very high conservation value. I note with alarm that the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reports serious impacts on swamps 12, 15b and 16. The evidence that swamps cannot be safely undermined is overwhelming. Remediation of swamps is not possible and there are no examples of 'self-healing'.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. CCHS3 may still be impacted by subsidence. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. LW5 to the start line of LW4 will avoid direct undermining of 3/4 of CCHS3, and CCHS4 will be not directly undermined but will be within the 20mm subsidence zone. Prior experience indicates that a swamp needs to be directly undermined to have a potential to be cracked, thus there is a reduced potential for CCHS3 to be cracked and a low likelihood that CCHS4 will be cracked by the amended LW5 extraction Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows.. "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C." These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Swamps CRHS1, CCHS3 and CCHS4 have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. Recommendation 18 of the Metropolitan Coal PAC report includes the following; "swamps of special significance will be protected from negative environmental consequences". Aboriginal site 52-3-0322 is located on the edge of CRHS1 and Aboriginal site 52-3-0320 is on the edge of CCHS3. CCHS3 and CCHS4 overly LW5 and CRHS1 is within the subsidence zone of LW5. Approving Longwalls 4 and 5 would approve the loss of these swamps.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat.

	We understand that this is currently being addressed by the DSEWPaC. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.
Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5. Low order streams play a vital role in connecting upland swamps to higher order streams.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Subsidence, increased strata permeability and strata depressurisation risks redirection and loss of surface and ground water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. Recent work by Professor Philip Pells (Thirlemere Lakes report and addenda, and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be counted on to protect surface and near surface waters from depressurisation and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction. The severe damage to two kilometres of the Waratah Rivulet provides another example of modelling and prediction failure. The widths of the longwalls that caused the catastrophic damage to the Waratah Rivulet were much the same as the width of Longwalls 4 and 5. Compounding this uncertainty, there appears to be little precedent for multi-seam mining, for which additional subsidence factors of up to 80% have been suggested. Such risks and uncertainties are unacceptable in relation to our water supplies and the need for biodiversity conservation.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The Gujarat EA is misleading in several respects, for instance it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. This report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence of LW4. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. Appendix J does not seem to contain monitoring and management plans referred to in the EA. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area for which SCA consent is required, it is not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels. Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	Noted. Comment directed to DP&I

The location of the Gujarat NRE No. 1 Colliery in a residential area is unacceptable. Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include; a coal stockpile located just 200m from people's homes; a resizing (crushing) facility; an enormous ventilation fan that blasts air from the underground mine directly at homes in West Corrimal; and, trucking of coal past people's homes to Port Kembla Coal Terminal.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; 2) Commencement of NRE Coal Distribution auditing program; 3) Upgrading all the trucks with dash board warning light to ensure covering of the load; 4) More signage to ensure covering of the load; 5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; 6) Dedicated water pipe line for truck washing facility; 7) Modification of existing truck washing facility to provide improved cleaning ; 8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; 9) All the above measures will incorporated into NRE's Traffic Management Plan.
Airborne particulates from coal mines are increasingly associated with serious respiratory and other health complaints. In particular, particulates smaller than 2.5 micrometres are known to damage health (NSW Environmental compliance and performance report: Management of dust from coal mine, Dept of Environment, Climate change and water NSW in collaboration with NSW Dept of Planning and Industry and Investment NSW, 2010, p3). This Modification proposal does not even measure or model small particulates. The only air quality monitoring data is from an air quality monitor located in Wollongong 6 kms away. The exposure to particulates of 2.5 microns and less may extend for kilometres and could reasonably be expected to impact on at least 1000 to 2000 homes in the area. It is unacceptable for DoPI and the Government of NSW allow this kind of exposure.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
Residents are also exposed to noise pollution from colliery operations and trucking. Countless complaints about noise remain unresolved.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Greenhouse Gas Emissions The coal seams of the Illawarra are known to be gassy and typically release 10 or more cubic metres of gas for each tonne of extracted coal. The composition of the gas varies from being primarily methane to primarily carbon dioxide. Assuming all of the fugitive gas is carbon dioxide, a considerably weaker greenhouse gas than methane, the coal to be extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes of fugitive carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project	The measured in-situ volume of gas in the area of LW4 and 5 and MG 6, 7 & 8 is round 3 cubic metres per tonne in-situ.
GNRE has demonstrated that it does not have the capacity and resources to operate this colliery. Since the Preliminary Works approval GNRE have proved that they are not capable of self regulation. They have failed to even comply with basic conditions imposed on them by DoPI and the PAC, including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April, 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent

alternative was months overdue. The EAs account of the so called consultation process is highly misleading.	issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. In respect of this, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. NRE is also committed to ensuring that going forward approvals and environmental compliance are focused on achieving best practice. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments to reduce lead time for these equipments without having an approval for their Noise Management plans from DP&I. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will developed to implement the audit recommendations.
It appears that extraction of LW4 (a component of this Modification application and an activity that is already virtually completed as a result of another very controversial approval process) has been problematic, due to longwall misalignment and that this error has resulted in the contamination of all the extracted coal. Not only is the subsidence much greater than predicted, the extracted coal has little value.	This issue has been discussed with IRRM representatives, the CCC and the general community at a recent Community Information Day on 23 August 2012. All these individuals and groups were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.
GNRE does not appear to have the resources, or the will to bring the antiquated infrastructure at No. 1 Colliery up to modern standards. Irrespective of the drawbacks or merits of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery.	• Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies.
I recognise that jobs and royalty revenues may be lost with the rejection of this entirely unacceptable proposal. (Although, I note that this modification cuts jobs from the Preliminary works commitment by about 100 jobs or a third of the No.1 Colliery workforce.) However, the broader community interest and inter-generational considerations are of greater significance. The number of jobs at stake is small relative to the regional work force and likewise the royalty revenues are very small relative to annual State and Federal incomes. The value of the natural assets that would be put in harm's way by this proposal cannot be sensibly quantified; they are priceless.	Employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements: 1) Operational viability dictated by coal prices and operating costs 2) Gaining approvals to allow ongoing proposed operations in a timely manner Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occur or upgrades of equipment take place. Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95%; \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million; about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution.

MERRIN

COMMENT	RESPONSE
I object to this modification proposal on the grounds of environmental and health impacts, and the extent of the proposal:	Noted. Comment directed to DP&I
* long-wall mining is clearly identified by a wide range of authors as a threat to the Sydney Drinking Water Catchment's water quality and quantity, wetland and river ecosystems, and geological and aquifer integrity	Noted. Comment directed to DP&I
* the expanded mine operations will have a greatly increased negative impact on local residential areas, through additional truck movements, increased noise, and increased exposure to coal dust, now recognised as a likely carcinogen	NRE will not be increasing activities above those already approved as part of the Preliminary Works Pt3A approval as part of this application. Any changes to coal volumes and management will be dealt with as part of a future application for the expansion of NRE operations at the site.
* it appears to be a considerable expansion of operations to the extent of a new proposal, and beyond what should be considered a modification of the original project	This does not expand the operation from either surface facility or underground coal extraction volume perspective. The Colliery will still be constrained to the 1Mtpa limit approved as part of the Preliminary Works Pt3A

MOORE

COMMENT	RESPONSE
The location of this proposed expansion makes approval absurd. Longwall mining - a technique that brings subsidence - should not be allowed under the Sydney Water Catchment, Cataract Creek or Upland Swamps. The proposed multi seam mining exacerbates this risk further	See below
As such, approval of this expansion would bring damage to drinking water catchment, in a country that regularly goes into drought. On these grounds alone, it should not be allowed.	This issue is dealt with in detail in the section on Drinking Water Supply in this Response Report. The drinking water catchments lose a significant amount of water each year as a result of simple evaporation. Between 2007/8 and 2010/11 the catchments lost an average of 10.75% of their storage to evaporation. As a result of the significant downstream ecological impacts that result from reservoir creation, the SCA is also required to release quantities of water to ensure the health of downstream ecosystems. Between 2007/8 and 2010/11 the catchments lost an average of 10.25% of their storage to environmental flow releases. The total annual losses (unavailable for drinking water) from the combined catchment storages due to evaporation and environmental flow have varied between 164,061ML and 399,650ML per year from 2007/8 to 2010/11 which is an average of 261,089ML or 21% of total storage volume. In contrast, the Golders groundwater model report indicates a potential sub-surface loss of stream flow of 0.07ML/day for Cataract Creek and 0.03ML/day for Bellambi Creek. That model indicates the water may be lost on the surface but will still flow via subsurface fractures and emerge at some point downstream at a later time. As such, at worst, the water loss is only temporary due to subsurface diversion. That means a potential annual temporary loss after mining proposed LW's 4 to 11 in area 2 of 25.6ML/year for Cataract Creek. With regard to LW5, and taking into account LW4 has already been mined, it would be, roughly, about 2/11 of 25.6ML/year or about 4.6ML/year. Assuming the estimate of approximately 4.6ML per year of water that may be redirected subsurface from streams is temporarily lost to the water storage due to the extraction of LW's 4 & 5, it represents slightly less than 0.002%, (two one-thousandths of one percent) of the annual average storage losses. Assuming the average evaporative and environmental flow losses remain the same, and applying the 25.6ML temporary subsurface losses from all eight of the proposed longwalls in NRE's Wonga East Area 2 to take into account cumulative losses, the potential annual loss is only slightly less than 0.01% (one one-hundredths of one percent) of total annual storage losses. Cataract Reservoir itself has a full operating storage of 97,190ML. The lowest level of the storage that NRE is aware of is 27,620ML or 29.3% capacity on 20 July 2006. If the low level figure is used, the loss of 4.6ML per year for Longwalls 4 & 5 amounts to less than 0.02% (two one-hundredth of one percent) of the Cataract storage capacity. Even extrapolating to all eight proposed longwalls at an annual loss of 25.6ML, the number is less than 0.01% (one one-hundredth of one percent) of the storage volume. At full storage level the potential LW4 & 5 temporary loss contribution drops to less than 0.005% (five one-hundredths of one percent) and potential cumulative loss for the eight proposed longwalls drops to less than 0.03% (three one-hundredths of one percent) of storage.
In addition, this expansion should not be permitted as it is in a residential area. An expansion will mean more truck movements on residential roads, more noise and more toxic coal dust.	There will be no change to Pit Top activities as a result of this application
finally, the proponents are not compliant with existing DA conditions. The Department of Planning still haven't approved one of GNRE's Management Plans (that should have been in place 4 months ago) and yet GNRE is multi-seam longwalling under the drinking water catchment and upland swamps.	NRE has had issues with compliance with Pt3A conditions and other approvals. This is addressed in detail in the section on Statutory/Regulatory Issues in this Response Report

PARKINSON

COMMENT	RESPONSE
This Email is to add my voice to the widespread opposition to mining under upland swamps and water table.	Noted. Comment directed to DP&I

QUINN
(Form Letter + additional comments)

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP 10_0046. The extent and impacts of the proposed additions to the Preliminary Works Project, reflected in the increased coal volumes and the use of documentation from the (withdrawn) expansion project, make it clear that this proposal cannot sensibly be regarded as simply a modification to the Preliminary Works project. Gujarat NRE (GNRE) is attempting to incrementally establish their expansion project.	The information in this project has been drawn from both the LW4 SMP and the current Underground Expansion Project Pt3A that is currently responding to issues from adequacy review. This modification and approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
Given its errors and omissions, the Environmental Assessment Report (EA) for the current proposal is unacceptably misleading and confusing. That it has been released to the public reflects poorly on the Department of Planning and Infrastructure (DoPI). Furthermore, the DoPI failed to identify and act upon a number of non-compliance matters and it was left to community members to point out the failures in a series of complaints. While the DoPI clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. The EA and its associated documentation contain a large amount of material for which the general public were given only three weeks to respond. Requests for an extension to the public comment period were refused.	Noted. Comment directed to DP&I
I also strongly object to the proposal for the additional reasons given below. Longwall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been recognised by the Planning Assessment Commission (PAC) as having "highly significant values" making it "worthy of protection" (Bulli Seam Operations report, 2010). Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects. These reports recognise the importance of swamps both as water stores and filters, and as biodiversity pools of very high conservation value. I note with alarm that the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reports serious impacts on swamps 12, 15b and 16. The evidence that swamps cannot be safely undermined is overwhelming. Remediation of swamps is not possible and there are no examples of 'self-healing'.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. CCHS3 may still be impacted by subsidence. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. LW5 to the start line of LW4 will avoid direct undermining of 3/4 of CCHS3, and CCHS4 will be not directly undermined but will be within the 20mm subsidence zone. Prior experience indicates that a swamp needs to be directly undermined to have a potential to be cracked, thus there is a reduced potential for CCHS3 to be cracked and a low likelihood that CCHS4 will be cracked by the amended LW5 extraction Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows.. "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C." These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Swamps CRHS1, CCHS3 and CCHS4 have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. Recommendation 18 of the Metropolitan Coal PAC report includes the following; "swamps of special significance will be protected from negative environmental consequences". Aboriginal site 52-3-0322 is located on the edge of CRHS1 and Aboriginal site 52-3-0320 is on the edge of CCHS3. CCHS3 and CCHS4 overly LW5 and CRHS1 is within the subsidence zone of LW5. Approving Longwalls 4 and 5 would approve the loss of these swamps.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat.

	We understand that this is currently being addressed by the DSEWPaC. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.
Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5. Low order streams play a vital role in connecting upland swamps to higher order streams.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Subsidence, increased strata permeability and strata depressurisation risks redirection and loss of surface and ground water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. Recent work by Professor Philip Pells (Thirlemere Lakes report and addenda, and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be counted on to protect surface and near surface waters from depressurisation and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction. The severe damage to two kilometres of the Waratah Rivulet provides another example of modelling and prediction failure. The widths of the longwalls that caused the catastrophic damage to the Waratah Rivulet were much the same as the width of Longwalls 4 and 5. Compounding this uncertainty, there appears to be little precedent for multi-seam mining, for which additional subsidence factors of up to 80% have been suggested. Such risks and uncertainties are unacceptable in relation to our water supplies and the need for biodiversity conservation.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The Gujarat EA is misleading in several respects, for instance it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. This report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence of LW4. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. Appendix J does not seem to contain monitoring and management plans referred to in the EA. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area for which SCA consent is required, it is not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels. Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	Noted. Comment directed to DP&I

The location of the Gujarat NRE No. 1 Colliery in a residential area is unacceptable. Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include; a coal stockpile located just 200m from people's homes; a resizing (crushing) facility; an enormous ventilation fan that blasts air from the underground mine directly at homes in West Corrimal; and, trucking of coal past people's homes to Port Kembla Coal Terminal.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; 2) Commencement of NRE Coal Distribution auditing program; 3) Upgrading all the trucks with dash board warning light to ensure covering of the load; 4) More signage to ensure covering of the load; 5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; 6) Dedicated water pipe line for truck washing facility; 7) Modification of existing truck washing facility to provide improved cleaning ; 8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; 9) All the above measures will incorporated into NRE's Traffic Management Plan.
Airborne particulates from coal mines are increasingly associated with serious respiratory and other health complaints. In particular, particulates smaller than 2.5 micrometres are known to damage health (NSW Environmental compliance and performance report: Management of dust from coal mine, Dept of Environment, Climate change and water NSW in collaboration with NSW Dept of Planning and Industry and Investment NSW, 2010, p3). This Modification proposal does not even measure or model small particulates. The only air quality monitoring data is from an air quality monitor located in Wollongong 6 kms away. The exposure to particulates of 2.5 microns and less may extend for kilometres and could reasonably be expected to impact on at least 1000 to 2000 homes in the area. It is unacceptable for DoPI and the Government of NSW allow this kind of exposure.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
Residents are also exposed to noise pollution from colliery operations and trucking. Countless complaints about noise remain unresolved.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Greenhouse Gas Emissions The coal seams of the Illawarra are known to be gassy and typically release 10 or more cubic metres of gas for each tonne of extracted coal. The composition of the gas varies from being primarily methane to primarily carbon dioxide. Assuming all of the fugitive gas is carbon dioxide, a considerably weaker greenhouse gas than methane, the coal to be extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes of fugitive carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project	The measured in-situ volume of gas in the area of LW4 and 5 and MG 6, 7 & 8 is round 3 cubic metres per tonne in-situ.
GNRE has demonstrated that it does not have the capacity and resources to operate this colliery. Since the Preliminary Works approval GNRE have proved that they are not capable of self regulation. They have failed to even comply with basic conditions imposed on them by DoPI and the PAC, including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April, 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent

alternative was months overdue. The EAs account of the so called consultation process is highly misleading.	issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWP&C. In respect of this, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. NRE is also committed to ensuring that going forward approvals and environmental compliance are focused on achieving best practice. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments to reduce lead time for these equipments without having an approval for their Noise Management plans from DP&I. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will developed to implement the audit recommendations.
It appears that extraction of LW4 (a component of this Modification application and an activity that is already virtually completed as a result of another very controversial approval process) has been problematic, due to longwall misalignment and that this error has resulted in the contamination of all the extracted coal. Not only is the subsidence much greater than predicted, the extracted coal has little value.	This issue has been discussed with IRRM representatives, the CCC and the general community at a recent Community Information Day on 23 August 2012. All these individuals and groups were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.
GNRE does not appear to have the resources, or the will to bring the antiquated infrastructure at No. 1 Colliery up to modern standards. Irrespective of the drawbacks or merits of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery.	• Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies.
I recognise that jobs and royalty revenues may be lost with the rejection of this entirely unacceptable proposal. (Although, I note that this modification cuts jobs from the Preliminary works commitment by about 100 jobs or a third of the No.1 Colliery workforce.) However, the broader community interest and inter-generational considerations are of greater significance. The number of jobs at stake is small relative to the regional work force and likewise the royalty revenues are very small relative to annual State and Federal incomes. The value of the natural assets that would be put in harm's way by this proposal cannot be sensibly quantified; they are priceless.	Employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements: 1) Operational viability dictated by coal prices and operating costs 2) Gaining approvals to allow ongoing proposed operations in a timely manner Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occur or upgrades of equipment take place. Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95%; \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million; about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution.
Furthermore, I cite "Alteration of habitat following subsidence due to longwall mining - key threatening process listing NSW Scientific Committee - final determination http://www.environment.nsw.gov.au/determinations/LongwallMiningKtp.htm	
8. The extraction of coal and the subsequent cracking of strata surrounding the goaf may liberate methane, carbon dioxide and other gases. Most of the gas is removed by the ventilation system of the mine but some gas remains within the goaf areas. Gases tend to diffuse upwards through any cracks occurring in the strata and be emitted from the surface (ACARP 2001). Gas emissions can result in localised plant death as anaerobic conditions are created within the soil (Everett et al. 1998).	Gas emissions have been recorded at a number of sites to date. However, this has not resulted in vegetation dieback in all circumstances, and it appears that gaseous related vegetation dieback is in fact a rare circumstance.
9. Subsidence due to longwall mining can destabilise cliff-lines and increase the probability of localised rockfalls and cliff collapse (Holla and Barclay 2000, ACARP 2001, 2002). This has occurred in the Western Coalfield and in some areas of the Southern Coalfield (ACARP 2001). These rockfalls have generally occurred within months of the cliffline being undermined but in some cases up to 18 years after surface cracking first became visible following mining (ACARP 2001). Changes to cliff-line topography may result in an alteration to the environment of overhangs and blowouts. These changes may result in the loss of roosts for bats and nest sites for cliff-nesting birds." http://www.environment.nsw.gov.au/determinations/LongwallMiningKtp.htm .	Noted. Comment directed to DP&I

Moreover "...the following threatened species and ecological communities are known to occur in areas affected by subsidence due to longwall mining and their habitats are likely to be altered by subsidence and mining-associated activities: Endangered Species <!--[if !vml]--> <!--[endif]-->; <i>Epacris hamiltonii</i> a shrub, <i>Eulamprus leuraensis</i> Blue Mountains Water Skink, <i>Hoplocephalus bungaroides</i> Broad-headed Snake, <i>Isodon obesulus</i> Southern Brown Bandicoot, <i>Petalura gigantea</i> Giant Dragonfly Vulnerable species <!--[if !vml]--> <!--[endif]-->, <i>Acacia baueri</i> subsp. <i>aspera</i> <!--[if !vml]--> <!--[endif]-->, <i>Apatophyllum constablei</i> <!--[if !vml]--> <!--[endif]-->, <i>Boronia deanei</i> <!--[if !vml]--> <!--[endif]-->, <i>Cercartetus nanus</i> Eastern Pygmy Possum, <i>Epacris purpurascens</i> var. <i>purpurascens</i> <!--[if !vml]--> <!--[endif]-->, <i>Grevillea longifolia</i> <!--[if !vml]--> <!--[endif]-->, <i>Heleioporus australiacus</i> Giant Burrowing Frog, <i>Ixobrychus flavicollis</i> Black Bittern, <i>Leucopogon exolasius</i> <!--[if !vml]--> <!--[endif]-->, <i>Litoria littlejohni</i> Littlejohn's Tree Frog, <i>Melaleuca deanei</i> <!--[if !vml]--> <!--[endif]-->, <i>Mixophyes balbus</i> Stuttering Frog, <i>Myotis adversus</i> Large-footed Myotis, <i>Persoonia acerosa</i> <!--[if !vml]--> <!--[endif]-->, <i>Potorous tridactylus</i> Long-nosed Potoroo, <i>Pseudophryne australis</i> Red-crowned Toadlet, <i>Pteropus poliocephalus</i> Grey-headed Flying Fox, <i>Pterostylis pulchella</i> <!--[if !vml]--> <!--[endif]-->, <i>Pultenaea aristata</i> <!--[if !vml]--> <!--[endif]-->, <i>Pultenaea glabra</i> <!--[if !vml]--> <!--[endif]-->, <i>Tetratheca juncea</i> <!--[if !vml]--> <!--[endif]-->, <i>Varanus rosenbergi</i> Rosenberg's Goanna Species and populations of species not currently listed as threatened but that may become so as a result of habitat alteration following subsidence due to longwall mining include: <i>Apatophyllum constablei</i> <!--[if !vml]--> <!--[endif]-->, <i>Boronia deanei</i> <!--[if !vml]--> <!--[endif]-->, <i>Cercartetus nanus</i> Eastern Pygmy Possum, <i>Epacris purpurascens</i> var. <i>purpurascens</i> <!--[if !vml]--> <!--[endif]-->, <i>Grevillea longifolia</i> <!--[if !vml]--> <!--[endif]-->, <i>Heleioporus australiacus</i> Giant Burrowing Frog, <i>Ixobrychus flavicollis</i> Black Bittern, <i>Leucopogon exolasius</i> <!--[if !vml]--> <!--[endif]-->, <i>Litoria littlejohni</i> Littlejohn's Tree Frog, <i>Melaleuca deanei</i> <!--[if !vml]--> <!--[endif]-->, <i>Mixophyes balbus</i> Stuttering Frog, <i>Myotis adversus</i> Large-footed Myotis, <i>Persoonia acerosa</i> <!--[if !vml]--> <!--[endif]-->, <i>Potorous tridactylus</i> Long-nosed Potoroo, <i>Pseudophryne australis</i> Red-crowned Toadlet, <i>Pteropus poliocephalus</i> Grey-headed Flying Fox, <i>Pterostylis pulchella</i> <!--[if !vml]--> <!--[endif]-->, <i>Pultenaea aristata</i> <!--[if !vml]--> <!--[endif]-->, <i>Pultenaea glabra</i> <!--[if !vml]--> <!--[endif]-->, <i>Tetratheca juncea</i> <!--[if !vml]--> <!--[endif]-->, <i>Varanus rosenbergi</i> Rosenberg's Goanna Endangered Ecological Communities Genowian Point Allocasuarina nana Heathland, Newnes Plateau Shrub Swamp in the Sydney Basin Bioregion, O'Hares Creek Shale Forest, Shale/Sandstone Transition Forest, Species and populations of species not currently listed as threatened but that may become so as a result of habitat alteration following subsidence due to longwall mining include: <i>Acacia ptychoclada</i> <!--[if !vml]--> <!--[endif]-->, <i>Almaleea incurvata</i> <!--[if !vml]--> <!--[endif]-->, <i>Darwinia grandiflora</i> <!--[if !vml]--> <!--[endif]-->, <i>Dillwynia stipulifera</i> <!--[if !vml]--> <!--[endif]-->, <i>Epacris coricea</i> <!--[if !vml]--> <!--[endif]-->, <i>Grevillea acanthifolia</i> subsp. <i>acanthifolia</i> <!--[if !vml]--> <!--[endif]-->, <i>Hydromys chrysogaster</i> Water rat, <i>Lomandra fluviatilis</i> <!--[if !vml]--> <!--[endif]-->, <i>Olearia quercifolia</i> <!--[if !vml]--> <!--[endif]-->, <i>Pseudanthus pimelioides</i> <!--[if !vml]--> <!--[endif]-->.	This is a generic list. While some of the species occur in the subsidence area not all do. NRE has undertaken and intensive ecological study of the area and continues to improve both the quality and quantity of its information to guide future decision making
16. Mitigation measures to repair cracking creek beds have had only limited success and are still considered experimental (ACARP 2002). Cracks less than 10 mm wide may eventually reseal without active intervention provided there is a clay fraction in the soil and at least some water flow is maintained. Cracks 10-50 mm wide may be sealed with a grouting compound or bentonite. Cracks wider than 50 mm require concrete (ACARP 2002). Pattern grouting in the vicinity of Marhnyes Hole in the Georges River has been successful at restoring surface flows and reducing pool drainage following fracturing of the riverbed (International Environmental Consultants 2004). Grouting of cracks also appears to have been relatively effective in Wambo Creek in the Hunter Valley. Installation of a grout curtain in the Cataract River, however, has been only partially successful and it was concluded in 2002, after rehabilitation measures had taken place, that the environment flows released from Broughtons Pass Weir by the Sydney Catchment Authority were insufficient to keep the Cataract River flowing or to maintain acceptable water quality (DIPNR 2003). Mitigation measures themselves may have additional environmental impacts due to disturbance from access tracks, the siting of drilling rigs, removal of riparian vegetation, and unintended release of the grouting material into the water. Furthermore, even measures that are successful in terms of restoring flows involve temporary rerouting of surface flows while mitigation is carried out (generally for 2-3 weeks at each grouting site). Planning for remediation measures may also be hampered by the lack of predictability of some impacts, and difficulties gaining access to remote areas where remedial works are needed. The long-term success of mitigation measures such as grouting is not yet known. It is possible that any ongoing subsidence after grouting may reopen cracks or create new ones. Further, it is not yet known whether the clay substance bentonite, which is often added to the cement in the grouting mix, is sufficiently stable to prevent shrinkage. Grouting under upland and hanging swamps that have no definite channel is probably not feasible.	Previous activities in the Southern Coalfield in Cataract River and the Georges River have been noted to remediate the pool holding capacity and overland stream flow in areas where grouting has been conducted

17. Empirical methods have been developed from large data sets to predict conventional subsidence effects (ACARP 2001, 2002, 2003). In general, these models have proved more accurate when predicting the potential degree of subsidence in flat or gently undulating terrain than in steep topography (ACARP 2003). A major issue identified in the ACARP (2001, 2002) reports was the lack of knowledge about horizontal stresses in geological strata, particularly those associated with river valleys. These horizontal stresses appear to play a major role in the magnitude and extent of surface subsidence impacts. The cumulative impacts of multiple panels also appear to have been poorly monitored. The general trend in the mining industry in recent years toward increased panel widths (from 200 up to 300 m), which allows greater economies in the overall costs of extraction, means that future impacts will tend to be greater than those in the past (ACARP 2001, 2002).	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
18. In view of the above the Scientific Committee is of the opinion that Alteration of habitat following subsidence due to longwall mining adversely affects two or more threatened species, populations or ecological communities, or could cause species, populations or ecological communities that are not threatened to become threatened. Dr Lesley Hughes Chairperson Scientific Committee Proposed Gazettal date: 15/07/05 Exhibition period: 15/07/05 - 09/09/05 References <omitted>	Noted. Quote from the Scientific Committee regarding the listing of Coastal Upland Swamps

REIDL
(Form Letter + additional comments)

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP 10_0046. The extent and impacts of the proposed additions to the Preliminary Works Project, reflected in the increased coal volumes and the use of documentation from the (withdrawn) expansion project, make it clear that this proposal cannot sensibly be regarded as simply a modification to the Preliminary Works project. Gujarat NRE (GNRE) is attempting to incrementally establish their expansion project.	The information in this project has been drawn from both the LW4 SMP and the current Underground Expansion Project Pt3A that is currently responding to issues from adequacy review. This modification and approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
Given its errors and omissions, the Environmental Assessment Report (EA) for the current proposal is unacceptably misleading and confusing. That it has been released to the public reflects poorly on the Department of Planning and Infrastructure (DoPI). Furthermore, the DoPI failed to identify and act upon a number of non-compliance matters and it was left to community members to point out the failures in a series of complaints. While the DoPI clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. The EA and its associated documentation contain a large amount of material for which the general public were given only three weeks to respond. Requests for an extension to the public comment period were refused.	Noted. Comment directed to DP&I
I also strongly object to the proposal for the additional reasons given below. Longwall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been recognised by the Planning Assessment Commission (PAC) as having "highly significant values" making it "worthy of protection" (Bulli Seam Operations report, 2010). Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects. These reports recognise the importance of swamps both as water stores and filters, and as biodiversity pools of very high conservation value. I note with alarm that the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reports serious impacts on swamps 12, 15b and 16. The evidence that swamps cannot be safely undermined is overwhelming. Remediation of swamps is not possible and there are no examples of 'self-healing'.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. CCHS3 may still be impacted by subsidence. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. LW5 to the start line of LW4 will avoid direct undermining of 3/4 of CCHS3, and CCHS4 will be not directly undermined but will be within the 20mm subsidence zone. Prior experience indicates that a swamp needs to be directly undermined to have a potential to be cracked, thus there is a reduced potential for CCHS3 to be cracked and a low likelihood that CCHS4 will be cracked by the amended LW5 extraction Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows.. "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C." These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Swamps CRHS1, CCHS3 and CCHS4 have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. Recommendation 18 of the Metropolitan Coal PAC report includes the following; "swamps of special significance will be protected from negative environmental consequences". Aboriginal site 52-3-0322 is located on the edge of CRHS1 and Aboriginal site 52-3-0320 is on the edge of CCHS3. CCHS3 and CCHS4 overly LW5 and CRHS1 is within the subsidence zone of LW5. Approving Longwalls 4 and 5 would approve the loss of these swamps.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat.

