Metallurgical Coal

ANNEX F
HERITAGE MANAGEMENT PLAN

WEST CLIFF AREA 5
LONGWALLS 37 AND 38 EXTRACTION PLAN

Document No: <ADD No. HERE>

Rev: A

bhpbilliton
resourcing the future

Table of Contents

Tables

Figures

Attachments

Review History

Revision	Description of Changes	Date	Approved
P1	New Document	May 2013	
P2	Revised Document	June 2013	
A	Draft for Agency comment	June 2013	
A	Final (consultation updated in Attachment A)	August 2013	

Persons involved in the development of this document include:

Name	Title	Company
Daniel Thompson	Environmental Planner	Cardno
Danyil Skora	Senior Environmental Planner	Cardno
Gary Brassington	Manager Approvals (Mining)	BHP Billiton Illawarra Coal

1 INTRODUCTION

1.1 PROJECT BACKGROUND

BHP Billiton Illawarra Coal (BHPBIC) operates the Bulli Seam Operations (BSO) (Appin and West Cliff Collieries) extracting hard coking coal used for steel production.

On 22 December 2011, the Planning and Assessment Commission (PAC), under delegation of the Minister for Planning, approved the BSO project (MP 08_0150) under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to continue mining operations until 31 December 2041.

This Heritage Management Plan (HMP) supports the Longwalls 37 and 38 Extraction Plan for West Cliff Area 5. The relationship between this HMP and the other components of the Extraction Plan is shown in **Figure 1** of the Extraction Plan.

1.2 SCOPE

This HMP has been prepared by Cardno on behalf of BHPBIC in accordance with the BSO Approval (MP08_150) *Condition 5 (k), Schedule 3* as follows:

> *5. The Proponent shall prepare and implement an Extraction Plan for first and second workings within each longwall mining domain to the satisfaction of the Director-General. Each extraction plan must:*
>
> *k. include a Heritage Management Plan, which has been prepared in consultation with Office of Environment and Heritage (OEH) and relevant stakeholders for both Aboriginal and historic heritage, to manage the potential environmental consequences of the proposed second workings on both Aboriginal and non-Aboriginal heritage sites items, and which:*
>
> - *includes additional investigations (such as surveys and current register searches) for Aboriginal heritage items (including previously known sites) and historic heritage items, sufficient to identify the significance (including 'special significance') of all sites which may be impacted by subsidence and to identify any actions required to ensure that the performance measures in Table 1 are met ; and*
> - *is prepared in accordance with the relevant requirements for preparation of the Heritage Management Plan required under Condition 24 of Schedule 4.*

The Study Area for the Extraction Plan, **Figure 1,** is defined in accordance with Mine Subsidence Engineering Consultants (MSEC, 2013), as the surface area predicted to be affected by the proposed mining of Longwalls 37 and 38 and encompasses the area bounded by, whichever is the greater of the following limits:

- 35^0 Angle of Draw for the maximum depth of cover, which equates to a horizontal distance of between 320 m and 380 m outside the limit of the proposed extraction area); and
- The 20 mm predicted limit of vertical subsidence, which is generally within the 35^0 Angle of Draw.

Additionally, features sensitive to far-field movements, which includes potential horizontal, valley closure and valley upsidence movements, which may be outside the 20 mm subsidence zone or 35^0 Angle of Draw have been assessed including:

- Watercourses (including the Georges River), within the predicted limits of 20 mm total upsidence and 20 mm total closure;

- Steep slopes; and
- Cliffs.

Two separate Study Areas have been defined, one for each of the longwalls. The Longwall 37 Study Area is located primarily to the west of the Georges River, with the Longwall 38 Study Area primarily to the east of the Georges River. The Study Area locations are illustrated in **Figure 1** and **Figure 2** (Niche, 2013).

1.3 OBJECTIVES

The objectives of this HMP are to identify heritage items within the Longwall 37 and 38 Study Area and to manage the potential impacts and/or environmental consequences of the proposed workings on Aboriginal and non-Aboriginal heritage sites and values.

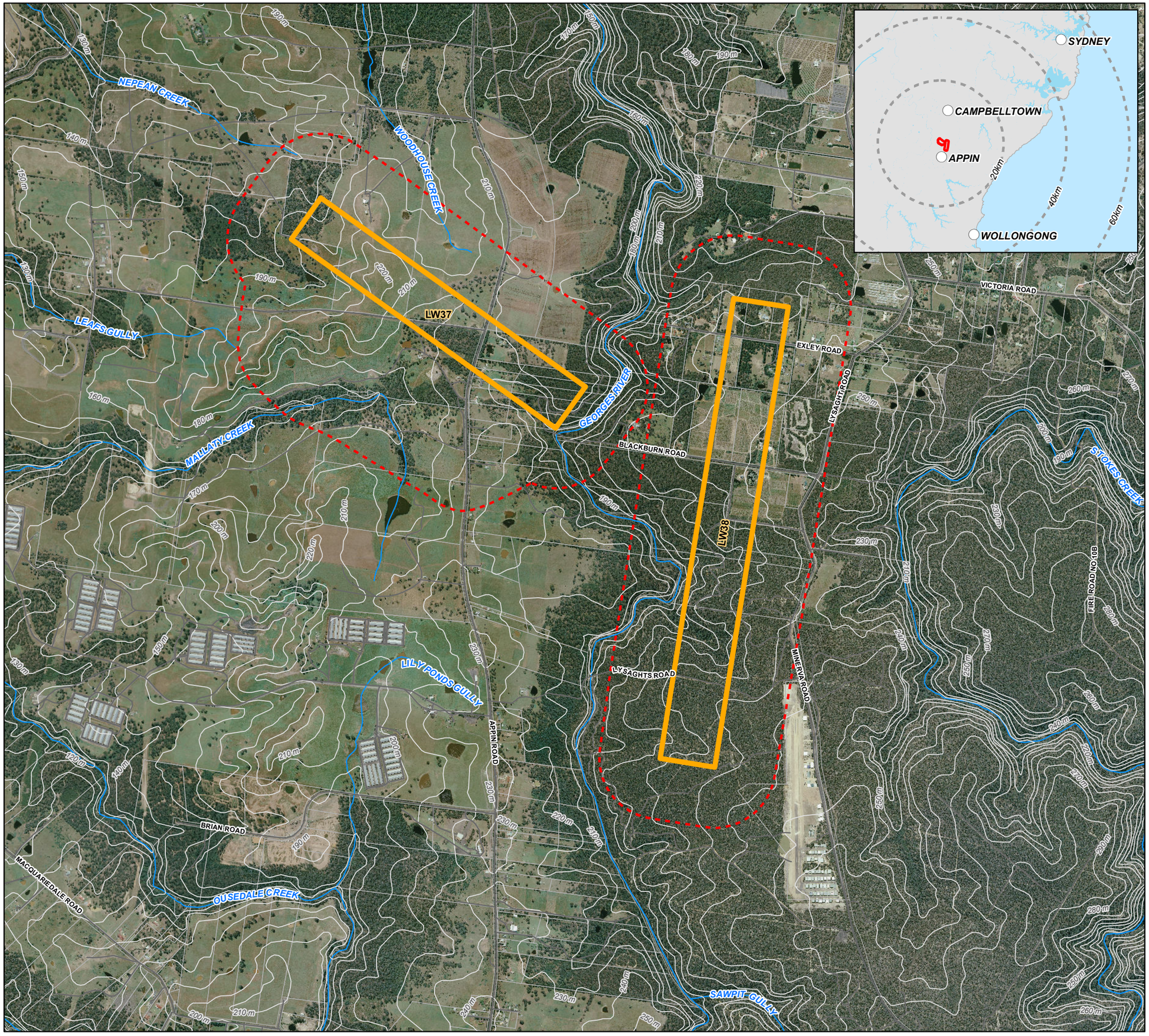
Specific focus will be on Aboriginal heritage sites that may be determined to hold 'special significance', sites determined to hold high or moderate significance, other Aboriginal heritage sites, non-Aboriginal heritage features such as buildings or structures of State or National heritage significance and other buildings or structures of identified heritage significance (**Figure 2**).

1.4 DISTRIBUTION

This HMP will be developed in consultation with the Office of Environment and Heritage (OEH), and specifically OEH's Heritage Branch and relevant stakeholders for both Aboriginal and European heritage. The finalised HMP will be distributed to:

- Department of Planning and Infrastructure - DP&I
- NSW Trade and Investment - Division of Resources and Energy - DRE
- OEH
- All registered Aboriginal stakeholders.

