LONGWALLS 4 & 5 AND MAINGATES 6, 7 & 8

ADDENDUM TO RESPONSE TO SUBMISSIONS

November 2012

CONTENTS

FIGURES

TABLES

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
CH4	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
PM2.5	Fine particles in the air that are smaller than 2.5 micrometers (µm) in diameter
PM10	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

Agencies have concerns regarding what is perceived as a failure to update the subsidence modelling and the groundwater model with data from LW4 extraction. Swamp impact assessment was considered inadequate, particularly for CCUS4, due to being based on inadequate baseline data, inaccurate subsidence predictions, failure to change longwall layout to accommodate significant swamps and poor management planning. Inadequate monitoring of endangered frog habitat and impacts on EPBC listed frogs were also raised as issues. Further voice was given to the agencies opposition to NRE's 'piecemeal' approach to approvals.

NRE has raised some issues that have come to light as part of the ongoing LW4 post extraction monitoring including cracking of the pavement on Mt Ousley Rd, the apparent drying out of a pool (CC6) being monitored in Cataract Creek and minor movement at the Picton Road bridge.

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.

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 vastly 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 were included in **Attachment B** of the original Response Report.

NRE has modified the LW5 layout, resulting in the further reduction of predicted impacts to the significant swamp CCUS4 to negligible levels. The only prediction of impact to CCUS4 comes from the extraction of LW6 which is predicted to have low levels of impact but is not relevant to this application. The significant swamp CCUS1 is unlikely to suffer any impact at all.

The groundwater model has not been revised because despite the surface subsidence predictions changing the GW1 Vibrating Wire Piezometer and packer test data still support the original input assumptions about the post mining subsurface propagation of fracturing.

Biosis has undertaken detailed endangered frog habitat characterisation and survey. No endangered frogs have been encountered in any identified habitat, including Cataract Creek. NRE has already undertaken to implement a TARP to ensure that there is no impact to the base of Cataract Creek that may impact on the endangered frog habitat. A draft Extraction Plan and SMP application are being prepared to embody that commitment.

NRE does not want to pursue its current 'piecemeal' approach to approvals but is driven by commercial realities to do so. It is accepted that the approval of Maingates does not imply or guarantee future longwall approval and all development is undertaken at NRE's risk.

Minor cracking has been observed on Mt Ousley Rd after the completion of LW4. The nature of the cracking is very minor, less than 2mm wide, and will easily be managed as part of RMS standard road maintenance regime.

There was some concern that a pool at monitoring point CC6 in Cataract Creek had dried up after extraction of LW4. A full investigation has shown that there was no impact on Cataract Creek and that the monitoring point CC6 had been installed incorrectly. The monitoring point had actually been installed in the headwaters of a 1st order tributary of Cataract Creek over LW5. The creek was inspected by Geoterra and was confirmed as still holding water but likely to dry out regularly as is the nature of many 1st order streams. Further monitoring points will be installed in Cataract Creek pending SCA approval.

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. NRE submitted its Response to Submissions report to DP&I on 23 October 2012.

Since that time some minor additional information has become available as a result of End of Panel investigations for LW4 as well as additional work undertaken for this modification and the Underground Expansion Project (MP09_0013).

PURPOSE OF THIS RESPONSE TO COMMENTS DOCUMENT

This document forms an addendum to 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. Its intention is to answer additional matters raised by agencies.

STRUCTURE OF THIS DOCUMENT

This Addendum to the original NRE Response to Submissions Report has been structured to address further issues raised by various Agencies after reading the original report. 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 and explains why the additional information has been provided

LW5 Subsidence
Addresses the subsidence modelling and predicted impacts based on latest available preliminary subsidence survey results

LW4 Subsidence Impacts
Addresses observed and suspected LW4 subsidence impacts

Approvals Process
Raises additional issues regarding NRE's current 'piecemeal' approach to approvals

Attachments
Contains a specialist report that address issues raised by the agencies

LW 5 SUBSIDENCE

Subsidence Predictions

Issue

Lack of Updated Subsidence Predictions Based on LW4 Outcomes
NRE has been criticised for not updating subsidence predictions based on the outcomes of the LW4 subsidence monitoring.

Response

NRE is in the process of finalising subsidence monitoring for the completed LW4 at the current time. The information in this response has been provided to assist agencies to and DP&I to assess the application but must be accepted as **preliminary only** as it has not yet been subjected to full analysis by relevant experts as part of the LW4 End of Panel report.

Subsidence movement generally continues for a period after extraction of a longwall panel. Given that the current extraction involves triple seam mining, NRE has waited a period of time after the end of the extraction to allow the residual subsidence to settle to non-significant levels. This will allow higher quality data to inform ongoing extraction approval applications and Extraction Plans.

As such only preliminary data on which to base subsidence re-prediction was available for use in either the LW 4 & 5 modification application or the NRE Response to Submissions. Neither was considered complete subsidence data available for Biosis to use in their assessment of impacts to swamps in their report developed for the Underground Expansion Project which is due to be lodged with DP&I in the near future.

The most recent data indicates that the maximum subsidence experienced over LW 4 was 1384mm (138.4cm or 1.384m). Predictions of subsidence for LW5 contained in Table 7.1 of the Longwalls 4 and 5; Maingates 6, 7 & 8 EA indicate a predicted maximum subsidence of 1.145m. This is a difference of 234mm (23cm or 0.23m).

Given that the geological conditions for LW5 are very similar to LW4 then the difference between the observed subsidence of LW4 and the predictions of LW5 are only in the order of 16% based on the **original subsidence predictions**. These original subsidence predictions for LW5 will be modified if necessary when final analysis of the subsidence monitoring data is completed by geotechnical experts.

The most important aspect that has been shown by the preliminary subsidence data is that the subsidence profile of LW4 is predominantly constrained to within the limits of the longwall panel mined in the Wongawilli Seam. The effect of the overlying Bulli Seam goaf is evident in the difference in behaviour between the north subsidence line (NX shown in **Figure 2**) where the Bulli Seam goaf extends either side of LW4 and the south subsidence line (SX shown in **Figure 3**) where the Bulli Seam goaf coincidentally extends only as far as the edges of the Longwall 4 goaf. The Balgownie Seam goaf is not evident in the subsidence profiles. Preliminary indications are that strains are confined to the inside edge of the chain pillars and the centre of the longwall as shown in **Figure 4** and **Figure 5**. The maximum observed horizontal tensile strain over the chain pillars was 4.68mm/m of tensile or expansive strain on the SX subsidence survey line. The maximum observed horizontal compressive strain was 5.03mm/m of compressive strain on the NX subsidence survey line. This compares favourably to the currently predicted 10-12mm/m maximum strain for LW5. **Figure 6** and **Figure 7** show that the vertical subsidence and strain are also constrained primarily to the LW panel with little extension beyond start and finish lines.

Subsidence predictions will be further refined by subsidence and geotechnical experts to ensure that the data NRE is using to support its applications and activities is as accurate as possible.

Figure 1 - LW 4 Subsidence Survey Monitoring Plan

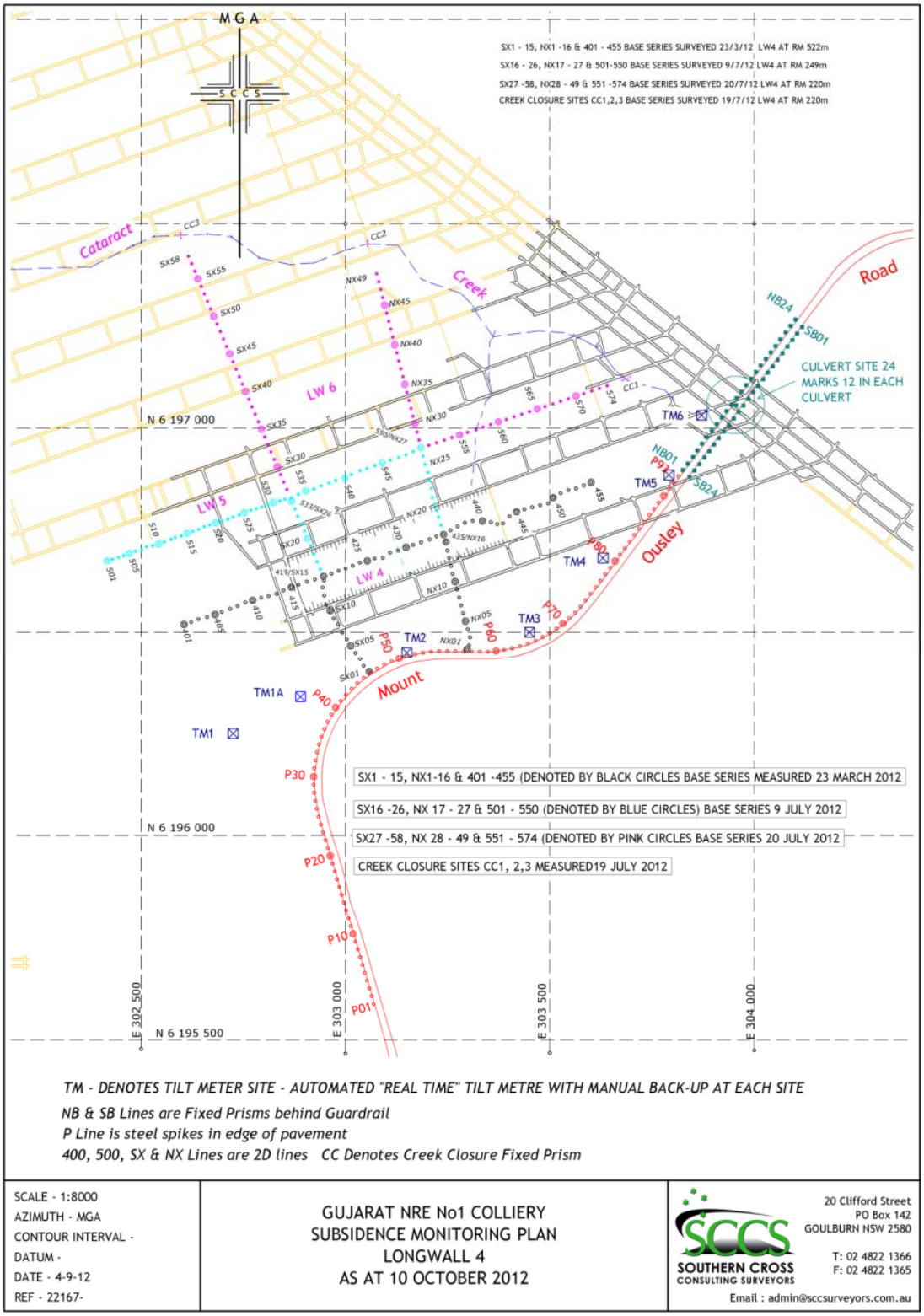


Figure 2 - LW4 Subsidence Relative to Chain Pillar Locations at the Subsidence Survey Northern Cross Line

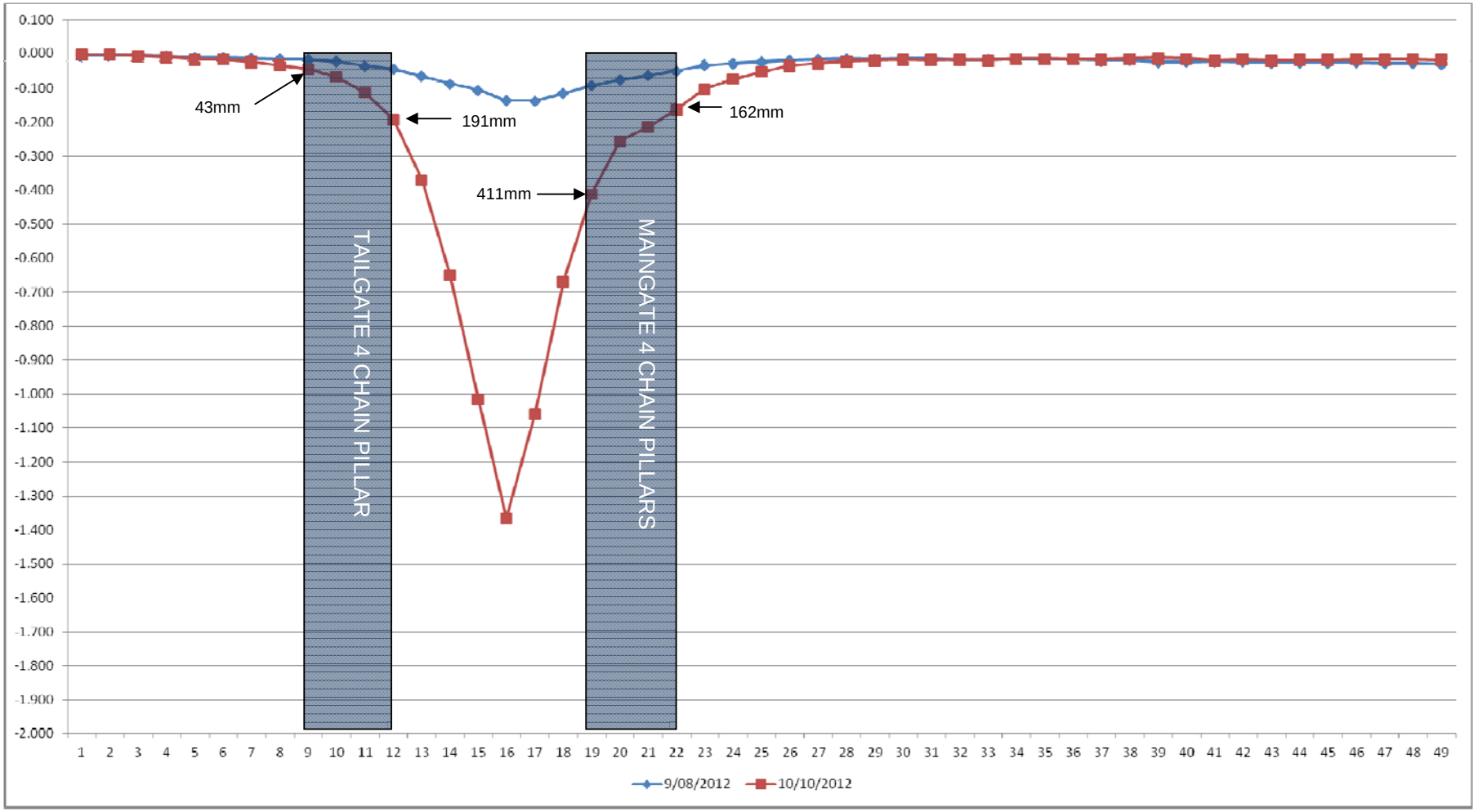


Figure 3 - LW4 Subsidence Relative to Chain Pillar Locations at the Subsidence Survey Southern Cross Line