	We understand that this is currently being addressed by the DSEWPaC. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.
Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5. Low order streams play a vital role in connecting upland swamps to higher order streams.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Subsidence, increased strata permeability and strata depressurisation risks redirection and loss of surface and ground water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. Recent work by Professor Philip Pells (Thirlemere Lakes report and addenda, and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be counted on to protect surface and near surface waters from depressurisation and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction. The severe damage to two kilometres of the Waratah Rivulet provides another example of modelling and prediction failure. The widths of the longwalls that caused the catastrophic damage to the Waratah Rivulet were much the same as the width of Longwalls 4 and 5. Compounding this uncertainty, there appears to be little precedent for multi-seam mining, for which additional subsidence factors of up to 80% have been suggested. Such risks and uncertainties are unacceptable in relation to our water supplies and the need for biodiversity conservation.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The Gujarat EA is misleading in several respects, for instance it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. This report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence of LW4. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. Appendix J does not seem to contain monitoring and management plans referred to in the EA. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area for which SCA consent is required, it is not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels. Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. These issues are addressed by SCT 2012 in Attachment A of this Response Report.. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	Noted. Comment directed to DP&I

The location of the Gujarat NRE No. 1 Colliery in a residential area is unacceptable. Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include; a coal stockpile located just 200m from people's homes; a resizing (crushing) facility; an enormous ventilation fan that blasts air from the underground mine directly at homes in West Corrimal; and, trucking of coal past people's homes to Port Kembla Coal Terminal.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; 2) Commencement of NRE Coal Distribution auditing program; 3) Upgrading all the trucks with dash board warning light to ensure covering of the load; 4) More signage to ensure covering of the load; 5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; 6) Dedicated water pipe line for truck washing facility; 7) Modification of existing truck washing facility to provide improved cleaning ; 8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; 9) All the above measures will incorporated into NRE's Traffic Management Plan.
Airborne particulates from coal mines are increasingly associated with serious respiratory and other health complaints. In particular, particulates smaller than 2.5 micrometres are known to damage health (NSW Environmental compliance and performance report: Management of dust from coal mine, Dept of Environment, Climate change and water NSW in collaboration with NSW Dept of Planning and Industry and Investment NSW, 2010, p3). This Modification proposal does not even measure or model small particulates. The only air quality monitoring data is from an air quality monitor located in Wollongong 6 kms away. The exposure to particulates of 2.5 microns and less may extend for kilometres and could reasonably be expected to impact on at least 1000 to 2000 homes in the area. It is unacceptable for DoPI and the Government of NSW allow this kind of exposure.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
Residents are also exposed to noise pollution from colliery operations and trucking. Countless complaints about noise remain unresolved.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Greenhouse Gas Emissions The coal seams of the Illawarra are known to be gassy and typically release 10 or more cubic metres of gas for each tonne of extracted coal. The composition of the gas varies from being primarily methane to primarily carbon dioxide. Assuming all of the fugitive gas is carbon dioxide, a considerably weaker greenhouse gas than methane, the coal to be extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes of fugitive carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project	The measured in-situ volume of gas in the area of LW4 and 5 and MG 6, 7 & 8 is round 3 cubic metres per tonne in-situ.
GNRE has demonstrated that it does not have the capacity and resources to operate this colliery. Since the Preliminary Works approval GNRE have proved that they are not capable of self regulation. They have failed to even comply with basic conditions imposed on them by DoPI and the PAC, including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April, 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent

alternative was months overdue. The EAs account of the so called consultation process is highly misleading.	issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. In respect of this, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. NRE is also committed to ensuring that going forward approvals and environmental compliance are focused on achieving best practice. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments to reduce lead time for these equipments without having an approval for their Noise Management plans from DP&I. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will developed to implement the audit recommendations.
It appears that extraction of LW4 (a component of this Modification application and an activity that is already virtually completed as a result of another very controversial approval process) has been problematic, due to longwall misalignment and that this error has resulted in the contamination of all the extracted coal. Not only is the subsidence much greater than predicted, the extracted coal has little value.	This issue has been discussed with IRRM representatives, the CCC and the general community at a recent Community Information Day on 23 August 2012. All these individuals and groups were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.
GNRE does not appear to have the resources, or the will to bring the antiquated infrastructure at No. 1 Colliery up to modern standards. Irrespective of the drawbacks or merits of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery.	• Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies.
I recognise that jobs and royalty revenues may be lost with the rejection of this entirely unacceptable proposal. (Although, I note that this modification cuts jobs from the Preliminary works commitment by about 100 jobs or a third of the No.1 Colliery workforce.) However, the broader community interest and inter-generational considerations are of greater significance. The number of jobs at stake is small relative to the regional work force and likewise the royalty revenues are very small relative to annual State and Federal incomes. The value of the natural assets that would be put in harm's way by this proposal cannot be sensibly quantified; they are priceless.	Employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements: 1) Operational viability dictated by coal prices and operating costs 2) Gaining approvals to allow ongoing proposed operations in a timely manner Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occur or upgrades of equipment take place. Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95%; \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million; about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution.
<!--[if !supportLists]-->• <!--[endif]-->Mining under the Sydney Water Catchment Area. This pristine vital resource is not ours to destroy, it belongs to future generations.	Noted. Comment directed to DP&I
<!--[if !supportLists]-->• <!--[endif]-->Mining under swamps and streams. Cataract Creek and several upland swamps will be directly impacted, these are seen as being highly significant and worthy of protection.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. As outlined above, Biosis has completed a detailed impacts assessment for upland swamps as a part of Gujarat's Major Expansion Project. This impact assessment used the initial risk assessment and comparative analysis methods, as required by OEH (2012), as well as an assessment of groundwater, flow accumulation and strains to assess impacts to upland swamps. This assessment method is more robust than any other undertaken within the Southern Coalfield. This assessment has identified that upland swamps located above Longwalls 4 and 5 are unlikely to be subject to negative environmental outcomes. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. Biosis is currently undertaking monitoring of Cataract Creek for threatened frog species. To date, no threatened frog species have been recorded within Cataract Creek.

	These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
<!--[if !supportLists]--><!--[endif]-->Multi seam mining, never before done in this fragile area. This expansion adds a third coal seam to be mined, in an experiment of unknown subsidence out comes. Compounded and unpredictable subsidence is likely.	Until LW4, to the best of NRE's knowledge, it would appear that triple seam mining has not occurred in the Southern Coalfield previously. The fact that something has not been done before doesn't necessarily mean it is too risky. Multi-seam mining is a common practice in Europe, particularly the UK. These issues are addressed by SCT 2012 in Attachment A of this Response Report. on subsidence and multi seam Significant effort, time and cost has been spent on monitoring over the last 3 years in the area proposed to be mined. Further work continues to further refine and improve both data collection and interpretation. This information contained in the SMP plans in Appendix J contain all the monitoring and mitigation measures that were proposed and undertaken for LW4. These measures will be extended and improved for LW5 as part of an Extraction Plan & SMP plan application These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
<!--[if !supportLists]--><!--[endif]-->The mine is in a residential area. GNRE point out the residential area was built around the mine but when GNRE bought the mine in 2004 the residential area was already ensconced.	There has been an operating mine at the site since 1887. Operations at the Colliery were temporarily suspended by the owner Bellpac between August and December 2004 when it was sold to NRE. Mining recommenced in July 2005 It is correct that during that history of its operation, residential development has encroached up to the boundary of the existing mine.
<!--[if !supportLists]--><!--[endif]-->Particulate matter is a major concern. We have 80,000 ton stockpiles 200m from residences. 2.5micron dust and smaller is seen as the 'new asbestos', linked to respiratory and other illness, and yet the mine will only be monitoring down to 10microns.	NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program. Based on clearer comparison with Colliery vs. local and regional non point source dust.
<!--[if !supportLists]--><!--[endif]-->The only method for coal transport from site is by truck. GNRE have operated for eight years and still create noise, dust, speed and vibration problems in the area. Diesel fumes from these trucks are a known carcinogenic.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program. Based on clearer comparison with Colliery vs. local and regional non point source dust. New trucks compliant with the Euro 5 standard for emissions control are being purchased by NRE's trucking contractor. Euro 5 regulatory standard regulates emissions from all combustion engines with the goal to limit as much as possible the negative impact of road vehicles on the environment and health. The Regulation covers a wide range of pollutant emissions: carbon monoxide (CO), non-methane hydrocarbons and total hydrocarbons, nitrogen oxides (NO_x) and particulates (PM). It covers tailpipe emissions, evaporative emissions and crankcase emissions. It sets limits for emissions from diesel vehicles as follows •carbon monoxide: 500 mg/km; •particulates: 5 mg/km (80 % reduction of emissions in comparison to the Euro 4 standard); •nitrogen oxides (NO_x): 180 mg/km (20 % reduction of emissions in comparison to the Euro 4 standard); •combined emissions of hydrocarbons and nitrogen oxides: 230 mg/km.
<!--[if !supportLists]--><!--[endif]-->This mine is non-compliant with its DA conditions. Department of Planning still haven't approved one of GNRE's Management Plans (required to be in place 4mths ago) and yet GNRE is multi seam longwalling under the SWCA and upland swamps.	Following are the non compliances with Preliminary Works Project Approval (MP 10_0046): (1) Failure to submit the management plans within 6 months of this approval in consultation with various agencies. Revised management plans need to be submitted by 31 August 2012 to DoPI in consultation with various agencies. All the management plans submitted to DoPI on 31 August 2012. • Schedule 3, Condition 16 (a) -Noise Management Plan • Schedule 3, Condition 21 (a)-Air Quality & Greenhouse Gas Management Plan • Schedule 3, Condition 28 (a) and (b) -Traffic Management Plan • Schedule 3, Condition 29 (a) and (b) – Biodiversity Management Plan • Schedule 3, Condition 32 (a) and (b) - Surface Facilities Water Schedule 3, Condition 35 (a) and (b) - Water Management Plan • Schedule 3, Condition 38 (a) and (b) - Heritage Management Plan (2) Schedule 3, Condition 15 (b) - Regularly assess the real time noise monitoring... NRE will be able to regularly assess the real-time noise monitoring to ensure compliance, following approval of the Noise Management Plan (Schedule 3, Condition 16) by the DG. (3) Schedule 3, Condition 20 (c) - Regularly assess the real time air quality monitoring... NRE will be able to regularly assess the real-time air quality monitoring to ensure compliance, following approval of the Air Quality & GHG Management Plan (Schedule 3, Condition 21) by the DG. (4) Schedule 3 Condition 23 (a)- Truck Washing Failure to submit a report to the Department about various truck washing arrangements that have been trialled at the surface facilities site within 6 months of this approval. A revised report submitted to DP&I along with the Air Quality & GHG

	Management Plan and Traffic Management Plan by 31 August 2012. (5) Schedule 5 Condition 1 (a) - Environmental Management Strategy Failure to submit an Environmental Management Strategy (EMS) for the project within 6 months of approval. An EMS was submitted to DP&I on 10 May 2012. (6) Schedule 5 Condition 5 - Community Consultative Committee Failure to establish and operate a Community Consultative Committee (CCC) or alternative framework within 6 months of this approval. A CCC was established and began operating by end of July 2012. The first CCC meeting was held on 21 August 2012. (7) Schedule 5 Condition 10 (a) - Access to Information Failure to make publicly available on NRE's website: 1. a complaints register, which is to be updated on a monthly basis; and 2. a comprehensive summary of the monitoring results of the project, reported in accordance with the specification in any approved plans or programs required under the conditions of this or any other approval. EPL monitoring results and complaints register is now available on NRE's website.
<!--[if !supportLists]--> <!--[endif]-->GNRE (and Department Resources and Energy) are having the validity of the longwall mining approval challenged in the Land and Environment Court.	Noted. Comment directed to DP&I

RITCHIE

COMMENT	RESPONSE
I would like to raise the following areas for consideration in the approval process for the modification of MP10_0044. I am a nearby resident to the NRE Colliery in Russell Vale/ Bellambi. I have been a resident since December 2000, and I am a homeowner.	Noted. Comment directed to DP&I
I make the following brief submission as to my objections about the approval of and the nature of this project: · The history of applications by the proponent: Given the size and nature of the Company, Gujarat NRE Coking Coal Limited, the history of applications being made and withdrawn in an endeavor to try to introduce longwall mining and expand the nature of the operation at the NRE No1 Colliery, is confusing and bordering upon deliberate obfuscation of the overall plans of the proponent.	The original application submitted by NRE was withdrawn in liaison with DP&I to be resubmitted as s Preliminary Works and Major Underground Expansion Pt3A's. This was to facilitate approval of some minor extraction and surface facility preparation while the likely more lengthy approval for longwalls was processed. This current approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE for commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above. There has been no intention to deliberately create a confusing situation as this impacts on NRE as well as those assessing applications
The nature of this application is incredulous, it is in relation to the NRE No1 Colliery, there was approval granted in October 2011 as part of the original MP10_0046. It beggars belief that the proponent could order and have manufactured a custom made \$90 million longwall machine and not realise that their approval as granted in October 2011 did not allow for the use of such a machine (due to the approved usages of the Maingates 4&5 as "exploratory drivages" only and not as "operational gateroads".	NRE has an existing application in with DP&I that includes a proposal for significant longwall operations. It has been in the planning system for a significant time and NRE had reasonable expectations that some longwalling operations would be approved in some form by 2012. Due to the approximate 2 year lead times in designing the longwall, tendering the construction and provision and commissioning of a new longwall NRE had to start the process in anticipation of future approvals or it would have faced up to 2 years of minimal coal production while a longwall was constructed. This would have caused significant financial issues that have, to a degree, been avoided through forward planning of the longwall equipment.
It was specifically noted by the Planning Assessment Commission, in the MP 10_0046 PAC Determination Report that a number of submitters at that time had specific concerns about the "preliminary works" and the "expansion" projects being dealt with separately. The report makes specific note that the "proponent made an unequivocal statement concerning acceptance of all commercial risk involved in separating the project applications".	The original application submitted by NRE was withdrawn in liaison with DP&I to be resubmitted as s Preliminary Works and Major Underground Expansion Pt3A's. This was agreed between NRE and DP&I to facilitate approval of some minor extraction and surface facility preparation while the likely more lengthy approval for longwalls was processed. This current approvals approach has not evolved in a manner that is favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE for commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
It appears that the piecemeal approach taken by the mine administration is such that it borders on being deliberately deceptive. The history of applications being made, withdrawn and now modified is providing a very testing environment for local residents to be able to stay astride all of the issues and to know what should be replied to, to whom and by when. It also proves challenging to be aware of what is actually the subject of "community consultation" at any time. There is a very real risk of concerned locals suffering from "submission fatigue" and this could, sadly, lead to limited expression of the true feelings of the local community regarding any changes, not just as a result of this application, but as part of the collective whole of the proponents applications. The proponent has commenced operation of the longwall machinery in the area known as LW4 in the Wongawilli Seam; it appears that the use of the "exploratory drivages" has already progressed to them becoming "operational gateroads" without any proper approval. It is time for the proponent to approach its dealings with the community in an open, honest and transparent fashion.	The original application submitted by NRE was withdrawn in liaison with DP&I to be resubmitted as Preliminary Works and Major Underground Expansion Pt3A's. This was agreed between NRE and DP&I to facilitate approval of some minor extraction and surface facility preparation while the likely lengthier approval for longwalls was processed. This current approvals approach has not evolved in a manner that is favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE for commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
· Environmental impact: The proponent is in an excellent position to become a first world leading Coal Mining Company providing innovative and world leading environmental solutions to the problems created by their activities. There are several areas, which are of concern arising from the Environmental Impact Assessment as lodged by the proponent. o The lack of data to properly model Subsidence, this is an issue that then daisy chains to several other concerns. As I understand the situation, the proponent is relying upon subsidence modeling performed by Geothermal. This modeling relies on data collected over many years in respect of mines, terrain, the rock strata's, depth of the mine, other landforms including aquifers, and ground water etc, to assess the likelihood, nature and extent of subsidence. It is not disputed that subsidence will occur, simply that the amount of subsidence and the area effected will be within acceptable limits. There are some caveats on this, the situation in the proposed mine area (namely LW4 & 5) is mining in a seam over which 2 other seams have previously had coal extracted by longwalling. This is an unusual circumstance and gives rise to a greater degree of uncertainty as to the degree and extent of subsidence. This creates, I believe, a higher level of risk of subsidence that causes significant damage to the environment.	These issues are also addressed by SCT 2012 in Attachment A of this Response Report.

o Longwall under the Sydney Water Catchment, namely; Cataract Creek Catchment. The higher degree of speculation that attaches to the modeling of subsidence creates a greater risk of there being a reduction in catchment storage in the area. The Proponent states that the predicted loss of stream flow would be 0.07m/l per day, (or >25m/l per year, or the equivalent of approximately 10 Olympic swimming pools being lost every year, for the foreseeable future. When the next El Nino cycle occurs, even that amount of water being lost from the Sydney Catchment is unacceptable. This is, in my view an unacceptable amount as predicted. Given that rate is predicated on the modeling of subsidence for which only very limited data is available; there is a very real risk of the loss of stream flow to greatly exceed that predicted and for the effect to be catastrophic upon the catchment. There should at very least be a requirement for a large bond or bank guarantee to be held in trust so that remediation work could start without delay should catastrophic effects be experienced in relation to stream flows and loss of catchment storage volume as a result of the proponent's workings.	Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report. In comparison to the overall storage of the Cataract Reservoir, even at low levels, the predicted water loss is not significant. Should approval be given for this project, the Extraction Plan/SMP will both require contingency plans up to and including offset undertakings to minimise or repair any impacts deemed unacceptable by regulators. Section 239 and Section 265 of the Mining Act will also allow the landholder (in this case SCA) to claim costs for repair, remediation, replacement of damage to land that affects the landowner's capacity to undertake its business. On this basis, within reason, the SCA can require remediation, repair or offset of any impacts beyond those anticipated or approved.. In this sense the community is protected from bearing the responsibility of repair or having to put up with detrimental impacts. Further clarification of the protections afforded to the Special Areas are contained in NRE's Mining Leases as follows: ML 1575 conditions 4,6,16,17,18,19,20,28,29,32 and Annexure A MPL271 conditions 2,7,12,13,14,15,25 CCL 745 conditions 2,7,8,12,13,14,22,25 These conditions are all enforceable by DRE both through fines and Land & Environment Court action. Further, NRE, like all other mining lease holders is required to maintain a Security with DRE for rehabilitation costs and indemnify the Crown (including the SCA) against any <i>"all actions, suits, claims and demands of whatsoever nature and all costs, charges and expense which may be brought against the lease holder or which the lease holder may incur in respect of any accident or injury to any Person or property...."</i>
o Longwall subsidence under suspended swamps; the Environmental Assessment includes information that 3 upland swamps, named as "Endangered Ecological Communities" all are at some risk of damage by reason of cracking of the bed of the swamp. These areas are irreplaceable and of incalculable value to a community that values and protects diverse and endangered land. The swamps themselves are largely protected in other ways, as they are included in a large area of "special purpose land" which provides a buffer around the water catchment area. They are largely undisturbed and intact at this stage; the risks posed by the approval sought by the proponent place this area at unacceptable risk of significant irreversible environmental damage.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Detailed assessment of upland swamps has identified that CCHS3 is not considered to be of 'special significance' based on criteria outlined within OEH (2012). In addition groundwater monitoring has indicated that this upland swamp is unlikely to be reliant on perched ephemeral groundwater, and thus impacts to CCHS3 are considered unlikely to occur. Thus it is deemed that this upland swamp is at negligible risk of negative environmental consequences as a result of extraction of coal from LW4 and 5. Detailed impacts assessment undertaken as a part of Gujarat's Major Expansion Project has assessed the risk of negative environmental consequences to CCHS4. Based on initial risk assessment, comparative analysis, assessment of groundwater, flow accumulation modelling and assessment of risk of fracturing resulting from strains concluded that CCHS4 was at a low risk of negative environmental consequences for extraction of all longwalls associated with the Major Expansion Project. Based on the location of CCHS4 outside of the predicted limits of subsidence for LW5 we conclude that CCHS3 and CCHS4 are at negligible risk of negative environmental consequences as a result of extraction of coal from LW4. In addition, the relocation of the start position for LW5 will further reduce the potential for impacts.
o Urban environmental impact; this approval would make very limited difference to the current approval (MP10_0046) and it's impacts. I will briefly outline how any increase in operation would likely impact: · The proponent relies heavily on the "history" of mining on the site as part of it's arguments about the visual amenity and in regards to other aspects of their impact on the local environment, particularly at the mine head. Historically there has been a mine at South Bulli (now the NRE No1 Colliery) site since 1887; however, this has largely been conducted in a disruptive and almost piecemeal fashion since 1996, when the then owners Shell Corporation announced it's closure. The colliery was, primarily in caretaker mode (so as to avoid the rehabilitation costs and to allow it to be sold as a "working" mine.) The site was operated/managed by Allied for several years leading up to it's acquisition by the proponents, however, at the time commodity prices meant that there was little incentive for operation at any scale (and certainly extraction and movement by road did not approach the current 1MTPA). That was largely the case since 1996 until the purchase of the site and the lease by Gujarat NRE Coking Coal Pty Ltd in 2005- 2006. This has meant an increase from approximately 400,000 tonnes (or less) per annum, to a significant escalation to 1,000,000 tonnes per annum by the proponent, it is noted that approval of the modification will be a step towards the proposed increase in extraction by the proponent to 3 million tonnes per annum.	NRE cannot comment on the total volumes operated historically by other companies but accepts that if NRE intends to extract up to the approved 1Mtpa limit. This may well be significantly different to the volumes extracted by previous owners in the Colliery's recent history. This proposal does not modify the currently approved 1 Mtpa limit imposed as part of the original Preliminary Works Pt3A approval. This current approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE. For commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above. The proposed future application will address the need to increase extraction volumes.

· Trucks; the proponent proposes to move all “run of mine” coal extracted from the NRE No1 Colliery by road. The impact of this is a loss of amenity as regards the peace and quiet enjoyment of my property on Bellambi Lane. The trucks are noisy, they generate dust and they are an eyesore. As stated historically they have not been a significant feature of the area during my ownership of the property since December 2000. Trucks cause significant vibration through the ground and by the shock wave of air that is caused by the low-pressure area created by the movement of the trailer. In recent times when the road surface had degraded, trucks hitting potholes and rough patches. The impact of the truck movements caused by the proponent is such that the road surface appears to be degrading rapidly and this creates a resultant increase in vibration and noise. The trucks generate significant noise this noise impacts directly ability to enjoy my suburban front yard of my children and myself. The truck noise can disrupt conversation and is intrusive, the nature of positive traffic changes in the area (with the opening of the Northern Distributor Extension), has meant that the noise of the trucks is significantly above the ambient noise levels that exists at all hours of the day and certainly in the hours between 6pm and 10pm at night. The management plan set out in the approval of the MP10_0046 Project still have not been implemented by the proponent, this is well outside the approval timeframes, and this proposal will continue to cement the unreliability of the proponent. They have not ensured compliance with the code of conduct by the drivers contracted to the proponent. Examples of this non-compliance include; exceeding the speed limit of 40km/h, ensuring that trailers are covered prior to leaving the Colliery site and running when the truck wash is not in operation. There has been no discussion of, or, it appears, no transparent move towards implementing any environmentally friendly alternative to movement by road by the proponent, not in the current approval/modification, nor has it been mooted in future applications. In this day and age the reliance upon old technologies (such as trucks), without public examination of and a commitment to alternatives, to reduce the environmental impacts of the activities of the proponent is not acceptable. They are not examining the issues of alternatives, as it does not look like any agency, government body etc is making it viable for them to have to do so.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. NRE will comply with Condition 25 of Schedule 2 of the Preliminary Works Pt3A approval with regard to trucking of coal to the Coal Terminal. Since the opening of the Northern Distributor extension (now Memorial Drive) in 2009 the average weekday traffic volumes in Bellambi Lane have dropped from 14,380 (2009) to 5,693 (2010) (ERM 2010). This reduction in overall traffic would have made the truck movements from the Colliery more noticeable. The Colliery has not increased traffic on Bellambi Lane and traffic will not increase as a result of this proposal. An audit by Somerset risk identified a need for a Code of Practice and audit system including a truck induction. This has been in operation for 12 months and has been added to the mine work order system for auto generation. Also a regular PKCT meeting is held with NRE and the trucking contractors where a monthly report is presented and any issues discussed and actioned. The resealing of Bellambi Lane has improved the body rattle noise. Any excess noise is identified and the truck removed from haulage till the repairs are complete. A recent example is the mud guard on truck and dog trailer was reported to be rattling. The mud flap repaired within a short time of the report. Updates to the management plans are ongoing; any issues raised are included in the work order sheets. A recent example of the evolving management of truck related issues related to complaints of trucks leaving NRE with uncovered loads involved NRE undertaking a coal cover CCTV audit. Both NRE and the trucking company also regularly check the truck behaviour on the coal route at random on the haulage days. Auto coal covers have been fitted to all coal haulage trucks since NRE started operations 7 years ago. After one complaint in 2007 regarding a coal cover not being in place instigated the fitting of a CCTV at Bellambi Lane intersection as well as a sign reminding drivers to cover their loads. This has now been added to the audit system. Also a points system is in place whereby the drivers receive a warning when any justified complaints are recorded (3 warnings result in dismissal). PKCT are also notified of any issues in the Monthly report document. A flashing dash board warning light is being fitted to all the haulage trucks to indicate when the coal cover is not in place as well as installation of increased signage for continued compliance. All trucks travel through a wheel wash then are again cleaned by a second truck wash. Coal from unloading at PKCT can get caught on the draw bar between the truck and dog/trailer and return to site. NRE has targeted this coal for removal prior to trucks leaving NRE. As some trucks vary in height further improvements are ongoing including the installation of a spray bar with multi jets which are set at different heights. The truck wash now uses fresh water to minimise the drag out of coal and dust on truck tyres to Bellambi Land. Truck wash upgrades should be completed at the PKCT by late November 2012 and this should result in cleaner trucks travelling back from PKCT. Since an issue recently with unwashed trucks leaving the site due to failure of the wheel wash, operations are now suspended if the truck wash units are not working. This has been included in the management plans. RTA have made changes to the traffic light sequence at both Bellambi Lane intersections for a smoother transition. A 50 km/h self imposed speed limit has been introduced with a GPS tracking system along Bellambi Lane to try to eliminate issues of truck drivers exceeding this agreed speed limit. Further feedback on additional issues in this area will be examined and if additional solutions are available they will be implemented. NRE has proposed air & noise monitoring program into their Noise and Air & GHG Management plans to ensure compliance with their Preliminary Works Project approval conditions for air & noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time air & noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise and Air & GHG Management plans from DoPI. NRE have taken additional steps ensure compliance with their EPL Licence Conditions and improved transport management which are following: (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whist loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan.
· Dust; the NRE No1 Colliery generates dust, as a local resident I can visually see the impact of the operations inside and outside my house. I cannot provide empirical scientific data, but I observe the layer of very fine, black dust increasing and decreasing in accordance with the wind direction and the amount of coal being hauled past my house. I have grave concerns about the impact of the fine (10micron) and very fine particulate (0.25micron) matter generated by the operations of the proponent. These have sources directly from coal being moved and stored within 400metres of my residence, as well as from the use of diesel engines and the wear of brake pads and clutches in the motors. There has been no assessment of the amounts or impacts of these types of substances in the residential area immediately surrounding the NRE no1 Colliery. The proponent has been very selective in locating dust detection and the level to which dust is detected and measured have been designed to maximise the likelihood of project receiving approval. It is my belief that the tarping of the trucks should be to a greater and a higher standard of wind and rain proof tarping system (such as those used for trucks carrying rain sensitive ores) -I have heard these tarping systems referred to as “100%ers”. The proponent causes coal to be hauled through a long standing residential area and that they should control the risks associated with that haulage to a very high standard. Experientially, I have children who suffer from asthma and I am concerned about the impact of the colliery operations on their short and long term health.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in 4 locations in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust. The comments about the 100%er truck covers are very interesting and will be investigated. New trucks compliant with the Euro 5 standard for emissions control are being purchased by NRE's trucking contractor. Euro 5 regulatory standard regulates emissions from all combustion engines with the goal to limit as much as possible the negative impact of road vehicles on

	the environment and health. The Regulation covers a wide range of pollutant emissions: carbon monoxide (CO), non-methane hydrocarbons and total hydrocarbons, nitrogen oxides (NO_x) and particulates (PM). It covers tailpipe emissions, evaporative emissions and crankcase emissions. It sets limits for emissions from diesel vehicles as follows •carbon monoxide: 500 mg/km; •particulates: 5 mg/km (80 % reduction of emissions in comparison to the Euro 4 standard); •nitrogen oxides (NO_x): 180 mg/km (20 % reduction of emissions in comparison to the Euro 4 standard); •combined emissions of hydrocarbons and nitrogen oxides: 230 mg/km.
Noise; as discussed above trucks and traffic connected with the use and development of the site generate the most significant noise impacts. There have been noises created by loading/earth moving equipment, which I have noticed, particularly when the ambient noise is greatly reduced. This includes "reversing beepers", diesel machinery and other machinery noise. This noise has become more significant and there has been a cumulative impact of these types of noises over time, leading to increased sensitivity to noises of this kind. I have found that my ability to tune them out has decreased. I anticipate that this issue will be ongoing and that the proponent owes all existing residents a duty of care to ensure that their health and wellbeing do not suffer as a result of their actions.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. These plans have submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carried out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
This response is made by me as a local resident and someone who has been impacted negatively by the activities of the proponent.	Noted. Comment directed to DP&I

SHULZ

COMMENT	RESPONSE
I am strongly opposed to any expansion of this mine. It will undermine drinking water catchments with no guarantee that these will not be impacted. Nearby, the Woronora Special Area, specifically the Waratah Rivulet, has been seriously impacted by undermining. The same is likely to happen here. Destruction of this water resource impacts not only this generation but every generation to come.	Noted. Comment directed to DP&I
Sensitive ecosystems occur in the area to be undermined, specifically Upland Swamps. These swamps are dependant on a water table being perched on an impermeable layer of sandstone. If this sandstone is cracked by undermining, the swamp may fail (i.e. drain). These swamps are not only beautiful, they are the filters for the pristine water that flows to the catchments and they house numerous threatened species, such as the red-crowned toadlet, ground parrot and eastern pygmy-possum.	Noted. Comment directed to DP&I
Furthermore, the entrance to this mine exists in a residential area. Coal dust is a serious health problem and I am concerned about the increasing levels in the atmosphere affecting my health and the health of my children. When we moved into this area, there were no stockpiles of coal waste outside the mine entrance. We had no inclination that this mine would be allowed to expand in the fashion it is intending.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in 4 locations in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust. The comments about the 100%er truck covers are very interesting and will be investigated.
Finally, truck movements are another serious concern. The residential area this mine occurs in is entirely unsuited to accommodate the increased truck movements. H	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval including no increase to trucking beyond what was approved.. NRE will comply with Condition 25 of Schedule 2 of the Preliminary Works Pt3A approval with regard to trucking of coal to the Coal Terminal.