BHPBIC will make the HMP and other relevant documentation publicly available on the BHPBIC website (Condition 11, Schedule 6 of BSO approval).



bhpbilliton
ILLAWARRA COAL

West Cliff Area 5 Study Areas (LW37 and 38)

Legend

- Study Area
- Local Roads (LPI)
- 10m Contours (LPI)
- Watercourses (LPI)
- Cadastre (LPI)
- West Cliff LW 37 and 38 (BHPBIC 2013)

N
W E
S

FIGURE 1

Scale 1:20,000 (at A3)

Kilometres

0 0.25 0.5 0.75 1

Cardno

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 14/03/2013
Coordinate System: GDA 1994 MGA Zone 56
Project: 112054-01
Map: G1002_WCA5_ExtractionPlan.mxd 03

Aerial imagery supplied by BHPBIC (2007 and 2009)

2 STATUTORY REQUIREMENTS

Extraction of coal from Longwalls 37 and 38 will be in accordance with the conditions set out in the BSO Approval, applicable legislation as detailed in **Section 2.2** and the requirements of relevant licences and permits, including the conditions attached to mining leases.

2.1 BSO APPROVAL

Condition 5 (k), Schedule 3 of the BSO Approval (MP 08_150) requires the preparation of an HMP to manage the potential impacts and/or environmental consequences of the proposed workings on both Aboriginal and non-Aboriginal heritage sites or values (refer **Section 1.2**).

This HMP also addresses the requirements detailed in *Condition 6, Schedule 3* and *Condition 2, Schedule 6* of the BSO Approval as shown in **Table 2.1**.

Table 2.1 – Management Plan Requirements

Project Approval Condition	***Relevant HMP Section***
Condition 6 – Schedule 3	
The Proponent shall ensure that the management plans required under Condition 5(g)-(l) above include:	
(a) an assessment of the potential environmental consequences of the Extraction Plan, incorporating any relevant information that has been obtained since this approval; and	Section 4
(b) a detailed description of the measures that would be implemented to remediate predicted impacts.	Section 7
Condition 2 – Schedule 6	
The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:	
(a) detailed baseline data;	Section 3
(b) a description of:	
- the relevant statutory requirements (including any relevant approval, licence or lease conditions);	Section 2 Section 5
- any relevant limits or performance measures/criteria;	
(c) - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;	Sections 5 to 8
(d) a program to monitor and report on the:	Section 6
- impacts and environmental performance of the project;	
- effectiveness of any management measures (see c above);	
(e) a contingency plan to manage any unpredicted impacts and to and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Section 8
(f) a program to investigate and implement ways to improve the environmental performance of the project over time;	Section 10

Project Approval Condition	*Relevant HMP Section*
(g) a protocol for managing and reporting any: - incidents; - complaints; - non-compliances with statutory requirements; and - exceedances of the impact assessment criteria and/or performance criteria; and (h) a protocol for periodic review of the plan.	Section 9 Section 10.6

Due consideration has been given to all the BSO Approval Conditions in the preparation of this HMP, including those relating to auditing, rehabilitation and environmental management.

2.2 LEGISLATION AND GUIDELINES

This HMP conforms to the requirements of the relevant legislation and advisory documents and guidelines including:

- *National Parks and Wildlife Act 1974*: Part 6 Approvals - Aboriginal Cultural Heritage Consultation requirements for proponents (DECCW, April 2010).
- *Heritage Act 1977*. Defines the assessment and protection of items listed on the State Heritage Register (SHR).
- Draft guidelines for Aboriginal Cultural Impact Assessment and Community Consultation (DECC, 2005), for assessing potential impacts on Aboriginal cultural heritage for development applications assessed under Part 3A of the EP&A Act.
- The Australia ICOMOS Burra Charter.
- Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS, 1997).
- NSW Heritage Manual (NSW Heritage Office and NSW Department of Urban Affairs and Planning [DUAP]).

2.3 RELEVANT LEASES AND LICENCES

The following licences or permits apply to BHPBIC's operations in West Cliff Area 5:

- Mining Leases as per **Table 2.2**.
- Environmental Protection Licence (EPL) 2504 which applies to BSO, including Appin and West Cliff Mines. A copy of the licence can be accessed at the EPA website via the following link http://www.environment.nsw.gov.au/poeo.
- West Cliff Mining Operations Plan (MOP) July 2007 to June 2014.
- All relevant OH&S and HSEC approvals.
- Any additional leases, licences or approvals resulting from the BSO Approval.

Table 2.2 – West Cliff Leases, Licences and other Reference Documents

Mining Lease - Document Number	Issue Date	Expiry Date/ Anniversary Date
CCL 724	4 July 1991	26 October 2011 (renewal pending)
Part CCL 767	29 October 1991	September 2010 (renewal pending)
CCL 381	24 October 1991	23 October 2012 (renewal pending)
ML 1678	27 September 2012	26 September 2033
MPL 200	13 January 1982	13 January 2024
MPL 201	13 January 1982	13 January 2024

3 BASELINE ASSESSMENT

A baseline Aboriginal Heritage Assessment (Biosis, 2009) and non-Aboriginal Heritage Assessment (Heritage Management Consultants [HMC], 2009) were undertaken in support of the BSO Environmental Assessment (EA). The Study Area for these assessments included the Longwalls 37 and 38 Study Area:

- Excluding duplicates, ten Aboriginal Heritage sites were located within close proximity to the proposed longwalls. These sites were inspected and assessed, photographically recorded and have been included in this assessment. These sites comprise:
    - 3 shelters with art (52-2-2234, 52-2-2241, 52-2-2242);
    - 2 shelters with art and archaeological deposit (52-2-2063, 52-2-2243);
    - 1 shelter with archaeological deposit (52-2-2062);
    - 1 axe grinding groove site (52-2-2064); and
    - 3 open sites with artefacts (52-2-2036, 52-2-2264, 52-2-3691).
- One heritage site was detected during the BSO EA investigations, being the Bridge and Road Remains Site (WH1), although WH1 is not situated in the subject area, it may be subject to far-field subsidence movements. The site was not visited during this assessment however, an inspection and records of this site occurred on 2 November 2011.

A supplementary field survey for Aboriginal and non-Aboriginal heritage items, titled, *Heritage Assessment - West Cliff Longwalls 37-38 Extraction Plan* (Niche, 2013) (refer **Attachment B**) was undertaken for the purpose of this extraction plan. This assessment aimed to identify any Aboriginal or non-Aboriginal sites, objects or places that had not been previously identified in the study area; assess the cultural heritage significance of objects; sites, relics or places within the project area; and provide appropriate mitigation and management recommendations in accordance with the requirements of the BSO approval.

No additional heritage or non-Aboriginal heritage items have been identified in the 2013 assessment (Niche, 2013) from those items identified in the BSO Heritage assessments (2009). The locations of the recorded Heritage Features within the Longwall 37 to 38 Study Area are shown in **Figure 2.**

3.1 BASELINE RECORDING

3.1.1 Aboriginal Heritage

Known Aboriginal archaeological sites within or near the Longwall 37 and 38 Study Area has been subject to recording at the level appropriate for registration on the *Aboriginal Heritage Information Management System* (AHIMS) at OEH (Niche, 2013).

Detailed baseline recording of any previously undetected Aboriginal heritage sites found prior to or during mining will be undertaken as required.