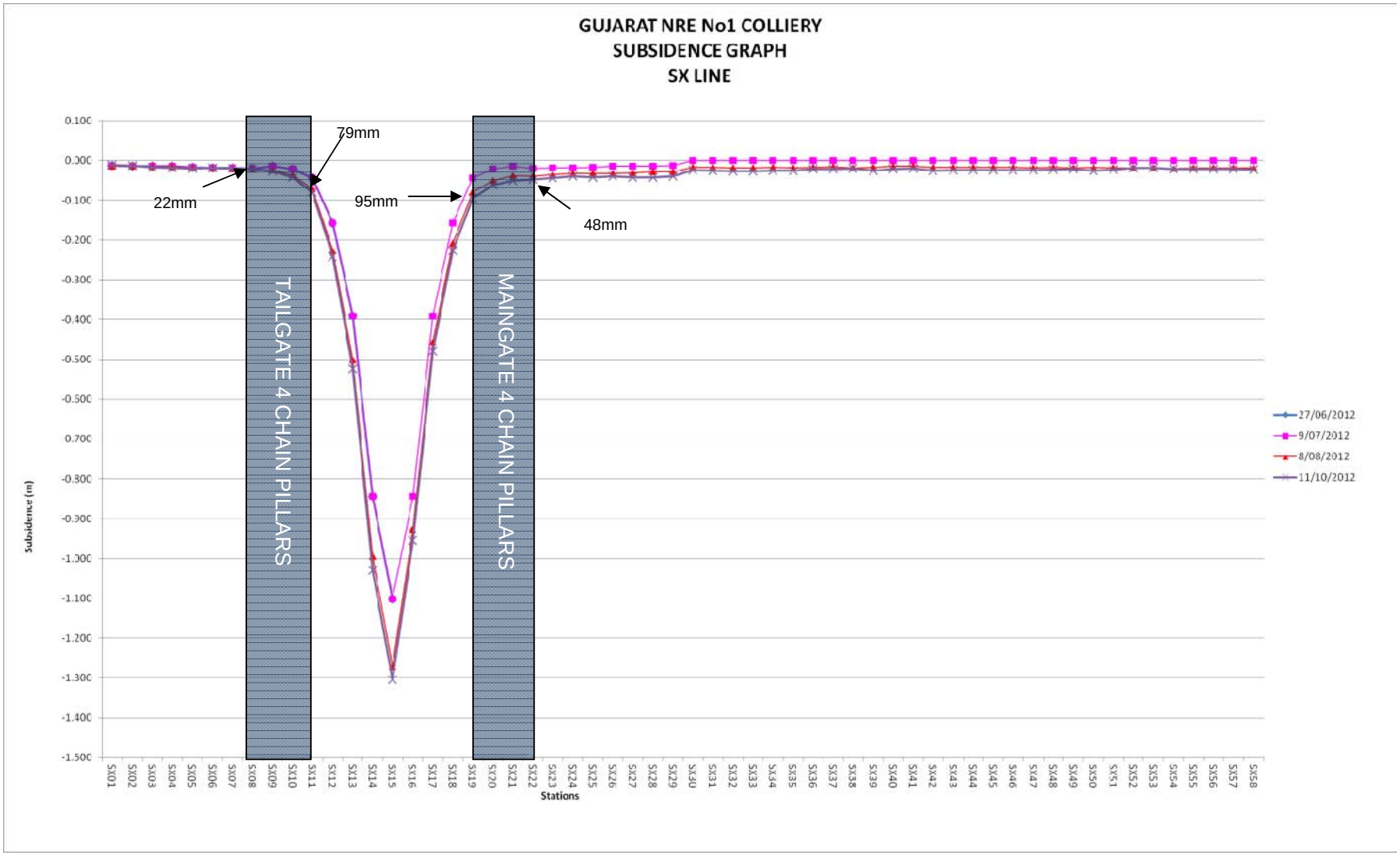


Figure 4 - LW4 Horizontal Strain Relative to Chain Pillar Locations at the Subsidence Survey Northern Cross Line

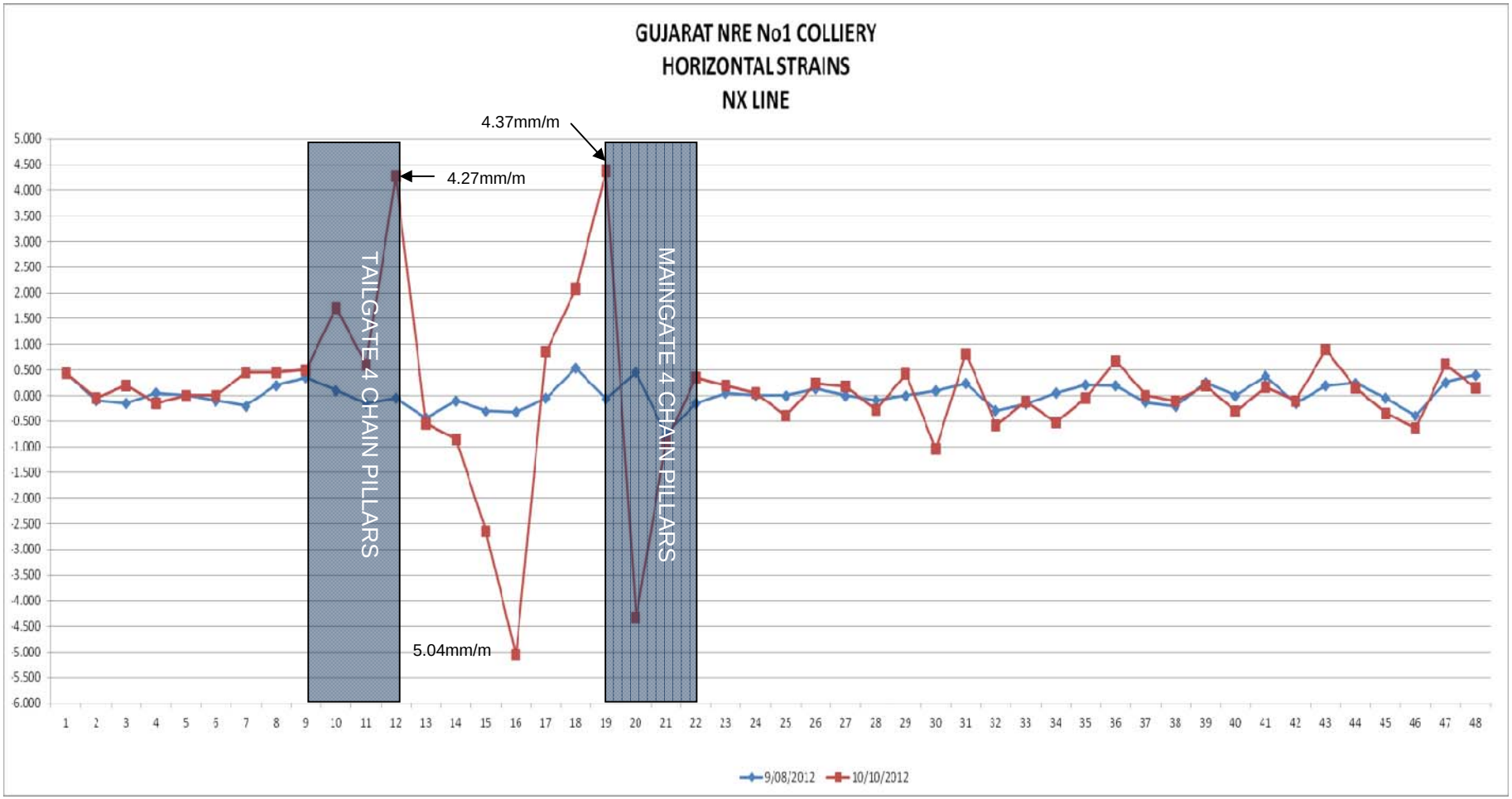


Figure 5 - LW4 Horizontal Strain Relative to Chain Pillar Locations at the Subsidence Survey Southern Cross Line

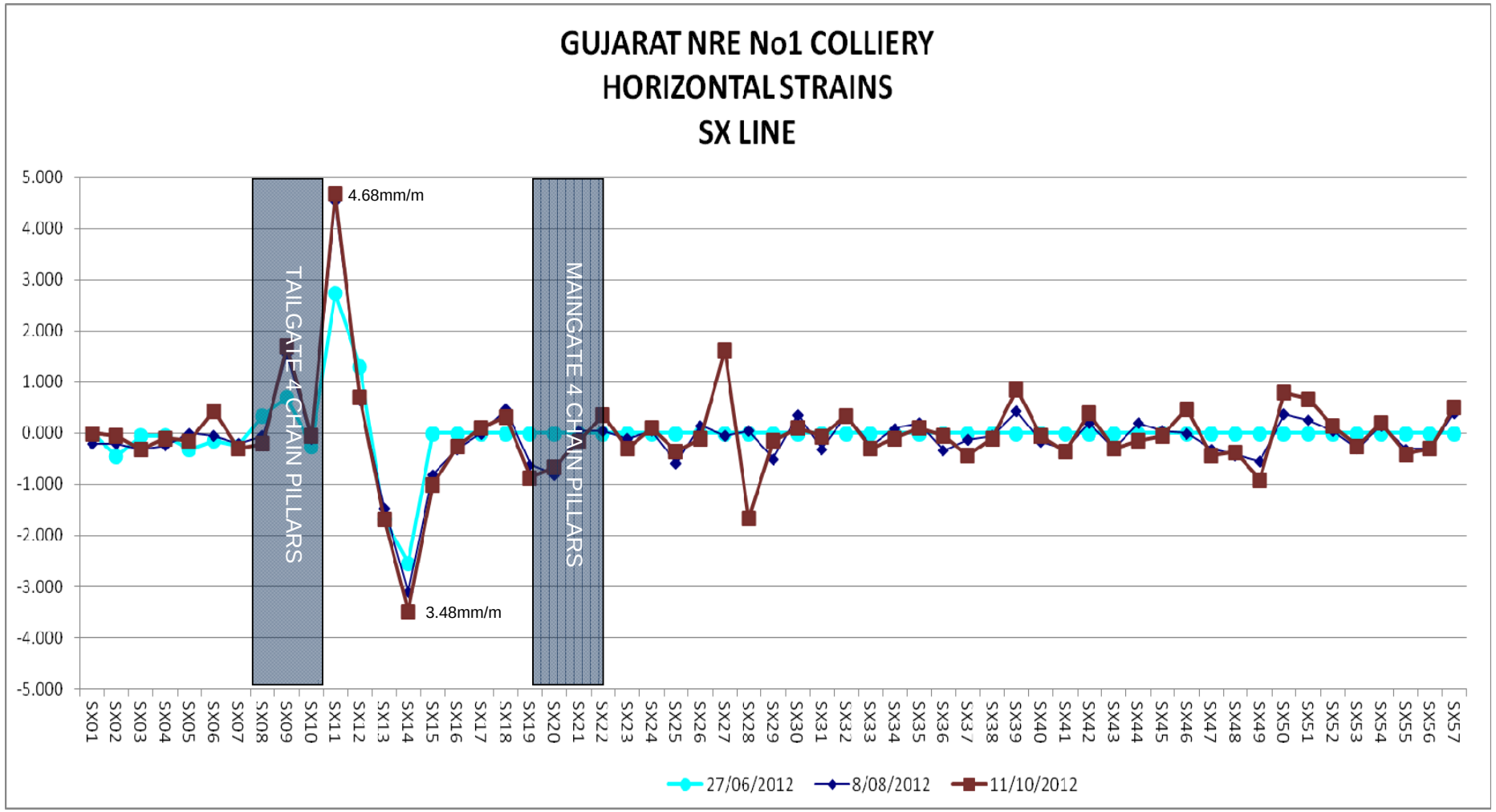


Figure 6 - LW4 Centreline Subsidence Survey Relative to Start and Finish Positions