SHAND

COMMENT	RESPONSE
I object to the increase in extraction as the impact on the surrounding environment and community will be disastrous in terms of stock piling and transport , major accidents with coal trucks are already a regular occurrence on memorial drive , also as any longwall mining under our water catchment area is a disaster waiting to happen . I would rather see our water reserves protected not lost through the greedy actions of foreign mining companies	This proposal does not modify the currently approved 1 Mtpa limit imposed as part of the original Preliminary Works Pt3A approval. NRE Coking Coal Ltd is a publically listed company on the ASX. Its primary ownership is Indian, however, NRE is only one of three Australian listed companies with majority foreign ownership operating in the Southern Coalfields either in or in close proximity to the Special Area

SHEPPARD

(Form letter)

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP 10_0046. The extent and impacts of the proposed additions to the Preliminary Works Project, reflected in the increased coal volumes and the use of documentation from the (withdrawn) expansion project, make it clear that this proposal cannot sensibly be regarded as simply a modification to the Preliminary Works project. Gujarat NRE (GNRE) is attempting to incrementally establish their expansion project.	The information in this project has been drawn from both the LW4 SMP and the current Underground Expansion Project Pt3A that is currently responding to issues from adequacy review. This modification and approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
Given its errors and omissions, the Environmental Assessment Report (EA) for the current proposal is unacceptably misleading and confusing. That it has been released to the public reflects poorly on the Department of Planning and Infrastructure (DoPI). Furthermore, the DoPI failed to identify and act upon a number of non-compliance matters and it was left to community members to point out the failures in a series of complaints. While the DoPI clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. The EA and its associated documentation contain a large amount of material for which the general public were given only three weeks to respond. Requests for an extension to the public comment period were refused.	Noted. Comment directed to DP&I
I also strongly object to the proposal for the additional reasons given below. Longwall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been recognised by the Planning Assessment Commission (PAC) as having "highly significant values" making it "worthy of protection" (Bulli Seam Operations report, 2010). Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects. These reports recognise the importance of swamps both as water stores and filters, and as biodiversity pools of very high conservation value. I note with alarm that the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reports serious impacts on swamps 12, 15b and 16. The evidence that swamps cannot be safely undermined is overwhelming. Remediation of swamps is not possible and there are no examples of 'self-healing'.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. CCHS3 may still be impacted by subsidence. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. LW5 to the start line of LW4 will avoid direct undermining of 3/4 of CCHS3, and CCHS4 will be not directly undermined but will be within the 20mm subsidence zone. Prior experience indicates that a swamp needs to be directly undermined to have a potential to be cracked, thus there is a reduced potential for CCHS3 to be cracked and a low likelihood that CCHS4 will be cracked by the amended LW5 extraction Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows.. "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C." These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Swamps CRHS1, CCHS3 and CCHS4 have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. Recommendation 18 of the Metropolitan Coal PAC report includes the following; "swamps of special significance will be protected from negative environmental consequences". Aboriginal site 52-3-0322 is located on the edge of CRHS1 and Aboriginal site 52-3-0320 is on the edge of CCHS3. CCHS3 and CCHS4 overly LW5 and CRHS1 is within the subsidence zone of LW5. Approving Longwalls 4 and 5 would approve the loss of these swamps.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat.

	We understand that this is currently being addressed by the DSEWPaC. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.
Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5. Low order streams play a vital role in connecting upland swamps to higher order streams.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Subsidence, increased strata permeability and strata depressurisation risks redirection and loss of surface and ground water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. Recent work by Professor Philip Pells (Thirlemere Lakes report and addenda, and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be counted on to protect surface and near surface waters from depressurisation and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction. The severe damage to two kilometres of the Waratah Rivulet provides another example of modelling and prediction failure. The widths of the longwalls that caused the catastrophic damage to the Waratah Rivulet were much the same as the width of Longwalls 4 and 5. Compounding this uncertainty, there appears to be little precedent for multi-seam mining, for which additional subsidence factors of up to 80% have been suggested. Such risks and uncertainties are unacceptable in relation to our water supplies and the need for biodiversity conservation.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The Gujarat EA is misleading in several respects, for instance it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. This report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence of LW4. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. Appendix J does not seem to contain monitoring and management plans referred to in the EA. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area for which SCA consent is required, it is not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels. Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	Noted. Comment directed to DP&I

The location of the Gujarat NRE No. 1 Colliery in a residential area is unacceptable. Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include; a coal stockpile located just 200m from people's homes; a resizing (crushing) facility; an enormous ventilation fan that blasts air from the underground mine directly at homes in West Corrimal; and, trucking of coal past people's homes to Port Kembla Coal Terminal.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; 2) Commencement of NRE Coal Distribution auditing program; 3) Upgrading all the trucks with dash board warning light to ensure covering of the load; 4) More signage to ensure covering of the load; 5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; 6) Dedicated water pipe line for truck washing facility; 7) Modification of existing truck washing facility to provide improved cleaning ; 8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; 9) All the above measures will incorporated into NRE's Traffic Management Plan.
Airborne particulates from coal mines are increasingly associated with serious respiratory and other health complaints. In particular, particulates smaller than 2.5 micrometres are known to damage health (NSW Environmental compliance and performance report: Management of dust from coal mine, Dept of Environment, Climate change and water NSW in collaboration with NSW Dept of Planning and Industry and Investment NSW, 2010, p3). This Modification proposal does not even measure or model small particulates. The only air quality monitoring data is from an air quality monitor located in Wollongong 6 kms away. The exposure to particulates of 2.5 microns and less may extend for kilometres and could reasonably be expected to impact on at least 1000 to 2000 homes in the area. It is unacceptable for DoPI and the Government of NSW allow this kind of exposure.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
Residents are also exposed to noise pollution from colliery operations and trucking. Countless complaints about noise remain unresolved.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Greenhouse Gas Emissions The coal seams of the Illawarra are known to be gassy and typically release 10 or more cubic metres of gas for each tonne of extracted coal. The composition of the gas varies from being primarily methane to primarily carbon dioxide. Assuming all of the fugitive gas is carbon dioxide, a considerably weaker greenhouse gas than methane, the coal to be extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes of fugitive carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project	The measured in-situ volume of gas in the area of LW4 and 5 and MG 6, 7 & 8 is round 3 cubic metres per tonne in-situ.
GNRE has demonstrated that it does not have the capacity and resources to operate this colliery. Since the Preliminary Works approval GNRE have proved that they are not capable of self regulation. They have failed to even comply with basic conditions imposed on them by DoPI and the PAC, including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April, 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent

alternative was months overdue. The EAs account of the so called consultation process is highly misleading.	issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. In respect of this, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. NRE is also committed to ensuring that going forward approvals and environmental compliance are focused on achieving best practice. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments to reduce lead time for these equipments without having an approval for their Noise Management plans from DP&I. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will developed to implement the audit recommendations.
It appears that extraction of LW4 (a component of this Modification application and an activity that is already virtually completed as a result of another very controversial approval process) has been problematic, due to longwall misalignment and that this error has resulted in the contamination of all the extracted coal. Not only is the subsidence much greater than predicted, the extracted coal has little value.	This issue has been discussed with IRRM representatives, the CCC and the general community at a recent Community Information Day on 23 August 2012. All these individuals and groups were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.
GNRE does not appear to have the resources, or the will to bring the antiquated infrastructure at No. 1 Colliery up to modern standards. Irrespective of the drawbacks or merits of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery.	• Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies.
I recognise that jobs and royalty revenues may be lost with the rejection of this entirely unacceptable proposal. (Although, I note that this modification cuts jobs from the Preliminary works commitment by about 100 jobs or a third of the No.1 Colliery workforce.) However, the broader community interest and inter-generational considerations are of greater significance. The number of jobs at stake is small relative to the regional work force and likewise the royalty revenues are very small relative to annual State and Federal incomes. The value of the natural assets that would be put in harm's way by this proposal cannot be sensibly quantified; they are priceless.	Employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements: 1) Operational viability dictated by coal prices and operating costs 2) Gaining approvals to allow ongoing proposed operations in a timely manner Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occur or upgrades of equipment take place. Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95%; \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million; about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution.

SKATES (Form letter)

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP 10_0046. The extent and impacts of the proposed additions to the Preliminary Works Project, reflected in the increased coal volumes and the use of documentation from the (withdrawn) expansion project, make it clear that this proposal cannot sensibly be regarded as simply a modification to the Preliminary Works project. Gujarat NRE (GNRE) is attempting to incrementally establish their expansion project.	The information in this project has been drawn from both the LW4 SMP and the current Underground Expansion Project Pt3A that is currently responding to issues from adequacy review. This modification and approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
Given its errors and omissions, the Environmental Assessment Report (EA) for the current proposal is unacceptably misleading and confusing. That it has been released to the public reflects poorly on the Department of Planning and Infrastructure (DoPI). Furthermore, the DoPI failed to identify and act upon a number of non-compliance matters and it was left to community members to point out the failures in a series of complaints. While the DoPI clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. The EA and its associated documentation contain a large amount of material for which the general public were given only three weeks to respond. Requests for an extension to the public comment period were refused.	Noted. Comment directed to DP&I
I also strongly object to the proposal for the additional reasons given below. Longwall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply. The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been recognised by the Planning Assessment Commission (PAC) as having "highly significant values" making it "worthy of protection" (Bulli Seam Operations report, 2010). Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects. These reports recognise the importance of swamps both as water stores and filters, and as biodiversity pools of very high conservation value. I note with alarm that the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reports serious impacts on swamps 12, 15b and 16. The evidence that swamps cannot be safely undermined is overwhelming. Remediation of swamps is not possible and there are no examples of 'self-healing'.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. CCHS3 may still be impacted by subsidence. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. LW5 to the start line of LW4 will avoid direct undermining of 3/4 of CCHS3, and CCHS4 will be not directly undermined but will be within the 20mm subsidence zone. Prior experience indicates that a swamp needs to be directly undermined to have a potential to be cracked, thus there is a reduced potential for CCHS3 to be cracked and a low likelihood that CCHS4 will be cracked by the amended LW5 extraction. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows.. "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C." These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Swamps CRHS1, CCHS3 and CCHS4 have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. Recommendation 18 of the Metropolitan Coal PAC report includes the following; "swamps of special significance will be protected from negative environmental consequences". Aboriginal site 52-3-0322 is located on the edge of CRHS1 and Aboriginal site 52-3-0320 is on the edge of CCHS3. CCHS3 and CCHS4 overly LW5 and CRHS1 is within the subsidence zone of LW5. Approving Longwalls 4 and 5 would approve the loss of these swamps.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat.

	We understand that this is currently being addressed by the DSEWPaC. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.
Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5. Low order streams play a vital role in connecting upland swamps to higher order streams.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Subsidence, increased strata permeability and strata depressurisation risks redirection and loss of surface and ground water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. Recent work by Professor Philip Pells (Thirlemere Lakes report and addenda, and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be counted on to protect surface and near surface waters from depressurisation and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
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The Gujarat EA is misleading in several respects, for instance it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. This report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence of LW4. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. Appendix J does not seem to contain monitoring and management plans referred to in the EA. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area for which SCA consent is required, it is not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels. Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	Noted. Comment directed to DP&I

The location of the Gujarat NRE No. 1 Colliery in a residential area is unacceptable. Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include; a coal stockpile located just 200m from people's homes; a resizing (crushing) facility; an enormous ventilation fan that blasts air from the underground mine directly at homes in West Corrimal; and, trucking of coal past people's homes to Port Kembla Coal Terminal.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; 2) Commencement of NRE Coal Distribution auditing program; 3) Upgrading all the trucks with dash board warning light to ensure covering of the load; 4) More signage to ensure covering of the load; 5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; 6) Dedicated water pipe line for truck washing facility; 7) Modification of existing truck washing facility to provide improved cleaning ; 8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; 9) All the above measures will incorporated into NRE's Traffic Management Plan.
Airborne particulates from coal mines are increasingly associated with serious respiratory and other health complaints. In particular, particulates smaller than 2.5 micrometres are known to damage health (NSW Environmental compliance and performance report: Management of dust from coal mine, Dept of Environment, Climate change and water NSW in collaboration with NSW Dept of Planning and Industry and Investment NSW, 2010, p3). This Modification proposal does not even measure or model small particulates. The only air quality monitoring data is from an air quality monitor located in Wollongong 6 kms away. The exposure to particulates of 2.5 microns and less may extend for kilometres and could reasonably be expected to impact on at least 1000 to 2000 homes in the area. It is unacceptable for DoPI and the Government of NSW allow this kind of exposure.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
Residents are also exposed to noise pollution from colliery operations and trucking. Countless complaints about noise remain unresolved.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Greenhouse Gas Emissions The coal seams of the Illawarra are known to be gassy and typically release 10 or more cubic metres of gas for each tonne of extracted coal. The composition of the gas varies from being primarily methane to primarily carbon dioxide. Assuming all of the fugitive gas is carbon dioxide, a considerably weaker greenhouse gas than methane, the coal to be extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes of fugitive carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project	The measured in-situ volume of gas in the area of LW4 and 5 and MG 6, 7 & 8 is round 3 cubic metres per tonne in-situ.
GNRE has demonstrated that it does not have the capacity and resources to operate this colliery. Since the Preliminary Works approval GNRE have proved that they are not capable of self regulation. They have failed to even comply with basic conditions imposed on them by DoPI and the PAC, including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April, 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent

alternative was months overdue. The EAs account of the so called consultation process is highly misleading.	issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. In respect of this, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. NRE is also committed to ensuring that going forward approvals and environmental compliance are focused on achieving best practice. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments to reduce lead time for these equipments without having an approval for their Noise Management plans from DP&I. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will developed to implement the audit recommendations.
It appears that extraction of LW4 (a component of this Modification application and an activity that is already virtually completed as a result of another very controversial approval process) has been problematic, due to longwall misalignment and that this error has resulted in the contamination of all the extracted coal. Not only is the subsidence much greater than predicted, the extracted coal has little value.	This issue has been discussed with IRRM representatives, the CCC and the general community at a recent Community Information Day on 23 August 2012. All these individuals and groups were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.
GNRE does not appear to have the resources, or the will to bring the antiquated infrastructure at No. 1 Colliery up to modern standards. Irrespective of the drawbacks or merits of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery.	• Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies.
I recognise that jobs and royalty revenues may be lost with the rejection of this entirely unacceptable proposal. (Although, I note that this modification cuts jobs from the Preliminary works commitment by about 100 jobs or a third of the No.1 Colliery workforce.) However, the broader community interest and inter-generational considerations are of greater significance. The number of jobs at stake is small relative to the regional work force and likewise the royalty revenues are very small relative to annual State and Federal incomes. The value of the natural assets that would be put in harm's way by this proposal cannot be sensibly quantified; they are priceless.	Employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements: 1) Operational viability dictated by coal prices and operating costs 2) Gaining approvals to allow ongoing proposed operations in a timely manner Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occur or upgrades of equipment take place. Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95%; \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million; about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution.

TOWNSLEY

COMMENT	RESPONSE
2. We have already seeing significant damage to the Warratah rivulet that feeds the Woronora dam, as a result of long wall mining activities by Metropolitan mine in Helensburgh. This damage, which is adversely affecting catchment water supply, has so far proved impossible to rectify, despite 18 months of intensive efforts and promises.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
3. Much of the expansion will occur under Sydney Water Catchment special areas putting our drinking water supply under further risk.	Noted. Comment directed to DP&I
4. Multi seam mining has never occurred in this fragile area, and this expansion adds a third coal seam to be mined with unknown/ unpredictable subsidence outcomes.	These issues are addressed by SCT 2012 in Attachment A of this Response Report. Until LW4, to the best of NRE's knowledge, it would appear that triple seam mining has not occurred in the Southern Coalfields previously. The fact that something has not been done before doesn't necessarily mean it is too risky. Multi-seam mining is a common practice in Europe, particularly the UK. Significant effort, time and cost have been spent on monitoring over the last 3 years in the area proposed to be mined. Further work continues to further refine and improve both data collection and interpretation. This information contained in the SMP plans in Appendix J contains all the monitoring and mitigation measures that were proposed and undertaken for LW4. These measures will be extended and improved for LW5 as part of an Extraction Plan & SMP plan application
5. The same area is also covered by Petroleum PELs for coal seam gas mining, an equally (or more) geologically invasive and risky gas methane extraction technology. No independent study has been concluded into the effects of 100+ production CSG mining sites on the areas ecology, geology or aquifers.	This application is not related to coal seam gas recovery, nor does NRE hold any Petroleum Extraction License or intend to extract Coal Seam Gas
6. The combined effects of production CSG and coal mining to the area are not understood and need to be modelled at current levels before considering further expansion.	This application is not related to coal seam gas recovery, nor does NRE hold any Petroleum Extraction License or intend to extract Coal Seam Gas
7. GNRE (and Department Resources and Energy) are having the validity of the longwall mining approval challenged in the Land and Environment Court. The outcome of this challenge should be awaited.	Noted. Comment directed to DP&I
8. Currently the only method for coal transport from site is by truck. Roads in the area are already overloaded with coal trucks for the various coal mines in the area and this should not be added to without prior to a program for commensurate road infrastructure improvement.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. NRE will comply with Condition 25 of Schedule 2 of the Preliminary Works Pt3A approval with regard to trucking of coal to the Coal Terminal.. To the best of NRE's knowledge, no other coal trucks use Bellambi Lane as a result of the distributor extension

TURNER

COMMENT	RESPONSE
At a public rally before the last election the Premier of NSW stated that the next Liberal and National Government would "... ensure mining cannot occur in any water catchment area and that any mining leases and exploration permits will reflect that common sense. No ifs, no buts, a guarantee."	Noted. Comment directed to DP&I
On December 1, 2011 the Premier told 2GB's Alan Jones: "I don't intend to allow — particularly after the drought we went through over a decade — mining or any other activity to threaten water resources."	Noted. Comment directed to DP&I
Note: As advised in the associated cover letter, repeated requests for an extension to the submission deadline have been refused. Following advice from DoPI staff this submission will be followed by a final version. This submission has not been proof read.	Noted. Comment directed to DP&I
This submission requests rejection of proposal MP 10_0046 Modification 1 for the following reasons: The now well known impacts of longwall mining on the rivers, streams, groundwaters, swamps and other ecosystems that underpin the Special Area catchments, which include the following: Y Loss of surface flows and water levels. Complete drying of pools and desiccation of swamps. Connectivity between pools lost or diminished with surface water being lost to the subsurface and groundwater flow. Notable 'case study' examples include the Cataract River, Georges River, Waratah Rivulet, Native Dog Creek and Wongawilli Creek.	Noted. Comment directed to DP&I
Y Redirections of flows away from the local catchment area as a result of increased fracturing, permeability and porosity. The SCA believes this has occurred at the Waratah Rivulet.	Noted. Comment directed to DP&I
Y Increased frequency, duration and magnitude of aquatic and wetland habitat drying. Loss of in-stream and wetland habitats. Risks to endangered species.	Noted. These are all potential outcomes of subsidence impact that require management
Y Drainage of near surface aquifers as a result of seam dewatering and propagating strata depressurization.	Noted. Comment directed to DP&I
Y Loss of water quality as a result of fracturing. Increased iron oxides, manganese salts, metal sulphides and electrical conductivity. Lower dissolved oxygen.	Noted. Comment directed to DP&I
Y Increased sedimentation in stored waters such as the Woronora Reservoir.	Noted. Comment directed to DP&I
Y Simplification of remaining in-stream habitat as a result of the growth of iron-oxidising bacteria evident as a rusty-coloured mass in the water.	Noted. These are all potential outcomes of subsidence impact that require management
Y Release of gas into the water column and out into the atmosphere. Oxidation of gas may lead to the death of riparian vegetation and in-stream fauna.	Noted. These are all potential outcomes of subsidence impact that require management
Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the Planning Assessment Commission (PAC) reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects.	Noted. Comment directed to DP&I
The listing of the Coastal Upland Swamps as Endangered Ecological Communities under the NSW Threatened Species Conservation Act in March 2012.	Noted. Comment directed to DP&I
The imminent listing of the Coastal Upland Swamps under the Commonwealth Environmental Protection and Biodiversity Conservation Act. This was anticipated in the NSW Planning Assessment Commission (PAC) report on the Bulli Seam Operations (BSO) proposal.	Noted. Comment directed to DP&I
Three swamps identified as having Special Significance Status are within the subsidence impact zone defined by the 35 degree angle of draw accepted as representative for the Southern Coalfield. This would correspond to a subsidence impact extending out some 200 metres from Longwalls 4 and 5. Swamps CCHS3 and CCHS4 are immediately above LW5 and CRHS1 is 75 metres from LW5. The swamps harbour biodiversity of international standing and are thin aquifers vulnerable to subsidence. Swamps act as water stores and filters.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Detailed assessment of upland swamps has identified that CCHS3 is not considered to be of 'special significance' based on criteria outlined within OEH (2012). In addition groundwater monitoring has indicated that this upland swamp is unlikely to be reliant on perched ephemeral groundwater, and thus impacts to CCHS3 are considered unlikely to occur. Thus it is deemed that this upland swamp is at negligible risk of negative environmental consequences as a result of extraction of coal from LW4 and 5. Detailed impacts assessment undertaken as a part of Gujarat's Major Expansion Project has assessed the risk of negative environmental consequences to CCHS4. Based on initial risk assessment, comparative analysis, assessment of groundwater, flow accumulation modelling and assessment of risk of fracturing resulting from strains concluded that CCHS4 was at a low risk of negative environmental consequences for extraction of all longwalls associated with the Major Expansion Project. Based on the location of CCHS4 outside of the predicted limits of subsidence for LW5 we conclude that CCHS3 and CCHS4 are at negligible risk of negative environmental consequences as a result of extraction of coal from LW4. In addition, the relocation of the start position for LW5 will further reduce the potential for impacts. With regard to international standing of upland swamps and associated biodiversity, application of IUCN criteria to the study area is not relevant, nor based in Australian biodiversity legislation. These issues have been addressed by SCT 2012 in Attachment A to this Response Report.
The evidence that swamps cannot be safely undermined is overwhelming, with the most recent casualties being swamps 12, 15b and 16 in Area 3A of the Dendrobium Colliery. The PAC report on the BSO proposal gives a number of examples of damaged or destroyed swamps and the swamps of Area 3A were identified in the BSO report as key indicators of vulnerability to subsidence. It is no longer acceptable to justify mining under or near the fragile Upland Swamps on the basis of further risk assessment.	Reductions in groundwater at a number of piezometers in proximity to Swamps 12 and 15b have been recorded in Dendrobium Area 3A, as reported in the end of panel report. To date, no impacts to the vegetation composition within these upland swamps has been recorded. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows: "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to

	fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7. In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C."
The swamps not damaged or lost as a result of subsidence impacts will be vulnerable to the drawdown/depressurisation effects that Professor Philip Pells has shown to be a contributing factor to the drying of the Thirlmere Lakes. Pells has shown that the Bald Hill claystone cannot be counted upon to protect surface and near surface waters from drawdown impacts.	It is NRE's understanding that no definitive link to mining has yet been determined in the case of the Thirlmere Lakes. Studies by both government agencies and a working panel appointed by the government have not established a link between mining at Tahmoor Colliery and water level changes in Thirlmere Lakes. Previous monitoring of vibrating wire piezometers in the stratigraphic profile has established that if the Bald Hill Claystone is not intersected by hydraulically connected vertical subsidence related fracturing it impedes the hydraulic connection between the overlying Hawkesbury sandstone and swamp aquifers to the underlying Bulgo Sandstone and deeper aquifers. These issues have been addressed by SCT 2012 in Attachment A to this Response Report.
The Subsidence Monitoring Plan for Longwalls 4 and 5 (Appendix J) states that the NSW Division of Resources and Energy (DRE) requires performance criteria with negligible environmental consequences for the swamps CRHS1, CCHS3 and CCHS4, including; Ynegligible change in the size of the swamp; Ynegligible change in the functioning of the swamp; Y negligible change to the composition or distribution of species within the swamp; YNegligible drainage of water from the swamp, or redistribution of water within the swamp. The PAC specifies negligible to mean "small and unimportant so as not to be worth considering".	Noted. Comment directed to DP&I
A significant section of Cataract Creek is within the subsidence impact zone. Cataract Creek has been identified by the PAC as having Special Significance Status and as being worthy of protection.	Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. Biosis is currently undertaking monitoring of Cataract Creek for threatened frog species. To date, no threatened frog species have been recorded within Cataract Creek. On the basis that the 4th order reach of Cataract Creek downstream of the freeway is significant, the development of a stream management plan, with setting of appropriate triggers and adherence to these triggers to avoid the cracking of Cataract Creek will be required through an adaptive management process. These issues have also been addressed by SCT 2012 in Attachment A to this Response Report.
A second order stream forms over LW5 and a first order stream that appears to emerge from CCHS3 commences over LW5. Low order streams are essential catchment components that connect swamps to higher order streams.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Upland swamp CCHS3 is located above the upper headwaters of two tributaries of Cataract Creek. The drainage line below this swamp is poorly defined and does not contain flowing water. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek These issues are addressed by SCT 2012 in Attachment A to this Response Report.
The Subsidence Monitoring Plan for Longwalls 4 and 5 (Appendix J) states that the NSW Division of Resources and Energy (DRE) requires performance criteria with negligible environmental consequences including; Ynegligible diversion of flows or changes in the natural drainage behaviour of pools; Ynegligible gas releases and iron staining; and Y Negligible increase in water turbidity.	Noted. Comment directed to DP&I

In its assessment of the BSO proposal the PAC specifies negligible to mean "small and unimportant so as not to be worth considering" and further states: "The Panel therefore recommends that the definition of "negligible impact" for rivers and streams should be: "no diversion of flows, no change in the natural drainage behaviour of pools, minimal iron staining, minimal gas releases and continued maintenance of water quality at its pre-mining standard".	
The Gujarat EA is misleading. For instance it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. The Geoterra report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence of LW4. There is no mention of the impact of LW4 on swamps. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area, not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The current Gujarat proposal seeks to exploit the now repealed but nonetheless persistent 'modification' provisions of Part 3A legislation to establish an NRE 1 expansion project in a piecemeal manner. This strategy circumvents cumulative impact considerations and side-steps the greater scrutiny that an expansion project application would attract - scrutiny which would occur within a changed legislative landscape.	While Pt3A of the Environmental Planning and Assessment Act 1979 has been repealed the Pt3A provisions continue to apply to approved Pt3A projects including allowing them to be modified. However, this approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.