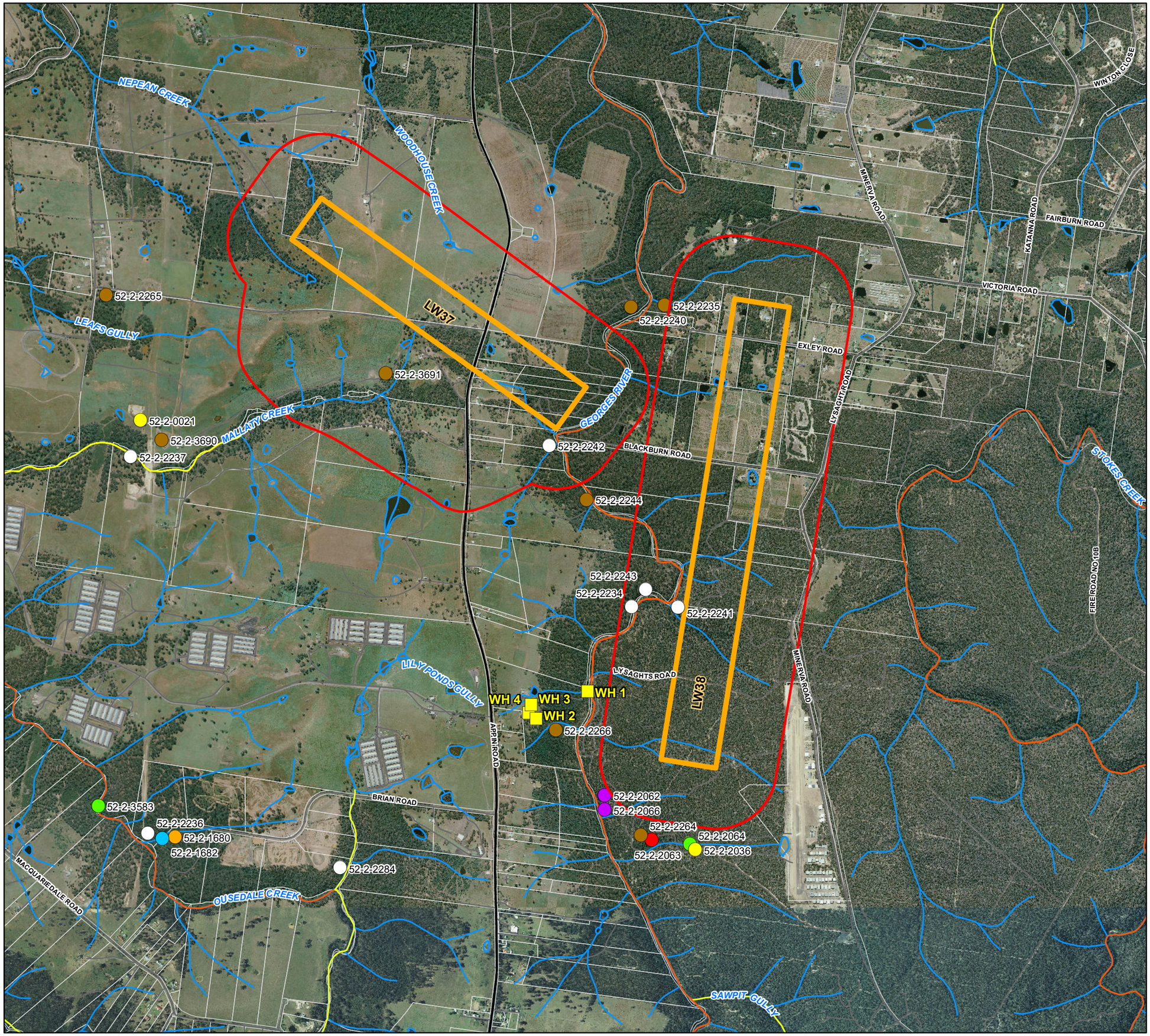
3.1.2 Historic Heritage

The significance of site WH-1 Bridge and road remains has been previously assessed by Biosis Research 2005 and 2007 and the statement of significance as outlined by those reports is as follows:

"The road and bridge crossing are significant indicators of transportation routes in the colony. The features provide direct evidence of historic use, reflecting the evolution of the area in an easily understood context" (Biosis, 2005).

Additionally, the bridge remains in conjunction with the grave, pub/cellar sites that were identified during this assessment informs and enhances the significance of each other, with the overall grouping providing a significant indication of the physical history of the subject area.

The sites recorded are considered collectively to have HIGH LOCAL significance (Niche, 2013).



bhpbilliton ILLAWARRA COAL

Recorded Heritage Items

WESTCLIFF AREA 5
LW 37 and 38

Legend

- Study Area
- European Heritage (Niche, 2013)

Aboriginal Sites (Niche, 2013)

- Art (Pigment or Engraved)
- Artefact
- Axe Grinding Groove
- Open Camp Site
- Scarred Tree
- Shelter with Art
- Shelter with Deposit
- Shelter with PAD
- Major Roads (LPI)
- Watercourse (MSEC, 2013)
- 3rd Order Watercourse (MSEC, 2013)
- 4th Order Watercourse (MSEC, 2013)
- West Cliff LW 37 and 38 (BHPBIC 2013)

N
W E
S

FIGURE 2

Scale 1:20,000 (at A3)

Metres
0 250 500 750 1,000

Cardno

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 11/06/2013
Coordinate System: GDA 1994 MGA Zone 56
Project: 112054-01
Map: G1010_RecordedHeritageItems.mxd 02

Aerial imagery supplied by BHPBIC (2007 and 2009)

4 PREDICTED IMPACTS

In accordance with the findings of the Southern Coalfield Inquiry:

- **Subsidence effects** are defined as the deformation of ground mass such as horizontal and vertical movement, curvature and strains.
- **Subsidence impacts** are the physical changes to the ground that are caused by subsidence effects, such as tensile and sheer cracking and buckling of strata.
- **Environmental consequences** are then identified, for example, as a loss of surface water flows and standing pools.

In applying these definitions to Aboriginal heritage items, subsidence impacts such as cracking will result in a heritage consequence if the subsidence impact damages the integrity or heritage value of the item.

4.1 ABORIGINAL HERITAGE

4.1.1 Subsidence Effects

MSEC (2009) undertook an initial assessment of predicted subsidence in the Study Area to support the BSO EA. These predictions were revised by MSEC (2013) to account for the revised Mine Plan for Longwall 37 to 38.

Ten Aboriginal heritage sites were considered in this assessment. Impact assessments based on the type of site, as assessed and presented by MSEC (2013) are outlined in Table 2 of the Niche (2013) report (see **Attachment B**).

There were three open artefact sites considered in the Niche (2013) assessment with a maximum predicted tilt of 2 mm/m which represents a change in grade of 1 in 500; a maximum predicted curvature of 0.03 km^{-1} hogging and <0.01 km^{-1} sagging, which represents a minimum radii of curvature of 33 km and greater than 100 km, respectively. The maximum predicted conventional strains for these sites, based on applying a factor of 15 to the maximum predicted conventional curvatures, are 0.5 mm/m tensile and less than 0.2 mm/m compressive.

There were six Sandstone shelter sites considered in the Niche (2013) assessment with a maximum predicted tilt of 2 mm/m which represents a change in grade of 1 in 500.

A single axe grinding groove site was assessed as part of this assessment with a maximum predicted tilt of less than 0.5 mm/m which represents a change in grade of less than 1 in 2,000; a maximum predicted curvature of less than 0.01 km^{-1} hogging and sagging, which represents a minimum radius of curvature greater than 100 km. The maximum predicted conventional strains for the site, based on applying a factor of 15 to the maximum predicted conventional curvature, is less than 0.2 mm/m.

4.1.2 Subsidence Impacts

The potential impacts that result from subsidence relate to the tilt and strain that occurs during and after coal has been extracted. The below impact assessment has been based on MSEC (2013) predictions for the Longwalls 37 and 38 mining area.

The three open artefact scatter sites considered in the Niche (2013) assessment may potentially be affected by cracking of the surface soils as a result of mine subsidence movement, though this is unlikely. It is considered highly unlikely that these sites would experience any adverse impacts resulting from the mining induced tilts (Niche, 2013).

The risk of adverse impact to the six sandstone shelter sites from mining induced tilts, tensile or compressive strains is considered to be very low. However, the sites may also be affected by subsidence impacts such as fracturing of sandstone, rockfalls or water seepage through the joints which affects art work panels. Given the low values of predicted curvature at the shelter sites, the risk of impact from tensile or compressive strains in this regard is considered very low (MSEC, 2013).

The likelihood of impacts to sandstone shelters that are located outside the extracted longwalls are considerably less than those which are located directly above. It has been reported in the Southern Coalfield, that where longwall mining has been carried out, approximately 10% of the 52 shelters have been affected by the fracturing of strata (Sefton, 2000). This suggests that the likelihood of impact in the subject area is relatively low, specifically as none of the shelter sites are directly above the proposed longwalls (Niche, 2013).

A single axe grinding groove site was assessed as a part of the Niche (2013) assessment which is located in the base of the stream valleys and therefore, could experience valley related movements. The maximum predicted upsidence and the maximum predicted compressive strains due to the closure movements are expected to occur in the bases of the valleys and could potentially impact the grinding groove site.

4.1.1 Consequences

It is possible, that if remediation of the surface was required after mining, that these works could potentially impact the three open artefact scatters (MSEC, 2013).

It is possible, that minor and isolated fracturing could occur in the vicinity of the grinding groove site. The likelihood of any fracturing being coincident with the sites is considered low (MSEC, 2013).

It is predicted that there will be negligible consequences for the heritage value of the Sandstone shelter sites from mining.

4.2 NON-ABORIGINAL HERITAGE

4.2.1 Subsidence Effects

There are no items within the subject area which are listed on the State Heritage register. The distances of the heritage items located within the subject area to the nearest goaf varies between 480 m to 760 m. At these distances the heritage items are unlikely to be subjected to any significant conventional subsidence movements resulting from the extraction; however they may be affected by minor far field movements (MSEC, 2013).

4.2.2 Subsidence Impacts

Site WH1 (the bridge and road remains site) is located 470 m to the west of Longwall 38. Since this site is located at the base of a valley, it may be subjected to further minor valley related movements due to the extraction of Longwall 38. The predicted additional closure due to the extraction of Longwall 38 is small, however given the rockbar has experienced impacts from the previously extracted Longwall 33, this closure may cause minor movements at existing fractures in rockbar RB39. The small magnitude of the predicted additional closure is considered unlikely to result in new impacts (MSEC, 2013).