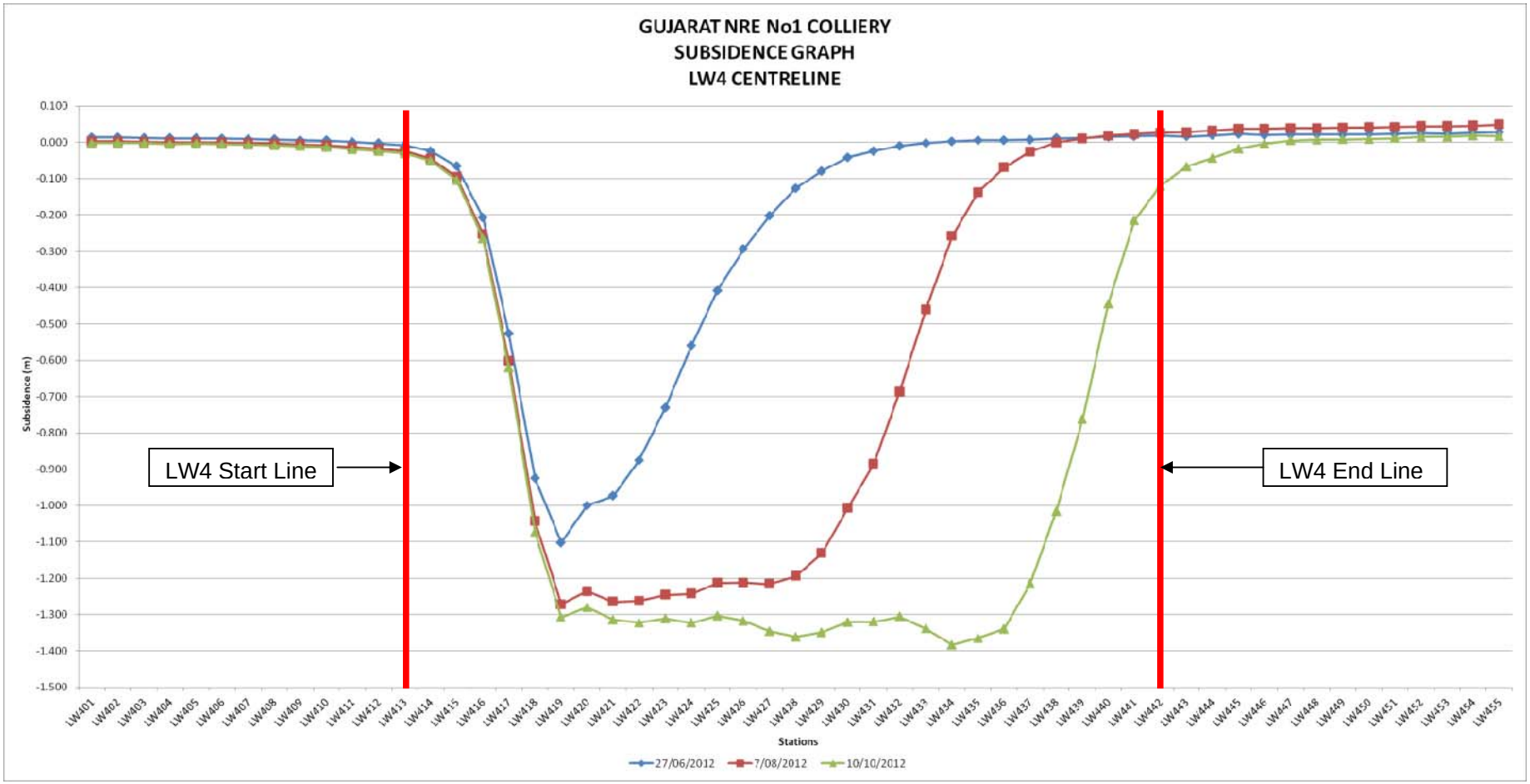
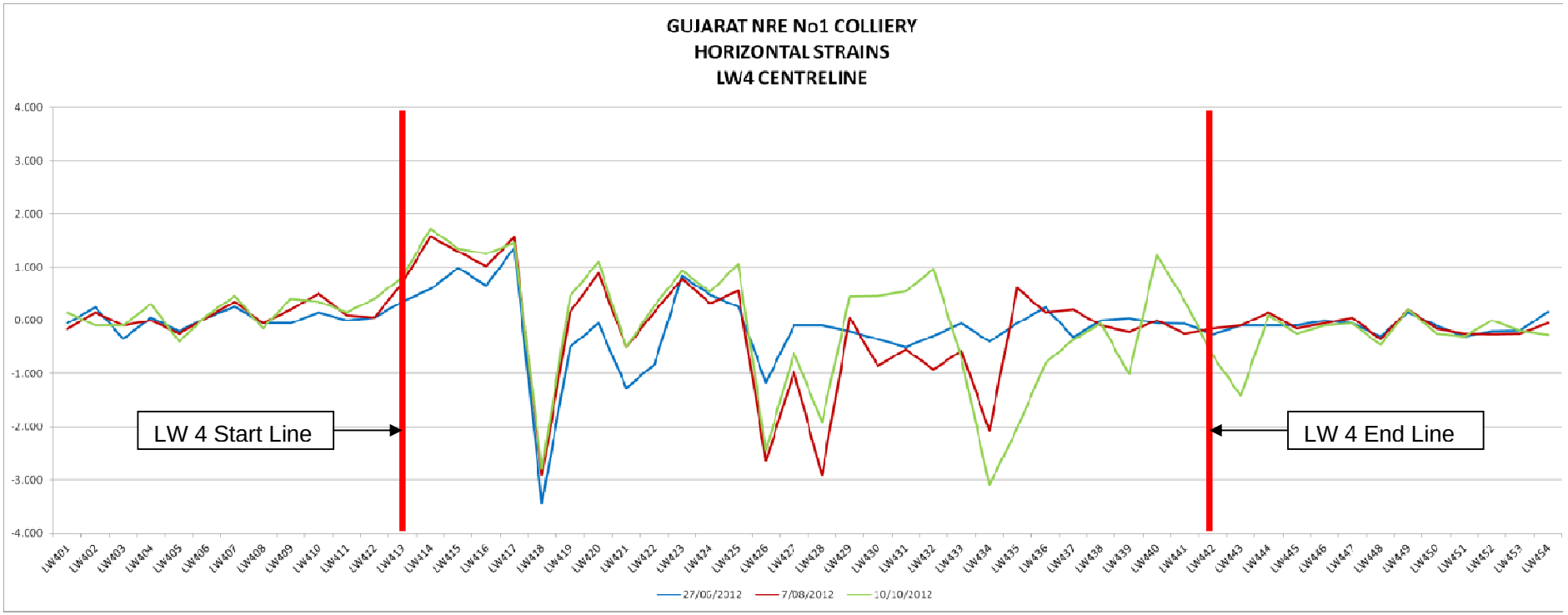


Figure 7 - LW4 Centreline Strains Relative to Start and Finish Positions



Upland Swamps

Issue

Swamp Impact Assessment Inadequate

OEH have stated that concerns remain regarding impacts on upland swamps from the extraction of LW5 including:

- the Biosis Upland Swamp Assessment report submitted with the original NRE Response to Submissions report states low, not negligible, impact will eventuate from LW5 extraction;
- inadequate subsidence modelling as NRE has not taken into account additional subsidence data from LW4 and updated its subsidence impact assessment on swamps;
- inadequate baseline monitoring;
- inadequate consideration of longwall layout to reduce impact on swamps; and
- inadequate management planning

Response

The Biosis Upland Swamp Assessment report submitted with the original NRE Response to Submissions Report covered the entire Wonga East and West Areas that form part of NRE's upcoming Underground Expansion Project Pt3A application. It is accepted that this may have caused some difficulty to OEH in its assessment as relevant to LW5 but all the required information was present in that report to inform an assessment of the proposal. In particular, Biosis realised that the renaming of swamps may confuse some, thus they added a table showing old names and new names. This renaming was necessitated by the number of swamps found and the fact that some swamps were part headwater and part valley infill.

The statement in particular that swamp CCUS4, which is located over proposed LW6 in the Wonga East area, would receive low levels of impact was relates to its undermining by LW6, not LW5. Negligible impact is anticipated on CCUS4 from the extraction of LW 5 as preliminary indications from LW4 data are that the subsidence and strain are not anticipated to extend beyond the chain pillars of Maingate 5 to any significant extent as shown in Figure 1, Figure 2, Figure 3, Figure 4 and Figure 5 of this Addendum. If you apply the PAC (2010) subsidence criteria for LW5 only there is negligible risk of impact to this swamp.

The information these Figures rely on is preliminary subsidence survey data that has recently become available and has not been fully analysed by geotechnical and subsidence engineers as part of the LW4 End of Panel report. Further details of the LW4 subsidence monitoring results as well as why the LW5 subsidence predictions have not yet been updated with the final measured subsidence information are contained in the Subsidence Predictions section of this report.

As mentioned in the Flora and Fauna section in the original Response to Submissions, particularly pgs 37 – 39, NRE has relocated the start line of LW5 which has reduced the likelihood of impact to significant swamps to negligible levels as both strains and subsidence are likely to be significantly reduced as mentioned above. The new LW5 layout with swamp types overlain as shown in the original Response to Submissions report is reproduced in **Figure 8.** It can also be noted in that Figure that the remapped CCUS4 is behind the LW5 start line. Given the reasonable assumption that subsidence from LW5 will be relatively similar to the preliminary subsidence data from LW4, CCUS4 will undergo negligible impact as it is outside the chain pillars of LW5 and behind the longwall start line.

OEH state that fracturing of the base of the swamp CCUS4 is likely to cause major changes to the swamp. There is no indication on what data this statement is based and requires further clarification. Although some swamps have been subject to loss of groundwater, erosion, fire and scouring, given the extent of mining under upland swamps on the Woronora plateau, the definitive OEH statement makes an assumption that impacts to groundwater will, without question, result in

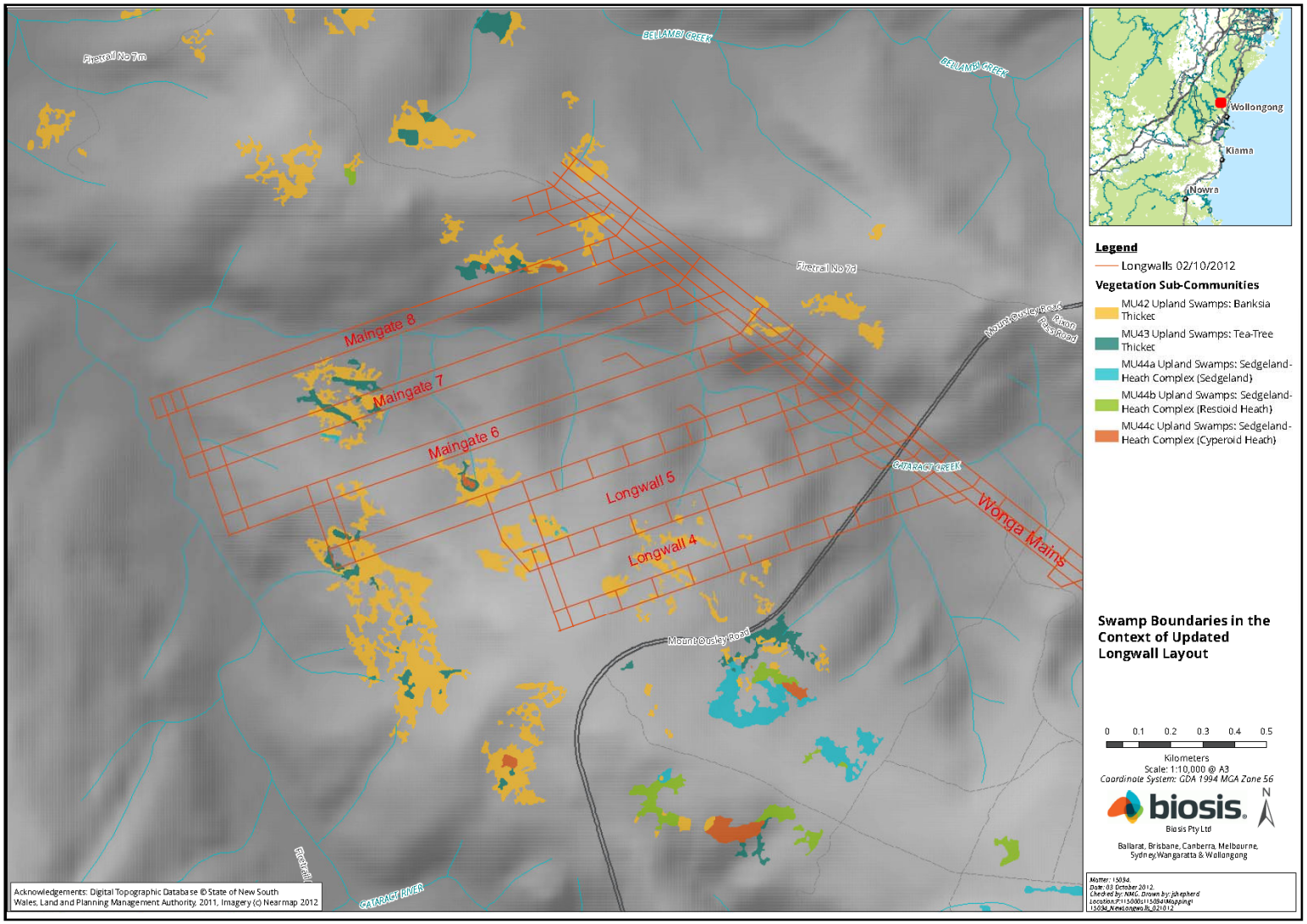
impacts to biodiversity. Biosis do not believe that this conclusion is well-founded nor based on suitable data. Biosis is not aware of any programs that have definitively quantified impacts to biodiversity features in swamps where groundwater has been impacted. This statement needs further clarification.

OEH appear to be asking for very specific impact detail which cannot be provided by any Colliery or prediction methodology. NRE and its consultants can assess likely impacts and risk of these impacts occurring but cannot be explicit about where they will occur and to what degree, as all impacts are probability-dependent. As with any other longwall mining activity the actual surface expression of subsidence is difficult to predict, with fracturing in some areas and not in others. Thus explicit predictions are not possible.

NRE noted in its Response to Submissions report with regard to impact management strategies that TARPs are not particularly useful as a tool to manage impacts from subsidence on significant swamp features. This will be reflected in its draft Extraction Plan/SMP that is currently nearing completion. The level of detail required by OEH for assessment is more appropriately dealt with at the Extraction Plan/SMP stage but NRE will endeavour to provide a Draft Extraction Plan to DP&I and the PAC to give a more comprehensive overview of its proposed management actions with regard to potential swamp impacts.

Biosis has undertaken a detailed assessment of breeding habitat for threatened frogs in Wonga East. The only suitable habitat is located along Cataract Creek and Mixophyes balbus has not been recorded here to date. Thus no impacts would be expected.