WILLIAMS
(Form letter)

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP 10_0046. The extent and impacts of the proposed additions to the Preliminary Works Project, reflected in the increased coal volumes and the use of documentation from the (withdrawn) expansion project, make it clear that this proposal cannot sensibly be regarded as simply a modification to the Preliminary Works project. Gujarat NRE (GNRE) is attempting to incrementally establish their expansion project.	The information in this project has been drawn from both the LW4 SMP and the current Underground Expansion Project Pt3A that is currently responding to issues from adequacy review. This modification and approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
Given its errors and omissions, the Environmental Assessment Report (EA) for the current proposal is unacceptably misleading and confusing. That it has been released to the public reflects poorly on the Department of Planning and Infrastructure (DoPI). Furthermore, the DoPI failed to identify and act upon a number of non-compliance matters and it was left to community members to point out the failures in a series of complaints. While the DoPI clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. The EA and its associated documentation contain a large amount of material for which the general public were given only three weeks to respond. Requests for an extension to the public comment period were refused.	Noted. Comment directed to DP&I
I also strongly object to the proposal for the additional reasons given below. Longwall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply. The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been recognised by the Planning Assessment Commission (PAC) as having "highly significant values" making it "worthy of protection" (Bulli Seam Operations report, 2010). Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects. These reports recognise the importance of swamps both as water stores and filters, and as biodiversity pools of very high conservation value. I note with alarm that the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reports serious impacts on swamps 12, 15b and 16. The evidence that swamps cannot be safely undermined is overwhelming. Remediation of swamps is not possible and there are no examples of 'self-healing'.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. CCHS3 may still be impacted by subsidence. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. LW5 to the start line of LW4 will avoid direct undermining of 3/4 of CCHS3, and CCHS4 will be not directly undermined but will be within the 20mm subsidence zone. Prior experience indicates that a swamp needs to be directly undermined to have a potential to be cracked, thus there is a reduced potential for CCHS3 to be cracked and a low likelihood that CCHS4 will be cracked by the amended LW5 extraction. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows.. "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C." These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Swamps CRHS1, CCHS3 and CCHS4 have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. Recommendation 18 of the Metropolitan Coal PAC report includes the following; "swamps of special significance will be protected from negative environmental consequences". Aboriginal site 52-3-0322 is located on the edge of CRHS1 and Aboriginal site 52-3-0320 is on the edge of CCHS3. CCHS3 and CCHS4 overly LW5 and CRHS1 is within the subsidence zone of LW5. Approving Longwalls 4 and 5 would approve the loss of these swamps.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat.

	We understand that this is currently being addressed by the DSEWPaC. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.
Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5. Low order streams play a vital role in connecting upland swamps to higher order streams.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Subsidence, increased strata permeability and strata depressurisation risks redirection and loss of surface and ground water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. Recent work by Professor Philip Pells (Thirlemere Lakes report and addenda, and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be counted on to protect surface and near surface waters from depressurisation and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction. The severe damage to two kilometres of the Waratah Rivulet provides another example of modelling and prediction failure. The widths of the longwalls that caused the catastrophic damage to the Waratah Rivulet were much the same as the width of Longwalls 4 and 5. Compounding this uncertainty, there appears to be little precedent for multi-seam mining, for which additional subsidence factors of up to 80% have been suggested. Such risks and uncertainties are unacceptable in relation to our water supplies and the need for biodiversity conservation.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The Gujarat EA is misleading in several respects, for instance it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. This report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence of LW4. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. Appendix J does not seem to contain monitoring and management plans referred to in the EA. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area for which SCA consent is required, it is not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels. Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	Noted. Comment directed to DP&I

The location of the Gujarat NRE No. 1 Colliery in a residential area is unacceptable. Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include; a coal stockpile located just 200m from people's homes; a resizing (crushing) facility; an enormous ventilation fan that blasts air from the underground mine directly at homes in West Corrimal; and, trucking of coal past people's homes to Port Kembla Coal Terminal.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; 2) Commencement of NRE Coal Distribution auditing program; 3) Upgrading all the trucks with dash board warning light to ensure covering of the load; 4) More signage to ensure covering of the load; 5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; 6) Dedicated water pipe line for truck washing facility; 7) Modification of existing truck washing facility to provide improved cleaning ; 8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; 9) All the above measures will incorporated into NRE's Traffic Management Plan.
Airborne particulates from coal mines are increasingly associated with serious respiratory and other health complaints. In particular, particulates smaller than 2.5 micrometres are known to damage health (NSW Environmental compliance and performance report: Management of dust from coal mine, Dept of Environment, Climate change and water NSW in collaboration with NSW Dept of Planning and Industry and Investment NSW, 2010, p3). This Modification proposal does not even measure or model small particulates. The only air quality monitoring data is from an air quality monitor located in Wollongong 6 kms away. The exposure to particulates of 2.5 microns and less may extend for kilometres and could reasonably be expected to impact on at least 1000 to 2000 homes in the area. It is unacceptable for DoPI and the Government of NSW allow this kind of exposure.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
Residents are also exposed to noise pollution from colliery operations and trucking. Countless complaints about noise remain unresolved.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Greenhouse Gas Emissions The coal seams of the Illawarra are known to be gassy and typically release 10 or more cubic metres of gas for each tonne of extracted coal. The composition of the gas varies from being primarily methane to primarily carbon dioxide. Assuming all of the fugitive gas is carbon dioxide, a considerably weaker greenhouse gas than methane, the coal to be extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes of fugitive carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project	The measured in-situ volume of gas in the area of LW4 and 5 and MG 6, 7 & 8 is round 3 cubic metres per tonne in-situ.
GNRE has demonstrated that it does not have the capacity and resources to operate this colliery. Since the Preliminary Works approval GNRE have proved that they are not capable of self regulation. They have failed to even comply with basic conditions imposed on them by DoPI and the PAC, including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April, 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent

alternative was months overdue. The EAs account of the so called consultation process is highly misleading.	issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. In respect of this, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. NRE is also committed to ensuring that going forward approvals and environmental compliance are focused on achieving best practice. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments to reduce lead time for these equipments without having an approval for their Noise Management plans from DP&I. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will developed to implement the audit recommendations.
It appears that extraction of LW4 (a component of this Modification application and an activity that is already virtually completed as a result of another very controversial approval process) has been problematic, due to longwall misalignment and that this error has resulted in the contamination of all the extracted coal. Not only is the subsidence much greater than predicted, the extracted coal has little value.	This issue has been discussed with IRRM representatives, the CCC and the general community at a recent Community Information Day on 23 August 2012. All these individuals and groups were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.
GNRE does not appear to have the resources, or the will to bring the antiquated infrastructure at No. 1 Colliery up to modern standards. Irrespective of the drawbacks or merits of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery.	• Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies.
I recognise that jobs and royalty revenues may be lost with the rejection of this entirely unacceptable proposal. (Although, I note that this modification cuts jobs from the Preliminary works commitment by about 100 jobs or a third of the No.1 Colliery workforce.) However, the broader community interest and inter-generational considerations are of greater significance. The number of jobs at stake is small relative to the regional work force and likewise the royalty revenues are very small relative to annual State and Federal incomes. The value of the natural assets that would be put in harm's way by this proposal cannot be sensibly quantified; they are priceless.	Employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements: 1) Operational viability dictated by coal prices and operating costs 2) Gaining approvals to allow ongoing proposed operations in a timely manner Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occur or upgrades of equipment take place. Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95%; \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million; about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution.

YOUNG

COMMENT	RESPONSE
Because this is a limited proposal that has been subject to revision in response to agency concerns, and because the subsidence expected will be lower than in most parts of the Southern Coalfield, I have only a few comments to make.	Noted. Comment directed to DP&I
Only one swamp CCHS3 (3.5 ha) will be undermined directly and the EA argues that LW5 has been reduced to minimise impact on this swamp. Another larger swamp CRHS1 (11.4 ha) lies immediately south of the longwalls and CCHS4 (1.8 ha) lies on the western margin. All these are recorded as having 'special significance status' under DECCW 2011 draft guidelines on upland swamps.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Detailed assessment of upland swamps has identified that CCHS3 is not considered to be of 'special significance' based on criteria outlined within OEH (2012). In addition groundwater monitoring has indicated that this upland swamp is unlikely to be reliant on perched ephemeral groundwater, and thus impacts to CCHS3 are considered unlikely to occur. Thus it is deemed that this upland swamp is at negligible risk of negative environmental consequences as a result of extraction of coal from LW4 and 5. Detailed impacts assessment undertaken as a part of Gujarat's Major Expansion Project has assessed the risk of negative environmental consequences to CCHS4. Based on initial risk assessment, comparative analysis, assessment of groundwater, flow accumulation modelling and assessment of risk of fracturing resulting from strains concluded that CCHS4 was at a low risk of negative environmental consequences for extraction of all longwalls associated with the Major Expansion Project. Based on the location of CCHS4 outside of the predicted limits of subsidence for LW5 we conclude that CCHS3 and CCHS4 are at negligible risk of negative environmental consequences as a result of extraction of coal from LW4.
Appendix I comments that tensile and compressive strains will be insufficient to cause bedrock cracking in CRHS1 and the review in Appendix E does not dispute this. Certainly subsidence estimates (total, tilt, strain etc) are lower than in many other parts of the Southern Coalfield.	Noted. Comment directed to DP&I
Given that there are 6 piezometers for which monitoring is available since late 2009, some detail of those monitoring results and the locations of the piezometers would have been helpful. The EA comments briefly that levels fluctuate between 'no standing water after extended dry periods to approximately 1.8m below ground surface'. This suggests to me that they are in large and already damaged swamps, as usually the water table would be close to the surface and in small swamps, sediment depth is much shallower than 1.8m. The only locations I can find are in Appendix E as a set of grid references. I accept that the likelihood of damage to the largest swamps CRHS1 is slight. All 3 swamps should be monitored, and a control swamp, to allow the impacts of the mining to be established and to provide data to inform future assessment of possible impacts in Wonga West.	The swamp water levels naturally range from dry to "full" depending on what the rainfall recharge regime is at the time of monitoring, and the swamp water levels do not always stay "full" in unmined / subsided areas. All swamps relevant to LW4 / LW5 extraction have been and will continue to be monitored for water levels and water quality, and control swamps outside of the potential subsidence area are being monitored for the same parameters Upland swamps CCHS3 is shallow in nature, with little peat development or organic material. Soils are shallow. CRHS1 and CCHS4 have deeper soils with increased organic content, although soils are predominantly mineral sands.
Timing The Application covers mining operations that are current. This may be partly a consequence of changing regulatory regime, but if adaptive management is to be implemented in the Southern Coalfield, these 'last minute' applications must cease. There should be an adequate lead time for proposals to be considered, and for monitoring results from previous areas to be assessed, before applications for new areas of mining are due to start. It is not acceptable for the approval process to be influenced by the brinksmanship that characterises this and some other proposals in the Southern Coalfield.	This approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.

NAME WITHHELD 1
(Form letter)

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP 10_0046. The extent and impacts of the proposed additions to the Preliminary Works Project, reflected in the increased coal volumes and the use of documentation from the (withdrawn) expansion project, make it clear that this proposal cannot sensibly be regarded as simply a modification to the Preliminary Works project. Gujarat NRE (GNRE) is attempting to incrementally establish their expansion project.	The information in this project has been drawn from both the LW4 SMP and the current Underground Expansion Project Pt3A that is currently responding to issues from adequacy review. This modification and approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
Given its errors and omissions, the Environmental Assessment Report (EA) for the current proposal is unacceptably misleading and confusing. That it has been released to the public reflects poorly on the Department of Planning and Infrastructure (DoPI). Furthermore, the DoPI failed to identify and act upon a number of non-compliance matters and it was left to community members to point out the failures in a series of complaints. While the DoPI clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. The EA and its associated documentation contain a large amount of material for which the general public were given only three weeks to respond. Requests for an extension to the public comment period were refused.	Noted. Comment directed to DP&I
I also strongly object to the proposal for the additional reasons given below. Longwall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply. The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been recognised by the Planning Assessment Commission (PAC) as having "highly significant values" making it "worthy of protection" (Bulli Seam Operations report, 2010). Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects. These reports recognise the importance of swamps both as water stores and filters, and as biodiversity pools of very high conservation value. I note with alarm that the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reports serious impacts on swamps 12, 15b and 16. The evidence that swamps cannot be safely undermined is overwhelming. Remediation of swamps is not possible and there are no examples of 'self-healing'.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. CCHS3 may still be impacted by subsidence. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. LW5 to the start line of LW4 will avoid direct undermining of 3/4 of CCHS3, and CCHS4 will be not directly undermined but will be within the 20mm subsidence zone. Prior experience indicates that a swamp needs to be directly undermined to have a potential to be cracked, thus there is a reduced potential for CCHS3 to be cracked and a low likelihood that CCHS4 will be cracked by the amended LW5 extraction. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows.. "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C." These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Swamps CRHS1, CCHS3 and CCHS4 have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. Recommendation 18 of the Metropolitan Coal PAC report includes the following; "swamps of special significance will be protected from negative environmental consequences". Aboriginal site 52-3-0322 is located on the edge of CRHS1 and Aboriginal site 52-3-0320 is on the edge of CCHS3. CCHS3 and CCHS4 overly LW5 and CRHS1 is within the subsidence zone of LW5. Approving Longwalls 4 and 5 would approve the loss of these swamps.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat.

	We understand that this is currently being addressed by the DSEWPaC. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.
Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5. Low order streams play a vital role in connecting upland swamps to higher order streams.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Subsidence, increased strata permeability and strata depressurisation risks redirection and loss of surface and ground water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. Recent work by Professor Philip Pells (Thirlemere Lakes report and addenda, and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be counted on to protect surface and near surface waters from depressurisation and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction. The severe damage to two kilometres of the Waratah Rivulet provides another example of modelling and prediction failure. The widths of the longwalls that caused the catastrophic damage to the Waratah Rivulet were much the same as the width of Longwalls 4 and 5. Compounding this uncertainty, there appears to be little precedent for multi-seam mining, for which additional subsidence factors of up to 80% have been suggested. Such risks and uncertainties are unacceptable in relation to our water supplies and the need for biodiversity conservation.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The Gujarat EA is misleading in several respects, for instance it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. This report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence of LW4. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. Appendix J does not seem to contain monitoring and management plans referred to in the EA. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area for which SCA consent is required, it is not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels. Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	Noted. Comment directed to DP&I

The location of the Gujarat NRE No. 1 Colliery in a residential area is unacceptable. Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include; a coal stockpile located just 200m from people's homes; a resizing (crushing) facility; an enormous ventilation fan that blasts air from the underground mine directly at homes in West Corrimal; and, trucking of coal past people's homes to Port Kembla Coal Terminal.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; 2) Commencement of NRE Coal Distribution auditing program; 3) Upgrading all the trucks with dash board warning light to ensure covering of the load; 4) More signage to ensure covering of the load; 5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; 6) Dedicated water pipe line for truck washing facility; 7) Modification of existing truck washing facility to provide improved cleaning ; 8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; 9) All the above measures will incorporated into NRE's Traffic Management Plan.
Airborne particulates from coal mines are increasingly associated with serious respiratory and other health complaints. In particular, particulates smaller than 2.5 micrometres are known to damage health (NSW Environmental compliance and performance report: Management of dust from coal mine, Dept of Environment, Climate change and water NSW in collaboration with NSW Dept of Planning and Industry and Investment NSW, 2010, p3). This Modification proposal does not even measure or model small particulates. The only air quality monitoring data is from an air quality monitor located in Wollongong 6 kms away. The exposure to particulates of 2.5 microns and less may extend for kilometres and could reasonably be expected to impact on at least 1000 to 2000 homes in the area. It is unacceptable for DoPI and the Government of NSW allow this kind of exposure.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
Residents are also exposed to noise pollution from colliery operations and trucking. Countless complaints about noise remain unresolved.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Greenhouse Gas Emissions The coal seams of the Illawarra are known to be gassy and typically release 10 or more cubic metres of gas for each tonne of extracted coal. The composition of the gas varies from being primarily methane to primarily carbon dioxide. Assuming all of the fugitive gas is carbon dioxide, a considerably weaker greenhouse gas than methane, the coal to be extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes of fugitive carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project	The measured in-situ volume of gas in the area of LW4 and 5 and MG 6, 7 & 8 is round 3 cubic metres per tonne in-situ.
GNRE has demonstrated that it does not have the capacity and resources to operate this colliery. Since the Preliminary Works approval GNRE have proved that they are not capable of self regulation. They have failed to even comply with basic conditions imposed on them by DoPI and the PAC, including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April, 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent

alternative was months overdue. The EAs account of the so called consultation process is highly misleading.	issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. In respect of this, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. NRE is also committed to ensuring that going forward approvals and environmental compliance are focused on achieving best practice. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments to reduce lead time for these equipments without having an approval for their Noise Management plans from DP&I. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will developed to implement the audit recommendations.
It appears that extraction of LW4 (a component of this Modification application and an activity that is already virtually completed as a result of another very controversial approval process) has been problematic, due to longwall misalignment and that this error has resulted in the contamination of all the extracted coal. Not only is the subsidence much greater than predicted, the extracted coal has little value.	This issue has been discussed with IRRM representatives, the CCC and the general community at a recent Community Information Day on 23 August 2012. All these individuals and groups were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.
GNRE does not appear to have the resources, or the will to bring the antiquated infrastructure at No. 1 Colliery up to modern standards. Irrespective of the drawbacks or merits of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery.	• Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies.
I recognise that jobs and royalty revenues may be lost with the rejection of this entirely unacceptable proposal. (Although, I note that this modification cuts jobs from the Preliminary works commitment by about 100 jobs or a third of the No.1 Colliery workforce.) However, the broader community interest and inter-generational considerations are of greater significance. The number of jobs at stake is small relative to the regional work force and likewise the royalty revenues are very small relative to annual State and Federal incomes. The value of the natural assets that would be put in harm's way by this proposal cannot be sensibly quantified; they are priceless.	Employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements: 1) Operational viability dictated by coal prices and operating costs 2) Gaining approvals to allow ongoing proposed operations in a timely manner Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occur or upgrades of equipment take place. Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95%; \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million; about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution.

NAME WITHHELD 2

COMMENT	RESPONSE
I object to the proposal for the following reasons: 1. Gujarat NRE is attempting to incrementally establish their expansion project for this mine. The expansion project proposal was submitted to DoP and then withdrawn.	The original application submitted by NRE was withdrawn in liaison with DP&I to be resubmitted as s Preliminary Works and Major Underground Expansion P13A's. This was agreed between NRE and DP&I to facilitate approval of some minor extraction and surface facility preparation while the likely more lengthy approval for longwalls was processed. This current approvals approach has not evolved in a manner that is favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE for commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
2. Longwall mining under the Sydney Catchment Area poses unacceptable risks to our water supply - The Sydney Water Catchment Area is a pristine vital resource is no t ours to destroy, it belongs to future generations.	Noted. Comment directed to DP&I
The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps, thereby increasing risk of loss of surface and ground water from the Cataract catchment.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Detailed assessment of upland swamps has identified that CCHS3 is not considered to be of 'special significance' based on criteria outlined within OEH (2012). In addition groundwater monitoring has indicated that this upland swamp is unlikely to be reliant on perched ephemeral groundwater, and thus impacts to CCHS3 are considered unlikely to occur. Thus it is deemed that this upland swamp is at negligible risk of negative environmental consequences as a result of extraction of coal from LW4 and 5. Detailed impacts assessment undertaken as a part of Gujarat's Major Expansion Project has assessed the risk of negative environmental consequences to CCHS4. Based on initial risk assessment, comparative analysis, assessment of groundwater, flow accumulation modelling and assessment of risk of fracturing resulting from strains concluded that CCHS4 was at a low risk of negative environmental consequences for extraction of all longwalls associated with the Major Expansion Project. Based on the location of CCHS4 outside of the predicted limits of subsidence for LW5 we conclude that CCHS3 and CCHS4 are at negligible risk of negative environmental consequences as a result of extraction of coal from LW4. In addition, the relocation of the start position for LW5 will further reduce the potential for impacts. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report.
Cataract Creek has been recognised as having "highly significant value" and being "worthy of protection" (Planning Assessment Commission, Bulli Seam Operations report 2010). Yet one first order stream that starts over or at the edge of LW5, as well as two other primary streams that join together directly over LW5 to form a tributary to Cataract Creek will be severely impacted by the subsidence over LW5.	Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. Biosis has undertaken detailed mapping of frog habitat within Wonga East, including mapping of breeding pools and potential breeding habitat. This detailed assessment has identified that potential breeding habitat within the area of potential impact is limited in extent. Cataract Creek does not provide suitable breeding habitat for the Giant Burrowing Frog. In addition, monitoring to date has not recorded the Barred Stuttering Frog within Cataract Creek, although suitable habitat is present. Given the limited number of know contemporary records for this species, if it was recorded within Cataract Creek it should be afforded all protection. Upland swamp CCHS3 and three small areas of upland swamp located over LW4 are located above the upper headwaters of two tributaries of Cataract Creek. The drainage lines below these swamps are poorly defined and do not contain flowing water. CCHS4 is located at the headwaters of a tributary of Cataract Creek. A waterfall is located at the base of this upland swamp. These issues are addressed by SCT 2012 in Attachment A of this Response Report.
Furthermore, recent work by Professor Philip Pells (Thirlmere Lakes report and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be relied upon to protect surface and near surf ace waters from depressurisation and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers These issues are addressed by SCT 2012 in Attachment A of this Response Report.

3. Mining under swamps and streams poses dangerous risks - The importance of swamps as water stores and filters, and as biodiversity pools of very high conservation value have been recognised in the Southern Coalfield Inquiry report and the Planning Assessment Commission's report on the Metropolitan Coal and Bulli Seam Operations project. These same reports also describe the negative impact of subsidence on swamps, surface waters and groundwater. Therefore it is alarming that the May2012 end of panel report for Longwall 7 in Dendrobium Area 3A records serious impacts on swamps 12, 15b and 16. - The Gujarat EA is misleading in several respects, for instance it suggests that a report by Geoterra (Appendix 1) indicates little or no impact to swamps over Longwalls 4 and 5. It also provides no subsidence information and makes no mention of the swamps that would be directly affected.	Relocation of LW5 to the start line of LW4 will avoid direct undermining of 3/4 of Cchs3, and Cchs4 will be not directly undermined but will be within the 20mm subsidence zone. Prior experience indicates that a swamp needs to be directly undermined to have a potential to be cracked, thus there is a reduced potential for Cchs3 to be cracked and a low likelihood that Cchs4 will be cracked by the amended LW5 extraction. Reductions in groundwater at a number of piezometers in proximity to Swamps 12 and 15b have been recorded in Dendrobium Area 3A, as reported in the end of panel report. To date, no impacts to the vegetation composition within these upland swamps has been recorded. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows: <i>"The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in:</i> <i>1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or</i> <i>2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or</i> <i>3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and</i> <i>4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment.</i> <i>Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C."</i> Detailed assessment of upland swamps has identified that CCHS3 is not considered to be of 'special significance' based on criteria outlined within OEH (2012). In addition groundwater monitoring has indicated that this upland swamp is unlikely to be reliant on perched ephemeral groundwater, and thus impacts to CCHS3 are considered unlikely to occur. Thus it is deemed that this upland swamp is at negligible risk of negative environmental consequences as a result of extraction of coal from LW4 and 5. Detailed impacts assessment undertaken as a part of Gujarat's Major Expansion Project has assessed the risk of negative environmental consequences to CCHS4. Based on initial risk assessment, comparative analysis, assessment of groundwater, flow accumulation modelling and assessment of risk of fracturing resulting from strains concluded that CCHS4 was at a low risk of negative environmental consequences for extraction of all longwalls associated with the Major Expansion Project. Based on the location of CCHS4 outside of the predicted limits of subsidence for LW5 we conclude that CCHS3 and CCHS4 are at negligible risk of negative environmental consequences as a result of extraction of coal from LW4.
4. Multi-seam mining has never before been carried out in the fragile Special Areas. - This expansion adds a third coal seam to be mined and our understanding is that there are no examples of triple seam mining in Australia.	Multi-seam mining refers to the extraction of more than one coal seam in one geographical location. Given that definition, double seam multi-seam mining has been undertaken in the Metropolitan Special area for at least 50 years. However, triple seam mining has not, to NRE's knowledge, been undertaken previously in the Special Area. These issues are addressed by SCT 2012 in Attachment A of this Response Report.
Gujarat are proposing an experiment of unknown subsidence outcomes - compounded and unpredictable subsidence is likely.	Until LW4, to the best of NRE's knowledge, it would appear that triple seam mining has not occurred in the Southern Coalfield previously. The fact that something has not been done before doesn't necessarily mean it is too risky. Multi-seam mining is a common practice in Europe, particularly the UK. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Significant effort, time and cost has been spent on monitoring over the last 3 years in the area proposed to be mined. Further work continues to further refine and improve both data collection and interpretation. This information contained in the SMP plans in Appendix J contain all the monitoring and mitigation measures that were proposed and undertaken for LW4. These measures will be extended and improved for LW5 as part of an Extraction Plan & SMP plan application
5. The mine entrance is in a residential area and poses serious health and safety risks to residents. - Gujarat point out the residential area was built around the mine but when Gujarat bought the mine in 2004 the residential area was already established.	Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. NRE has proposed air & noise monitoring program into their Noise and Air & GHG Management plans to ensure compliance with their Preliminary Works Project approval conditions for air & noise compliance monitoring requirements. These plans have been submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time air & noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise and Air & GHG Management plans from DoPI. NRE have taken additional steps ensure compliance with their EPL Licence Conditions and improved transport management which are following: (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility;

	(7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan.
Particulate dust matter is a major concern. There are 80,000 ton stockpiles 200m from residences. 2.5micron dust and smaller is seen as the 'new asbestos', linked to respiratory and other illness, and yet the mine will only be monitoring down to 10microns.	NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
Noise is another major concern. The only exhaust fan from the current seam is 450m from residence. Gujarat's fan at their Wongawilli mine was heard 4kms away.	Distance is not always a good indicator of impact from noise sources. The fan noise from the Wongawilli Colliery portal construction fan was heard in Horsley at a distance of approximately 3km yet was not heard by the Colliery's closed neighbours less than 1km away. This was due to a variety of reasons include the low frequency and tonal characteristics of the noise, topography, wind direction and temperature inversions. The matter was dealt with rapidly, in liaison with the EPA, by erecting acoustic screens around the fan.
The only method for coal transport from site is by truck. Gujarat have operated for eight years and still create noise, dust, speed and vibration problems in the area. Diesel fumes from these trucks are a known carcinogenic.	NRE will not be increasing activities above those already approved as part of the Preliminary Works Pt3A approval as part of this application. Any changes to coal volumes and management will be dealt with as part of a future application for the expansion of NRE operations at the site. New trucks compliant with the Euro 5 standard for emissions control are being purchased by NRE's trucking contractor. Euro 5 regulatory standard regulates emissions from all combustion engines with the goal to limit as much as possible the negative impact of road vehicles on the environment and health. The Regulation covers a wide range of pollutant emissions: carbon monoxide (CO), non-methane hydrocarbons and total hydrocarbons, nitrogen oxides (NO_x) and particulates (PM). It covers tailpipe emissions, evaporative emissions and crankcase emissions. It sets limits for emissions from diesel vehicles as follows •carbon monoxide: 500 mg/km; •particulates: 5 mg/km (80 % reduction of emissions in comparison to the Euro 4 standard); •nitrogen oxides (NO_x): 180 mg/km (20 % reduction of emissions in comparison to the Euro 4 standard); •combined emissions of hydrocarbons and nitrogen oxides: 230 mg/km.
6. This mine is non-compliant with its DA conditions. - Department of Planning still haven't approved one of Gujarat's Management Plans (required to be in place 4mths ago) and yet Gujarat is multi-seam longwalling under the Metropolitan Special Area.	Following are the non compliances with Preliminary Works Project Approval (MP 10_0046): (1) Failure to submit the management plans within 6 months of this approval in consultation with various agencies. Revised management plans need to be submitted by 31 August 2012 to DoPI in consultation with various agencies. All the management plans submitted to DoPI on 31 August 2012. Schedule 3, Condition 16 (a) -Noise Management Plan Schedule 3, Condition 21 (a)-Air Quality & Greenhouse Gas Management Plan Schedule 3, Condition 28 (a) and (b) -Traffic Management Plan Schedule 3, Condition 29 (a) and (b) – Biodiversity Management Plan Schedule 3, Condition 32 (a) and (b) - Surface Facilities Schedule 3, Condition 35 (a) and (b) - Water Management Plan Schedule 3, Condition 38 (a) and (b) - Heritage Management Plan (2) Schedule 3, Condition 15 (b) - Regularly assess the real time noise monitoring... NRE will able to regularly assess the real-time noise monitoring to ensure compliance, following approval o the Noise Management Plan (Schedule 3, Condition 16) by the DG. (3) Schedule 3, Condition 20 (c) - Regularly assess the real time air quality monitoring... NRE will able to regularly assess the real-time air quality monitoring to ensure compliance, following approval of the Air Quality & GHG Management Plan (Schedule 3, Condition 21) by the DG. (4) Schedule 3 Condition 23 (a)- Truck Washing Failure to submit a report to the Department about various truck washing arrangements that have been trialled at the surface facilities site within 6 months of this approval. A revised report submitted to DP&I along with the Air Quality & GHG Management Plan and Traffic Management Plan by 31 August 2012. (5) Schedule 5 Condition 1 (a) - Environmental Management Strategy Failure to submit an Environmental Management Strategy (EMS) for the project within 6 months of approval. An EMS was submitted to DP&I on 10 May 2012. (6) Schedule 5 Condition 5 - Community Consultative Committee Failure to establish and operate a Community Consultative Committee (CCC) or alternative framework within 6 months of this approval. A CCC was established and began operating by end of July 2012. The first CCC meeting was held on 21 August 2012. (7) Schedule 5 Condition 10 (a) - Access to Information Failure to make publicly available on NRE's website: 1. a complaints register, which is to be updated on a monthly basis; and 2. a comprehensive summary of the monitoring results of the project, reported in accordance with the specification in any approved plans or programs required under the conditions of this or any other approval. EPL monitoring results and complaints register is now available on NRE's website.
7. Gujarat (and Department Resources and Energy) are having the validity of the LW4 approval challenged in the Land and Environment Court.	Noted. Comment directed to DP&I