4.2.3 Consequences

No consequences are predicted for non-Aboriginal heritage features.

5 PERFORMANCE MEASURES AND INDICATORS

The BSO Approval provides Subsidence Impact Performance Measures (*Schedule 3).* **Table 5.1** below details the conditions relevant to heritage items. In relation to the performance measures for Aboriginal and non-Aboriginal heritage features the term "negligible" is defined within the Project Approval as "small and unimportant, such as not to be worth considering".

For the purpose of measuring performance against the Aboriginal heritage subsidence impact performance criteria, sites are considered to be "*affected by subsidence impacts*" if they exhibit overhang collapse and/or rock fall that damages Aboriginal art that cannot be attributed to natural weathering or deterioration.

Non-Aboriginal heritage sites are considered to be "*affected by subsidence impacts*" if they exhibit cracks in timber or the external facade, movement of wall claddings, loss of bearing to isolated walls etc. or level changes to a building.

Table 5.1 – Subsidence Impact Performance Measures (BSO Approval)

Aboriginal Heritage Features (Condition 1 Schedule 3)	
Sites determined to hold 'special significance' as a result of studies required for Extraction Plans.	Negligible impact or environmental consequences.
Sites determined to hold high or moderate significance as a result of studies required for Extraction Plans.	Less than 10% of such sites across the mining area are affected by subsidence impacts (other than negligible impacts or environmental consequence).
Other Aboriginal heritage sites.	Less than 10% of such sites within any longwall mining area are affected by subsidence impacts (other than minor impacts or environmental consequence).
Historic Heritage Features (Condition 1 Schedule 3)	
St James Church, Menangle. St Mary's Tower, Douglas Park.	Negligible loss of heritage value. Negligible impact on structural integrity or external fabric.
Broughtons Pass Weir.	Negligible loss of heritage value.
Other buildings or structures of State or National heritage significance.	Negligible loss of heritage value. Negligible impact on structural integrity or external fabric, unless the owner of the feature agrees otherwise in writing.
Other buildings or structures of identified heritage significance.	No loss of heritage value greater than predicted under a Heritage Management Plan prepared under *Condition 6 Schedule 3.*
Built Features (Condition 3 Schedule 3)	
Other public infrastructure (including water supply pipelines, high pressure gas pipelines and the gas distribution network; electricity transmission and distribution lines; telecommunication cables and optical fibre networks; roads, trails and associated structures). Houses, industrial premises, swimming pools, farm dams and other built features or improvements	Always safe. Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated. Damage must be fully repaired or fully compensated, or else the damaged built feature or damaged infrastructure component must be replaced.

**Note*: Not all of the above mentioned features are present in the Longwalls 37 and 38 Study Area as the subsidence impact performance measures in Schedule 3 relate to the entire BSO Area.*

In order to mitigate the potential subsidence impacts and heritage consequences from the mining of Longwalls 37 and 38, monitoring and recording will be undertaken prior to mining, throughout the extraction and at the completion of extraction and associated subsidence (refer **Section 6**).

In the event that any subsidence impact is recorded, consideration would be given to implementing appropriate management, remediation and/or mitigation measures in consultation with OEH and other relevant stakeholders (refer **Section 7**).

If the subsidence impact performance measures are exceeded, BHPBIC will notify DP&I, OEH and other stakeholders and implement the Contingency Plan (refer **Section 8**).

6 MONITORING AND REPORTING

6.1 MONITORING PROGRAM

6.1.1 Aboriginal Heritage Sites

Subsidence parameters (i.e. subsidence, tilt, tensile strain, compressive strain, valley closure and closure strain) will be measured in accordance with the Longwalls 37 and 38 Subsidence Monitoring Program.

The monitoring program outlined below will be implemented to monitor the impacts of subsidence effects on known Aboriginal heritage sites located within the Longwalls 37 and 38 Study Area. The monitoring program outlined below reflects the magnitude of the expected impacts and further details are provided in the Subsidence Monitoring Program located at Annex B of the Extraction Plan.

Impacts recorded will be assessed by comparing the results of the monitoring recording stages with the baseline data. Movement at and within the heritage site will be monitored by comparing photographed monitoring points, and general observations of the surrounding landscape and whether it shows evidence of subsidence impact.

Monitoring will be implemented, as and if required, for any additional heritage sites which are determined to be at risk of subsidence impacts detected prior to or during the extraction of Longwalls 37 and 38. The appropriate regime would be developed in consultation with a specialised heritage consultant and relevant stakeholders. Details of recommended monitoring methods are provided in Biosis (2012).

6.1.2 Historic Heritage Sites

A monitoring program will be implemented to monitor the impacts and consequences of subsidence effects from the extraction of Longwalls 37 and 38 on known non-Aboriginal heritage sites located within the Study Area.

A subsidence monitoring program for the bridge and road remains site (WH1) will be developed on the basis of the pre-mining inspection and assessment.

The subsidence monitoring program will include:

- Pre-mining inspection and assessment prior to mining.
- Observational monitoring to identify potential subsidence impacts.
- Assessment of heritage impacts by a suitably qualified heritage expert (if required).

Baseline recording and monitoring would be undertaken at three stages of the longwall extraction for Longwall 37 and 38:

- *Baseline archival recording:*
  Prior to commencement of mining.
- *Impact assessment recording:*
  Following the identification of impacts
- *Final assessment recording:*
  Following the completion of subsidence.

6.2 REPORTING

Upon completion of any required baseline recording of Aboriginal items, a report and archival material will be submitted to the OEH.

Baseline recording of non-Aboriginal items shall be in accordance with the requirements of the OEH (Heritage Branch).

Results from the monitoring program will be reported in the Annual Environmental Management Report (AEMR). This report will detail the outcomes of monitoring undertaken; provide results of visual inspections; determine whether performance indicators have been exceeded; and whether CMAs are required.

Monitoring results will be reviewed monthly by the BHPBIC Subsidence Management Committee. However, if the findings of monitoring are deemed to warrant an immediate response the Manager Approvals will initiate the requirements of the TARP (refer **Table 7.1**).

Monitoring results will be made publicly available in accordance with BSO Approval *Condition 8 & 11, Schedule 6* and will also be included in the Annual Reporting *Condition 4, Schedule 6.*

7 MANAGEMENT AND MITIGATION STRATEGIES

7.1 ABORIGINAL HERITAGE

The predicted impacts to the sites are nil to negligible and no mitigation measures are currently proposed.

BHPBIC will review the need to implement management or mitigation strategies during routine monitoring (refer **Section 6**).

If required, management strategies will be developed and implemented in accordance with current conservation practice and conservation principles contained within the Australia International Council of monuments and Sites, the *Burra Charter*, and the NSW Office of Environment and Heritage *Guideline to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (2011). All management strategies will be developed in consultation with the identified Aboriginal stakeholders, the landowner, DP&I and OEH.

Possible measures include:

- Artificial drip line for where additional seepage has resulted from mining.
- Silica fill for cracking resulting from mining.
- Modification of monitoring methodology in response to any particular subsidence impacts.

- Archival recording.
- Continue monitoring.

7.2 NON-ABORIGINAL HERITAGE

A range of mitigation options are presented in the TARP (refer **Table 7.1**).

Any proposed mitigation measures would be assessed for their potential to impact the heritage values of the asset and the method used should be appropriate for the heritage value of the site.

7.3 TARPS

Table 7.1 shows the Longwalls 37 and 38 Heritage Trigger Action Response Plan (TARP).

Table 7.1 – Longwalls 37 and 38 Trigger Action Response Plan (TARP)

Monitoring	Trigger	Action
Aboriginal Archaeology		
Area 5: • 52-2-2064 • 52-2-2234 • 52-2-2236 • 52-2-2241 • 52-2-2242 • 52-2-2243 • 52-2-2062 • 52-2-2063 • 52-2-2264 • 52-2-3691	***Level 1 **** • Change in shelter conditions not attributable to natural weathering or preservation – mineral growth or micro-organism growth (as observed by comparing pre-mining photographs with post-subsidence/mining photographs) • Changes external to the shelter that affect the site context (e.g. ground cracking, boulder slumping, rock and/or tree falls)	• Continue monitoring program • Condition assessment and photographic record • Notify relevant specialists and key stakeholders (e.g. Registered Aboriginal Parties) • Summarise impacts and report in the End of Panel Report and AEMR
	Level 2 * • Change in shelter conditions not attributable to natural weathering or preservation – change in drip line or seepage, cracking or exfoliation of overhang or shelter, movement or opening of existing planes and joints at panel, block fall within shelter or overhang, shelter or overhang collapse	• *Actions as stated for Level 1* • Review monitoring program • Review impacts against the Performance Measures • Develop site management plan to mitigate effects in consultation with Registered Aboriginal Parties and the landowner
	Level 3 * • Level 2 impacts at greater frequency than predicted • Level 2 impacts attributable to mining remote from the mining area	• *Actions as stated for Level 2* • Investigate reasons for the impacts • Update future predictions based on outcomes of the investigation
	Exceeding Performance Measures • More than negligible environmental consequences for sites determined to hold "special significance" as a result of the studies required for Extraction Plans • More than 10% of sites determined to hold high or moderate significance as a result of studies for Extraction Plans (or 1 such site, whichever is the greater) within any longwall mining domain are/is affected by subsidence impacts (other than minor impacts or environmental consequences) • More than 10% of other Aboriginal heritage sites (or 1 such site, whichever is the greater) within any longwall mining domain are/is affected by subsidence impacts (other than minor impacts or environmental consequences)	• *Actions as stated for Level 3* • Investigate reasons for the exceedance • Update future predictions based on outcomes of the investigation