Figure 8 - Swamps with New LW5 Layout



LW 4 SUBSIDENCE IMPACTS

Mt Ousley Road

Issue

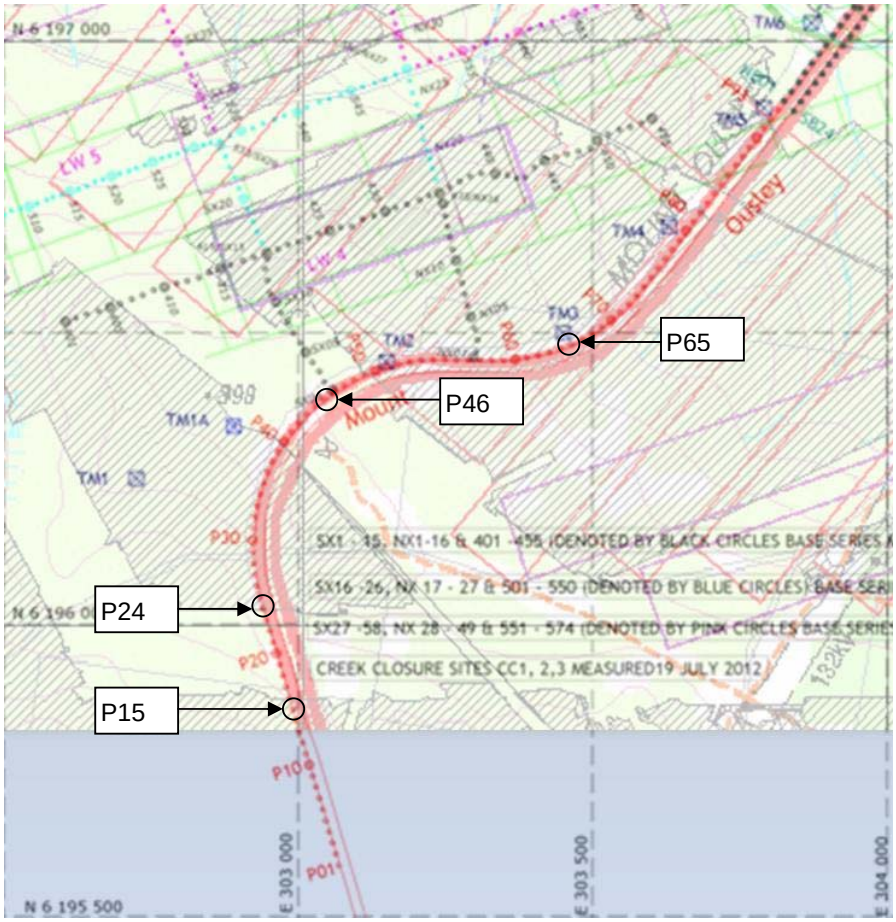
Mt Ousley Rd Cracking
Very recent LW4 End of Panel visual surveys of Mt Ousley Rd have indicated the presence of four very minor cracks in the road pavement.

Response

Cracking was originally observed on 9 October 2012 by Comms Network Solutions Pty Ltd (Comms) as part of routine visual inspections of the road as required by the NRE Built Features Management Plan. The Comms Inspection Report is located in **Attachment A**. On 17 October 2012, SCT inspected the surface along the Mt Ousley Road from south of Picton Road in the south to Bellambi Creek in the north. The inspection results were correlated with LW4 subsidence data up to 10 October 2012 and are shown in **Figure 9** and further detail is provided in **Table 1**.

There appears to be strong correlation between the ground movements observed and mining, both temporally and spatially which explains in a coherent fashion the movements and impacts detected along the P Line on Mt Ousley Rd. Weather conditions may well be playing a part in terms of difficulty of survey and possibly soil or substrate shrink/swell in some areas in the few millimetres range that is below a fairly tight effective survey tolerance of ±5mm.

Figure 9 - Locations of Subsidence Related Cracking Observed on Mt Ousley Rd

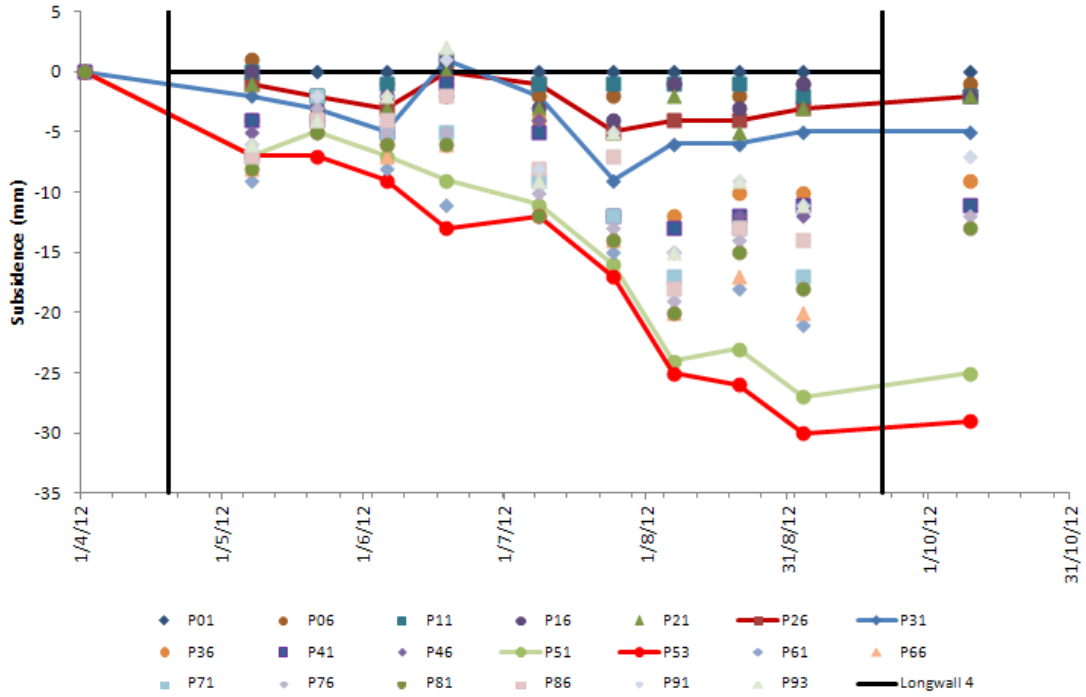


Vertical Subsidence

Vertical subsidence is behaving in a manner that is consistent with the presence of overlying goafs in the Bulli and Balgownie Seam and the general softening of the overburden strata that has resulted from this previous mining.

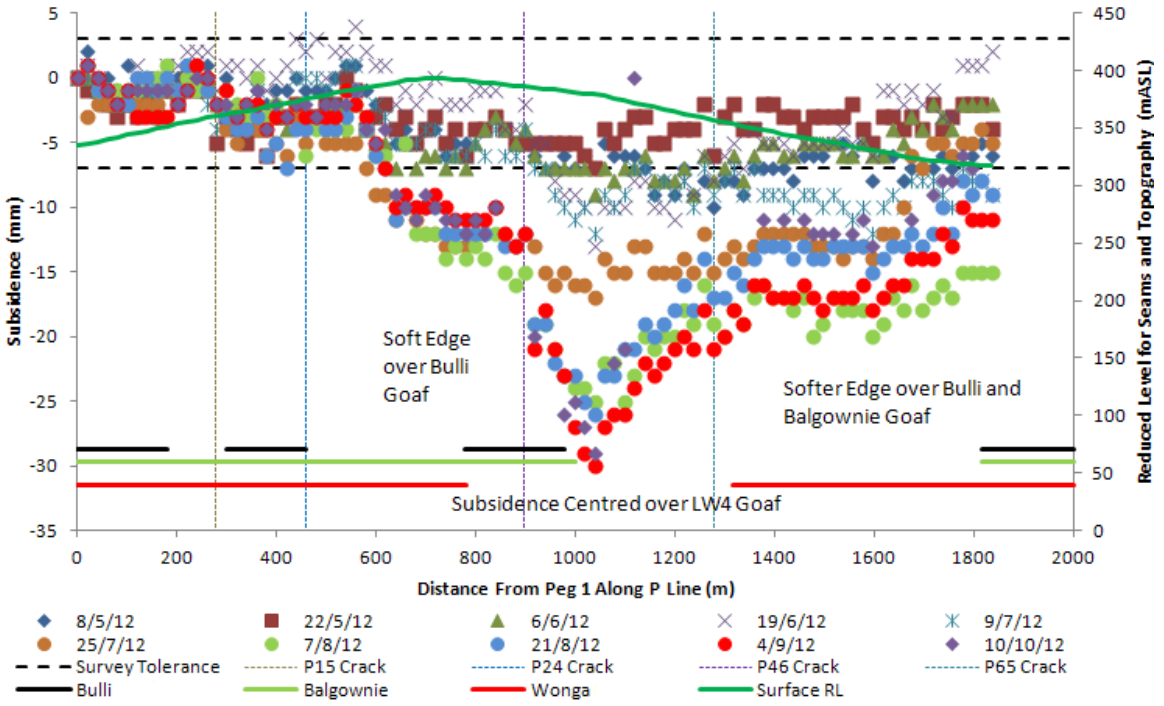
As shown in **Figure 10**, the subsidence has increased gradually and consistently as LW4 has been mined and looks to have stopped now that LW4 has finished. This movement is likely to recommence when LW5 is mined.

Figure 10 - Subsidence Observed on P Line Pegs on Mt Ousley Rd



As shown in **Figure 11**, the point of maximum subsidence (30mm) is located at Peg 53, half way along the LW4 goaf. This subsidence has occurred about 180m outside the LW4 goaf over goafs in both the Bulli and Balgownie Seams. The overburden depth is approximately 340m to the Wongawilli Seam, so the 30mm of subsidence observed is observed at 0.52 times overburden depth, implying an angle of draw of greater than 26.5°. It should be recognised that angle of draw becomes less meaningful in a multi-seam situation because of the influence of overlying goafs.

Figure 11 - Subsidence Observed on P Line Pegs on Mt Ousley Rd against Goafs



The overlying goafs are apparent in the subsidence that has been measured suggesting that there has been slight redistribution within the overburden as would be expected. However, the redistribution has been small and consistent with the goaf geometries. The additional subsidence is not, in SCT's view, in any way related to pillar instability or hints at any imminent instability, but rather at slight (10-15mm) readjustments with the existing goafs. The ground movements are all within the limits of current LW4 monitoring and there does not appear to be any need to extend the LW4 monitoring to the south for LW5. An extension of surveying to the north will be undertaken to confirm the extent of movement.

To the south where there is only the Bulli Seam goaf there is about 10mm of additional subsidence over that goaf. To the north, there are both Bulli and Balgownie goafs for most of the way and there is about 15mm of subsidence reducing back to 12mm when the Bulli and Balgownie Seam goafs disappear near the bottom of Cataract Creek (right hand edge of **Figure 11** plot at 1800m). Some further survey data in this area will help confirm how quickly the subsidence returns to background.

Horizontal Movements and Surface Cracking

The peg to peg strain measurements are not of sufficient resolution to pick up horizontal ground movements of interest including the onset of cracking that has been observed. Three dimensional surveying will be implemented for LW 5 to help in determining ground movement across the site to provide a more holistic picture of how the ground is moving.

The surface cracking evident along the highway that is associated with recent mining is consistent in location with the various goaf edges in the different seams as well as associated geological structure and pre-existing goaf edge cracks. The P46 and P65 cracks appear to be related to the vertical subsidence that has occurred above LW4 as a result of normal subsidence processes. The P15 and P24 cracks are consistent with the edges of previous goafs in the Bulli Seam.

Table 1 - Location of Cracks and Assessment of Subsidence Contribution

Peg Numbers	Clearly Associated with Mining LW4	Possibly Associated with Mining LW4	Normal Wear & Tear of Road Surface
North of 2380/2400 reseal located 200m south of Bellambi Creek *(multiple cracks on road surface unrelated to cracks on surface of original alignment)*			✓
Picton Rd Exit onto Mt Ousley Rd to north *(multiple cracks on road surface)*			✓
200m South of Peg P01 *(slumping on side of embankment)*			✓
Peg P01 *(edge of cut and fill and start of embankment)*			✓
Peg P11		✓	
Pegs P15-18		✓	
Pegs P24-25	✓		
Pegs P46-47	✓		
Pegs P66-67	✓		
Pegs P70-71		✓	

The surface cracks observed and attributed to recent mining of LW4 are all of low magnitude (<1-2mm crack width) and in the context of general wear and tear on the road surface do not appear to be particularly significant. There are much larger cracks evident along the edge of the road that are clearly associated with settlement of the earth embankment above Cataract River. SCT understands that much of the road surface has recently been resealed within the last 12 months, but near Bellambi Creek (about 1.5km north of Cataract Creek) where the reseal finishes, there is evidence of numerous cracks across the tarseal surface that appear to be a consequence of normal wear and tear. These cracks are not evident on the surface of the now disused road alignment immediately adjacent so they do not appear to be a result of subsidence in last 10-15 years since the road was realigned. The nature and frequency of these wear and tear cracks is much greater than the cracks that have recently occurred as a result of mining subsidence adjacent to LW4, suggesting that the mining induced cracks are likely to be able to be managed through routine maintenance.

The cracking evident south of LW4 at P15 and P24 and adjacent to LW4 at P46 and P65 is considered to be associated with low level reactivation of the goaf as a result of horizontal relaxation. SCT doesn't believe that the cracks are associated with vertical displacement caused by any sort of pillar instability at Bulli Seam level, but are instead a result of softness within the subsided overburden strata that is a result of subsidence caused by previous mining.

The current monitoring strategy for LW4 will be upgraded to include three dimensional monitoring and a survey line extension to the north along Mt Ousley Rd in order to improve data collected by monitoring the ground movements associated with LW5.

Cataract Creek

Issue

Drying of a Pool in Cataract Creek after Extraction of LW4
Data from a water depth logger at monitoring site CC6 (Cataract Creek 6), backed up by visual observations by NRE monitoring staff, indicated that a pool in Cataract Creek has significantly dried during monitoring over the period during and after the extraction of LW4

Response

A post LW4 inspection walk was conducted on 23 October 2012 along Cataract Creek. The inspection assessed the visual water flow, water levels in pools, identifying any apparently recent creek bed cracking and looking for any ferruginous seeps that may have developed since the extraction of LW4.

The inspection was conducted between sites on the eastern side of Mt Ousley Rd and the confluence of Tributary CT1 with Cataract Creek. Tributary CT1 was then followed to its headwaters. The inspection route can be seen on **Figure 12** and the outcomes of the inspection are outlined in **Table 2.**

Table 2 - Outcomes of LW4 End of Panel Inspections for Cataract Creek

	Cataract Creek	Tributary CT1
Creek flow	No change apart from a natural reduction due to less runoff in the catchment	The 2nd order tributary has dried up due to lack of rainfall recharge
Pool holding levels	No change	Pool levels have reduced due to lack of runoff in the catchment, but pools are still holding water
Creek bed cracking	No new cracks	No new cracks
Ferruginous seeps	Creek had less generic ferruginous discolouration than when last inspected on 4 May 2012	The creek has had notably elevated historic ferruginisation that has been evident for a substantial time. It appears as thick, pasty ferruginous sandy muds inter-collated with humic material which is endemic in the tributary sediments. No change was observed since LW4 was extracted

What became apparent during the inspection was that the monitoring point known as CC6 had been inadvertently installed by NRE in the headwaters of Cataract Tributary CT1 approximately 250m to 300m from Cataract Creek and directly over LW5.