8. No proper community consultation has taken place regarding Gujarat's proposed mining expansion and its effects on local residents.	NRE has been advised by DRE via a letter on 23 August 2012 that its LW4 & 5 SMP application was based on a "community consultation process that falls short of community expectations and industry best practice. As such DRE request that the Colliery enhance their community consultation process going forward." Further the letter requested a resubmission of the community consultation process that would address all the consultation requirements of the SMP Guidelines for Applications for Subsidence Management Approvals. This request has been somewhat overtaken by events related to the submission of the LW4 & 5 and MG 6, 7 & 8 Pt3A modification application. DRE has recently advised NRE that While an SMP is still required to be lodged for the extraction of LW5. This will be undertaken as a parallel but separate application to the Extraction Plan that will be required by DP&I. A Community Information Day was held on 23 August 2012,. Copies of the EA have been placed on the website as required by the Preliminary Works Pt3A, direct neighbours to the Colliery were advised via letterbox drop of the Community Information Day and a list of interested persons were sent emails containing a link to the EA and advice of the Community Information Day.
There has been an extremely limited opportunity for residents to express opinions, including opposition to a proposal from Gujarat to continue an existing longwall (LW4) and develop a new longwall (LW5) in the Metropolitan Special Area just behind Russell Vale.	NRE has been advised by DRE via a letter on 23 August 2012 that it's LW4 & 5 SMP application was based on a "community consultation process that falls short of community expectations and industry best practice. As such DRE request that the Colliery enhance their community consultation process going forward." Further the letter requested a resubmission of the community consultation process that would address all the consultation requirements of the SMP Guidelines for Applications for Subsidence Management Approvals. This request has been somewhat overtaken by events related to the submission of the LW4 & 5 and MG 6,7 & 8 Pt3A modification application. DRE has recently advised NRE that While an SMP is still required to be lodged for the extraction of LW5. This will be undertaken as a parallel but separate application to the Extraction Plan that will be required by DP&I. A Community Information Day was held on 23 August 2012,. Copies of the EA have been placed on the website as required by the Preliminary Works Pt3A; direct neighbours to the Colliery were advised via letterbox drop of the Community Information Day and a list of interested persons were sent emails containing a link to the EA and advice of the Community Information Day.
The Department of Planning (DoP) has refused to grant an extension of time.	Noted. Comment directed to DP&I
In view of all the above concerns and facts, I repeat my opposition to this proposal.	Noted. Comment directed to DP&I

NAME WITHHELD 3
(Form letter)

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP 10_0046. The extent and impacts of the proposed additions to the Preliminary Works Project, reflected in the increased coal volumes and the use of documentation from the (withdrawn) expansion project, make it clear that this proposal cannot sensibly be regarded as simply a modification to the Preliminary Works project. Gujarat NRE (GNRE) is attempting to incrementally establish their expansion project.	The information in this project has been drawn from both the LW4 SMP and the current Underground Expansion Project Pt3A that is currently responding to issues from adequacy review. This modification and approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
Given its errors and omissions, the Environmental Assessment Report (EA) for the current proposal is unacceptably misleading and confusing. That it has been released to the public reflects poorly on the Department of Planning and Infrastructure (DoPI). Furthermore, the DoPI failed to identify and act upon a number of non-compliance matters and it was left to community members to point out the failures in a series of complaints. While the DoPI clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. The EA and its associated documentation contain a large amount of material for which the general public were given only three weeks to respond. Requests for an extension to the public comment period were refused.	Noted. Comment directed to DP&I
I also strongly object to the proposal for the additional reasons given below. Longwall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply. The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been recognised by the Planning Assessment Commission (PAC) as having "highly significant values" making it "worthy of protection" (Bulli Seam Operations report, 2010). Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects. These reports recognise the importance of swamps both as water stores and filters, and as biodiversity pools of very high conservation value. I note with alarm that the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reports serious impacts on swamps 12, 15b and 16. The evidence that swamps cannot be safely undermined is overwhelming. Remediation of swamps is not possible and there are no examples of 'self-healing'.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. CCHS3 may still be impacted by subsidence. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. LW5 to the start line of LW4 will avoid direct undermining of 3/4 of CCHS3, and CCHS4 will be not directly undermined but will be within the 20mm subsidence zone. Prior experience indicates that a swamp needs to be directly undermined to have a potential to be cracked, thus there is a reduced potential for CCHS3 to be cracked and a low likelihood that CCHS4 will be cracked by the amended LW5 extraction. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows.. "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C." These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Swamps CRHS1, CCHS3 and CCHS4 have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. Recommendation 18 of the Metropolitan Coal PAC report includes the following; "swamps of special significance will be protected from negative environmental consequences". Aboriginal site 52-3-0322 is located on the edge of CRHS1 and Aboriginal site 52-3-0320 is on the edge of CCHS3. CCHS3 and CCHS4 overly LW5 and CRHS1 is within the subsidence zone of LW5. Approving Longwalls 4 and 5 would approve the loss of these swamps.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat.

	We understand that this is currently being addressed by the DSEWPaC. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.
Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5. Low order streams play a vital role in connecting upland swamps to higher order streams.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Subsidence, increased strata permeability and strata depressurisation risks redirection and loss of surface and ground water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. Recent work by Professor Philip Pells (Thirlemere Lakes report and addenda, and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be counted on to protect surface and near surface waters from depressurisation and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction. The severe damage to two kilometres of the Waratah Rivulet provides another example of modelling and prediction failure. The widths of the longwalls that caused the catastrophic damage to the Waratah Rivulet were much the same as the width of Longwalls 4 and 5. Compounding this uncertainty, there appears to be little precedent for multi-seam mining, for which additional subsidence factors of up to 80% have been suggested. Such risks and uncertainties are unacceptable in relation to our water supplies and the need for biodiversity conservation.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The Gujarat EA is misleading in several respects, for instance it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. This report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence of LW4. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. Appendix J does not seem to contain monitoring and management plans referred to in the EA. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area for which SCA consent is required, it is not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels. Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	Noted. Comment directed to DP&I

The location of the Gujarat NRE No. 1 Colliery in a residential area is unacceptable. Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include; a coal stockpile located just 200m from people's homes; a resizing (crushing) facility; an enormous ventilation fan that blasts air from the underground mine directly at homes in West Corrimal; and, trucking of coal past people's homes to Port Kembla Coal Terminal.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; 2) Commencement of NRE Coal Distribution auditing program; 3) Upgrading all the trucks with dash board warning light to ensure covering of the load; 4) More signage to ensure covering of the load; 5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; 6) Dedicated water pipe line for truck washing facility; 7) Modification of existing truck washing facility to provide improved cleaning ; 8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; 9) All the above measures will incorporated into NRE's Traffic Management Plan.
Airborne particulates from coal mines are increasingly associated with serious respiratory and other health complaints. In particular, particulates smaller than 2.5 micrometres are known to damage health (NSW Environmental compliance and performance report: Management of dust from coal mine, Dept of Environment, Climate change and water NSW in collaboration with NSW Dept of Planning and Industry and Investment NSW, 2010, p3). This Modification proposal does not even measure or model small particulates. The only air quality monitoring data is from an air quality monitor located in Wollongong 6 kms away. The exposure to particulates of 2.5 microns and less may extend for kilometres and could reasonably be expected to impact on at least 1000 to 2000 homes in the area. It is unacceptable for DoPI and the Government of NSW allow this kind of exposure.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
Residents are also exposed to noise pollution from colliery operations and trucking. Countless complaints about noise remain unresolved.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Greenhouse Gas Emissions The coal seams of the Illawarra are known to be gassy and typically release 10 or more cubic metres of gas for each tonne of extracted coal. The composition of the gas varies from being primarily methane to primarily carbon dioxide. Assuming all of the fugitive gas is carbon dioxide, a considerably weaker greenhouse gas than methane, the coal to be extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes of fugitive carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project	The measured in-situ volume of gas in the area of LW4 and 5 and MG 6, 7 & 8 is round 3 cubic metres per tonne in-situ.
GNRE has demonstrated that it does not have the capacity and resources to operate this colliery. Since the Preliminary Works approval GNRE have proved that they are not capable of self regulation. They have failed to even comply with basic conditions imposed on them by DoPI and the PAC, including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April, 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent

alternative was months overdue. The EAs account of the so called consultation process is highly misleading.	issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. In respect of this, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. NRE is also committed to ensuring that going forward approvals and environmental compliance are focused on achieving best practice. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments to reduce lead time for these equipments without having an approval for their Noise Management plans from DP&I. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will developed to implement the audit recommendations.
It appears that extraction of LW4 (a component of this Modification application and an activity that is already virtually completed as a result of another very controversial approval process) has been problematic, due to longwall misalignment and that this error has resulted in the contamination of all the extracted coal. Not only is the subsidence much greater than predicted, the extracted coal has little value.	This issue has been discussed with IRRM representatives, the CCC and the general community at a recent Community Information Day on 23 August 2012. All these individuals and groups were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.
GNRE does not appear to have the resources, or the will to bring the antiquated infrastructure at No. 1 Colliery up to modern standards. Irrespective of the drawbacks or merits of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery.	• Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies.
I recognise that jobs and royalty revenues may be lost with the rejection of this entirely unacceptable proposal. (Although, I note that this modification cuts jobs from the Preliminary works commitment by about 100 jobs or a third of the No.1 Colliery workforce.) However, the broader community interest and inter-generational considerations are of greater significance. The number of jobs at stake is small relative to the regional work force and likewise the royalty revenues are very small relative to annual State and Federal incomes. The value of the natural assets that would be put in harm's way by this proposal cannot be sensibly quantified; they are priceless.	Employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements: 1) Operational viability dictated by coal prices and operating costs 2) Gaining approvals to allow ongoing proposed operations in a timely manner Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occur or upgrades of equipment take place. Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95%; \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million; about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution.

NAME WITHHELD 4
(Form letter)

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP 10_0046. The extent and impacts of the proposed additions to the Preliminary Works Project, reflected in the increased coal volumes and the use of documentation from the (withdrawn) expansion project, make it clear that this proposal cannot sensibly be regarded as simply a modification to the Preliminary Works project. Gujarat NRE (GNRE) is attempting to incrementally establish their expansion project.	The information in this project has been drawn from both the LW4 SMP and the current Underground Expansion Project Pt3A that is currently responding to issues from adequacy review. This modification and approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
Given its errors and omissions, the Environmental Assessment Report (EA) for the current proposal is unacceptably misleading and confusing. That it has been released to the public reflects poorly on the Department of Planning and Infrastructure (DoPI). Furthermore, the DoPI failed to identify and act upon a number of non-compliance matters and it was left to community members to point out the failures in a series of complaints. While the DoPI clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. The EA and its associated documentation contain a large amount of material for which the general public were given only three weeks to respond. Requests for an extension to the public comment period were refused.	Noted. Comment directed to DP&I
I also strongly object to the proposal for the additional reasons given below. Longwall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply. The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been recognised by the Planning Assessment Commission (PAC) as having "highly significant values" making it "worthy of protection" (Bulli Seam Operations report, 2010). Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects. These reports recognise the importance of swamps both as water stores and filters, and as biodiversity pools of very high conservation value. I note with alarm that the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reports serious impacts on swamps 12, 15b and 16. The evidence that swamps cannot be safely undermined is overwhelming. Remediation of swamps is not possible and there are no examples of 'self-healing'.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. CCHS3 may still be impacted by subsidence. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. LW5 to the start line of LW4 will avoid direct undermining of 3/4 of CCHS3, and CCHS4 will be not directly undermined but will be within the 20mm subsidence zone. Prior experience indicates that a swamp needs to be directly undermined to have a potential to be cracked, thus there is a reduced potential for CCHS3 to be cracked and a low likelihood that CCHS4 will be cracked by the amended LW5 extraction. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows.. "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C." These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Swamps CRHS1, CCHS3 and CCHS4 have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. Recommendation 18 of the Metropolitan Coal PAC report includes the following; "swamps of special significance will be protected from negative environmental consequences". Aboriginal site 52-3-0322 is located on the edge of CRHS1 and Aboriginal site 52-3-0320 is on the edge of CCHS3. CCHS3 and CCHS4 overly LW5 and CRHS1 is within the subsidence zone of LW5. Approving Longwalls 4 and 5 would approve the loss of these swamps.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat.

	We understand that this is currently being addressed by the DSEWPaC. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.
Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5. Low order streams play a vital role in connecting upland swamps to higher order streams.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Subsidence, increased strata permeability and strata depressurisation risks redirection and loss of surface and ground water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. Recent work by Professor Philip Pells (Thirlemere Lakes report and addenda, and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be counted on to protect surface and near surface waters from depressurisation and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction. The severe damage to two kilometres of the Waratah Rivulet provides another example of modelling and prediction failure. The widths of the longwalls that caused the catastrophic damage to the Waratah Rivulet were much the same as the width of Longwalls 4 and 5. Compounding this uncertainty, there appears to be little precedent for multi-seam mining, for which additional subsidence factors of up to 80% have been suggested. Such risks and uncertainties are unacceptable in relation to our water supplies and the need for biodiversity conservation.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The Gujarat EA is misleading in several respects, for instance it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. This report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence of LW4. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. Appendix J does not seem to contain monitoring and management plans referred to in the EA. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area for which SCA consent is required, it is not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels. Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	Noted. Comment directed to DP&I

The location of the Gujarat NRE No. 1 Colliery in a residential area is unacceptable. Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include; a coal stockpile located just 200m from people's homes; a resizing (crushing) facility; an enormous ventilation fan that blasts air from the underground mine directly at homes in West Corrimal; and, trucking of coal past people's homes to Port Kembla Coal Terminal.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; 2) Commencement of NRE Coal Distribution auditing program; 3) Upgrading all the trucks with dash board warning light to ensure covering of the load; 4) More signage to ensure covering of the load; 5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; 6) Dedicated water pipe line for truck washing facility; 7) Modification of existing truck washing facility to provide improved cleaning ; 8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; 9) All the above measures will incorporated into NRE's Traffic Management Plan.
Airborne particulates from coal mines are increasingly associated with serious respiratory and other health complaints. In particular, particulates smaller than 2.5 micrometres are known to damage health (NSW Environmental compliance and performance report: Management of dust from coal mine, Dept of Environment, Climate change and water NSW in collaboration with NSW Dept of Planning and Industry and Investment NSW, 2010, p3). This Modification proposal does not even measure or model small particulates. The only air quality monitoring data is from an air quality monitor located in Wollongong 6 kms away. The exposure to particulates of 2.5 microns and less may extend for kilometres and could reasonably be expected to impact on at least 1000 to 2000 homes in the area. It is unacceptable for DoPI and the Government of NSW allow this kind of exposure.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
Residents are also exposed to noise pollution from colliery operations and trucking. Countless complaints about noise remain unresolved.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Greenhouse Gas Emissions The coal seams of the Illawarra are known to be gassy and typically release 10 or more cubic metres of gas for each tonne of extracted coal. The composition of the gas varies from being primarily methane to primarily carbon dioxide. Assuming all of the fugitive gas is carbon dioxide, a considerably weaker greenhouse gas than methane, the coal to be extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes of fugitive carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project	The measured in-situ volume of gas in the area of LW4 and 5 and MG 6, 7 & 8 is round 3 cubic metres per tonne in-situ.
GNRE has demonstrated that it does not have the capacity and resources to operate this colliery. Since the Preliminary Works approval GNRE have proved that they are not capable of self regulation. They have failed to even comply with basic conditions imposed on them by DoPI and the PAC, including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April, 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent

alternative was months overdue. The EAs account of the so called consultation process is highly misleading.	issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. In respect of this, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. NRE is also committed to ensuring that going forward approvals and environmental compliance are focused on achieving best practice. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments to reduce lead time for these equipments without having an approval for their Noise Management plans from DP&I. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will developed to implement the audit recommendations.
It appears that extraction of LW4 (a component of this Modification application and an activity that is already virtually completed as a result of another very controversial approval process) has been problematic, due to longwall misalignment and that this error has resulted in the contamination of all the extracted coal. Not only is the subsidence much greater than predicted, the extracted coal has little value.	This issue has been discussed with IRRM representatives, the CCC and the general community at a recent Community Information Day on 23 August 2012. All these individuals and groups were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.
GNRE does not appear to have the resources, or the will to bring the antiquated infrastructure at No. 1 Colliery up to modern standards. Irrespective of the drawbacks or merits of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery.	• Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies.
I recognise that jobs and royalty revenues may be lost with the rejection of this entirely unacceptable proposal. (Although, I note that this modification cuts jobs from the Preliminary works commitment by about 100 jobs or a third of the No.1 Colliery workforce.) However, the broader community interest and inter-generational considerations are of greater significance. The number of jobs at stake is small relative to the regional work force and likewise the royalty revenues are very small relative to annual State and Federal incomes. The value of the natural assets that would be put in harm's way by this proposal cannot be sensibly quantified; they are priceless.	Employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements: 1) Operational viability dictated by coal prices and operating costs 2) Gaining approvals to allow ongoing proposed operations in a timely manner Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occur or upgrades of equipment take place. Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95%; \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million; about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution.

NAME WITHHELD 5

COMMENT	RESPONSE
I object to the above proposal for the following reasons:- - The Dept of Planning and Infrastructure has conducted itself poorly in it's communication with the public in this matter, (e.g. refusing an extension to allow extra time and discussion of reading matter) and consequently I feel very much let down by a government that seems to have little concern for community.	Noted. Comment directed to DP&I
The extension will increase dust levels in The immediate residential area, as well as increased noise pollution from The mine and extra trucks, at a time when related health impacts to residents around coal mines are now being recognised.	There will be no increase in activity at the Pit Top as a result of this application. See the sections on Air Quality and Noise in this Response Report for a summary of activities NRE are undertaking to minimise air quality issues.
Most of all, I bring to your attention that Barry O'Farrell made a promise, before The last election, that he would not allow mining in and around water catchment areas. Our escarpment is already suffering from past and current mining. How can it be responsible to allow bigger and bigger machinery to pull out such incomprehensible quantities of coal, for The mighty dollar, when in The longer term we must all be big losers. I plead with you that we must take stock and act responsibly to protect this very important environment that is part of The The catchment area for drinking water for millions of people.	Noted. Comment directed to DP&I
I am sorely disappointed at the way decisions are made by the Planning Dept. I want a government that has wisdom and takes it's job seriously, not just to ensure quick money in the kitty, but realises that decisions today will be effecting our generations to come.	Noted. Comment directed to DP&I

NAME WITHHELD 6

COMMENT	RESPONSE
I am a resident in Bellambi Lane and my main concern is the increase in the noise (truck movements), coal dust and general pollution which will happen due to the increase in coal mining at the site.	There will be no increase in activity at the Pit Top as a result of this application. See the sections on Air Quality and Noise in this Response Report for a summary of activities NRE are undertaking to minimise air quality issues.
The front door of my home as well as the windows have to remain closed for the entire day and night (they operate from 6am to 10pm) due to the noise level and dust pollution of the truck driving pass my home. My front veranda has to be swept daily as it is covered in black dust. How much of that am I breathing in - time will only tell - That is also a concern I have	Noted. See above.

NAME WITHHELD 7
(Form letter)

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP 10_0046. The extent and impacts of the proposed additions to the Preliminary Works Project, reflected in the increased coal volumes and the use of documentation from the (withdrawn) expansion project, make it clear that this proposal cannot sensibly be regarded as simply a modification to the Preliminary Works project. Gujarat NRE (GNRE) is attempting to incrementally establish their expansion project.	The information in this project has been drawn from both the LW4 SMP and the current Underground Expansion Project Pt3A that is currently responding to issues from adequacy review. This modification and approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
Given its errors and omissions, the Environmental Assessment Report (EA) for the current proposal is unacceptably misleading and confusing. That it has been released to the public reflects poorly on the Department of Planning and Infrastructure (DoPI). Furthermore, the DoPI failed to identify and act upon a number of non-compliance matters and it was left to community members to point out the failures in a series of complaints. While the DoPI clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. The EA and its associated documentation contain a large amount of material for which the general public were given only three weeks to respond. Requests for an extension to the public comment period were refused.	Noted. Comment directed to DP&I
I also strongly object to the proposal for the additional reasons given below. Longwall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply. The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been recognised by the Planning Assessment Commission (PAC) as having "highly significant values" making it "worthy of protection" (Bulli Seam Operations report, 2010). Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects. These reports recognise the importance of swamps both as water stores and filters, and as biodiversity pools of very high conservation value. I note with alarm that the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reports serious impacts on swamps 12, 15b and 16. The evidence that swamps cannot be safely undermined is overwhelming. Remediation of swamps is not possible and there are no examples of 'self-healing'.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. CCHS3 may still be impacted by subsidence. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. LW5 to the start line of LW4 will avoid direct undermining of 3/4 of CCHS3, and CCHS4 will be not directly undermined but will be within the 20mm subsidence zone. Prior experience indicates that a swamp needs to be directly undermined to have a potential to be cracked, thus there is a reduced potential for CCHS3 to be cracked and a low likelihood that CCHS4 will be cracked by the amended LW5 extraction. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows.. "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C." These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Swamps CRHS1, CCHS3 and CCHS4 have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. Recommendation 18 of the Metropolitan Coal PAC report includes the following; "swamps of special significance will be protected from negative environmental consequences". Aboriginal site 52-3-0322 is located on the edge of CRHS1 and Aboriginal site 52-3-0320 is on the edge of CCHS3. CCHS3 and CCHS4 overly LW5 and CRHS1 is within the subsidence zone of LW5. Approving Longwalls 4 and 5 would approve the loss of these swamps.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat.

	We understand that this is currently being addressed by the DSEWPaC. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.
Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5. Low order streams play a vital role in connecting upland swamps to higher order streams.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Subsidence, increased strata permeability and strata depressurisation risks redirection and loss of surface and ground water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. Recent work by Professor Philip Pells (Thirlemere Lakes report and addenda, and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be counted on to protect surface and near surface waters from depressurisation and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction. The severe damage to two kilometres of the Waratah Rivulet provides another example of modelling and prediction failure. The widths of the longwalls that caused the catastrophic damage to the Waratah Rivulet were much the same as the width of Longwalls 4 and 5. Compounding this uncertainty, there appears to be little precedent for multi-seam mining, for which additional subsidence factors of up to 80% have been suggested. Such risks and uncertainties are unacceptable in relation to our water supplies and the need for biodiversity conservation.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The Gujarat EA is misleading in several respects, for instance it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. This report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence of LW4. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. Appendix J does not seem to contain monitoring and management plans referred to in the EA. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area for which SCA consent is required, it is not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels. Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	Noted. Comment directed to DP&I

The location of the Gujarat NRE No. 1 Colliery in a residential area is unacceptable. Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include; a coal stockpile located just 200m from people's homes; a resizing (crushing) facility; an enormous ventilation fan that blasts air from the underground mine directly at homes in West Corrimal; and, trucking of coal past people's homes to Port Kembla Coal Terminal.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; 2) Commencement of NRE Coal Distribution auditing program; 3) Upgrading all the trucks with dash board warning light to ensure covering of the load; 4) More signage to ensure covering of the load; 5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; 6) Dedicated water pipe line for truck washing facility; 7) Modification of existing truck washing facility to provide improved cleaning ; 8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; 9) All the above measures will incorporated into NRE's Traffic Management Plan.
Airborne particulates from coal mines are increasingly associated with serious respiratory and other health complaints. In particular, particulates smaller than 2.5 micrometres are known to damage health (NSW Environmental compliance and performance report: Management of dust from coal mine, Dept of Environment, Climate change and water NSW in collaboration with NSW Dept of Planning and Industry and Investment NSW, 2010, p3). This Modification proposal does not even measure or model small particulates. The only air quality monitoring data is from an air quality monitor located in Wollongong 6 kms away. The exposure to particulates of 2.5 microns and less may extend for kilometres and could reasonably be expected to impact on at least 1000 to 2000 homes in the area. It is unacceptable for DoPI and the Government of NSW allow this kind of exposure.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
Residents are also exposed to noise pollution from colliery operations and trucking. Countless complaints about noise remain unresolved.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Greenhouse Gas Emissions The coal seams of the Illawarra are known to be gassy and typically release 10 or more cubic metres of gas for each tonne of extracted coal. The composition of the gas varies from being primarily methane to primarily carbon dioxide. Assuming all of the fugitive gas is carbon dioxide, a considerably weaker greenhouse gas than methane, the coal to be extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes of fugitive carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project	The measured in-situ volume of gas in the area of LW4 and 5 and MG 6, 7 & 8 is round 3 cubic metres per tonne in-situ.
GNRE has demonstrated that it does not have the capacity and resources to operate this colliery. Since the Preliminary Works approval GNRE have proved that they are not capable of self regulation. They have failed to even comply with basic conditions imposed on them by DoPI and the PAC, including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April, 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent

alternative was months overdue. The EAs account of the so called consultation process is highly misleading.	issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. In respect of this, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. NRE is also committed to ensuring that going forward approvals and environmental compliance are focused on achieving best practice. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments to reduce lead time for these equipments without having an approval for their Noise Management plans from DP&I. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will developed to implement the audit recommendations.
It appears that extraction of LW4 (a component of this Modification application and an activity that is already virtually completed as a result of another very controversial approval process) has been problematic, due to longwall misalignment and that this error has resulted in the contamination of all the extracted coal. Not only is the subsidence much greater than predicted, the extracted coal has little value.	This issue has been discussed with IRRM representatives, the CCC and the general community at a recent Community Information Day on 23 August 2012. All these individuals and groups were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.
GNRE does not appear to have the resources, or the will to bring the antiquated infrastructure at No. 1 Colliery up to modern standards. Irrespective of the drawbacks or merits of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery.	• Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies.
I recognise that jobs and royalty revenues may be lost with the rejection of this entirely unacceptable proposal. (Although, I note that this modification cuts jobs from the Preliminary works commitment by about 100 jobs or a third of the No.1 Colliery workforce.) However, the broader community interest and inter-generational considerations are of greater significance. The number of jobs at stake is small relative to the regional work force and likewise the royalty revenues are very small relative to annual State and Federal incomes. The value of the natural assets that would be put in harm's way by this proposal cannot be sensibly quantified; they are priceless.	Employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements: 1) Operational viability dictated by coal prices and operating costs 2) Gaining approvals to allow ongoing proposed operations in a timely manner Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occur or upgrades of equipment take place. Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95%; \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million; about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution.