Monitoring	Trigger	Action
European Heritage		
Longwalls 38: • Site WH1 (bridge and road remains)	***Level 1*** * • Changes external to the site that affect the site context (e.g. ground cracking)	• Continue monitoring program • Condition assessment and photographic record • Notify relevant specialists and key stakeholders • Summarise impacts and report in the End of Panel Report and AEMR
	Level 2 * • Change in site conditions not attributable to natural weathering or preservation – movement or opening of existing fractures, bedding planes and joints	• *Actions as stated for Level 1* • Review monitoring program • Review impacts against the Performance Measures • Develop site management plan to mitigate effects in consultation with stakeholders, where appropriate
	Level 3 * • Fracturing of the bridge footings	• *Actions Stated for Level 2* • Investigate reasons for the impacts • Update future predictions based on outcomes of the investigation
	Exceeding Performance Measures • Loss of heritage value greater than predicted under the HMP	• *Actions as stated for Level 3* • Investigate reasons for the exceedance • Update future predictions based on outcomes of the investigation

8 CONTINGENCY RESPONSE PLAN

8.1 EXCEEDANCES OF PERFORMANCE MEASURES

In the event the Performance Measures detailed in **Section 5** of this HMP are considered to have been exceeded, or are likely to be exceeded, BHPBIC will implement a Contingency Plan to manage any unpredicted impacts and their consequences.

This would involve:

- Capture photographic record.
- Notify relevant stakeholders soon as practicable.
- Notify relevant agencies and specialists soon as practicable.
- Conduct site visits with stakeholders as required.
- Contract specialists to investigate and report on changes identified.
- Provide incident report to relevant agencies within seven days.
- Establish weekly monitoring frequency until stabilised.
- Monthly updates from specialists on investigation process.
- Inform relevant agencies and stakeholders of results of investigation within one week of completion.

- Develop site Corrective Management Action (CMA) in consultation with key stakeholders if required within one month, (pending stakeholder availability) and seek approvals.
- Implement CMA as agreed with stakeholders following approvals.
- Conduct initial follow up monitoring and reporting within two months of CMA completion.
- Review Management Plan within three months.
- Report in regular reporting and AEMR.

BHPBIC will consult with appropriate specialists and relevant agencies in order to devise an appropriate response in respect to any identified exceedance.

The development and implementation of contingency measures will be specifically designed to address the specific circumstances of the exceedance and assessment of environmental consequences.

If the contingency measures implemented by BHPBIC fail to remediate the impact or the Director-General determines that it is not reasonable or feasible to remediate the impact BHPBIC will provide a suitable offset to compensate for the impact to the satisfaction of the Director-General of DP&I in accordance with the BSO Approval *Condition 2, Schedule 3*.

All incidents will be reported internally through BHPBIC's Incident Procedure and related records will be maintained in accordance with the Records Management Procedure (refer **Section 10.4**).

8.2 UNEXPECTED FINDS

Where Aboriginal cultural material becomes newly identified BHPBIC will implement a contingency plan to ensure the protection of these items in accordance with the *NPWS Act 1979*. The following contingency plan describes the actions that must be taken in instances where Aboriginal cultural material is discovered or unearthed:

- Cessation of works in the vicinity of the find.
- If suspected human remains are discovered notify Coroner's Office and the NSW Police as soon as practicable.
- Notify OEH as soon as practicable.
- If human remains are discovered, notify the Aboriginal Lands Council as soon as practicable.
- Consultation with relevant stakeholders to undertake a subsidence impact assessment, and development of a management strategy.
- Develop a monitoring program in accordance with Heritage expert consultants' recommendations.
- Record the site in accordance with the *NPWS Act 1974* and OEH guidelines.

9 INCIDENTS, COMPLAINTS, EXCEEDANCES AND NON-CONFORMANCES

9.1 INCIDENTS

BHPBIC will notify the DP&I and any other relevant agencies of any incident associated with the BSO as soon as practicable after BHPBIC becomes aware of the incident. BHPBIC will provide the DP&I and any relevant agencies with a detailed report on the incident within seven days of the date of confirmation of any event.

9.2 COMPLAINTS HANDLING

BHPBIC will:

- Provide a readily accessible contact point through a 24 hour toll-free Community Call Line (1800 102 210). The number will be displayed prominently on BHPBIC sites in a position visible by the public as well as on publications provided to the local community.
- Respond to complaints in accordance with the BHPBIC Community Complaints and Enquiry Procedure.
- Maintain good relations and communication lines between the community and BHPBIC staff.
- Keep a register of any complaints, including the details of the complaint with information such as:
    - Time and date.
    - Person receiving the complaint.
    - Complainant's contact name and phone number.
    - Description of the complaint.
    - Work area where complaint relates to.
    - Details of any verbal response.
    - Details of any written response where appropriate.

9.3 NON-CONFORMANCE PROTOCOL

The requirement to comply with all approvals, plans and procedures is the responsibility of all personnel (staff and contractors) employed on or in association with West Cliff Mine. Regular inspections, internal audits and initiation of any remediation/rectification work in relation to the Extraction Plan will be undertaken by the Manager Approvals.

Non-conformities, corrective actions and preventative actions are managed in accordance with the BHPBIC *Non-Conformance, Preventative and Corrective Action Procedure (ICHP0107)*. This procedure details the processes to be utilised with respect to the identification of non-conformances, the application of appropriate corrective actions(s) to address non-conformances and the establishment of preventative actions to avoid non-conformances. The key elements of the process include:

- Identification of non-conformance and/or non-compliances.
- Recording of non-conformance and/or non-compliance.
- Evaluation of the non-conformance and/or non-compliance to determine specific corrective and preventative actions.
- Corrective and preventative actions to be assigned to the responsible person.

- Management review of corrective actions to ensure the status and effectiveness of the actions.

An Annual Review will be undertaken to assess BHPBIC's compliance with all conditions of the BSO Approval, mining leases and all other approvals and licences.

An independent environmental audit will also be undertaken (*Condition 9, Schedule 6*) to review the adequacy of strategies, plans or programs under these approvals and if appropriate, recommend actions to improve the environmental performance of the BSO. The independent environmental audit will be undertaken by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Director-General of DP&I.

10 PLAN ADMINISTRATION

This HMP will be administered in accordance with the requirements of the West Cliff Area 5 Environmental Management System (EMS) and the BSO Approval Conditions. A summary of the administrative requirements is provided below.

10.1 ROLES AND RESPONSIBILITIES

All statutory obligations applicable to the West Cliff Area 5 operations are identified and managed via an online compliance management system (TICKIT). The online system can be accessed by the responsible BHPBIC managers from the link below.

https://illawarracoal.tod.net.au/login.

The overall responsibility for the implementation of this HMP resides with the Manager Approvals who shall be the HMP's authorising officer.

Responsibilities for environmental management of West Cliff Area 5 and the implementation of the WMP include:

Head of External Affairs

- Ensure that the requisite personnel and equipment are provided to enable this HMP to be implemented effectively.

Manager Approvals

- Authorise the HMP and any amendments thereto and seek appropriate approvals for any proposed amendments.
- Delegate to an appropriately qualified person the responsibility to document any changes to the HMP, recognising the potential for those changes to affect other aspects of the HMP.
- Provide regular updates to BHPBIC on the results of the HMP.
- Arrange information forums for key stakeholders as required.
- Prepare any report in accordance with the HMP. Maintain records required by the HMP.
- Organise and participate in assessment meetings called to review mining impacts.
- Within 24 hours, respond to any queries or complaints made by members of the public in relation to aspects of this HMP.

- Organise audits and reviews of the HMP.
- Address any identified non-conformances, assess improvement ideas submitted and implement if considered appropriate.
- Arrange for the implementation of any agreed actions. Responses or remedial measures.
- Ensure surveys required by this HMP are conducted and record details of instances where circumstances prevent these from taking place.