As a result of the site inspection, the site shown as CC6 on the LW4 monitoring plan has now been renamed CT1 and a new installation location has been indentified for CC6 within the stretch of Cataract Creek well upstream of where Tributary CT1 enters. Additional pool monitoring sites are also proposed and are shown as CC7 and CC8. The site shown as CC7 has been renamed CC9 to ensure downstream consistency in nomenclature. An application to the SCA is currently being developed to emplace the new pool depth loggers in this new location. The new pool depth logger locations are shown in **Figure 12** and an overview of renamed and new pool depth monitoring point areas are shown in **Table 3**.

Table 3 - Overview of Proposed Pool Depth Monitoring Points for LW5

Logger Designation	New Monitoring Point?	Previous Name
CT1	No	CC6
CC6	**Yes**	
CC7	**Yes**	
CC8	**Yes**	
CC9	No	CC7
CC10	Submerged under reservoir	Submerged under reservoir

Geology and Hydrogeology of Cataract Creek Catchment

Based on geological profiles and piezometric data obtained while drilling the piezometer holes GW1 and GW1A, NRE has undertaken a significant reassessment of the geology of the Cataract catchment. SCT's analysis of the GW1 piezometric profile (**Figure 14**) indicates that it is located over the Balgownie Goaf and a more irregular Bulli goaf. The location of GW1 is shown in **Figure 12**. The stooks etc. in Bulli goaf mean it probably doesn't feature much in causing zones of downward movement within the overburden strata. The height of the zone of downward movement associated with ground movement above the Balgownie goaf extends through to the point where there is large drawdown evident in the piezometer profile at about the distance above the Balgownie mining horizon that would be expected given the location of the hole relative to the goaf (about 0.8 time panel width because the hole is offset to the panel a bit). The Stanwell Park Claystone may also have an influence in slowing vertical flow.

Preliminary geological findings using recent drilling records and significant ground truthing by NRE Geologists as well as assessment by SCT and Geoterra has confirmed that the base of Cataract Creek over NRE workings (outside LW5 extraction footprint) is actually the Bulgo Sandstone overlain in its lower reaches by alluvial deposits and talus covered slopes. This is shown in Plan View in **Figure 13** and geological cross section from Bore SWM1 to Cataract Creek in **Figure 15.**

This means that the overlying Bald Hill Claystone, Newport and Garie Formations and Hawkesbury Sandstone have been sequentially eroded by Cataract Creek in this area and are potentially no longer present in the stream bed at the Mt Ousley Road crossing and for some distance downstream between the freeway and Site CC9. Geoterra and SCT don't interpret that the absence of the Bald Hill Claystone will has a significant effect on the current and historical recharge of water from Cataract Creek to the mine goaf. This is primarily due to the fact that natural cleating and jointing in the Bald Hill Claystone increases the hydraulic conductivity to a level that is similar to adjacent strata. As can be seen in **Figure 16** from Pells and Pells (2012) [Pells S.E. and Pells, P.J.N. 2012 "Impacts of Longwall Mining on Coal Seam Gas Extraction on Groundwater Regimes in the Sydney Basin Part 2 – Practical Applications" Australian Geomechanics Vol 47, No 3 September 2012 pp53-68], the Bulgo Sandstone has been measured as having the lowest permeability of all strata in the local profile.

Current preliminary mapping indicates that there is a large volume of colluviums/alluvium blanketing the area and making it difficult to interpret the geology. Further work will be undertaken if necessary to determine the geology below the masking of the colluviums/alluvium. However, indications from mapping done back in 1981 shows the dam and lower parts of Cataract Creek have Bald Hill Claystone exposed in the stream bed, then as you walk up the stream, the Bald Hill Claystone gets eroded away and the Bulgo Sandstone is exposed. The Bulgo would be exposed upstream of the freeway for an as yet unmapped distance, and if you kept walking you would walk up the profile thru the Bald Hill Claystone, Newport / Garie formations and back into the Hawkesbury Sandstone.

With regard to impacts on potential water flow to the mine, it is the opinion of both SCT and Geoterra, given the hydrostatic gradient observed in GW1, the preliminary geological interpretation and records of mine groundwater inflows, that it is likely that vertical flow is already

occurring (and has been historically occurring, before any mining in the area) from the Cataract Creek to the Bulli Seam. It is further considered likely that the volume being transmitted is not significant at this point, whilst mine pump out records do not show any “spike” on inflows during or after mining LW4. Vertical hydraulic connectivity derived through natural pressure gradients, which have potentially been increased to enable flow sandstone

This additional information does not change the previous assumptions used in the model set up that the Bulgo Sandstone was exposed in Cataract Creek, that previous subsidence had enhanced the overburden permeability, and that the proposed subsidence would further enhance the overburden permeability. As a result, the groundwater model does not require an update of its predictions.

Figure 12 – Proposed Water Monitoring Locations along Cataract Creek and Amended CT1 Site (Previously CC6)

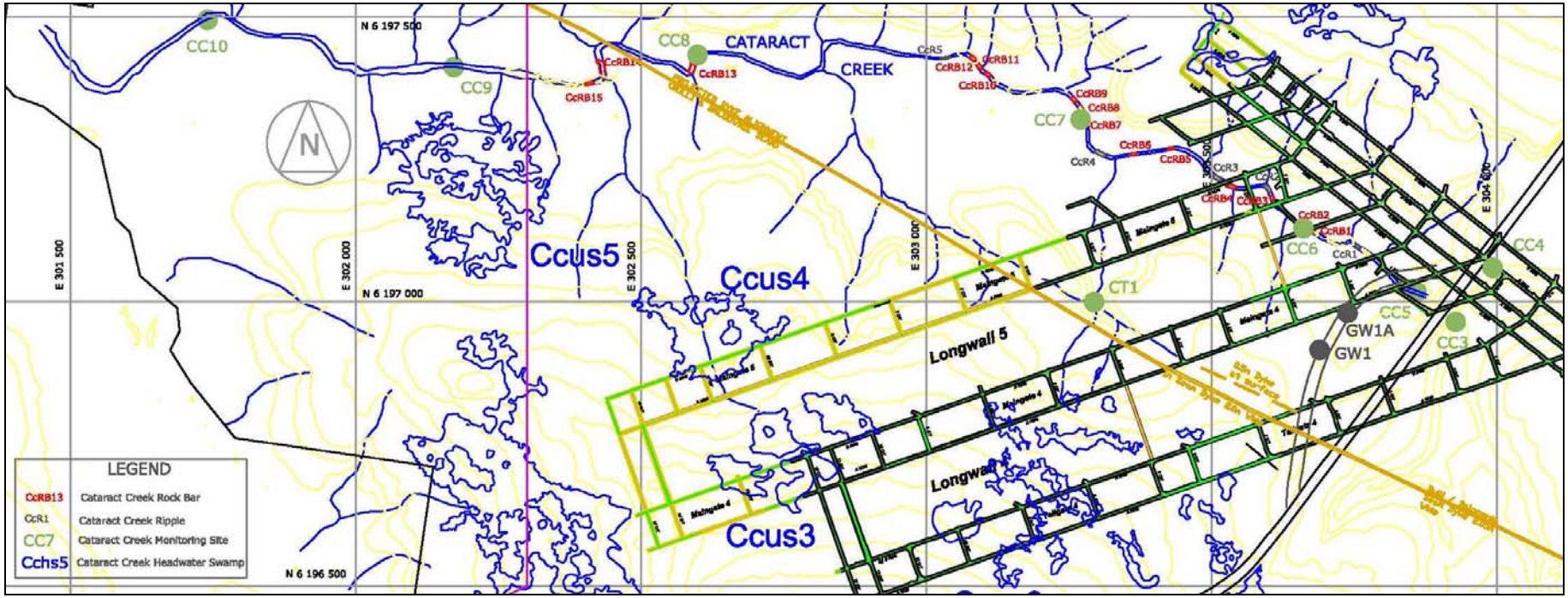


Figure 13 - Preliminary Reinterpretation of Cataract Creek Catchment Geology with Proposed Longwalls