NAME WITHHELD 8
(Mixture of form letters)

COMMENT	RESPONSE
I object to the proposed Modification to the Preliminary Works Project MP10_0046 for the following reasons- Long-wall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply. The extraction of coal from long-wall 4 and 5 will cause subsidence within an area that includes Cataract Creek and Upland Swamps. The Cataract Creek flows into the Cataract Dam, any risk to this watercourse is unacceptable. The upland Swamps of the Sydney Basin Bio region have been declared a Threatened Ecological Community, and as such they should be protected. Furthermore the swamps play a crucial role in the filtering of water that goes into the reservoir, these should also be protected as a crucial component of our drinking water supply system.	These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
The subsidence predictions are questionable because there is little precedent for multi- seam mining of this nature (Pells). Even Sydney Water Catchment Authority's Agency response to Preliminary Works (Major Project 10_0046) Development Approval states that although subsidence can be predicted there is less certainty about how water will respond to the collapse of the land caused by long-wall mining. I draw your attention to Appin Colliery it has been mining under Appin township for more years than I can remember. I drive up to that area approx 3 or 4 times a month and there are Subsidence and End of Subsidence Signs in and around Appin township, it is easy to see where the subsidence is in the paddocks and other areas. Where as around the catchment areas with the amount of under growth it will not be easily seen. It will take a number of years for this to happen as like it is now appearing in Appin. Gujarat NRE is unlikely to be still under operations by the time any subsidence occurs and as such who will be responsible ! Such risks and uncertainties are unacceptable in relation to our water supplies.	These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
The Water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	Noted. Comment directed to DP&I
The location of the Gujarat NRE No1 Colliery is unacceptable as it is in a residential area. Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include a coal stockpile located just 200m from people's homes to Port Kembla Coal Terminal. Airborne particulates from Coal Mines are increasingly associated with serious respiratory and other health complaints. In particular, particulates smaller than 2.5micrometers are known to damage health (NSW Environmental Compliance and Performance Report, Management of dust from coal mine, Dept of Environment, Climate change and water NSW in collaboration with NSW Dept of Planning and Industry and Investment NSW, 2010,p3) This Modification does not even measure or model small particulates. The only air quality monitoring data is from and air quality monitor located in Wollongong 6 kms away. It is unacceptable for DoPI to allow this exposure to continue. The exposure to particulates of 2.5 microns and less may extend for kilometres and could reasonably be expected to impact on at least 1000 to 2000 homes in the area.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan.
Residents are also exposed to noise pollution from Colliery Operations and trucking.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise

	Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
The movements of the Trucks from the Colliery to the Coal Loader and return are of concern to me because of the constant acceleration and deceleration combined with the brake squeal and empty truck noise, vibrations and coal dust. This is to be estimated to be one truck alone would do approx 18 round trips per day.	RTA have made changes to the traffic light sequence at both Bellambi Lane intersections for a smoother transition. A 50 km/h self imposed speed limit has been introduced with a GPS tracking system along Bellambi Lane to try to eliminate issues of truck drivers exceeding this agreed speed limit. Further feedback on additional issues in this area will be examined and if additional solutions are available they will be implemented.
Countless complaints about noise and coal dust remain unresolved.	NRE acknowledges that it can improve both its community consultation and community interaction, particularly with close neighbours. Significant effort has been undertaken recently to listen to and address neighbours reasonable concerns. Major investment is being made to ensure that air quality monitoring is best practice and that dust suppression techniques are both expanded and improved. NRE has also recently completed noise reduction works on its Pit Top ventilation fan which has reduced noise from its operation.

NAME WITHHELD 9

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP10_0046. There are several important items that concern me: the main one is that, why Gujarat NRE just continually enters Modifications to their Preliminary has works. It appears to me that they are just seeing what they CAN get away with in this piecemeal manner.	The original application submitted by NRE was withdrawn in liaison with DP&I to be resubmitted as s Preliminary Works and Major Underground Expansion Pt3A's. This was agreed between NRE and DP&I to facilitate approval of some minor extraction and surface facility preparation while the likely more lengthy approval for longwalls was processed. This current approvals approach has not evolved in a manner that is favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE for commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
After several meetings with the management team who talk to us (the residents) we are told time and time again that they have to have the Money to update and implement the regulations that bind them to be able to do the work.	Correct
Unfortunately it has been an ongoing neglect with regard to our concerns, mainly the dust, noise and truck movements.	Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPaC to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. NRE has proposed air & noise monitoring program into their Noise and Air & GHG Management plans to ensure compliance with their Preliminary Works Project approval conditions for air & noise compliance monitoring requirements. These plans have submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time air & noise monitoring equipment to reduce lead time for these equipment without having an approval for their Noise and Air & GHG Management plans from DP&I. NRE have taken additional steps ensure compliance with their EPL Licence Conditions and improved transport management which are following: (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whist loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan.
We are continually told we are getting the dust monitors, but they are not in place,	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in 4 locations in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust. The comments about the 100%er truck covers are very interesting and will be investigated.
We are told the truck noise is being monitored but nothing is really being done, it seems that when they listen to a few of the trucks, they advise them to correct their habits. It eases for a while then starts up again. Also when they hear the trucks they say it's not that bad," but do them or you listen to it every day". We are also told some people tune out to it and we are being too sensitive to the noise	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. Noise is a particularly subjective environmental issue. Noise that will affect one person may not bother another. Depending on sensitivity a person may either eventually not notice the noise or may become even further attuned to the particular noise. Irrespective, NRE does not believe that simply because a person may be more sensitive to a noise issue no action requires to be taken to try to reduce or remove

	its impact. For any noise impact, if removal is not practical, NRE will work with the EPA to reduce the noise to a level that is considered reasonable by the EPA
In the Modification they say the number of truck movements is not going to change, and they state that it is within the Coal Loader 24/7 times. Sorry we are in a residential area the times for that are within their first approval times are 7am-10pm Mon-Fri and 8am-6pm Sat-Sun. It is not noted in their NEW Modification submission.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. NRE will comply with Condition 25 of Schedule 2 of the Preliminary Works Pt3A approval with regard to trucking of coal to the Coal Terminal
We have also noted that sometimes the Trucks are not washed and they haven't been covered. Hence dust carries. GNRE have been fined for that neglect.	NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan.
The dust carried by the trucks and the stock pile (even though it is washed down) is continually settling on the outside and inside of homes in the area of the mine & truck routes.	NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan.
With the heavy truck movements I also have noticed cracks appearing on the walls and ceiling in our home	NRE is unable to ascertain the causes of cracking in the residence mentioned
Finally GNRE had baulked at implementing a CCC it is now a reality (only just) but that was a condition to their first Application, why did you not make sure that they did not fulfil that requirement within a reasonable timeframe.	Noted. Question directed to DP&I

NAME WITHHELD 10
(Form letter)

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP 10_0046. The extent and impacts of the proposed additions to the Preliminary Works Project, reflected in the increased coal volumes and the use of documentation from the (withdrawn) expansion project, make it clear that this proposal cannot sensibly be regarded as simply a modification to the Preliminary Works project. Gujarat NRE (GNRE) is attempting to incrementally establish their expansion project.	The information in this project has been drawn from both the LW4 SMP and the current Underground Expansion Project Pt3A that is currently responding to issues from adequacy review. This modification and approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
Given its errors and omissions, the Environmental Assessment Report (EA) for the current proposal is unacceptably misleading and confusing. That it has been released to the public reflects poorly on the Department of Planning and Infrastructure (DoPI). Furthermore, the DoPI failed to identify and act upon a number of non-compliance matters and it was left to community members to point out the failures in a series of complaints. While the DoPI clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. The EA and its associated documentation contain a large amount of material for which the general public were given only three weeks to respond. Requests for an extension to the public comment period were refused.	Noted. Comment directed to DP&I
I also strongly object to the proposal for the additional reasons given below. Longwall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply. The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been recognised by the Planning Assessment Commission (PAC) as having "highly significant values" making it "worthy of protection" (Bulli Seam Operations report, 2010). Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects. These reports recognise the importance of swamps both as water stores and filters, and as biodiversity pools of very high conservation value. I note with alarm that the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reports serious impacts on swamps 12, 15b and 16. The evidence that swamps cannot be safely undermined is overwhelming. Remediation of swamps is not possible and there are no examples of 'self-healing'.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. CCHS3 may still be impacted by subsidence. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. LW5 to the start line of LW4 will avoid direct undermining of 3/4 of CCHS3, and CCHS4 will be not directly undermined but will be within the 20mm subsidence zone. Prior experience indicates that a swamp needs to be directly undermined to have a potential to be cracked, thus there is a reduced potential for CCHS3 to be cracked and a low likelihood that CCHS4 will be cracked by the amended LW5 extraction. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows.. "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C." These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Swamps CRHS1, CCHS3 and CCHS4 have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. Recommendation 18 of the Metropolitan Coal PAC report includes the following; "swamps of special significance will be protected from negative environmental consequences". Aboriginal site 52-3-0322 is located on the edge of CRHS1 and Aboriginal site 52-3-0320 is on the edge of CCHS3. CCHS3 and CCHS4 overly LW5 and CRHS1 is within the subsidence zone of LW5. Approving Longwalls 4 and 5 would approve the loss of these swamps.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat.

	We understand that this is currently being addressed by the DSEWPaC. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.
Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5. Low order streams play a vital role in connecting upland swamps to higher order streams.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Subsidence, increased strata permeability and strata depressurisation risks redirection and loss of surface and ground water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. Recent work by Professor Philip Pells (Thirlemere Lakes report and addenda, and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be counted on to protect surface and near surface waters from depressurisation and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction. The severe damage to two kilometres of the Waratah Rivulet provides another example of modelling and prediction failure. The widths of the longwalls that caused the catastrophic damage to the Waratah Rivulet were much the same as the width of Longwalls 4 and 5. Compounding this uncertainty, there appears to be little precedent for multi-seam mining, for which additional subsidence factors of up to 80% have been suggested. Such risks and uncertainties are unacceptable in relation to our water supplies and the need for biodiversity conservation.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The Gujarat EA is misleading in several respects, for instance it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. This report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence of LW4. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. Appendix J does not seem to contain monitoring and management plans referred to in the EA. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area for which SCA consent is required, it is not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels. Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	Noted. Comment directed to DP&I

The location of the Gujarat NRE No. 1 Colliery in a residential area is unacceptable. Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include; a coal stockpile located just 200m from people's homes; a resizing (crushing) facility; an enormous ventilation fan that blasts air from the underground mine directly at homes in West Corrimal; and, trucking of coal past people's homes to Port Kembla Coal Terminal.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; 2) Commencement of NRE Coal Distribution auditing program; 3) Upgrading all the trucks with dash board warning light to ensure covering of the load; 4) More signage to ensure covering of the load; 5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; 6) Dedicated water pipe line for truck washing facility; 7) Modification of existing truck washing facility to provide improved cleaning ; 8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; 9) All the above measures will incorporated into NRE's Traffic Management Plan.
Airborne particulates from coal mines are increasingly associated with serious respiratory and other health complaints. In particular, particulates smaller than 2.5 micrometres are known to damage health (NSW Environmental compliance and performance report: Management of dust from coal mine, Dept of Environment, Climate change and water NSW in collaboration with NSW Dept of Planning and Industry and Investment NSW, 2010, p3). This Modification proposal does not even measure or model small particulates. The only air quality monitoring data is from an air quality monitor located in Wollongong 6 kms away. The exposure to particulates of 2.5 microns and less may extend for kilometres and could reasonably be expected to impact on at least 1000 to 2000 homes in the area. It is unacceptable for DoPI and the Government of NSW allow this kind of exposure.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
Residents are also exposed to noise pollution from colliery operations and trucking. Countless complaints about noise remain unresolved.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Greenhouse Gas Emissions The coal seams of the Illawarra are known to be gassy and typically release 10 or more cubic metres of gas for each tonne of extracted coal. The composition of the gas varies from being primarily methane to primarily carbon dioxide. Assuming all of the fugitive gas is carbon dioxide, a considerably weaker greenhouse gas than methane, the coal to be extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes of fugitive carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project	The measured in-situ volume of gas in the area of LW4 and 5 and MG 6, 7 & 8 is round 3 cubic metres per tonne in-situ.
GNRE has demonstrated that it does not have the capacity and resources to operate this colliery. Since the Preliminary Works approval GNRE have proved that they are not capable of self regulation. They have failed to even comply with basic conditions imposed on them by DoPI and the PAC, including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April, 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent

alternative was months overdue. The EAs account of the so called consultation process is highly misleading.	issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. In respect of this, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. NRE is also committed to ensuring that going forward approvals and environmental compliance are focused on achieving best practice. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments to reduce lead time for these equipments without having an approval for their Noise Management plans from DP&I. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will developed to implement the audit recommendations.
It appears that extraction of LW4 (a component of this Modification application and an activity that is already virtually completed as a result of another very controversial approval process) has been problematic, due to longwall misalignment and that this error has resulted in the contamination of all the extracted coal. Not only is the subsidence much greater than predicted, the extracted coal has little value.	This issue has been discussed with IRRM representatives, the CCC and the general community at a recent Community Information Day on 23 August 2012. All these individuals and groups were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.
GNRE does not appear to have the resources, or the will to bring the antiquated infrastructure at No. 1 Colliery up to modern standards. Irrespective of the drawbacks or merits of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery.	• Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies.
I recognise that jobs and royalty revenues may be lost with the rejection of this entirely unacceptable proposal. (Although, I note that this modification cuts jobs from the Preliminary works commitment by about 100 jobs or a third of the No.1 Colliery workforce.) However, the broader community interest and inter-generational considerations are of greater significance. The number of jobs at stake is small relative to the regional work force and likewise the royalty revenues are very small relative to annual State and Federal incomes. The value of the natural assets that would be put in harm's way by this proposal cannot be sensibly quantified; they are priceless.	Employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements: 1) Operational viability dictated by coal prices and operating costs 2) Gaining approvals to allow ongoing proposed operations in a timely manner Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occur or upgrades of equipment take place. Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95%; \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million; about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution.

NAME WITHHELD 11

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP 10_0046. This proposal, along with the Preliminary Works component of the original MP 10_0046, and the SMP application to the Division of Resources and Energy are attempts by Gujarat NRE (GNRE) to incrementally establish their expansion project. It is misleading to exhibit this proposal as a mere modification. This piecemeal approach to planning and this strategy of brinkmanship erodes the capacity for public involvement and participation in environmental planning and assessment as conferred by the Environmental Planning and Assessment Act 1979.	The original application submitted by NRE was withdrawn in liaison with DP&I to be resubmitted as s Preliminary Works and Major Underground Expansion P13A's. This was agreed between NRE and DP&I to facilitate approval of some minor extraction and surface facility preparation while the likely more lengthy approval for longwalls was processed. This current approvals approach has not evolved in a manner that is favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE for commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
It is obvious that this is about GNRE's expansion and yet no-one is able to see or comment on the full picture. I do not believe that this approach reflects planning best practice.	The original application submitted by NRE was withdrawn in liaison with DP&I to be resubmitted as s Preliminary Works and Major Underground Expansion P13A's. This was agreed between NRE and DP&I to facilitate approval of some minor extraction and surface facility preparation while the likely more lengthy approval for longwalls was processed. This current approvals approach has not evolved in a manner that is favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE for commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
Furthermore, I object to the proposal for the following reasons: Longwall mining under the Sydney Water Catchment Area Recent reports of damage to the Waratah Rivulet, loss of water in the Woronora Dam and the draining of the Thirlmere lakes, all attributable in full or in part to damage from longwall mining, are alarming. I believe that the Department of Planning and Infrastructure (DoPI) is out of step with the public view on risk of the water catchment posed by mining.	Streambed and pool cracking has demonstrably affected the connected overland flow in Waratah Rivulet, however no loss of water from Woronora dam has been demonstrably established that we are aware of and no connection to the mining at Tahmoor has been established both by government agencies and by a government selected working group on Thirlmere Lakes
The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been identified as having "highly significant values" making it "worthy of protection" (PAC, Bulli Seam Operations report, 2010). Subsidence impacts on swamps, surface waters and groundwater are documented in the Southern Coalfield Inquiry report and other reports. These reports recognise the importance of swamps within the catchment system both to store water and to filter it as it moves down into the larger water courses. Swamps cannot be undermined "safely" and they cannot be remediated.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Biosis has undertaken detailed mapping of frog habitat within Wonga East, including mapping of breeding pools and potential breeding habitat. This detailed assessment has identified that potential breeding habitat within the area of potential impact is limited in extent. Cataract Creek does not provide suitable breeding habitat for the Giant Burrowing Frog. In addition, monitoring to date has not recorded the Barred Stuttering Frog within Cataract Creek, although suitable habitat is present. Given the limited number of know contemporary records for this species, if it was recorded within Cataract Creek it should be afforded all protection. Upland swamp CCHS3 and three small areas of upland swamp located over LW4 are located above the upper headwaters of two tributaries of Cataract Creek. The drainage lines below these swamps are poorly defined and do not contain flowing water. CCHS4 is located at the headwaters of a tributary of Cataract Creek. A waterfall is located at the base of this upland swamp. Biosis has just completed a comprehensive assessment of all upland swamps as a part of Gujarat's Major Expansion Project., including upland swamps located above Longwalls 4 and 5. This included the use of LiDAR data to identify upland swamps, detailed ground-truthing and mapping of all vegetation sub-communities within upland swamps. The revised Upland Swamp Environmental Impact Assessment Guidelines (OEH 2012) were used to identify upland swamps of 'special significance' within the study area. An impact assessment was undertaken using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock. This assessment identified that CCHS3 (referred to as CCUS3 in the revised impact assessment), previously mapped as one larger upland swamp, actually consists of two upland swamps that are reliant on divergent flow pathways, and are contained within different catchments. Detailed assessment of these upland swamps also identified that neither supports Tea-tree Thicket (MU43). Therefore neither upland swamp meets criteria for special significance as defined by OEH (2012). In addition, groundwater monitoring of CCHS3 has not recorded any groundwater within this upland swamp. It is likely that CCHS3 is dry for most of the year and is largely reliant on surface water flows and rainfall. The impacts of fracturing of the bedrock below this upland swamp are unlikely to result in the loss of groundwater within this upland swamp. CCHS4 contains Banksia Thicket (MU42), Tea-tree Thicket (MU42) and Cyperoid Heath (MU44c) and is thus considered to be of 'special significance'. Thus a detailed impact assessment was undertaken. This identified that the predicted subsidence associated with the overall project would be unlikely to result in significant changes to the swamp. The rockbar associated with this upland swamp is located outside of the predicted limits of subsidence for LW5 and is unlikely to be impacted as a result of the extraction of coal from LW4 or 5 These issues are addressed by SCT 2012 in Attachment A of this Response Report

I am not qualified to critique the risk assessment in the proposal but I will state that risk assessment is just an estimate of risk of subsidence damage based on available information. Pells acknowledges that there is little precedent of multi seam longwall mining upon which to base his estimate. The precedents cited are only observances of subsidence effects in the short term. Do any of the experts know what the cumulative effect of undermining of the swamps and watercourses may be in 50, 100 or even 200 years time? Irrespective of the risk assessment of the various experts cited, I argue that the water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	These issues are addressed by SCT 2012 in Attachment A of this Response Report Biosis has undertaken detailed mapping of frog habitat within Wonga East, including mapping of breeding pools and potential breeding habitat. This detailed assessment has identified that potential breeding habitat within the area of potential impact is limited in extent. Cataract Creek does not provide suitable breeding habitat for the Giant Burrowing Frog. In addition, monitoring to date has not recorded the Barred Stuttering Frog within Cataract Creek, although suitable habitat is present. Given the limited number of know contemporary records for this species, if it was recorded within Cataract Creek it should be afforded all protection. Upland swamp CCHS3 and three small areas of upland swamp located over LW4 are located above the upper headwaters of two tributaries of Cataract Creek. The drainage lines below these swamps are poorly defined and do not contain flowing water. CCHS4 is located at the headwaters of a tributary of Cataract Creek. A waterfall is located at the base of this upland swamp. Biosis has just completed a comprehensive assessment of all upland swamps as a part of Gujarat's Major Expansion Project., including upland swamps located above Longwalls 4 and 5. This included the use of LiDAR data to identify upland swamps, detailed ground-truthing and mapping of all vegetation sub-communities within upland swamps. The revised Upland Swamp Environmental Impact Assessment Guidelines (OEH 2012) were used to identify upland swamps of 'special significance' within the study area. An impact assessment was undertaken using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock. This assessment identified that CCHS3 (referred to as CCUS3 in the revised impact assessment), previously mapped as one larger upland swamp, actually consists of two upland swamps that are reliant on divergent flow pathways, and are contained within different catchments. Detailed assessment of these upland swamps also identified that neither supports Tea-tree Thicket (MU43). Therefore neither upland swamp meets criteria for special significance as defined by OEH (2012). In addition, groundwater monitoring of CCHS3 has not recorded any groundwater within this upland swamp. It is likely that CCHS3 is dry for most of the year and is largely reliant on surface water flows and rainfall. The impacts of fracturing of the bedrock below this upland swamp are unlikely to result in the loss of groundwater within this upland swamp. CCHS4 contains Banksia Thicket (MU42), Tea-tree Thicket (MU42) and Cyperoid Heath (MU44c) and is thus considered to be of 'special significance'. Thus a detailed impact assessment was undertaken. This identified that the predicted subsidence associated with the overall project would be unlikely to result in significant changes to the swamp. The rockbar associated with this upland swamp is located outside of the predicted limits of subsidence for LW5 and is unlikely to be impacted as a result of the extraction of coal from LW4 or 5. The risk assessment identified that subsidence associated cracking of the base of swamps can pose a risk to the water levels and water holding capacity of swamps, and therefore a process of assessing the significance of each subject swamp, and assessing which swamps need to be protected, and the measures required to do so have been identified and need to be adhered to as part of an overall swamp management strategy.
I strongly object to the proposal because the location of the proposed longwalls poses an unacceptable risk to the Sydney Water Catchment Area.	Noted. Comment directed to DP&I
Proximity to residential areas and the resultant negative impacts on the health and wellbeing of residents Unlike other collieries in the Illawarra, GNRE No. 1 Colliery is located in a residential area. I have google mapped each colliery in the area and yet I cannot find any with the proximity to residences that is evident with the Russell Vale Colliery. It was disappointing that the PAC approval of the Preliminary Works application did not reflect an understanding of this fact. Because of this proximity, the Russell Vale Colliery should be subject to more, not less stringent regulation and monitoring than any other mine in the area. However, recent developments have shown that GNRE is unwilling or unable to self-regulate and the DoPI is unwilling or unable to monitor GNRE's compliance.	Noted. Comment directed to DP&I
As a resident that lives near the colliery, I am increasingly frustrated and angered by the contempt with which colliery staff have treated local residents and by the staff's dismissive attitude to legitimate complaints about various pollutions we are subjected to. What is even more shocking is the impotence and disinterest of state government agencies to address residents' concerns.	NRE acknowledges that it can improve both its community consultation and community interaction, particularly with close neighbours. Significant effort has been undertaken recently to listen to and address neighbours reasonable concerns. Major investment is being made to ensure that air quality monitoring is best practice and that dust suppression techniques are both expanded and improved. NRE has also recently completed noise reduction works on its Pit Top ventilation fan which has reduced noise from its operation.
Homes and mines don't mix. In 2012, Russell Vale is no longer an appropriate place for a colliery.	Noted. Comment directed to DP&I
Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include; a coal stockpile located just 200m from people's homes; a resizing facility; and, an enormous ventilation fan that blasts air from the underground mine directly at homes in West Corrimal. Trucking of coal past people's homes to Port Kembla Coal Terminal also creates an enormous amount of dust for people living in the vicinity of Bellambi Lane.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue.

Noise pollution Residents are also exposed to noise pollution from colliery operations and trucking. Countless complaints about noise remain unresolved. The noise from the exhaust fan is unacceptably loud, disturbing and offensive, particularly at night and when it is exacerbated by adverse meteorological conditions. GNRE are either unwilling or unable to address the noise pollution. As previously mentioned, a residential area is not an appropriate place for a colliery.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan has been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carried out a noise audit earlier as required by its Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Inability to self-regulate or comply with conditions of approval Since the Preliminary Works approval GNRE have proved that they are not capable of self-regulation. They have failed to even comply with basic conditions imposed on them by DoPI and the PAC, including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April, 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved alternative was months overdue.	Following are the non compliances with Preliminary Works Project Approval (MP 10_0046): (1) Failure to submit the management plans within 6 months of this approval in consultation with various agencies. Revised management plans need to be submitted by 31 August 2012 to DoPI in consultation with various agencies. All the management plans submitted to DoPI on 31 August 2012. Schedule 3, Condition 16 (a) -Noise Management Plan Schedule 3, Condition 21 (a)-Air Quality & Greenhouse Gas Management Plan Schedule 3, Condition 28 (a) and (b) -Traffic Management Plan Schedule 3, Condition 29 (a) and (b) – Biodiversity Management Plan Schedule 3, Condition 32 (a) and (b) - Surface Facilities Schedule 3, Condition 35 (a) and (b) - Water Management Plan Schedule 3, Condition 38 (a) and (b) - Heritage Management Plan (2) Schedule 3, Condition 15 (b) - Regularly assess the real time noise monitoring... NRE will able to regularly assess the real-time noise monitoring to ensure compliance, following approval of the Noise Management Plan (Schedule 3, Condition 16) by the DG. (3) Schedule 3, Condition 20 (c) - Regularly assess the real time air quality monitoring... NRE will able to regularly assess the real-time air quality monitoring to ensure compliance, following approval of the Air Quality & GHG Management Plan (Schedule 3, Condition 21) by the DG. (4) Schedule 3 Condition 23 (a)- Truck Washing Failure to submit a report to the Department about various truck washing arrangements that have been trialled at the surface facilities site within 6 months of this approval. A revised report submitted to DP&I along with the Air Quality & GHG Management Plan and Traffic Management Plan by 31 August 2012. (5) Schedule 5 Condition 1 (a) - Environmental Management Strategy Failure to submit an Environmental Management Strategy (EMS) for the project within 6 months of approval. An EMS was submitted to DP&I on 10 May 2012. (6) Schedule 5 Condition 5 - Community Consultative Committee Failure to establish and operate a Community Consultative Committee (CCC) or alternative framework within 6 months of this approval. A CCC was established and began operating by end of July 2012. The first CCC meeting was held on 21 August 2012. (7) Schedule 5 Condition 10 (a) - Access to Information Failure to make publicly available on NRE 's website: 1. a complaints register, which is to be updated on a monthly basis; and 2. a comprehensive summary of the monitoring results of the project, reported in accordance with the specification in any approved plans or programs required under the conditions of this or any other approval. EPL monitoring results and complaints register is now available on NRE's website.
It took a community group's complaint to DoPI to draw attention to the non-compliance. As far as I am aware, no "enforcement action" was ever taken over the non-compliance. The Management Plans are still outstanding. I draw the conclusion that GNRE's inability to self-regulate is enabled and even encouraged by DoPI's inability or unwillingness to enforce compliance. There appears to be an entrenched culture at DoPI of compromised priorities. It was left to community members to point out that GNRE was not meeting its obligations by writing a series of complaints. While the DoPI clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. As a taxpayer, I find this unacceptable.	Noted. Statement with regard to DP&I activities
Moreover, the fact that the management plans are still not available to the public during this public exhibition stage of the modification planning process (Noise, Air Quality & Greenhouse Gas, Traffic, Surface Facilities, Water MP's) is unacceptable.	This modification proposal will not result in changes to activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. As a result the draft Management Plans for the Russell Vale Pit Top were not included in the application
In the public information session on this proposal we were informed that it appears that extraction of LW4 (a component of this Modification application and an activity that is already virtually completed as a result of another very controversial approval process) has been problematic, due to longwall misalignment. Furthermore, it appears that this longwall alignment error has resulted in the contamination of all the extracted coal. Not only is the subsidence much greater than predicted, the extracted coal has little value. The public was told that the proceeds of sale of the minerals extracted only covered extraction costs. This unfortunate outcome should be taken into account by DoPI and the PAC in the assessment of GNRE's assertion in making this application that the corporation is able to competently and responsibly extract LW5. The evidence suggests otherwise.	This issue has been discussed with IRRM representatives, the CCC and the general community at a recent Community Information Day on 23 August 2012. All these individuals and groups were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.