Environmental Field Team Coordinator

- Instruct suitable person(s) in the required standards for inspections, recording and reporting and be satisfied that these standards are maintained.
- Investigate significant subsidence impacts.
- Identify and report any non-conformances with the HMP.
- Participate in any other assessment meetings called to review subsidence impacts in the area affected by mining.

Survey Coordinator

- Collate survey data and present in an acceptable form for review at assessment meetings.
- Bring to the attention of the Manager Approvals any findings indicating an immediate response may be warranted.
- Bring to the attention of the Manager Approvals any non-conformances identified with the Plan provisions or ideas aimed at improving the HMP.

Technical Experts

- Conduct the roles assigned to them in a competent and timely manner to the satisfaction of the Manager Approvals and formally provide expert opinion as requested.

Person(s) Performing Inspections

- Formally bring to the attention of the Environment Field Team Coordinator any non-conformances identified with the Plan, or ideas aimed at improving the Plan.
- Conduct inspections in a safe manner.

10.2 RESOURCES REQUIRED

The Head of External Affairs provides resources sufficient to support this HMP.

Equipment will be needed for the TARPs provisions of this HMP. Where this equipment is of a specialised nature, it will be provided by the supplier of the relevant service. All equipment is to be appropriately maintained, calibrated and serviced as required in operation manuals.

It shall be the responsibility of the Manager Approvals to ensure that personnel and equipment are provided as required to allow the provisions of this Plan to be implemented.

10.3 TRAINING

All staff and contractors working on BHPBIC sites are required to complete the BHPBIC training program which includes:

- An initial site induction (incl. all relevant aspects of environment, safety and community).
- Safe Work Methods Statements and Job Safety Analyses, Toolbox Talks and Pre-shift communications.
- On-going job specific training and re-training (where required).

All training records are maintained by the BHPBIC Safety and Training Department (STAX database system), which can be accessed by BHPBIC staff via the online information system iPick.

It shall be the responsibility of the Manager Approvals to ensure that all persons and organisations having responsibilities under this HMP are trained and understand their responsibilities.

The person(s) performing regular inspections shall be under the supervision of the Environment Field Team Coordinator and be trained in observation and reporting. The Environment Field Team Coordinator shall be satisfied that the person(s) performing the inspections are capable of meeting and maintaining this standard.

10.4 RECORD KEEPING AND CONTROL

Environmental Records are maintained in accordance with the BHPBIC procedure *Records Management (ICHP0108)*.

10.5 DOCUMENT CONTROL

The BHPBIC *Document Control Procedure (ICHP0103)* outlines the method for control of defined 'business critical' documentation for all BHPBIC operations. The system has been designed in such a manner to ensure that:

- Documents are approved for adequacy by authorised personnel prior to use.
- Obsolete documents are promptly removed from circulation.
- Documents are reissued, or made available, to relevant persons in a timely fashion after changes have been made and the authorisation process is complete.

The HMP and other relevant documentation will be made available on the BHPBIC website (*Condition 11, Schedule 6).*

10.6 MANAGEMENT PLAN REVIEW

A comprehensive review of the objectives and targets associated with the BSO is undertaken on an annual basis via the BHPBIC Balanced Planning (1 year outlook) and Balanced Strategy (5 year outlook) processes. These reviews, which include involvement from the senior site management and other key site personnel, assess the performance of the mine over the previous year and develop goals and targets for the following period.

An annual review of the environmental performance of BSO will also be undertaken in accordance with *Condition 4, Schedule* 6. More specifically this HMP will be subject to

review (and revision if necessary, to the satisfaction of the Director-General) within three months of:

- The submission of an annual review under *Condition 4, Schedule 6.*
- The submission of an incident report under *Condition 7, Schedule 6.*
- The submission of an audit report under *Condition 9, Schedule 6.*
- Any modification to the conditions of this approval.

If deficiencies in the EMS and/or HMP are identified in the interim period, the plans will be modified and approvals for these modifications sought as required. This process has been designed to ensure that all environmental documentation continues to meet current environmental requirements, including changes in technology and operational practice, and the expectations of stakeholders.

11 REFERENCES

Biosis Research, 2012, *Bulli Seam Operations Project: Heritage Management Plan.* An unpublished report to BHPBIC.

Mine Subsidence Engineering Consultants, 2009, *Bulli Seam Operations Subsidence Assessment*. Report for BHP Billiton Illawarra Coal.

Mine Subsidence Engineering Consultants, 2013, *West Cliff Colliery – Longwalls 37 and 38: Subsidence Predictions and Impact Assessments for the Natural Features and Surface Infrastructure in Support of the Extraction Plan (Revision B).* Report for BHP Billiton Illawarra Coal.

NSW National Parks and Wildlife Service, 1997, *Aboriginal Cultural Heritage: Standards and Guidelines Kit*. Standards for Archaeological Practice in Aboriginal Heritage Management. NSW NPWS, Hurstville.

Office of Environment and Heritage, 2011, *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW.* Published by the Office of Environment and Heritage NSW, Department of Premier and Cabinet.

Sefton, C., 2000. *Overview of the Monitoring of Sandstone Overhangs for the Effects of Mining Subsidence Illawarra Coal Measures*. Report prepared for BHPBIC

Attachment A – Aboriginal Stakeholder Consultation

A cultural heritage consultation program was undertaken for the BSO Part 3A Environmental Assessment. The details of which can be found in Section 2 of the BSO Part 3A Aboriginal Cultural Heritage Assessment (Biosis Research, 2009). Consultation undertaken by Niche (2013) with the Aboriginal Community followed on from the consultation that was initiated by Biosis Research during the BSO Aboriginal Heritage Assessment. Draft copies of the Niche Heritage Assessment (2013) were forwarded to the Registered Aboriginal Parties for comment, with comments subsequently incorporated into the Report.

As this project is an extension of the previous assessment for BSOP, the following representative groups were contacted, based on previous consultation:

- Ms Lorraine Brown - Coomaditchie United Aboriginal Corporation.
- Mrs Glenda Chalker - Cubbitch Barta Native Title Claimants Aboriginal Corporation.
- Gary Caines.
- Ms Rhonda Cruse-Illawarra Aboriginal Corporation
- Ms Sharralyn Robinson - Illawarra Local Aboriginal Land Council.
- Uncle Ruben Brown - Korewal Elouera Jerrungarugh Tribal Elders Aboriginal Corporation.
- Ms Maria Maher - Kullila Welfare and Housing Aboriginal Corporation.
- Mrs Dorothy Carroll - Ngunawal Heritage Aboriginal Corporation.
- Peter Falk - Peter Falk Consultancy.
- Tharawal Local Aboriginal Land Council.
- Wadi Wadi Coomaditchie Aboriginal Corporation.
- Mr Scott Franks - Wargon and Burra Aboriginal Centre Inc.
- Ms Kim Davis and Ms Lisa Davis - Wodi Wodi Elders Corporation.
- Mr Paul Cummins - Woronora Plateau Gundungara Elders Corporation.
- Wulungulu Elders Council.

The final Niche Heritage Assessment (2013) will be issued to the Registered Aboriginal Parties, with any comments made summarised and incorporated into the management plan documentation.

Aboriginal Stakeholder Involvement

Baseline Recording and Monitoring

For baseline recording and scheduled monitoring visits the Aboriginal Stakeholders will be notified in writing – either by letter, facsimile or e-mail - 3 weeks prior to the scheduled work commencing. Requirements for attendance and participation in site visits will be advised to the Aboriginal Stakeholders in the written notification.

Attendance and participation in site inspections will be subject to attendees satisfying standard requirements for contractors and meeting mutually agreeable terms of involvement and payment with BHPBIC. These requirements are described below:

Multiple Stakeholders

Prior on-site incidents have led to a precautionary approach when involving multiple stakeholders in the field on the same day. This will limit each group seeing all sites due to OH&S issues.

Stakeholder Behaviour

Individual Aboriginal stakeholder behaviour and the provision of cultural knowledge and values for the BSO Cultural Heritage Assessment will be considered in determining those individuals to be included in field work.

Insurance

Aboriginal stakeholders are required to provide copies of current insurances including public liability and workers compensation prior to commencement of field surveys.

OH&S

All field participants will be required to comply with all BHPBIC standard occupational health and safety requirements including appropriate personal protection equipment and random drug and alcohol testing.

Due to logistical and occupational health and safety requirements, BHPBIC must limit the number of representatives from each registered stakeholder group to one or two persons on any one day. Multiple representatives however can be rotated throughout the baseline recording program.

Recording of New Sites

Should previously unknown Aboriginal archaeological cultural heritage sites be identified the Aboriginal Stakeholders (if not present at the site visit) will be notified. The notification will be made via letter, facsimile or e-mail.

Review of Consultation

At the conclusion of mining at each of the longwalls, the Aboriginal Stakeholder list will be subject to review. If Aboriginal Stakeholders are consistently unable to be contacted, or if they have requested no further involvement in the project, they will cease to be notified unless BHPBIC is informed by the group that they wish to recommence consultation.