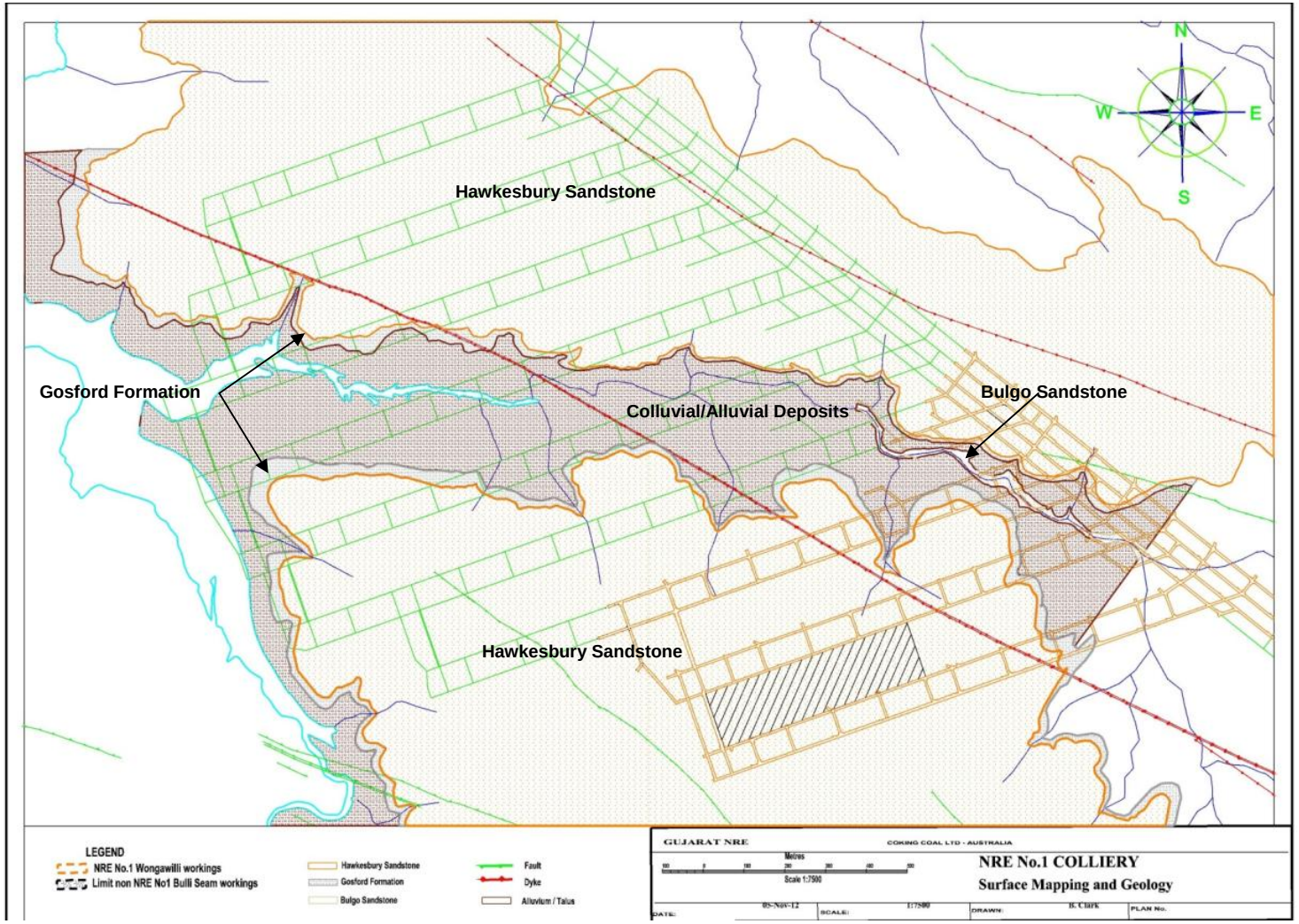


Figure 14 - Groundwater Piezometric Profile for GW1 Borehole

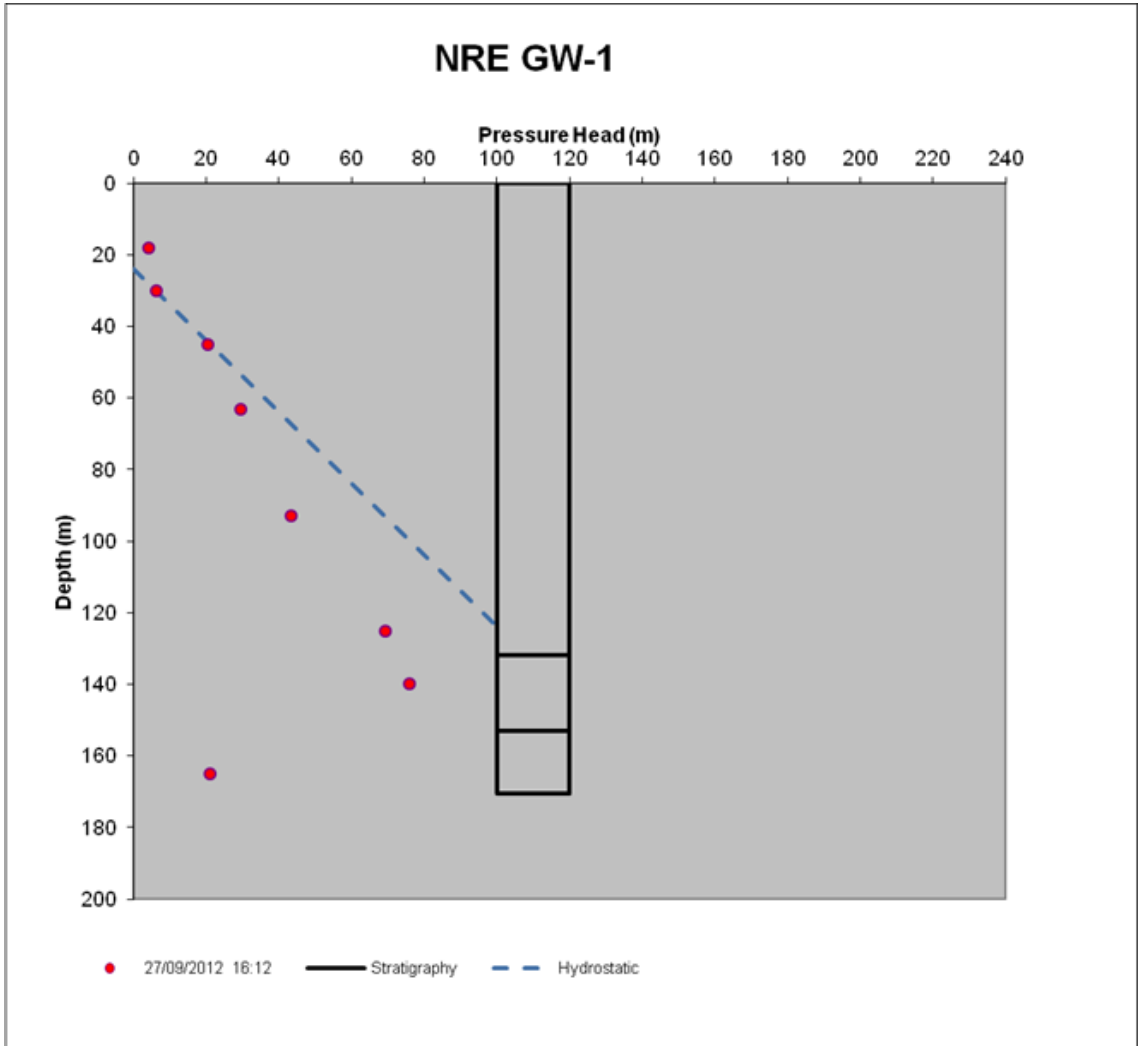


Figure 15 - Cross Section from Bore SWM1 to Cataract Creek

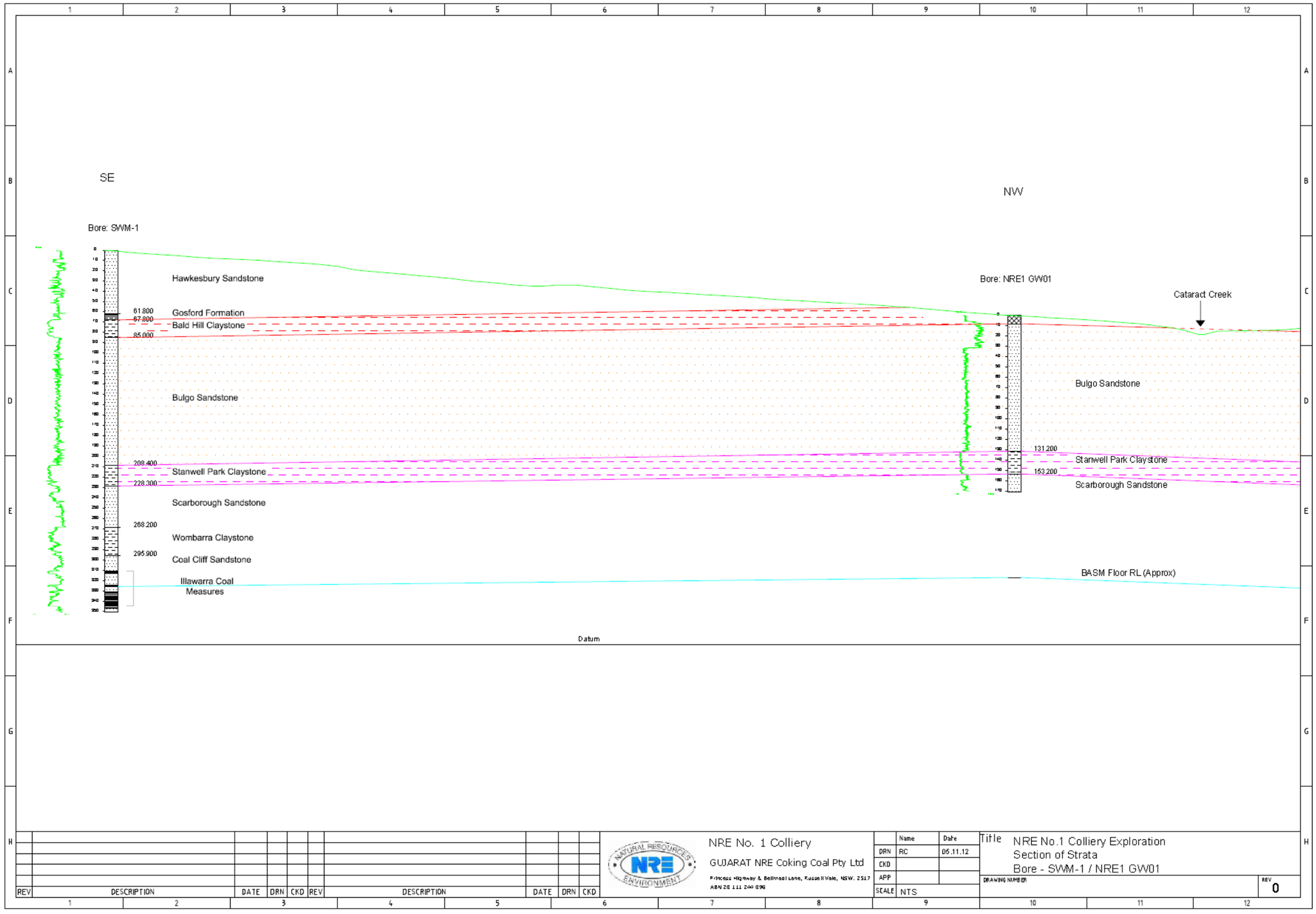
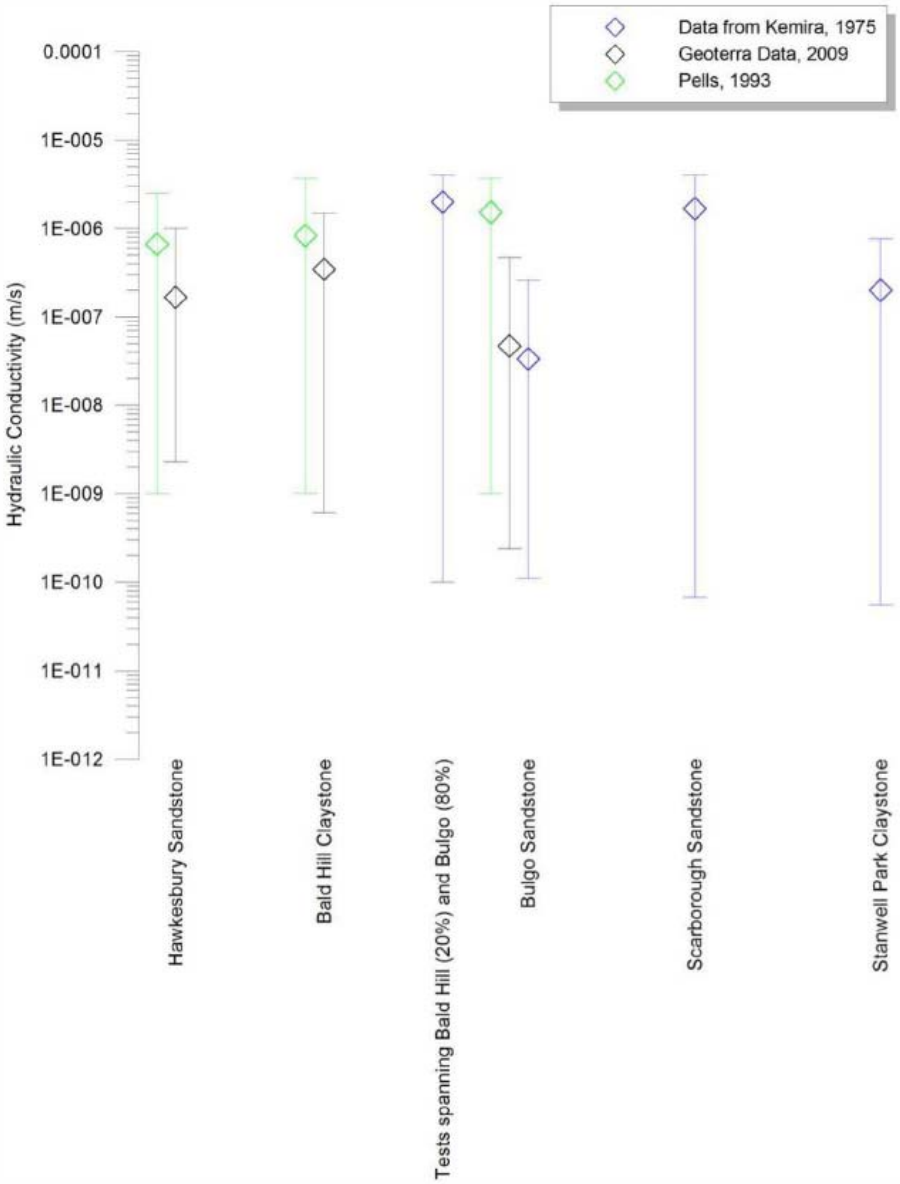


Figure 16 - Permeability of the Geological Profile in the Application Area (Pells and Pells 2012)



APPROVALS PROCESS

MG 6, 7 & 8 Approval

Issue

Piecemeal Approach

Agencies cannot support the approval of MG 6, 7 & 8 as it constitutes piecemeal development and places pressure on agencies to approve future longwalls

Response

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

The original Pt3A application for the development of Wonga East and West and the upgrade of the No.1 Colliery surface infrastructure was submitted by NRE in 2009 but was then withdrawn in liaison with the 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 operation. A significant delay may have implications for suppliers, contractors and employees. None 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.

NRE recognises that the drivage of maingates does not guarantee approval of subsequent longwalls. This is a common risk that must be borne by many mining companies as part of doing business in a commercially viable manner. With regard to the DSC Notification Area, NRE has been undertaking consultation with DSC for some time and has submitted an application for the approval of Maingate 5. This application has been endorsed by the DSC and likely to be conditionally approved in the near future.

ATTACHMENT A

Comms 2012 Visual Inspection of Mt Ousley Road

VISUAL INSPECTION OF MT OUSLEY ROAD

NRE No 1 Colliery

Longwall Mining, Wonga East Mining Area, NSW

Northbound Pavement Survey Section

For LW4

Report No 3 –Inspection 9/10/12

Since the completion of LW4 the inspections are now on a monthly basis and this inspection has been completed along Mt Ousley Road concurrent with the Southern Cross Consulting Services (SCCS) surveys which have incorporated Lane 1 closure on the North Bound (NB) pavement. The twin culverts at Cataract Creek have also been inspected along with the kerb inlet drains along Mt Ousley Road. Note that the kerb & gutter on the NB pavement have been cleaned out over the last month resulting in a large number of the survey marks from SM46 to SM95 being damaged or removed.

Plate 1:
Typical damage to survey marks as shown @ SM 49 along kerb area. Damage to survey marks has occurred from SM44 north through to Cataract Creek at SM 99.

The section of pavement inspected is from 250 metres north of the Picton Wilton Road interchange through to Cataract Creek a distance of approximately 2000 metres.

A base line inspection was completed on 22-5-12 and since that date 9 surveys have been completed along this section of Mt Ousley Road. In initial 6 surveys no changes had been observed in the pavement until the inspection on 21-8-12. Generally over the surveyed length of Mt Ousley Road the road pavement is in good condition with a small number of tensile cracks present, predominantly on the steep incline north from the Picton-Wilton Road interchange. The section of pavement from the crest of the hill to the north to Cataract Creek for around 1500 metres is in very good condition with only 1 or 2 minor cracks present.

Survey Mark 24 + 2-5 metres.

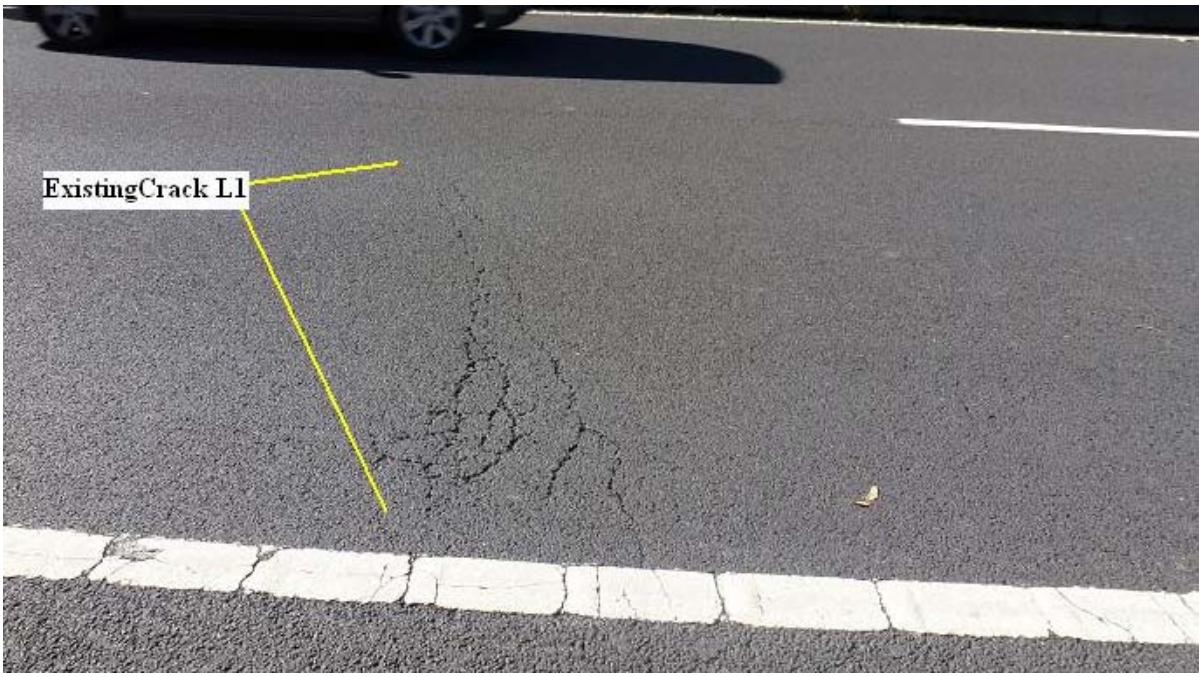


Plate 2
View east at SM 24 on 22-5-12 showing existing pavement cracking in Lane 1 NB

Plate 2A:
View east at Survey Mark 24 on 9-10-12 showing existing pavement cracking in Lane 1 north and extension of crack into lane 2 (not present 21-8-12) and new crack south of original tension crack in Lane 1. The extent of cracking in this area has not changed over the past month since 4/9/12 (See Plate 1 Report 2)

The two photos above show development of tensile cracking at Survey Mark 24 with new tensile crack in Lane 1 and development of existing crack into Lane 2 in line with original crack that was present on 22-5-12. As discussed on 4/9/12 there is the possibility that this movement may be due to some additional far field movement down the southern or western slope on Mt Ousley Road at the junction of a cut in the roadway profile to the south and fill north where the pavement enters a rock cutting at around Survey Mark 23. Refer to Plate 3 Report 2 shown below noting that there has been no change in the presentation of the cracks in this area over the past month

Plate 3: (Extract from Report 2 of 4-9-12)
View south down slope showing approximate cut / fill line where Mt Ousley Road enters rock cutting just below new crack development

<u>Survey Mark 46 + 10 metres.</u>
There had been no previous damage to the pavement at this location and when inspected 21-8-12 a diagonal crack had developed across the pavement from lanes 1 & 2 NB into lane 2 southbound. The crack width was around 2-5mm lane 1 extending up to 5-10mm lane 2 NB and also in lane 2 SB (subjective assessment). The orientation of the crack is east-west across Mt Ousley Road.
Generally from the current inspection the crack appears to be better defined ie wider over the past month with the extension of the crack on the eastern side of the pavement South Bound extending from Lane 2 into the kerb side lane, Lane 1. Hence since the appearance of the crack across the pavement on 21/8 it has continued to develop over the last 7 weeks to the present.
See the attached Google Earth plan on the following page, Plate 4, showing the approximate position of the SM 46.10. Note that this location appears to be the closest Mt Ousley Road approaches to the commencing end of LW4

See also comparative photos Plates 5 to 6 on following pages showing the diagonal crack across Mt Ousley Road at SM 46.10 taken 21/8 and 9/10

Plate 4:
Google Earth plan showing approximate location of survey marks 46.10 and 65.10 along Mt Ousley Road relative to LW4 & 5.