NAME WITHHELD 12
(Form letter)

COMMENT	RESPONSE
I write to object to the acceptance of this proposal as a modification to the Preliminary Works Project MP 10_0046. The extent and impacts of the proposed additions to the Preliminary Works Project, reflected in the increased coal volumes and the use of documentation from the (withdrawn) expansion project, make it clear that this proposal cannot sensibly be regarded as simply a modification to the Preliminary Works project. Gujarat NRE (GNRE) is attempting to incrementally establish their expansion project.	The information in this project has been drawn from both the LW4 SMP and the current Underground Expansion Project Pt3A that is currently responding to issues from adequacy review. This modification and approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.
Given its errors and omissions, the Environmental Assessment Report (EA) for the current proposal is unacceptably misleading and confusing. That it has been released to the public reflects poorly on the Department of Planning and Infrastructure (DoPI). Furthermore, the DoPI failed to identify and act upon a number of non-compliance matters and it was left to community members to point out the failures in a series of complaints. While the DoPI clearly goes out of its way to accommodate the interests of the proponent, it seems it acts on the concerns of the public with great reluctance. The EA and its associated documentation contain a large amount of material for which the general public were given only three weeks to respond. Requests for an extension to the public comment period were refused.	Noted. Comment directed to DP&I
I also strongly object to the proposal for the additional reasons given below. Longwall mining under the Sydney Water Catchment Area poses unacceptable risks to our water supply. The extraction of coal from Longwalls 4 and 5 will cause subsidence within an area that includes Cataract Creek and several upland swamps. Cataract Creek has been recognised by the Planning Assessment Commission (PAC) as having "highly significant values" making it "worthy of protection" (Bulli Seam Operations report, 2010). Subsidence impacts on swamps, surface waters and groundwater has been described in detail in the Southern Coalfield Inquiry report and the PAC reports for the Metropolitan Coal and Bulli Seam Operations (BSO) projects. These reports recognise the importance of swamps both as water stores and filters, and as biodiversity pools of very high conservation value. I note with alarm that the May 2012 end of panel report for Longwall 7 in Dendrobium Area 3A reports serious impacts on swamps 12, 15b and 16. The evidence that swamps cannot be safely undermined is overwhelming. Remediation of swamps is not possible and there are no examples of 'self-healing'.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. CCHS3 may still be impacted by subsidence. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. LW5 to the start line of LW4 will avoid direct undermining of 3/4 of CCHS3, and CCHS4 will be not directly undermined but will be within the 20mm subsidence zone. Prior experience indicates that a swamp needs to be directly undermined to have a potential to be cracked, thus there is a reduced potential for CCHS3 to be cracked and a low likelihood that CCHS4 will be cracked by the amended LW5 extraction. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Review of the Dendrobium Longwall 7 End of Panel Report does not appear to support the occurrence of serious impacts. In summary the report indicates that impact on swamps was assessed as follows.. "The mining of Longwall 7 did not appear to have any noticeable adverse effect on local groundwater levels in and around Swamp 15a (which was not directly mined under), however groundwater storage was impacted at Swamps 12, 15b and 16. Comparison of shallow groundwater levels recorded with the cumulative monthly rainfall mass residual showed a general decline in water levels and the drying out ('flat lining') of several piezometers towards the end of the Longwall 7 mining period. This drying out could not be attributed to fluctuations in local precipitation levels and is therefore an indicator of subsidence related impacts on shallow groundwater storage.....Rock fracturing was observed on outcropping bedrock in Swamp 12. No additional fracturing of bedrock was observed in the swamps of Dendrobium Area 3A. No soil cracking was observed and no fracturing of rockbars occurred within swamps.....Analysis of all available water quality data during the monitoring period showed that the mining of Longwall 7 did not cause any significant water quality impacts in: 1) the catchment of Wongawilli Creek (monitored at WWM3 immediately downstream of Longwall 7 and further downstream at WWL2 for the greater catchment); or 2) just downstream of Swamp 12 at Pool 3 in subcatchment WC17 of Wongawilli Creek; or 3) the catchment of Sandy Creek as measured at sub-catchment sites SC10 and SC10C downstream of Swamps 15a and 15b; and 4) at Lower Sandy Creek site SCL for the greater Sandy Creek catchment. Water quality monitoring of Swamps 15a and 15b within the Sandy Creek catchment area also indicated no degradation of water quality as a result of the mining of Longwall 7..In summary, there were no discernible impacts on the water quality of the Wongawilli Creek or Sandy Creek catchments, their local sub-catchments nor the swamps within those subcatchments as a consequence of the mining of Longwall 7. This includes Swamp 12 in subcatchment WC17 of Wongawilli Creek and Swamp 15b in subcatchment SC10C of Sandy Creek where declines in shallow groundwater levels in the vicinity of these swamps were observed. Across the majority of Area 3A, impacts to terrestrial flora and fauna resulting from subsidence effects associated with longwall mining to date have been negligible, in line with predictions. There have been no observable impacts to vegetation or fauna habitat within Swamps 12 or 15b despite fracturing of bedrock in streams WC17 and SC10C situated below each of these swamps. Additionally no impacts to vegetation have been observed in streams WC17 or SC10C." These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Swamps CRHS1, CCHS3 and CCHS4 have special significance status under DECCW (now OEH) 2011 draft guidelines, and CCHS3 and CCHS4 include rare Tea-Tree communities. Recommendation 18 of the Metropolitan Coal PAC report includes the following; "swamps of special significance will be protected from negative environmental consequences". Aboriginal site 52-3-0322 is located on the edge of CRHS1 and Aboriginal site 52-3-0320 is on the edge of CCHS3. CCHS3 and CCHS4 overly LW5 and CRHS1 is within the subsidence zone of LW5. Approving Longwalls 4 and 5 would approve the loss of these swamps.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat.

	We understand that this is currently being addressed by the DSEWPaC. Aboriginal site 52-2-0322 is located outside the predicted limits of subsidence. Aboriginal site is 52-2-0320 could not be re-located by either ERM or Biosis. The location included in the EA is an estimated location provided by AHIMS. Contingency monitoring has been provided for within the Heritage Management Plan for LW4. In addition, both of these sites are axe grinding grooves, and unless fracturing of the bedrock directly impacts these sites the heritage values of these sites will not be impacted.
Two first order streams join together directly over LW5 to form a second order tributary to Cataract Creek; these streams will be severely impacted by the subsidence over LW5. There is also a first order stream that appears to commence over or at the edge of LW5. Low order streams play a vital role in connecting upland swamps to higher order streams.	NRE will relocate the start position of LW5 adjacent to the LW4 start line thus minimising potential significant impacts to the swamps CCHS4 and CRHS1 from its extraction. This change will be reflected in modified longwall layout plans, subsidence impacts predictions and impact assessments as part of both the Extraction Plan and SMP submissions should this application be approved. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. First and second order stream channels overlie LW5, however it is not anticipated that there will be a loss of total flow discharge volumes into Cataract Creek, notwithstanding the potential for a change in overland flow within the 1st or second order streams over the subsided panel, as any flow that may be changed to throughflow, due to cracking, is anticipated to report to Cataract Creek These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
Subsidence, increased strata permeability and strata depressurisation risks redirection and loss of surface and ground water from the Cataract catchment, as the Sydney Catchment Authority believes has occurred as a result of damage to the Waratah Rivulet. Recent work by Professor Philip Pells (Thirlemere Lakes report and addenda, and research accepted for publication in Australian Geomechanics) shows that the Bald Hill claystone layer cannot be counted on to protect surface and near surface waters from depressurisation and water loss.	Based on prior experience in other southern coalfield mines that are monitored by a series of vibrating wire piezometers down the stratigraphic profile, it is anticipated based on the SGP subsidence predictions, that if the hydraulically connected fracture zone that develops after subsidence above the workings does not extend into the Bald Hill Claystone, where it is present in the Cataract Creek catchment, the claystone does separate the Hawkesbury Sandstone aquifers from the Bulgo Sandstone (and deeper) aquifers. However, if the claystone is intersected by the upward migration of hydraulically connected fracturing, then that could cause some depressurisation of the overlying Hawkesbury Sandstone aquifers These issues are also addressed by SCT 2012 in Attachment A of this Response Report.
In Appendix E Pells cites examples highlighting the uncertain nature of subsidence prediction. The severe damage to two kilometres of the Waratah Rivulet provides another example of modelling and prediction failure. The widths of the longwalls that caused the catastrophic damage to the Waratah Rivulet were much the same as the width of Longwalls 4 and 5. Compounding this uncertainty, there appears to be little precedent for multi-seam mining, for which additional subsidence factors of up to 80% have been suggested. Such risks and uncertainties are unacceptable in relation to our water supplies and the need for biodiversity conservation.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
The Gujarat EA is misleading in several respects, for instance it suggests that a report by Geoterra (Appendix I) indicates little or no impact to swamps over Longwalls 4 and 5. This report refers specifically to CRHS1, which is not located above the longwalls, and makes no mention of the swamps that are directly over the longwalls. The EA provides no subsidence information, predicted or observed, for LW4. LW5 would reactivate and compound the subsidence of LW4. There appear to be no predictions for valley closure or upsidence, other than a mention of upsidence in CRHS1. Appendix J does not seem to contain monitoring and management plans referred to in the EA. The EA provides essentially no mitigation information. The Metropolitan Special Area is a Schedule 1 area for which SCA consent is required, it is not a Schedule 2 area as the EA suggests. The EA makes no reference to the Sydney Drinking Water SEPP or its embodied Neutral or Beneficial Effect (NorBE) on water test.	The SEPP Sydney Drinking Water Catchment (2011) neutral or beneficial effect requirement is specified for water quality in the catchment. Although it has been observed in the Southern Coalfield over subsidence areas that there can be an increase in ferruginous precipitation, along with lower dissolved oxygen, a minor increase in salinity and the dissolution of some metals, these effects occur in limited reaches of affected streams, over and downstream of subsidence affected zones, and have not been observed, or are predicted to adversely affect the water quality within the reservoir. The effects are generally identified for a few tens of metres downstream of the discharge point, and dissipate further downstream to background levels. Section 7.2 of the EA addresses issues surrounding the estimated 3.5 ha of swamps located over LW5. The location and designation of the swamps are shown on Figure 9 of the EA The information on actual LW4 subsidence was not available at the time of the EA development. Recent subsidence data has become available for the completed LW4. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Table 7.1 of the EA indicates that predicted additional subsidence over LW4 as a result of the extraction of LW5 is expected to be 200mm. However, it is difficult to understand this and descriptive text would have clarified the table's intent. Revised LW4 & 5 subsidence predictions were also contained in Appendix B The issues of far field effects are addressed in Appendix A and to a lesser degree in Appendix I however this information does not appear to have been effectively transferred to the main EA document. Mitigation measures were contained in a table in each of the main sections of the EA. More detailed indications of management measures to be used in a future Extraction Plan were included in Appendix J The Metropolitan Special Area is actually a Schedule 1 area not a Schedule 2 area as is correctly pointed out.
The water catchment area is not ours to risk. We have a responsibility to preserve the catchment special area and its underlying land and aquifers undamaged, so that future generations of this area can have the access to drinking water that we have taken for granted in our lifetime.	Noted. Comment directed to DP&I

The location of the Gujarat NRE No. 1 Colliery in a residential area is unacceptable. Residents in the vicinity are exposed to airborne particulates from the colliery's operations. These operations include; a coal stockpile located just 200m from people's homes; a resizing (crushing) facility; an enormous ventilation fan that blasts air from the underground mine directly at homes in West Corrimal; and, trucking of coal past people's homes to Port Kembla Coal Terminal.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in (X locations) in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. NRE has received 1 warning letter and 2 fines from EPA for failure to cover loads incident and truck and wheel wash not operating causing dust drag out on Bellambi Lane Incident respectively. Dust from trucks is an ongoing focus of NRE in both its Air Quality & Greenhouse Gas and Transport Management Plans. The particular incident referred to was due to a failure of the water system supplying the truck wash. This incidence has been investigated by NRE and the following steps have been taken to rectify the issue. 1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; 2) Commencement of NRE Coal Distribution auditing program; 3) Upgrading all the trucks with dash board warning light to ensure covering of the load; 4) More signage to ensure covering of the load; 5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; 6) Dedicated water pipe line for truck washing facility; 7) Modification of existing truck washing facility to provide improved cleaning ; 8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; 9) All the above measures will incorporated into NRE's Traffic Management Plan.
Airborne particulates from coal mines are increasingly associated with serious respiratory and other health complaints. In particular, particulates smaller than 2.5 micrometres are known to damage health (NSW Environmental compliance and performance report: Management of dust from coal mine, Dept of Environment, Climate change and water NSW in collaboration with NSW Dept of Planning and Industry and Investment NSW, 2010, p3). This Modification proposal does not even measure or model small particulates. The only air quality monitoring data is from an air quality monitor located in Wollongong 6 kms away. The exposure to particulates of 2.5 microns and less may extend for kilometres and could reasonably be expected to impact on at least 1000 to 2000 homes in the area. It is unacceptable for DoPI and the Government of NSW allow this kind of exposure.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. However, NRE has accepted the community's concern regarding the 2.5um issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust.
Residents are also exposed to noise pollution from colliery operations and trucking. Countless complaints about noise remain unresolved.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. These plans have been submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Greenhouse Gas Emissions The coal seams of the Illawarra are known to be gassy and typically release 10 or more cubic metres of gas for each tonne of extracted coal. The composition of the gas varies from being primarily methane to primarily carbon dioxide. Assuming all of the fugitive gas is carbon dioxide, a considerably weaker greenhouse gas than methane, the coal to be extracted under the current proposal would add 32,000 tonnes of carbon dioxide to the 44,000 tonnes of fugitive carbon dioxide released by the Preliminary Works project. Combustion of the extracted coal would further add 4.8 million tonnes of carbon dioxide emissions to the 6.6 million tonnes of carbon dioxide emitted from combustion of the coal from the Preliminary Works project	The measured in-situ volume of gas in the area of LW4 and 5 and MG 6, 7 & 8 is round 3 cubic metres per tonne in-situ.
GNRE has demonstrated that it does not have the capacity and resources to operate this colliery. Since the Preliminary Works approval GNRE have proved that they are not capable of self regulation. They have failed to even comply with basic conditions imposed on them by DoPI and the PAC, including: implementing management plans for noise, air quality, greenhouse gas emissions, traffic, biodiversity, water, heritage, and many more areas by the due date of 13 April, 2012 (still outstanding at the end of August 2012). Their implementation of a Community Consultation Committee or approved	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward, In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent

alternative was months overdue. The EAs account of the so called consultation process is highly misleading.	issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/05/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. During the establishment of subsidence survey lines for the LW4 subsidence survey, NRE contractors inadvertently cleared a couple of small linear sections of swamps without SCA approval. The SCA were notified immediately of the incident via a report undertaken by ecologists from Biosis. From an impact perspective, the clearing didn't disturb the ground and as such the swamp vegetation will regenerate. Irrespective, NRE immediately closed off the cleared sections to prevent further foot traffic. All work immediately stopped. A review of all NRE compliance was undertaken and a modified environmental assessment was subsequently lodged when SCA were satisfied that environmental protections were adequate to allow ongoing installation of survey lines. The SCA have issued NRE with a \$1,500 PIN for the incident. Based on a review of the THPSS listing advice it is our opinion that the upland swamps within the project area do not meet the criteria for this TEC, as they are outside of the altitudinal range, no Woronora swamps are listed as components of the THPSS, nor Woronora swamps are mapped by DEH (2005) as part of the THPSS and the swamps located above Longwalls 4 and 5 do not generate peat. We understand that this is currently being addressed by the DSEWPaC. In respect of this, NRE have recently increased its environmental staff from 4 to 9 with the establishment of a Group Monitoring Team to manage all subsidence monitoring activities in the catchment. NRE is also committed to ensuring that going forward approvals and environmental compliance are focused on achieving best practice. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments to reduce lead time for these equipments without having an approval for their Noise Management plans from DP&I. NRE is planning to carry out a noise audit earlier as required by the Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will developed to implement the audit recommendations.
It appears that extraction of LW4 (a component of this Modification application and an activity that is already virtually completed as a result of another very controversial approval process) has been problematic, due to longwall misalignment and that this error has resulted in the contamination of all the extracted coal. Not only is the subsidence much greater than predicted, the extracted coal has little value.	This issue has been discussed with IRRM representatives, the CCC and the general community at a recent Community Information Day on 23 August 2012. All these individuals and groups were advised that as this was the first panel extracted by the new longwall and longwall crew the established cutting height of the longwall meant that it was cutting into clay bands which caused unavoidable impacts to the ash content of the coal recovered. This is a commissioning issue that is being addressed by modifying the longwall equipment to reduce the cutting height for any future longwalls.
GNRE does not appear to have the resources, or the will to bring the antiquated infrastructure at No. 1 Colliery up to modern standards. Irrespective of the drawbacks or merits of this proposal, GNRE is not an appropriate corporation to extract this coal or operate this colliery.	• Since 2004 NRE have invested more than \$600 million re-establishing production and progressively upgrading operations (mining equipment, mining infrastructure and environmental controls) to meet current day standards. • In 2008 NRE started on seeking the necessary approvals with the view of establishing an operating mine with a minimum life of 18 to 20 years. • To date we have spent more than \$4.1 million on studies and reports to support these approvals. • This data base is being expanded with further monitoring and investigations and it is anticipated that at least a further \$4 million will be spent on over the next 3 to 4 years on these studies.
I recognise that jobs and royalty revenues may be lost with the rejection of this entirely unacceptable proposal. (Although, I note that this modification cuts jobs from the Preliminary works commitment by about 100 jobs or a third of the No.1 Colliery workforce.) However, the broader community interest and inter-generational considerations are of greater significance. The number of jobs at stake is small relative to the regional work force and likewise the royalty revenues are very small relative to annual State and Federal incomes. The value of the natural assets that would be put in harm's way by this proposal cannot be sensibly quantified; they are priceless.	Employee numbers are estimates in EA's and actual employee numbers for an ongoing operation are reliant on two elements: 1) Operational viability dictated by coal prices and operating costs 2) Gaining approvals to allow ongoing proposed operations in a timely manner Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occur or upgrades of equipment take place. Mining Royalties to the State Government for 2011 to 2012 are estimated to be in the order of \$1.48 billion of which coal mining accounts for 95%; \$1.4 billion in royalties. The royalties paid by NRE No.1 Mine to the State Government for 2011-12 were \$2.22 million; about 0.16% of the total coal royalties. While this could be regarded as a minor or very small contribution the same does not apply in respect of a local or regional perspective. For the Greater Wollongong and Illawarra Region (post code commencing in 25) there are 184 employees of the NRE No.1 mine who in 2011-12 received a total \$314,864 per week as wages or salaries. This is a direct annual contribution of \$16.37 million into the local or regional economy. In addition to this for 2011-12 a further \$16.38 million was paid to contractors or suppliers of mining related service who operate in the Greater Wollongong and Illawarra Region (post code commencing in 25). This is a significant local contribution.

NAME WITHHELD 13

COMMENT	RESPONSE
I would like to formally object to Gujarat NRE's Modification No 1 to their Preliminary Works approval MP 10_0046 to allow for longwall mining LW4+ 5 at No 1 Colliery in Russell Vale.	Noted. Comment directed to DP&I
The reason I am objecting to this proposal are as follows: · Insufficient time allowed by DoP+I to make informed submission on such a large and complex application;	Noted. Comment directed to DP&I
· Insufficient documentation for application, as MP referred to in Modification are yet to be approved or available to public;	This modification proposal will not result in changes to activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. As a result the draft Management Plans for the Russell Vale Pit Top were not included in the application. The main issue that seems to have contributed to the issues described are that the project is a subset of a proposed much larger project. As such some of information that provided context in relation to the larger proposed project was not available. NRE acknowledges that it can improve the quality of its documentation and will endeavour to do so in liaison with DP&I for future applications.
· Poor documentation for application, as some appendices apply to whole site rather than being LW4 + 5 specific;	This modification proposal will not result in changes to activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. As a result the draft Management Plans for the Russell Vale Pit Top were not included in the application. The main issue that seems to have contributed to the issues described are that the project is a subset of a proposed much larger project. As such some of information that provided context in relation to the larger proposed project was not available. NRE acknowledges that it can improve the quality of its documentation and will endeavour to do so in liaison with DP&I for future applications.
· Piece meal application made again by GNRE. Application should be fractionated further, the Expansion DA should be only further application);	The original application submitted by NRE was withdrawn in liaison with DP&I to be resubmitted as s Preliminary Works and Major Underground Expansion Pt3A's. This was agreed between NRE and DP&I to facilitate approval of some minor extraction and surface facility preparation while the likely more lengthy approval for longwalls was processed. This current approvals approach has not evolved in a manner that is favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE for commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
· Insufficient alternative consideration to the Longwall option;	Due to current medium and long-term coal pricing, methods of first workings only for coal extraction are uneconomic
· Water security concerns, regarding longwall mining under the Sydney Water Catchment Area;	Noted. Comment directed to DP&I
· Damage to upland swamps, ground water and perched aquifers;	NRE has completed a complete remapping and identification of every swamp over the current and future proposed longwall mining areas. It has developed a new best practice impact assessment methodology based on guidance from the recent listing of Upland Swamps in the Threatened Species Conservation Act, Southern Coalfield Inquiry, Bulli Seam and Metropolitan PAC reports and the new OEH draft Upland Swamp Guidelines. This methodology has included accurate ground based swamp boundary mapping and detailed ecological community classification. The methodology also includes an assessment of groundwater dependency and potential future minor groundwater or surface water flow path changes to assess likelihood of impact. It has been reviewed by various experts including OEH. Biosis has just completed a comprehensive assessment of all upland swamps as a part of Gujarat's Major Expansion Project., including upland swamps located above Longwalls 4 and 5. This included the use of LiDAR data to identify upland swamps, detailed ground-truthing and mapping of all vegetation sub-communities within upland swamps. The revised Upland Swamp Environmental Impact Assessment Guidelines (OEH 2012) were used to identify upland swamps of 'special significance' within the study area. An impact assessment was undertaken using initial risk assessment, comparative analysis, groundwater assessment, flow accumulation modelling and an assessment of strains and potential for fracturing of bedrock. This assessment identified that CCHS3 (referred to as CCUS3 in the revised impact assessment), previously mapped as one larger upland swamp, actually consists of two upland swamps that are reliant on divergent flow pathways, and are contained within different catchments. Detailed assessment of these upland swamps also identified that neither supports Tea-tree Thicket (MU43). Therefore neither upland swamp meets criteria for special significance as defined by OEH (2012). In addition, groundwater monitoring of CCHS3 has not recorded any groundwater within this upland swamp. It is likely that CCHS3 is dry for most of the year and is largely reliant on surface water flows and rainfall. The impacts of fracturing of the bedrock below this upland swamp are unlikely to result in the loss of groundwater within this upland swamp. CCHS4 contains Banksia Thicket (MU42), Tea-tree Thicket (MU42) and Cyperoid Heath (MU44c) and is thus considered to be of 'special significance'. Thus a detailed impact assessment was undertaken. This identified that the predicted subsidence associated with the overall project would be unlikely to result in significant changes to the swamp. The rockbar associated with this upland swamp is located outside of the predicted limits of subsidence for LW5 and is unlikely to be impacted as a result of the extraction of coal from LW4 or 5.
· Damage to environmental ecosystems, threaten species and greenhouse gas emissions;	Flora, fauna and ecological communities reliant upon groundwater or surface water are most susceptible to impacts associated with subsidence. This includes upland swamps and associated flora and fauna, as well as species residing in creeks, particularly species breeding within creeks. Upland swamps located above LW4 and 5 are considered at a negligible risk of negative environmental outcomes. Thus, species reliant upon upland swamps are also considered at negligible risk.

	Breeding habitat for threatened frog species has been mapped in detail. Breeding habitat is limited in extent, and no significant habitat is located above longwalls 4 or 5. Although there is some risk of impact to flora and fauna, it is considered that this risk is so small as to not be worth considering.
- Loss of amenity to the residential area because of noise and dust;	Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWP&C to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward. In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. NRE has proposed air & noise monitoring program into their Noise and Air & GHG Management plans to ensure compliance with their Preliminary Works Project approval conditions for air & noise compliance monitoring requirements. These plans have submitted to DoPI for their approval on 31/08/12. Also, NRE has placed a order for real time air & noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise and Air & GHG Management plans from DoPI. NRE have taken additional steps ensure compliance with their EPL Licence Conditions and improved transport management which are following: (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan.
- Trucks;	Noted. Comment directed to DP&I
- Change in surrounding suburban area;	Noted. Comment directed to DP&I
- GNRE's inability to properly manage the development;	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWP&C to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward. In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance.
- Socio Economic/employment;	Noted. Comment directed to DP&I
- Miscellaneous items.	Noted. Comment directed to DP&I
Fractionated Development Application Process: The Preliminary Works Project at No 1 Colliery Russell Vale was approved on the 13 October 2011 for the continuation of mining and ancillary operations, being Stage 1 of the Major Expansion. This Major Expansion was supposed to be approved Dec 2010. This Preliminary Works application was deemed contentious by several State Government agencies that stated they "do not consider it good practice to separate elements of the proposed new mining area into separate projects resulting in the assessment being undertaken in a piecemeal fashion". Now GNRE has fractionated the development yet again, by applying for this Modification (Mod). Longwall mining could never be considered preliminary works, it is an operation that belongs in the Stage 2 Expansion DA. For this reason alone, the Mod should be refused.	The original application submitted by NRE was withdrawn in liaison with DP&I to be resubmitted as s Preliminary Works and Major Underground Expansion Pt3A's. This was agreed between NRE and DP&I to facilitate approval of some minor extraction and surface facility preparation while the likely more lengthy approval for longwalls was processed. This current approvals approach has not evolved in a manner that is favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE for commercial reasons. As a result this current modification application, involving one already extracted longwall (LW4) and one additional longwall (LW5) has been brought forward out of the much larger future extraction proposal. The request for approval of Maingates 6, 7 & 8 has been included from a mining continuity perspective. The extraction of gateroads is a lengthy process that must be completed prior to the possibility of future longwall extraction. If the gateroads are not ready in time for the installation of the longwall then it can cause significant discontinuity in longwall production leading to potentially difficult commercial difficulties as explained above.
The Mod states that the reason for the modification is to ensure the ongoing viability of the mine due to protracted time frames in obtaining approvals. This is an erroneous statement. GNRE have an approval to remove remnant coal from the Bulli Seam (the V Panels) but have decided not to opt for the longwall option.	This is correct. NRE does have approved to remove remnant coal from both the V-Mains and P & O Panels. NRE is currently not progressing that extraction due to current coal pricing and the significant development works required to extract V Mains, V Mains is uneconomic in the present economic climate.
GNRE have been tardy in putting together the appropriate documentation for their Expansion DA, due to GNRE'S lack of resources and the development being problematic. GNRE have approval under their Stage 1 DA to remove coal from the V Panels in the Bulli Seam but have decided that they no longer want to pursue this option due to economic considerations. Yet they are required under their coal lease to remove as much coal as possible but again they refuse to adopt their approved mining right	This is correct. All leases contain a resource recovery clause that allows the DRE to consider a Colliery's reasoning for not extracting a coal resource that is currently considered to be commercially viable. NRE does have approved to remove remnant coal from both the V-Mains and P & O Panels. NRE is currently not progressing that extraction due to current medium and long-term coal pricing, methods of first workings only for coal extraction are uneconomic. V Mains panel is limited in recoverable resource and was originally designed as a transitional mining area until further longwall mining areas were developed - due to geological constraints; it is also unsuitable for longwall mining.
GNRE were requested on 18 August 2009 by the Director General of DoP+I to provide adequate information to support their Expansion DA. This information has still not been submitted. Clearly the time has been protracted by GNRE, for it has been three years since the DGR were issued.	That request relates to the original application submitted by NRE which was withdrawn in liaison with DP&I to be resubmitted as s Preliminary Works and Major Underground Expansion Pt3A's. This was agreed between NRE and DP&I to facilitate approval of some minor extraction and surface facility preparation while the likely more lengthy approval for longwalls was processed
DRE approved a SMP for LW4 on 26 March 2012, subject to meeting certain conditions and additional documentation. This was subsequently approved 30 July 2012. This approval by DRE is now an ongoing Land and Environment Court case instigated by IRRM about the approvals legality under clause 8K of the Environmental Planning and Assessment Act. The extraction has been completed on this longwall, so it is curious to see GNRE include it in its Mod. Are they trying to make amends their illegal SMP?	Noted. Comment directed to DP&I

Submission time frame and poor documentation: There was only three weeks allowed for the public consultation component of this Mod. (GNRE advised concerned residents that the period was four weeks but later said that was their error.) Three weeks is insufficient time to read and digest a 900 page document and then make an informed submission on such a large and complex application, particularly when a large portion of the documentation is missing or nonexistent. There were many requests made to extend the exhibition period but they were all declined by DoP+I.	Noted. Comment directed to DP&I
Poor documentation has become a major issue in this modification. There have been missing SMP Management Plans from the DoP+I website; approved Management Plans (MP) mentioned in the Mod that did not exist; an updated Statement of Commitment not being correct, that was amended and only made public late on Friday 31st; Management Plans that magically appeared on Wednesday 28th; Extraction Plan and Subsidence Monitoring Plan missing from Appendix j. DoP+I have acknowledged all this missing or incorrect information but still would not extend the exhibition period, even when new information was made available one working day from the end of the exhibition time.	Noted. Comment directed to DP&I
In GNRE's Mod there are numerous references to Management Plans. These MP's, either associated with the SMP for LW4 or required under GNRE Preliminary Works DA. The SMP MP's were specified in the Mod as being included in Appendix J but in fact this information was not included on the DoP+I website in its entirety (Public Safety, Heritage, Water, Electrical Transmission Lines MP's). The MP's required under the Preliminary Works DA are actually not yet approved (over four months overdue) and are not available to the public during this public exhibition stage of the modification planning process (Noise, Air Quality & Greenhouse Gas, Traffic, Surface Facilities Water MP's). It should also be noted that an Extraction Plan and Subsidence Monitoring Plan were also stated as being included in the notorious Appendix J but are missing in not only the DoP+I website but also the viewable hard copies.	NRE advised DP&I on 23 August 2012 of the omitted plans on its website. As stated in Section 1.2 of the EA, Appendix J was included to give an example of what the content and structure of an Extraction Plan might be. It was available in electronic form on the NRE website and all hardcopies were printed with Appendix J as a standalone folder containing all the relevant management plans. References to 'approved management plans' The references made throughout the document were intended to reflect NRE's intent to adhere to future approved Management Plans as required by MP10_0046 Pt3A approval conditions.
In the Mod there is a Statement of Commitments; this Statement has been altered with the additional amendments shown in red. However there are numerous items that have been added that have not been highlighted, such as- NRE will undertake regular meetings with the CCC, to provide timely and accurate information on major approvals issues and general operational aspects of the Colliery. And also items have been deleted and not noted, such as- "GNRE will conduct regular community liaison meetings and provide regular updates to the community both during construction and operation of the project." This unacknowledged removal and replacement of information gives a totally different meaning of their commitments and alters their commitments that have been made during the Preliminary Works DA. This Statement was then altered and made public with only one working day left until the end of the exhibition period.	Changes were made to the Statement of Commitments for three reasons: 1) The first change was made as a result of interpretation issues surrounding management plan references brought to both NRE and DoP+I's attention by a members of IRRM on 22 August 2012. The original text was intended to reflect NRE's intent to adhere to future approved Management Plans as required by MP10_0046 Pt3A approval conditions. These plans have not yet been approved by the Department of Planning & Infrastructure but, when approved, will become a part of the Statement of Commitments and therefore enforceable as such. Members of the IRRM pointed this out and were advised of the intent of the wording. The wording was changed to minimise confusion. 2) There were also errors that were picked up in the Statement of Commitments by the public where NRE had failed to highlight in red some additions to the Statements of Commitments. As soon as this was pointed out NRE addressed the errors and reposted the corrected Statement of Commitments. 3) Some of the lines of the original Statement of Commitments were left out of the modification application because there was no intent to change them. The Timings column was similarly omitted so that only Statements that were going to be changed were in the modification. This was explained to a representative of IRRM who indicated to NRE that this may cause some to come to the conclusion that NRE was attempting to hide issues. As a result of these criticisms, and in liaison with DoP+I, NRE updated its Statement of Commitments to address any issues of confusion, or implications of non-transparency. This occurred late in the process
There are numerous Impact Comparison and Mitigation Measures mentioned in this Mod. These comparisons have no relationship to each other, the mining location is different (V Panels to LW5), the mining methods are different (Pillar extraction to longwall mining) and the affected features are different (Lizard Creek to Cararack Creek). I fail to see how is it possible to make a comparison between two different things? Are the new Impact Comparison and Mitigation Measures going to override the old ones and if so, does this mean that the V Panels are not going to be mined? What a confusing document. This is a gross oversight on the part of the DoP+I and very misleading documentation on the part of GNRE.	The subsidence impact predictions as well as management and mitigation measures are for the extraction of LW5 only and don't replace or override any of the impact prediction or management measure for V Mains or other extraction mentioned in the Preliminary Works EA
The missing MP's are the ones that have the most impact on the surrounding community. How is it possible that the public can be asked to comment on an application that relies on supportive documentation that is not even available to them or has so many errors or misleading statements?	This modification proposal will not result in changes to activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. As a result the draft Management Plans for the Russell Vale Pit Top were not included in the application