Any Aboriginal groups not listed as registered stakeholders who wish to be included in ongoing consultation will be included in the notification and reporting process described above, however this will not automatically translate into participation in monitoring visits.

Ongoing Consultation

The Heritage Assessment recommended continued consultation with the Registered Aboriginal Parties. Ongoing consultation would be undertaken to ensure that they are kept informed of the project, with notification of any additional Aboriginal objects located during surface works provided.

Attachment B – Heritage Assessment West Cliff Longwalls 37 to 38 Extraction Plan (Niche, 2013)

HERITAGE ASSESSMENT

West Cliff Longwalls 37-38 Extraction Plan

May 2013

Local Government Area:	Wollondilly and Campbelltown LGAs
Consultant Name:	Niche Environment and Heritage Pty Ltd
Author:	Renée Regal
Proponent:	BHP Billiton Illawarra Coal

Document Controls

Project No.	1198		
Document Description	Heritage Assessment: West Cliff Longwalls 37-38 Extraction Plan		
Niche Project Manager(s)	Name	Signed	Date
	Matthew Richardson		24 May 2013
Document Manager	Renée Regal		
Authors	Renée Regal		
Internal Reviews	Jamie Reeves- Director, Niche Environment and Heritage		
External Review	Mr Gary Brassington - BHP Billiton Illawarra Coal Mr Danyil Skora – Senior Environmental Planner – Cardno		
Document Status	Final		
Date	28 June 2013		
Prepared for:	BHP Billiton Illawarra Coal		
Front Cover Photo:	Pool on the Georges River		

Sydney Office

PO Box 231, Concord NSW 2137
Mobile: 0488 224 888
Fax: 02 4017 0071

jreeves@niche-eh.com

Central Coast/Hunter Office

PO Box 3104, Umina Beach, NSW 2257 Mobile: 0488 224 999
Fax: 02 4017 0071

rharrington@niche-eh.com

Illawarra/Southern NSW Office

PO Box 12, Macarthur Square, NSW 2560
Mobile: 0488 224 777
Fax: 02 4017 0071

mrichardson@niche-eh.com

Summary

This report presents an Aboriginal and European Heritage Assessment for the proposed extraction of Longwalls 37 and 38, which are located within BHP Billiton Illawarra Coal's (BHPBIC) Area 5 of West Cliff Colliery, near Appin NSW.

This report has been written in consideration of the following guidelines:

- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011);
- *The Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (Department of Environment, Climate Change and Water NSW, 2010); and
- *The Heritage Manual* (NSW Heritage Office and the DUAP 1996).

The assessment found that the proposed Longwalls 37 and 38 are located within close proximity to ten Aboriginal archaeological sites. None of these sites are located directly over the longwalls:

- Sawpit Gully 3 (52-2-2036);
- Sawpit Gully 11 (52-2-2062);
- Sawpit Gully 10 (52-2-2063);
- Sawpit Gully 9 (52-2-2064);
- GEORGES RIVER NO.1(52-2-2234);
- GEORGES RIVER NO.5 (52-2-2241);
- GEORGES RIVER NO.4 (52-2-2242);
- GEORGES RIVER NO.2 (52-2-2243);
- Georges River 1 (52-2-2264); and,
- Bulli Site 11 (52-2-3691).

It is unlikely that there will be significant impact to heritage sites that fall within the subject area, and within the zone of potential far-field effects, as a result of the extraction of Longwalls 37 and 38.

In accordance with the Bulli Seam Operation Heritage Management Plan (Biosis 2012) the following recommendations are made:

1. A detailed Heritage Management Plan should be developed in accordance with Biosis (2012) *Bulli Seam Operations Project: Heritage Management Plan*.
2. Continued consultation with the Registered Aboriginal Parties is recommended to ensure they are kept informed of the project. This should include notification of any additional Aboriginal objects located/identified during any surface works.
3. Site WH1 (a bridge and road remains site) is located 470 m to the west of Longwall 38. The site is located on the Georges River rockbar RB39, which experienced fractures after the completion of Longwall 33 (MSEC 2012:107). Since this site is located at the base of a valley, based on a conservative assessment, it may be subjected to further minor valley related movements due to the extraction of Longwall 38. The small magnitude of the

predicted additional closure is considered unlikely to result in additional impacts (MSEC 2012: 106-107) however it is recommended that this site be included in any stream or rock bar observational monitoring program and any changes reported and recorded.

Table of Contents

List of Tables

List of Figures

List of Appendices

List of Abbreviations

ACHCRs	Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW, 2010).
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
BHPBIC	BHP Billiton Illawarra Coal
DECCW	Department of Environment, Climate Change and Water
EP&A Act	Environmental Planning & Assessment Act (NSW, 1979)
LEP	Local Environmental Plan
LGA	Local Government Area
NP&W Act	National Park and Wildlife Act (NSW, 1974)
NPWS	NSW National Parks & Wildlife Service
OEH	The Office of Environment and Heritage

*All measurements are abbreviated as per standard metric notation

1 Introduction

The project

This report presents a Heritage Assessment for the proposed extraction of Longwalls 37 and 38, which are located within BHP Billiton Illawarra Coal's (BHPBIC) Area 5 of West Cliff Colliery, near Appin NSW.

BHP Billiton Illawarra Coal (BHPBIC) proposes to continue its underground mining operations at its Bulli Seam Operations (BSO) at Appin and West Cliff mines, located in the Southern Coalfield of New South Wales, by extracting coal from the Bulli Seam using longwall mining techniques.

Project Approval for the BSO was granted by the Planning Assessment Commission (PAC), under delegation of the Minister for Planning on 22 December 2011. An Environmental Assessment was completed to support the BSO project application.

The subject area

The subject area of this project has been designed as a minimum, to be the surface area enclosed by a 35 degree angle of draw line from the limit of proposed mining and by the predicted 20mm subsidence contour resulting from the extraction of Longwalls 37 and 38 (MSEC 2012:ii). Note that site inspection were completed prior to the definition of the 35 degree angle of draw boundary, hence sites which occur in close proximity to this boundary have been included in the assessment for completeness.

The subject area occurs within Consolidated Coal Lease 767, which is located within Wollondilly and Campbelltown Local Government Areas (LGA). The Subject area is defined as the surface area that is likely to be affected by the proposed mining of Longwalls 37 and 38 at West Cliff. The extent of the Subject area is consistent with that provided in MSEC (2012), which has been calculated by combining the areas bounded by the following limits:

- A 35 degree angle of draw line from the proposed extents of Longwalls 37 and 38.
- The predicted limit of vertical subsidence, taken as the predicted 20 mm subsidence contour resulting from the extraction of the proposed Longwalls 37 and 38.
- Any features sensitive to far field movements, including potential horizontal and valley related movements, resulting from the extraction of Longwalls 37 and 38.

A number of mining options for Longwalls 37 to 38 were considered as part of the process to develop the final proposed mine layout. These include variations in the locations of the longwalls in relation to the Georges River. The layout has been designed to significantly reduce the levels of impact to the Georges River (MSEC2012:ii).

Niche Environment and Heritage Pty Ltd (Niche) was commissioned by BHPBIC to conduct and prepare this heritage assessment. The assessment was prepared by Renée Regal of Niche and reviewed by Cameron Harvey, Niche Heritage Team Leader.

1.1 Statutory Background

The BSO was approved under Part 3A of the *Environmental Planning and Assessment Act* 1979 (NSW) to continue mining operations for a further 30 years.

As a condition of this Project Approval, BHPBIC is required to prepare an EP to manage the potential subsidence effects, impacts and environmental consequences associated with the extraction of coal from the approved areas.

An EP is required to support mining of Longwalls 37 and 38 in the West Cliff Area 5 mining domain (Longwalls 35 and 36 have existing approvals). The EP is required to use the findings from previous assessments of the Subject area undertaken as part of the BSO Environmental Assessment (EA) in combination with any supplementary surveys, reports, and stakeholder consultation required.

Extraction Plan Approval is required for Longwalls 37 and 38 (Figure 1, Figure 2) prior to longwall extraction from this area. The proposed Longwalls 37 and 38 will complete the West Cliff Area 5 mining domain after which it is proposed that the West Cliff longwall will relocate to Appin Area 9.

1.2 Objectives

The objectives of this report are as follows:

- ❒ to identify whether any Aboriginal sites, objects or places are present that have not been previously identified during the BSO approval assessment works and whether or not these would be impacted by the proposed works;
- ❒ to identify whether any non-Aboriginal heritage sites or relics are present that have not previously been identified during the BSO approval assessment works and whether or not these would be impacted by the proposed works;
- ❒ if such objects, sites, relics or places are present, assess their cultural heritage significance via consultation with Registered Aboriginal Parties (RAPs); and
- ❒ provide appropriate mitigation and management recommendations in accordance with the requirements of the BSO Project Approval.