Plate 5:
Photo from 21/8/12, shows diagonal crack across NB section of Mt Ousley Road at SM 46.10. Crack width approximately 2-5mm in lane 1 (kerb) and 5-10mm lane 2

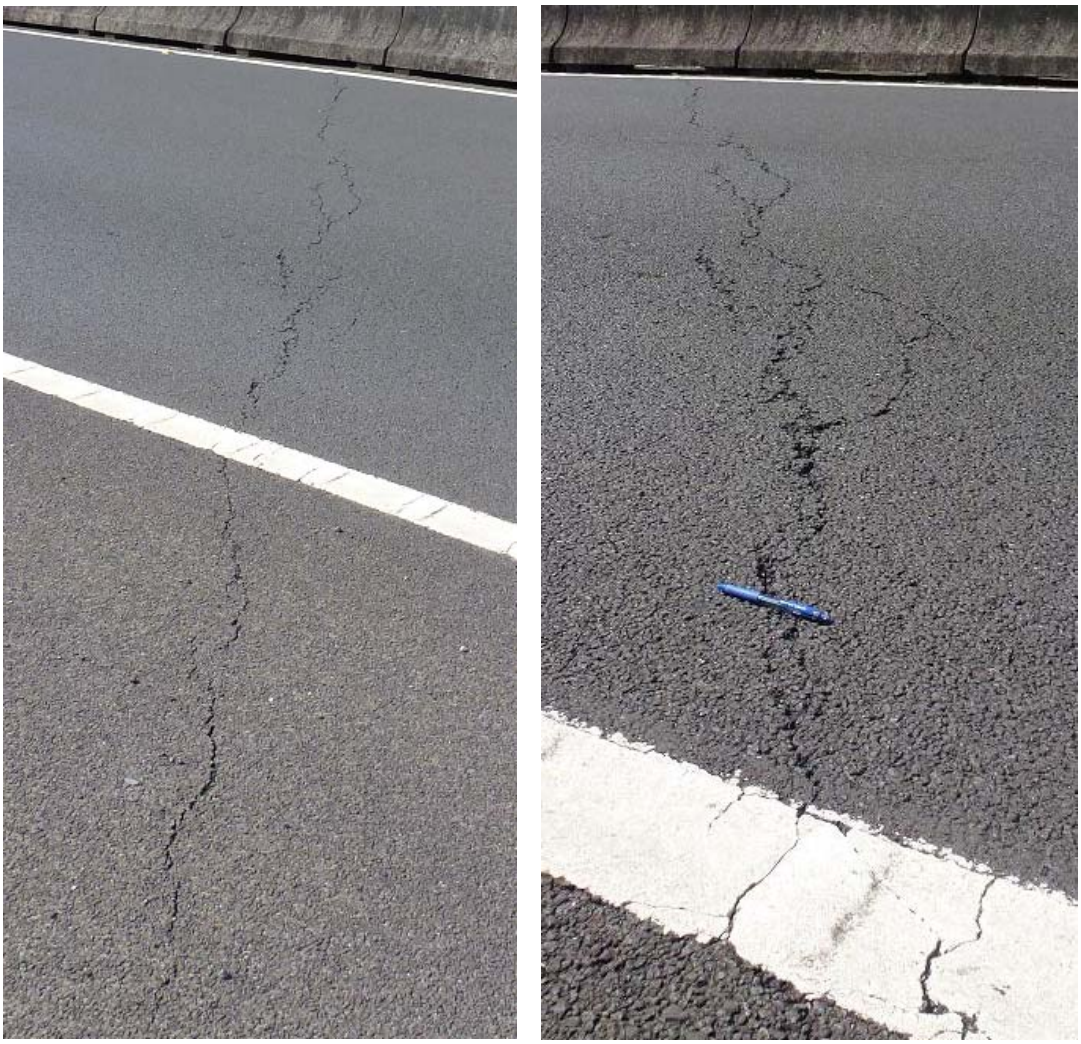


Plate 6 & 6A: Crack across NB pavement 4/9/12 left and 9/10/12 right

As mentioned above the cracking in the South Bound pavement at SM 46.10 has increased in width in Lane 2 and also now extends from Lane 2 into the kerb side lane, Lane 1.

Plate 7:
View east across South Bound pavement showing the extension of the crack from Lane 2 east into Lane 1. Previous inspection 4/9/12 crack was finer and only present half way across Lane 2.

Survey Mark 48.0.

Over the previous inspection interval 21/8 to 4/9 there was a new tensile crack that had appeared in the pavement at Survey Mark 48.0, approximately 30 metres north of the cracks at SM46+10metres. The crack orientation is at a similar angle east west across the road to the cracks that appeared at SM 46 +10m. This crack also extends across the median barrier into Lane 2 SB but is relatively fine @ 2-3mm and only extends into half the width of Lane 2. There has been no noticeable change in the presentation of this crack on 9/10/12

Plate 8:
Tensile crack shown from 4/9/12 in Lane 2 North Bound at Survey Mark 48.0.Crack line extending across lane 2 SB at around 5-10mm width no observable change on inspection 9/10/12

Survey Mark 65 + 10 metres.

As reported 21/8, this location is near the centre of the horizontal curve immediately south of straight alignment down to Cataract Creek, See Plate 4 above. On 22/5 there was an existing very fine crack in the NB pavement in Lane 2 which appeared to have opened slightly so that it was more easily observed and had extended as a fine crack in the pavement into lane 1. No change identified 4/9/12 or on 9/10/12.

The identified pavement locations will continue to be monitored during monthly follow up inspections

Colin Dove

Comms Network Solutions Pty Ltd

9th October 2012

ATTACHMENT B

Additional Agency Response Submissions

NSW GOVERNMENT | Office of Environment & Heritage

Our reference: Doc12/42748
Contact: Rachel Lonie 9995 6837

Mr Clay Preshaw
Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

Dear Mr Preshaw

I refer to your email correspondence dated 8th October 2012 seeking comment from the Office of Environment and Heritage (OEH) on the Response to Submissions on the Environmental Assessment (EA) for Gujarat NRE No.1 Colliery – Modification MP10_0046 Mod 1.

OEH has reviewed the documents and provides detailed comment in Attachment 1. In sum, issues raised in OEH's submission dated 4 September 2012 (Doc12/33475) have not been adequately addressed. A copy of the OEH's previous submission is attached for ease of reference.

If you have any queries regarding this matter please contact Rachel Lonie (02) 9995 6837 (note working days are generally Monday and Wednesday only) or Lou Ewins (02) 9995 6802.

Yours sincerely

25 OCT 2012

MONICA COLLINS
Director Conservation and Regulation
Regional Operations
Office of Environment and Heritage

Attachment: OEH's submission on the EA for NRE 1 Colliery – Modification MP10_0046 Mod 1, dated 4 September 2012.

ATTACHMENT 1

Office of Environment and Heritage (OEH) Comment on the Response to Submissions on the Environmental Assessment for Gujarat NRE Application for s75W Modification 1 to MP 10_0046 – Preliminary Works Project *Longwalls 4 and 5; Maingates 6, 7 and 8.*

Gujarat NRE Coking Coal Ltd (NRE's) *Response to Submissions* does not appropriately address the majority of issues OEH identified in its previous response on the Environmental Assessment (EA).

Outstanding matters include:

- Inadequate subsidence modelling. For example NRE has not updated subsidence assessments in light of LW4 results;
- Inadequate risk assessment based on predicted subsidence;
- Inadequate baseline monitoring to assess impact (or lack thereof);
- Inadequate consideration of longwall layout to address swamps agreed to be of Special Significance;
- Inadequate assessment of the Bald Hill Claystone and aquitard properties before and after mining;
- Inadequate linkage of management action to potential impacts or stated commitment to remediation should impacts occur (or how 'success' of such remediation will be assessed); and
- Additional information provided has not been linked into a coherent impact assessment.

The proposal as described does not convincingly anticipate environmental impacts that may arise from the current mine plan should they occur. Adjustments to the mine plan have not been made to account for potential impacts to endangered ecological communities (EECs) agreed to be of significance. Other impacts (e.g. to aquifers, baseflows etc.) have not been adequately addressed in the *Response to Submissions* report.

The incremental nature of this planning approval process is a concern. One of the major issues in approving the advanced construction of roadways is that it locks in a given longwall width and pillar width, yielding little scope for realignment to address significant surface features.

Identification of swamps of 'special significance'

OEH is supportive of NRE's use of the *Draft Upland Swamp Environmental Assessment Guidelines 2012* to inform the significance assessment for these highly significant natural features within the project area. OEH believes that Biosis has applied the draft guidelines correctly and thoroughly in identifying "swamps of special significance" within the project area. OEH also is supportive of the detailed field survey and validation of the extent and composition of upland swamps across both the Wonga East and Wonga West mining domains. The way in which this new information has been incorporated into the significance assessment of upland swamps is in accordance with the guidelines and OEH supports the findings on special significance reached in the Biosis report.

However, the Biosis (2012) report introduces a source of confusion by renaming all the swamps using a different terminology to that used in the original EA (e.g. CCHS4 is now renamed CCUS4). Also, as the swamp assessment is for the broader mine expansion and not specific to Longwalls (LWs) 4 and 5, it is difficult to integrate the relevant facts/assessments into the current EA for LWs 4 and 5.

Subsidence predictions and likely impacts on Upland Swamps

Subsidence predictions have not changed despite the highlighted inadequacies. If, as stated, the observed subsidence from LW 4 is much greater than that predicted from a single seam mining operation, the impacts are also likely to be significantly greater (*Response to Submissions*, p. 27).

The risk of significant impact to highly significant natural features is inconsistent with the recommendations of the Planning Assessment Commission (PAC) determinations for both the Metropolitan and Bulli Seam projects. In applying the findings of the swamp significance assessment to the impact assessment process,

OEH reiterates the principles of environmental protection listed in NSW legislation and policy, the findings of the NSW Department of Planning's Southern Coalfield Inquiry (NSW DoP 2008), the NSW PAC report on the Metropolitan Coal Project (NSW PAC 2009) and the Bulli Seam Operations (NSW PAC 2010), as discussed below.

Principles of particular relevance are:

- prevention of environmental impacts to swamps of special significance;
- pre-mining risk assessment and adjustment of mining plan if special significance swamps are at risk; and
- effective monitoring of impacts, with adaptive management of mining operations if negative environmental outcomes have been detected.

With regard to protecting swamps from the impacts of mining related subsidence, Recommendation 18 from the Metropolitan PAC report (p. 140, 2009), and included in the *Draft Upland Swamp Environmental Assessment Guidelines 2012*, states that:

Negative environmental consequences are considered undesirable for all swamps and:

a) swamps of special significance will be protected from negative environmental consequence; and

b) a presumption of protection from significant negative environmental outcomes will exist for all other swamps unless the Proponent can demonstrate for an individual swamp that costs of avoidance would be prohibitive and mitigation or remediation options are not reasonable or feasible. Under circumstances where the decision is to allow significant negative environmental consequences to occur and remediation is not feasible offsets and other forms of compensation may be considered appropriate.

Considering the PACs (2010) subsidence thresholds for potential negative impacts to swamps and the stated subsidence levels from the current mine plan (not updated by NRE to allow for the experience of LW4), it is not clear how Biosis has come to the conclusion that "*Potential for impacts is considered low*" for CCHS4/CCUS4. Fracturing of the base of the swamp (as potentially indicated based on subsidence predictions), whether it has a permanent or rainfall dependent perched aquifer, is still likely to cause major changes to the swamp. No evidence or objective assessment of such a "low" categorization is justified in the Biosis (2012) document.

Upland swamps on the Woronora Plateau have high conservation value, as demonstrated by the Scientific Committee's (2012) listing of upland swamps as an EEC and the broader community's appreciation of these ecosystems as part of 'natural' or wilderness areas[1]. It is not clear to OEH that NRE has adjusted the longwall layout to afford greater protection to upland swamp EECs or, where effects are unavoidable, provided a clear management pathway and commitment to rehabilitation and/or offsetting if impacts occur.