GNRE have proved that they are incapable of being self-regulated or trusted to carry out even simple conditions because of their indiscretions and multiple non-compliances over the past year. I believe that they should be more heavily regulated and monitored until they can prove they have the capacity to behave in a moral and professional manner. In this regard, it is important that DoP+I regulate them heavily and ensure that their conditions are monitored in the strictest possible way, unlike their Preliminary Works DA conditions.	NRE has had recent historical issues with non-compliance for a variety of reasons. Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPac to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward. In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. NRE has proposed air & noise monitoring program into their Noise and Air & GHG Management plans to ensure compliance with their Preliminary Works Project approval conditions for air & noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time air & noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise and Air & GHG Management plans from DoPI. NRE have taken additional steps ensure compliance with their EPL Licence Conditions and improved transport management which are following: (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whist loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan.
GNRE have been reprimanded by DRE for poor and misleading documentation of their SMP submission for LW4 + 5 and now I see that DoP+I has allowed GNRE's poor documentation of this Modification to pass their scrutiny.	NRE has been advised by DRE via a letter on 23 August 2012 that it's LW4 & 5 SMP application was based on a "community consultation process that falls short of community expectations and industry best practice. As such DRE request that the Colliery enhance their community consultation process going forward." Further the letter requested a resubmission of the community consultation process that would address all the consultation requirements of the SMP Guidelines for Applications for Subsidence Management Approvals. This request has been somewhat overtaken by events related to the submission of the LW4 & 5 and MG 6,7 & 8 Pt3A modification application. DRE has recently advised NRE that While an SMP is still required to be lodged for the extraction of LW5. This will be undertaken as a parallel but separate application to the Extraction Plan that will be required by DP&I
Subsidence: The Pells Report- "The prediction of the impacts of subsidence on swamps, creeks, groundwater and infrastructure depends on the accuracy of the subsidence predictions themselves. However, it is a fact that these predictions of subsidence, and in particular tilts and ground surface strains, is fraught with uncertainty. The main reason for this is the impact of geological structures, often unknown, and, in the case of multi-seam mining is exacerbated by limited precedent." This statement is very illuminating and damning in itself.	These issues are addressed by SCT 2012 in Attachment A of this Response Report.
This three tier mining that GNRE are experimenting with is very unique and has many problems and concerns in regard to predicting subsidence under our water catchment area. It also brings with it more concerns about being able to cease mining immediately should a major subsidence occur. Longwall mining is a very destructive method mining and is very difficult to stop part way through a panel extraction if necessary. The Mod includes LW4, this longwall section is in fact almost completely extracted. The predicted subsidence for LW4 could be used in the prediction of subsidence for LW5 and others in the area. It would also be useful information to give the public so they can make an informed decision on the Mod. I have obtained verbal figures from GNRE staff about subsidence dimensions of LW4 so far: First working subsidence was predicted to be 20mm, whereas the actual subsidence was 28mm; Longwall mining subsidence was predicted to be 200mm, whereas the actual subsidence was 1280mm. So it can be seen that the predictions are very inaccurate. First workings a 40% error and Longwall mining a 540% error. I think that GNRE and DoP+I should postpone this development until the end of panel report has been completed on LW4.	Until LW4, to the best of NRE's knowledge, it would appear that triple seam mining has not occurred in Australia previously. The fact that something has not been done before doesn't necessarily mean it is too risky. Multi-seam mining is a common practice in Europe, particularly the UK. These issues are addressed by SCT 2012 in Attachment A of this Response Report. Significant effort, time and cost has been spent on monitoring over the last 3 years in the area proposed to be mined. Further work continues to further refine and improve both data collection and interpretation. This information contained in the SMP plans in Appendix J contain all the monitoring and mitigation measures that were proposed and undertaken for LW4. These measures will be extended and improved for LW5 as part of an Extraction Plan & SMP plan application
Water security: The Longwall LW4 + 5 are located under the Sydney Water Catchment Special Area. Given that the life of this coal mine is only 15 years and that the necessity to maintain a secure water systems stretches into the hundreds of years, the coal is probably more valuable left in place in order to securing this precious resource. Maybe it is time that we put a monetary value on this commodity and this unique catchment area. We do not have the right to destroy this wonderful resource, it belongs to future generations.	Noted. Comment directed to DP&I
Water: Recent reports of damage to the Waratah Rivulet, loss of water in the Woronora Dam and the draining of the Thirlmere lakes, all attributable, in full or in part, to damage from longwall mining, are alarming.	Noted. Comment directed to DP&I
Risk assessment is just an estimate of risk of subsidence based on available information and Phillip Pells acknowledges that there is little precedent of multi seam longwall mining upon which to base this estimate. The precedents cited are only observances of subsidence effects in the short term. The experts don't know what the cumulative effect of undermining of the swamps and watercourses may be in 50, 100 or even 200 years time?	This issue is addressed in SCT 2012 in Attachment A of this Response Report Biosis is not aware of any assessment of impacts of multi seam mining in Australia in flora and fauna. Impact assessments undertaken have relied upon subsidence predictions provided. The risk assessment identified that subsidence associated cracking of the base of swamps can pose a risk to the water levels and water holding capacity of swamps, and therefore a process of assessing the significance of each subject swamp, and assessing which swamps need to be protected, and the measures required to do so have been identified and need to be adhered to as part of an overall swamp management strategy.
Although the subsidence impact and loss of water may not be large, the development should not be considered in isolation from the Expansion DA that plans to longwall a much larger area. The accumulative effect of dozens of longwalls with minimal subsidence is in fact The proposal's inclusion of operational gateroads 6, 7 and 8 indicates the applicant's intention to mine much more extensively and therefore the consideration of subsidence of longwall's 4 and 5 alone is at best piecemeal and could be construed as negligent.	This approvals approach is not favoured by NRE. It is, however, a currently unavoidable requirement from a company commercial perspective to ensure continuity of operations. Any delay in longwall operations will have a significant commercial impact on NRE's operations. A significant delay may have implications for suppliers, contractors and employees. Neither of these outcomes is desired by NRE.

The Mod states- modelled subsidence induced cracking could potentially affect stream flow in the reaches overlying and downstream of the proposed workings, although the anticipated stream flow losses would have little impact on the Cataract Reservoir water storage volume. There will be numerous longwalls under taken at this mine. Given that this is another GNRE piecemeal application it should not stand alone in its impacts. The whole of the development should be taken into account when assessing the water loss as the accumulative effect of numerous 'little impacts' on streams could in fact be substantial. Also the comment about damaged streams self-remediating has been proven to be false and if the water does emerge further downstream it is usually contaminated from leached salts and minerals.	Given the sensitivity of Cataract Creek with regard to subsidence impacts NRE proposes to undertake intensive survey and visual monitoring of the creek. A TARP will be developed for the Extraction Plan & SMP that will include but not be limited to: 1) Monitoring intensities increasing as LW5 approaches Cataract Creek 2) Triggers based on survey, ecological, water quality and visual data indicating low level developing likelihood of impact to slowing the longwall progress 3) Triggers based on survey, ecological, water quality and visual data indicating increased likelihood of impact to stopping and removing the longwall at the nearest Maingate cut through. Limited data is available on the impacts of iron leaching on fauna species. Those species who complete part or all of their lifecycle in aquatic environments are most susceptible to impacts. This would include frogs and fish species, as well as invertebrates. Anecdotal evidence indicates that that, provided pool levels do not drop during critical lifecycle stages, frog species can cope with iron leaching within waterways, and tadpoles have been observed to feed on iron flocculent within creeks. This issue is addressed in SCT 2012 in Attachment A of this Response Report <u>NRE will not rely on "self healing" of stream bed cracking to remediate stream flows in potentially cracked stream reaches</u>
Greenhouse gas emissions: The Mod states- "with the volume of coal production and transportation per annum as per the approved project - air quality impacts (and Greenhouse Gas) per annum are as per the approved project." but the dust is ongoing and of concern to local residents. It also states the dust will be monitored- in accordance with NRE's approved Air Quality & Greenhouse Gas Management Plan." This is curious because at the time of this Mod the MP has not been approved and is in fact over four months overdue, rendering the current project non-compliant. How much longer do the residents of this area have to suffer the tardiness of GNRE and the slackness of DoP+I.	This modification application did not remodel air quality impacts from the operation as the modification will not change the maximum 1 million tonnes per annum production on which the original Pt3A air quality assessment was based. This original assessment was based on the standard PM10, Total Suspended Particulates (TSP) and depositional dust long term air quality criteria. NRE has placed some depositional dust gauges in 4 locations in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust. In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/5/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. The intention of the statement in the modification application regarding the 'approved management plan' was to indicate that the ongoing operation of the Colliery would be managed in accordance with the DP&I mandated Air Quality & Greenhouse Gas management plan as approved. It was not meant to infer that the plan had been approved at the time of the lodgement of the EA.
The DoP+I stated in the Director- General's EA to the PAC- "It must be noted that if the project was not allowed to proceed, the resultant gap in the coking coal supply would be almost certainly filled by another coal resource either in NSW, Australia or overseas. In other words, removing the GHG emissions from the project would not likely result in any decrease in global CO2 emissions." So I will not hold our breath for a sensible and sustainable outcome from the approved Air Quality & Greenhouse Gas Management Plan.	Noted. Comment directed to DP&I
GNRE have stated in their Mod that they will investigate opportunities to capture and/or reuse ventilation gases but gives no time frame or any tangible commitment. Their Preliminary Works DA mentioned the same statement but put a 2015 timeframe on it, one year after the expiration of this DA. Given that methane is 20 times more damaging than CO2 as a GHG, I think GNRE and the NSW State Govt should show some responsibility and due diligence to the environment and the community.	There is currently no full capacity Reverse Thermal Oxidation (RTO) plant for underground coal mines in Australia. The BHP pilot plant at Westcliff Colliery draws only 10% of ventilation air capacity through a fresh air interface, and is being used to determine if the process is viable due to the large ventilation volumes, and consequently relatively small percentage of CH4, required for underground coal mining. There is no approved design for connecting the mine ventilation air directly to an RTO plant that will mitigate risk potential risks from a heat source at 960 degrees Celsius. The percentage of CH4 in the ventilation must exceed 0.2% in order to commence the oxidation process, and ideally needs to be in the order of 1% to be able to generate electricity. Currently NRE No.1 Mines Ventilation Air Methane (VAM) is in the order of 0.3% CH4, which is marginal for a sustained RTO process and impractical for power generation. It is not until we mine west of fault adjacent LV11 that the in seam CH4 concentration is predicted to increase. In seam drilling, currently planned for later next year when the mains have advanced towards the fault, will quantify the in seam gas make and concentration to determine the suitability of an RTO process. Hence the current 2015 target date for actioning control measures for VAM. GNRE have commenced discussions with an RTO supplier to trial their mini 2m3/s unit to test if we can sustain the RTO process at our current emission levels.

Air Quality: The Mod states- "with the volume of coal production and transportation per annum as per the approved project - air quality impacts (and Greenhouse Gas) per annum are as per the approved project." but the dust is ongoing and of concern to local residents. It also states the noise will be monitored- in accordance with NRE's approved Air Quality & Greenhouse Gas Management Plan." This is curious because at the time of this Mod the MP has not been approved and is in fact over four months overdue, rendering the current project non-compliant. How much longer do the residents of this area have to suffer the tardiness of GNRE and the slackness of DoP+I.	In accordance with Schedule 3, Condition 21 of MP 10_0046 approval, the Air Quality & Greenhouse Gas Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 11/5/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. The intention of the statement in the modification application regarding the 'approved management plan' was to indicate that the ongoing operation of the Colliery would be managed in accordance with the DP&I mandated Air Quality & Greenhouse Gas management plan as approved. It was not meant to infer that the plan had been approved at the time of the lodgement of the EA.
The air quality monitoring mentioned in the Preliminary Works DA only mentions monitoring particulate matter down to 10 microns (PM10). As the mining industry and NSW State Government are currently aware, the real concern is particulate matter smaller than 2.5 microns (PM2.5). I believe it is time that this industry and the Govt took some responsibility for the health of the community and showed a bit of due diligence. All insoluble particulates are a danger to our health but it is extensively documented that diesel fumes, coal and silica dust are of special concern and 10 micron particulate matter causes less severe health effects than finer particles below 2.5 microns. Yet the mines in NSW are only required to record particulate matter to 10 microns. Dust has always been problematic at this mine (probably due to the close proximity to residential areas that GNRE bought into and to the fact that they bought antiquated infrastructure) and GNRE need to demonstrate that they have the ability to operate this mine under 2012 regulations and afford an acceptable amenity to the surrounding community.	NRE has accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust. New trucks compliant with the Euro 5 standard for emissions control are being purchased by NRE's trucking contractor. Euro 5 regulatory standard regulates emissions from all combustion engines with the goal to limit as much as possible the negative impact of road vehicles on the environment and health. The Regulation covers a wide range of pollutant emissions: carbon monoxide (CO), non-methane hydrocarbons and total hydrocarbons, nitrogen oxides (NO_x) and particulates (PM). It covers tailpipe emissions, evaporative emissions and crankcase emissions. It sets limits for emissions from diesel vehicles as follows •carbon monoxide: 500 mg/km; •particulates: 5 mg/km (80 % reduction of emissions in comparison to the Euro 4 standard); •nitrogen oxides (NO_x): 180 mg/km (20 % reduction of emissions in comparison to the Euro 4 standard); •combined emissions of hydrocarbons and nitrogen oxides: 230 mg/km.
"In May 2003, the NEPC made the Variation to the Air NEPM which strengthens air quality standards to help protect Australians from the adverse health impacts of small pollutant particles. The Variation introduces advisory reporting standards for fine particles 2.5 micrometres or less in size (known as PM2.5). These are known to produce respiratory and cardiovascular illness." "Emissions from motor vehicles constitute the most significant source of urban air pollution in Australia. Continued annual growth in vehicle kilometres travelled and fuel consumption by the diesel fleet highlights this as an area of growing concern from the air quality perspective. Analysis of the Australian diesel fleet shows that diesel vehicles are increasing as a proportion of the total fleet. The emissions of most interest in relation to diesel vehicles are oxides of nitrogen (NOx) and fine particles. NOx is a precursor to the formation of photochemical smog, and fine particles have been identified as a major health risk."	NRE has placed some depositional dust gauges in 4 locations in the local community around the Colliery to determine the offsite impacts of the Colliery's activities. Currently, if depositional dust exceeds 4mg/m2 visual assessment of the dust at an approved analytical laboratory is undertaken to try to identify all the current contributors. Visual inspection of the dust will now be undertaken irrespective of amount to help determine what the actual sources of the local dust are. This process will help focus NRE as well as regulators and the local community on all the potential sources of dust that are affecting the area so that, if necessary, further investigation can be undertaken as to other sources of dust (both from the Colliery and other locations). NRE has also accepted the community's concern regarding the PM2.5 dust issue and has currently ordered real time air quality monitors that can measure down to 2.5um. It is hoped this action will provide valuable data to work with the community and inform continued air quality improvement through the Colliery's ongoing Air Quality & Greenhouse Gas Management Plan once approved by DP&I. This plan's performance is required to be reviewed at least annually and improved where possible as an outcome of this Annual Review. NRE will also purchase a portable air quality monitor that can measure PM10 and PM2.5 dust particles to allow offsite air quality measurement at potentially affected premises. As this new data is acquired and interpreted it will allow the Colliery to develop a more targeted air quality management program based on clearer comparison with Colliery vs. local and regional non point source dust. New trucks compliant with the Euro 5 standard for emissions control are being purchased by NRE's trucking contractor. Euro 5 regulatory standard regulates emissions from all combustion engines with the goal to limit as much as possible the negative impact of road vehicles on the environment and health. The Regulation covers a wide range of pollutant emissions: carbon monoxide (CO), non-methane hydrocarbons and total hydrocarbons, nitrogen oxides (NO_x) and particulates (PM). It covers tailpipe emissions, evaporative emissions and crankcase emissions. It sets limits for emissions from diesel vehicles as follows •carbon monoxide: 500 mg/km; •particulates: 5 mg/km (80 % reduction of emissions in comparison to the Euro 4 standard); •nitrogen oxides (NO_x): 180 mg/km (20 % reduction of emissions in comparison to the Euro 4 standard); •combined emissions of hydrocarbons and nitrogen oxides: 230 mg/km.
Noise: The Mod states- "The production volumes and associated transportation activities are as per the approved project. Hence the proposed modification works are unlikely to result in noise impacts beyond those previously assessed." but the noise is ongoing and of concern to local residents. It also states the noise will be monitored- "in accordance with NRE's approved Noise Management Plan." This is curious because at the time of this Mod the MP has not been approved and is in fact over four months overdue, rendering the current project non-compliant. How much longer do the residents of this area have to suffer the tardiness of GNRE and the slackness of DoP+I.	In accordance with Schedule 3, Condition 16 of MP 10_0046 approval, the Noise Management Plan was due to be submitted to DP&I on 13 April 2012. It was submitted on 16/5/12. The plan was reviewed by DP&I and returned to NRE to undertake further consultation on its development with a required resubmission date of 31/08/12. It was resubmitted on 31/08/12. The intention of the statement in the modification application regarding the 'approved management plan' was to indicate that the ongoing operation of the Colliery would be managed in accordance with the DP&I mandated Air Quality & Greenhouse Gas management plan as approved. It was not meant to infer that the plan had been approved at the time of the lodgement of the EA.

The mine infrastructure at GNRE No1 Colliery has an exhaust fan (in fact the only exhaust fan from the Wongawilli Seam) located only several hundred meters from residential areas. I have been informed by GNRE that this exhaust portal could have up to five fans located on it. At the moment there is only two and the noise is creating concerns in the area. I suggest that the fan portal be relocated to a shaft on top of the escarpment to move the noise generator to a more distant location.	This modification proposal will not result in activities on the surface in addition to those approved as part of the Preliminary Works Pt3A approval. Distance is not always a good indicator of impact from noise sources. The fan noise from the Wongawilli Colliery portal construction fan was heard in Horsley at a distance of approximately 3km yet was not heard by the Colliery's closest neighbours less than 1km away. This was due to a variety of reasons include the low frequency and tonal characteristics of the noise, topography, wind direction and temperature inversions. The matter was dealt with rapidly, in liaison with the EPA, by erecting acoustic screens around the fan. However, NRE has undertaken significant work to address the community's concerns regarding noise and ensure it complies with the conditions in the Preliminary Works Pt3A approval. NRE has proposed noise monitoring program into their Noise Management plan to ensure compliance with their Preliminary Works Project approval conditions for noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time noise monitoring equipments earlier to reduce lead time for these equipments without having an approval for their Noise Management plans from DoPI. NRE is planning to carry out a noise audit earlier as required by its Preliminary Works Part 3A approval to evaluate all reasonable and feasible measures to mitigate operational noise levels to comply with the long term noise goals. An action plan will develop to implement the audit recommendations.
Community: A Community Consultative Committee has finally been set up after a long hard fought battle by IRRM and community members. GNRE were trying to supplant the DoP+I CCC model with their own strategy. (This strategy was going to include a 50 strong panel, members selected by GNRE's consultant and run by GNRE themselves.) It is now curious that GNRE stated in their Mod - "Previous to establishing a CCC, NRE undertook interviews with the community utilising an independent third party to assist in understanding the community's key interests. NRE identified some key steps in Community Engagement as follows: Step 1 – Identifying stakeholders / community of interest and the role they can play in Gujarat NRE's community engagement. Step 2 – Interview those key community stakeholders and research / understand their interests and experience of effective community engagement. Step 3 – Determine from these key community areas/groups, what is believed to constitute effective community engagement and interpret the key messages. Step 4 – Build community engagement with the community utilising Community Engagement Principles drawn from Step 2 - Community Interviews. Step 5 – Integrate the above into a Community Consultative Committee." This statement suggests that GNRE were attempting to broker an accord rather than trying to deny the community of an independently chaired proven model that is the minimum requirement of every mine in NSW. It is even more curious that while this process of an alternative community consultation strategy was going on, GNRE was in the process of an approval SMP with DRE containing misleading community consultation documentation. They also neglected to mention the fact when they gave the community involved an update of their approval process.	1) CCC has been established. 2) Approvals based Community Information Days are undertaken 3) 2 general Community Information Days per year
The Mod contains a Statement of Commitment that is misleading and very erroneous. The Statement contains unacknowledged removal and replacement of information that gives a totally different meaning of their commitment. Under the new Mod Statement of Commitment, GNRE will do all their dissemination of community information through the CCC that was required under their DA and they will be no longer bound to have meetings or provide newsletters to the community as stated in the Preliminary Works DA. This is a not an appropriate way to consult or inform the community.	Changes were made to the Statement of Commitments for three reasons: 1) The first change was made as a result of interpretation issues surrounding management plan references brought to both NRE and DoPI's attention by a members of IRRM on 22 August 2012. The original text was intended to reflect NRE's intent to adhere to future approved Management Plans as required by MP10_0046 Pt3A approval conditions. These plans have not yet been approved by the Department of Planning & Infrastructure but, when approved, will become a part of the Statement of Commitments and therefore enforceable as such. Members of the IRRM pointed this out and were advised of the intent of the wording. The wording was changed to minimise confusion. 2) There were also errors that were picked up in the Statement of Commitments by the public where NRE had failed to highlight in red some additions to the Statements of Commitments. As soon as this was pointed out NRE addressed the errors and reposted the corrected Statement of Commitments. 3) Some of the lines of the original Statement of Commitments were left out of the modification application because there was no intent to change them. The Timings column was similarly omitted so that only Statements that were going to be changed were in the modification. This was explained to a representative of IRRM who indicated to NRE that this may cause some to come to the conclusion that NRE was attempting to hide issues. As a result of these criticisms, and in liaison with DoPI, NRE updated its Statement of Commitments to address any issues of confusion, or implications of non-transparency. This occurred late in the process With regard to ongoing consultation NRE will continue with informal communications such as email, phone and face to face communications in order to respond to complaints or enquiries. In terms of broader consultation, at a minimum, NRE will utilise the following methods: 1) CCC 2) Approvals based Community Information Days are undertaken 3) 2 general Community Information Days per year
Mining Options: GNRE have stated in their Mod that there are only two options, longwall or do nothing. I believe that this is naïve, as there are also multiple options in between. The multi seam mining method being experimented with at this mine is unique and so requires a little more investigation and alternative thinking. Just because GNRE have a longwall machine does not mean that any other mining method should be excluded. Bord and pillar and pillar extraction are probably a more suitable mining method in this sensitive multi seam mining area, as if a catastrophic problem arises such as pillar run, then the mining can immediately cease. This is not the case with a long wall miner, as we are frequently being reminded by GNRE's solicitors. GNRE stated in their Preliminary Works DA that pillar extraction was the preferred and most economic option in the Bulli Seam V Panels. Maybe if GNRE had of employed the Pillar Extraction method at LW4 they would not have contaminated all the metallurgical coal with clay due to over-cut and drastically reduced its price and use. Another option would be leave it in the ground until it increases in value as to be viable under a more non destruction method.	Due to current medium and long-term coal pricing, methods of first workings only for coal extraction are uneconomic. V Mains panel is limited in recoverable resource and was originally designed as a transitional mining area until further longwall mining areas were developed - due to geological constraints, it is also unsuitable for longwall mining. Multi-seam longwall mining has been occurring safely worldwide for many years.

Socio Economic: This section starts off with a disjoint statement that the community (presume residential area) was built around the mine and because of its proximity to the site they will incur most of the impacts. This mine has the closest above ground infrastructure of any mine in the Illawarra. This mine has very antiquated infrastructure. This mine in the past actually sold off land for residential development. This mine is one of the few remaining mines that rely solely on trucks to transport coal to PKCT. This transportation is done through residential areas. This mine was on the verge of closing down in 2000 and was bought by the current owner with the knowledge that there are residential areas in close proximity. The fact still remains that this mine operates in 2012 and should be compliant under the strictest regulations because of close proximity to the built up residential area.	Extensive work has been undertaken recently in liaison with a variety of government agencies including DP&I, DRE, EPA, SCA and DSEWPaC to make improvements in management systems. New management plans, developed as part of the Preliminary Works will assist in managing compliance going forward. In particular the requirement for an Annual Review report and regular Independent Audits will ensure ongoing compliance and continual improvements of areas determined as lacking in either Audits or Reviews. NRE is currently investigating options to automate its compliance management system in order to circumvent issues related to staff unavailability which will ensure that the unavailability of one employee or consultant will not cause an avoidable non-compliance. NRE has proposed air & noise monitoring program into their Noise and Air & GHG Management plans to ensure compliance with their Preliminary Works Project approval conditions for air & noise compliance monitoring requirements. This plan was submitted to DP&I for their approval on 31/08/12. Also, NRE has placed a order for real time air & noise monitoring equipment now to reduce lead time for this equipment prior to approval for their Noise and Air & GHG Management plans from DP&I. NRE have taken additional steps ensure compliance with their EPL Licence Conditions and improved transport management which are following: (1) Introduced three strike warning system to truck drivers regarding failure to comply with Code of Conduct; (2) Commencement of NRE Coal Distribution auditing program; (3) Upgrading all the trucks with dash board warning light to ensure covering of the load; (4) More signage to ensure covering of the load; (5) Road Sweeping on Bellambi Lane once a week whilst loading from open stockpile area; (6) Dedicated water pipe line for truck washing facility; (7) Modification of existing truck washing facility to provide improved cleaning ; (8) Regular TBT talks to all truck drivers regarding requirements of Driver's Code of Conduct and; (9) All the above measures will incorporated into NRE's Traffic Management Plan.
Employment at the mine is an ongoing cry that is flaunted by GNRE. It is now curious to note that GNRE's Mod states- "The proposed modification will have a range of positive social and economic impacts to the local area, including: maintaining current employment of approximately 222 employees." Their Preliminary Works DA stated that there were to be 259 employees plus 78 contractors, a total of 337 jobs. The 222 employees is 115 down from the stated in the Preliminary Works DA and yet there is no explanation of why this has occurred. Is it because the mine are now using their longwall machine or are they further cutting costs because of their economic situation. Either way this drastic reduction in employment at the mine should not go overlooked, losing 34% of its workforce in a modification to a development approval is a major concern.	The reduction in workforce is not a result of the modification. Employee levels at the mine continually fluctuate, particularly when development into new parts of mining areas occurs or upgrades of equipment take place.
Community funding commitments were not mentioned in this modification. The Preliminary Works DA documents \$0.1m-\$0.15m commitment to specified groups over two years, is this funding to remain and why isn't it being extended under this modification.	The community support commitments have not been modified as part of this application. Gujarat NRE supported 21 different community groups and sporting organizations to the sum of \$1,386,027.91 well above \$0.1m-\$0.15m. Gujarat NRE is and always will be committed to being a good corporate citizen..
As you can see from the above I am strongly opposed to this DA proceeding in its present form.	Noted. Comment directed to DP&I