If there is a prediction of cracking, subsidence or other mining related impacts to swamps of special significance then the mining plan must be amended, either by avoiding impact or modifying the proposal to ensure that impacts are "negligible". Draining of swamps, streams and drying of breeding pools for threatened frog species such as Littlejohn's Tree Frog, as has recently been found in the Dendrobium 3A area, should not be assessed as a negligible impact, but rather as a highly significant one. If such outcomes are predicted they should be explicitly described in the approval, the Environmental Management Plan, and the Trigger Action Response Plan (TARP). This is to ensure that if the impacts are greater than predicted, they are considered to be exceedences of the performance measures.

Given that the approval provides a defence for damage of habitat of an EEC or threatened species, predictions of impact must include explicit descriptions of what those impacts are likely to be in upland swamps and streams. The Proponent must identify the impacts that are to be expected and are considered acceptable, and the impacts that are unexpected and are therefore considered to be unacceptable. These should trigger the implementation of remediation and/or further offsetting measures.

[1] Choice modelling for the Bulli Seam Operations valued upland swamps at $2 million per ha (BHPBIC 2009).

LW5 is predicted by Biosis to have a low impact on the significant swamp CCUS4 (Figure 10 of Biosis report). This acknowledges that the impacts are above the 'negligible' threshold required for a swamp of special significance. NRE should either modify the proposal to avoid impact, modify the mining method to minimise impact to the negligible threshold, or explicitly describe the mining impact that is consistent with its prediction for this swamp and the creeks and pools downstream that are fed from this swamp so that post-mining monitoring can show whether this prediction was met. If the prediction is not met then remediation and/or offsetting should be triggered through an appropriate TARP.

Monitoring and Compliance

The lack of two years pre-mining data is a major limitation to undertaking an adequate environmental assessment. Monitoring must focus on the water balance within swamps through the installation of piezometers as almost all other threatened biodiversity features are dependant on the water regime remaining unchanged within the swamps. Identification and monitoring of important breeding habitat of threatened stream frogs should also be included post approval.

As discussed above, the current TARP is inadequate, lacking required detail of "predicted performance measures and outcomes and cannot be assumed to be effective in detecting or remediating damage.

OEH notes the number of past non compliance instances described in the *Response to Submissions* report and is concerned how compliance with the conditions of consent will be monitored and adequate compliance actions will take place promptly.

Referral to SEWPaC under the EPBC

The *Response to Submissions* states:
"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…*

We understand that this is currently being addressed by DSEWPaC" (p35).

OEH considers this response is inadequate for a number of reasons as discussed below. OEH retains the view that referral to the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) is warranted.

The statement that ***no Woronora swamps are listed as components of the THPSS*** is incorrect. An extract from the EPBC listing (see Table 1) specifically identifies 5 swamps (Butlers, Gallahers, North Pole, Rock Arch and Stockyard) which are all on the Woronora Plateau and are mapped by OEH as vegetation type MU42 (as are the swamps over NRE Wonga East).

Southern Highlands swamps			
Butlers Swamp (upper reaches Nepean River[2])	North of Robertson	34° 31' 30"	150° 35' 20"
Gallahers Swamp[c] (upper reaches of Avon River)	North of Robertson	34° 29.42'	150° 43.38'
North Pole Swamp[c,d] (upper reaches of Dudewaugh Creek, a tributary of Burke River, and Avon River[2])	North-east of Robertson	34° 30'	150° 39'
Rock Arch Swamp[c] (upper reaches of ?Avon River)	North-east of Robertson	34° 30.65'	150° 39.22'

Stockyard Swamp[c,d] (upper reaches of Dudewaugh Creek, a tributary of Burke River[2])	North-east of Robertson	34° 31'	150° 39'

Table 1. Excerpt from EPBC THPSS listing.
http://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=32

When the Sydney Catchment Authority was undertaking studies for the Kangaloon Borefield, SEWPaC (then DEWHA) expressed an opinion that upland swamps of the area did conform to the THPSS listing even though they were at slightly lower altitude. Clearly the current SEWPaC review of upland swamps on the Woronora Plateau will address the inconsistencies in the current THPSS listing, but until that time the status of upland swamps and the current proposal should be referred to the Commonwealth if only to additionally address the effects of the current mine plan on species that are definitively covered by the EPBC listing and also found in this area (e.g. Macquarie Perch, Giant Burrowing Frog and potentially Littlejohn's Tree Frog).

Further to the above, no evidence is provided in the documentation to support the statement "*the swamps located above Longwalls 4 and 5 do not generate peat*". If the correct species and conditions (i.e. waterlogging) occur in these swamps then peat can form. The soil substrate for many of the upland swamps in this area are actually better described as peaty sands, but nevertheless still contain an element of peat. Much greater study of these systems is required to ascertain whether they do or do not produce peat. Such detailed studies have not been undertaken by the proponents of the EA and such broad statements of opinion are not supported by scientific, peer-reviewed data or analysis.

2. Aboriginal Cultural Heritage

The Proponent has not addressed or identified how the monitoring programme will be aligned with the requirements of the Bulli Seam Project PAC recommendations as per previous OEH comments.

In the response to submissions, the Proponent makes the following statement "*...unless fracturing of the bedrock directly impacts these sites, the heritage values of these sites will not be impacted.*" OEH does not agree with this statement.

The grinding grooves themselves may not be impacted by fracturing of the rock platform, however, the cultural value of each site does not solely consist of the physical site, in this case, grinding grooves. The location of the grinding grooves on the platform and in the wider local context may have a significance that can only be identified by the local Aboriginal community. The heritage value of each site comprises the tangible and intangible values and it is incorrect to state that the heritage values will not be impacted by fracturing of the surrounding bedrock.

David Clarkson

From: Clay Preshaw [Clay.Preshaw@planning.nsw.gov.au]
Sent: Friday, 2 November 2012 3:46 PM
To: David Clarkson
Subject: NRE No. 1 Mod

FYI - DSC comments

>>> "Heather Middleton" <heather@damsafety.nsw.gov.au> 11/1/2012 2:23 pm >>>
Clay I have enclosed an excerpt from the minutes of the DSC meeting on the 5th of September regarding the proposed development of LWs 4 -5 ande gateroads for Longwalls 6, 7 and 8 within the Cataract notification Area. While the DSC has endorsed the development of gateroads for longwalls 6 to 8 at this stage they have not written to the CICM regarding their endorsement. Today however I have received an application from NRE requesting endorsement of the development of Maingate 5 which falls within the Notification Area, and as it has already been endorsed by the DSC am writing a letter of endorsement to the DSC.

Excerpt from DSC minutes 5th September 2012

NRE#1, mining within Cataract Notification Area

The Committee NOTED:

NRE#1 has notified the DSC that they propose to mine first workings within the Cataract NA by developing gateroads for longwalls 6, 7 & 8

First workings cause minimum subsidence and negligible impact on the Reservoir

The Committee Endorsed the Subcommittee's recommendation:

That Ziegler be delegated to process the first workings application if a time constraint makes it necessary that it be dealt with before the next DSC meeting.

The Committee NOTED

That the current level of information received from NRE#1 is insufficient to allow the DSC to approve longwall extraction within the NA and that a request for further information is to be forwarded to NRE.

Kind regards

Heather Middleton
Mining Regulation Officer
Bus: (02) 98957353
heather@damsafety.nsw.gov.au

New South Wales Government
Dam Safety Committe

NSW GOVERNMENT | Resources & Energy

OUT12/26784

Mr Howard Reed
Manager Mining
Major Project Assessments
Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

Attention: Clay Preshaw

Dear Mr Reed

Response to Submission
NRE No.1 Colliery - Modification
(MP 10_0046 Mod 1)

I refer to your email of 8 October 2012 requesting comments on the "*Response to Submissions*" by Gujarat NRE Coking Coal Ltd in respect of its application to modify its approval for NRE No.1 Colliery - *Longwalls 4 and 5; Maingates 6, 7 and 8 – Application for s75W modification 1 to MP 10_0046 – Preliminary Works Project*.

Gujarat is undertaking critical investigations as requested by NSW Trade & Investment, Regional Infrastructure & Services, Division of Resources & Energy (DRE) as part of the assessment of this proposal.

The results of the investigations will assist the Department in further assessing this proposal and enable a well informed response to the request for comments on the "*Response to Submissions*" by DRE.

Further comments will be made after the results of the investigations have been received and examined.

Should you have any enquires regarding this matter please contact John Curtis, Assistant Project Officer, Industry Coordination on (02) 8281 7349.

Yours sincerely

19/10/12

WILLIAM HUGHES
ACTING DIRECTOR
MINERALS OPERATIONS

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Our Ref. D2012/99215

Mr Howard Reed
Manager, Mining Projects
Department of Planning & Infrastructure
GPO Box 39
SYDNEY NSW 2001

Attention: Clay Preshaw

Dear Mr Reed Clay

ENVIRONMENTAL ASSESSMENT NRE NO. 1 COLLIERY
PRELIMINARY WORKS PROJECT MODIFICATION APPLICATION MP 10_0046

I refer to the Department's e-mail dated 8 October 2012 providing a Response to Submissions (RTS) document and requesting any further comments on the proposal. The SCA has reviewed the RTS document and its response to major issues is provided below.

Additional Information

The SCA notes that the RTS document provides additional information including a revised longwall 5 (LW5) mine plan, actual measured subsidence for LW4, a comprehensive assessment of swamps in NRE's areas (BIOSIS 2012), a specialist response to subsidence related comments on modification application (SCT 2012) and additional groundwater monitoring information.

Subsidence Assessment

The actual measured subsidence for LW4 is significantly greater than predicted. The previously predicted subsidence for LW5 are likely to be unreliable and therefore the SCA considers that the subsidence predictions for LW5 should be revised as previously requested and associated predicted impacts on Cataract Creek Upland Swamp 4 (CCUS4) updated.

Groundwater Assessment

The SCA notes that the monitoring of additional groundwater bore GW-1 has indicated that a horizon within the Bald Hill Claystone may be acting as an aquitard at this site. The SCA notes that both new deep groundwater bores have been located on the eastern end of LWs 4 & 5 and none on the western end. The SCA considers that the aquitard properties of the Bald Hill Claystone are not adequately known on the western end of LWs 4 & 5 which lies in close proximity to Cataract River and Cataract River Upland Swamp 1 (CRUS1) and CCUS4 swamp.

The groundwater model has not been revised and sensitivity analysis has not been undertaken as requested by the SCA despite additional groundwater monitoring data becoming available. The RTS document states that the additional data does not invalidate the assumptions and parameters used in the model and as such the groundwater model does not require updating, and that sufficient sensitivity analyses have been conducted. It further states that the model predictions, together with monitoring experience gained from the Southern Coalfields, have been used to guide the potential effects of LWs 4 & 5 on the

groundwater and streams. Given that the subsidence predictions for LW4 have been found unreliable as discussed above, and the RTS document does not provide actual measured subsidence over streams and swamps as result of LW4 extraction, there is uncertainty related to potential effects of LW5 extraction on CCUS4 swamp.

Assessment of Surface Water and swamps

The RTS document reiterates previous comments of negligible impacts on swamps including CRUS1 and CCUS4, both afforded 'special significance'. The rockbar associated with upland swamp CCUS4 as reported is located outside the predicted limits of subsidence for LW5, and it is predicted the swamp is unlikely to be impacted as a result of the coal extraction from LWs 4 & 5. The SCA considers that subsidence predictions for LW4 have been found unreliable as discussed above, and the RTS document does not provide actual measured subsidence over Cataract Creek and/or Cataract Creek Upland Swamp 3 (CCUS3) as result of LW4 extraction. Therefore the predictions relating to CCUS4 and the associated rock bar and waterfall may not be valid.

Approval for Maingates 6, 7 & 8

Maingates 6, 7 and 8 and any future secondary extraction of these longwalls underlie the Dams Safety Committee's Dam Notification area for Cataract Dam and undermine the main channel of Cataract Creek, CCUS4 and CCUS5 (both special significance swamps). The BIOSIS report has assessed that the CCUS5 swamp has significant risk from mining impacts.

In addition the SCT (2012) report states that the increased subsidence observed above multi-seam mining such as LW 4 suggests increased disturbance of the subsided overburden strata and increased potential for overall increased hydraulic conductivity between surface and the mining horizons. The SCT report further states that the increased vertical hydraulic conductivity may be an issue where the recharge source is a reservoir, 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 groundwater. The report also states that the increase in hydraulic conductivity as a result of vertical stretching and secondary effects such as valley closure tend to be located directly over each longwall panel. Therefore mining directly under important surface features should be avoided or longwall panels located further away from such features. Secondary extraction of LWs 6 to 8 as proposed is unlikely to achieve the SCA's performance criteria. LW 8 is of the most concern to the SCA given the likely impacts on Cataract Creek and CCUS5.

The SCA remains concerned about the longer term potential for connection between the stored waters and current and potentially future mined areas. The unusually higher than predicted subsidence resulting from the extraction of LW 4 and the reduction of the bridging capacity of the overburden increase risks from secondary extraction of LWs 6 to 8.

The SCA reiterates its previous comment that an integrated approach is important for these longwalls which would enable the entirety of their impacts in a highly complex mining environment to be assessed, and a more integrated approach to be taken to the management of such impacts.

Conclusion

Notwithstanding a reduced LW5 and NRE's assurances that subsidence predictions and impact assessments as a result of extraction of LW5 will be reflected as part of both the Extraction Plan and Subsidence Management Plan and that NRE will conform to the SCA

performance criteria by preparing and adhering to stream, swamp and groundwater management plans with appropriate triggers to be used to provide adaptive management methods, there is uncertainty in relation to the impact predictions.

Consequently, the SCA is not satisfied that the Proponent has demonstrated the Project can achieve the SCA's performance measures particularly in relation to CCUS4 swamp, and requests a review of the subsidence predictions and cumulative impacts as a result of longwall 5 extraction taking into consideration actual impacts measured as a result of LW4 extraction.

The SCA is also concerned that approval of maingates 6, 7 and 8 could be infer an expectation of a future approval to extract from LWs 6, 7 and 8. As noted above the SCA remains concerned that extraction of coal from these areas as marked would be unacceptable to the SCA.

The SCA would appreciate being involved in any further environmental assessment and consultation process associated with the application and the opportunity to comment on any draft conditions.

If you wish to discuss any matter raised in this letter, please do not hesitate to contact Dr Girja Sharma or via e-mail girja.sharma@sca.nsw.gov.au

Yours sincerely

1/11/12

DR PETER DAVIES
Senior Manager, Sustainability