The report will inform the Heritage Management Plan which is part of the overall Extraction Plan (EP) report being completed by Cardno.

2 Description of the Subject Area

2.1 Identification

The proposed longwalls are located near the township of Appin, NSW and includes parts of the Wollondilly and Campbelltown Local Government Areas. Figure 1 illustrates the general location of the project area, whilst Figure 2 illustrates the general layout of the proposed longwalls and their associated below surface infrastructure (hereafter referred to as the 'subject area').

Land use within the project area is consistent with that generally found within the Appin area, being rural residential and mixed agriculture. There are a number of public and private roads located within the project area including Appin and Wedderburn Roads.

2.2 Aboriginal Objects and Places

An extensive AHIMS search was conducted on 27 February 2012 (AHIMS Client ID 64183) for the area surrounding the Longwall 37 and 38 subject area. The AHIMS Search results are presented in Appendix 1. There were 31 sites identified within a 5 x 5 km area centred on the location of Longwalls 37 and 38, including 11 duplicate records (Table 1) (Figure 3).

A single site (52-2-2101) was identified as being of special significance and has a restriction placed on the presentation of information regarding the site. The site record was accessed to ensure the site was not within the subject area. The site is at least 1.5 km distant from the subject area, and is at no risk of effects from subsidence. The site is not presented on any figures to maintain confidentiality.

Excluding duplicates, ten sites were located within close proximity to the proposed longwalls: these sites were inspected and assessed, and have been included in this assessment. These sites comprise (Figure 3):

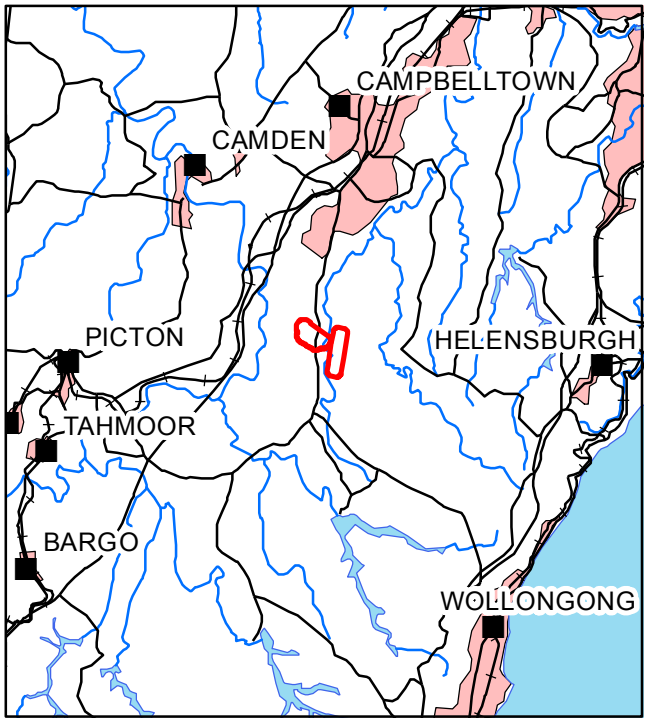
- 3 shelters with art (52-2-2234, 52-2-2241, 52-2-2242);
- 2 shelters with art and archaeological deposit (52-2-2063, 52-2-2243);
- 1 shelter with archaeological deposit (52-2-2062);
- 1 axe grinding groove site (52-2-2064);
- 3 open sites with artefacts (52-2-2036, 52-2-2264, 52-2-3691).

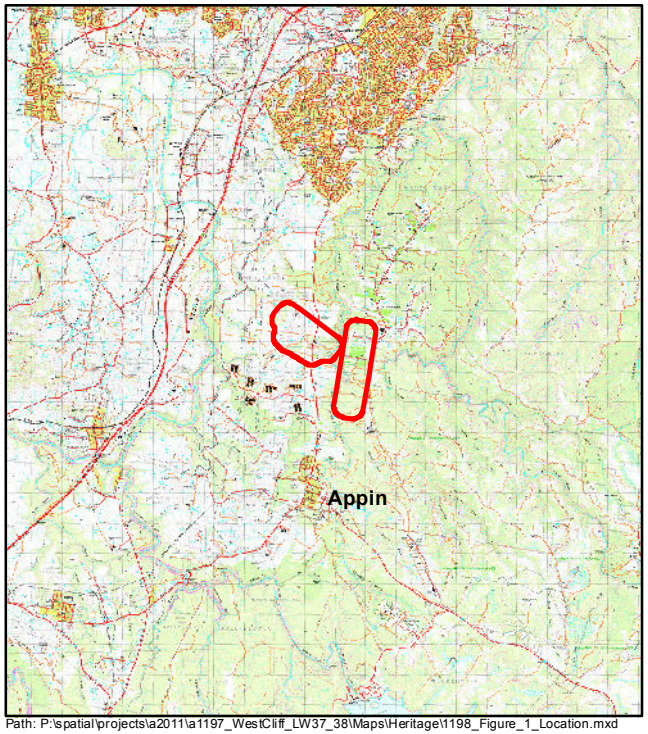
The types of sites and the frequencies of site types within the search area are consistent with the regional trends identified through previous studies (Sefton 1998 and 1999, Biosis Research 2006a, 2006b, 2009a, 2009b and Niche 2010 and 2011).

Aboriginal places are places of cultural significance to Aboriginal people. No Aboriginal places have been declared within the subject area (April 2013) or listed on AHIMS.

Table 1. AHIMS search results #98735

Site ID	Site Name	Site Features	Site Types
52-2-2101	Restriction applied	Restriction applied	Restriction applied
52-2-2104	Sawpit Gully 11 duplicate of 52-2-2062	Art (Pigment or Engraved) Grinding Groove : -	Shelter with Art and Grinding Groove
52-2-2105	Sawpit Gully 10 duplicate of 52-2-2063	Art (Pigment or Engraved) Grinding Groove : -	Shelter with Art and Grinding Groove
52-2-2113	Sawpit Gully 14 duplicate of 52-2-2066	Artefact : -	Shelter with Deposit
52-2-2059	Ousedale Creek 1;Georges River Appin duplicate of 52-2-2101	Art (Pigment or Engraved) Potential Archaeological Deposit (PAD)	Shelter with Art Shelter with PAD
52-2-2062	Sawpit Gully 11;Georges River Appin duplicate 0f 52-2-2104	Artefact	Shelter with deposit
52-2-2064	Sawpit Gully 9 Georges River Appin	Grinding Groove	Axe Grinding Groove
52-2-2066	Sawpit Gully 14 (Georges River Appin); duplicate of 52-2-2113	Potential Archaeological Deposit (PAD)	Shelter with PAD
52-2-0021	Douglas Park 1	Artefact	Open Site
52-2-1680	Ousedale Creek 4	Modified Tree (Carved or Scarred)	Scarred Tree
52-2-1681	Ousedale Creek 2 duplicate of 52-2-2236	Artefact	Open Site
52-2-1682	Ousedale Creek 3	Artefact	Shelter with Deposit
52-2-2234	GEORGES RIVER NO.1	Art (Pigment or Engraved)	Shelter with Art
52-2-2235	GEORGES RIVER NO.6	Artefact	Open Site
52-2-2236	OUSEDALE CREEK NO.2 duplicate of 52-2-1681	Artefact Art (Pigment or Engraved)	Shelter with Art and Deposit
52-2-2237	OUSEDALE CREEK NO.3	Art (Pigment or Engraved) Artefact	Shelter with Art and Deposit
52-2-2240	GEORGES RIVER NO.7	Artefact	Open Site
52-2-2241	GEORGES RIVER NO.5	Art (Pigment or Engraved)	Shelter with Art
52-2-2242	GEORGES RIVER NO.4	Art (Pigment or Engraved)	Shelter with Art
52-2-2243	GEORGES RIVER NO.2	Art (Pigment or Engraved) Artefact	Shelter with Art and Deposit
52-2-2244	GEORGES RIVER NO.3	Artefact	Open Site
52-2-2063	Sawpit Gully 10;Georges River Appin duplicate of 52-2-2105	Art (Pigment or Engraved) Artefacts	Shelter with Art and Deposit
52-2-2264	Georges River 1	Artefact	Open Site
52-2-2265	Leafs Gully 1	Artefact	Open Site
52-2-2266	Georges River 2	Artefact	Open Site
52-2-2284	MD2	Art (Pigment or Engraved)	Shelter with Art
52-2-3583	WA010	Grinding Groove	Axe Grinding Groove
52-2-3690	Bulli Site 10	Artefact	Open Site
52-2-3691	Bulli Site 11	Artefact	Open Site
52-2-2041	Sawpit Gully 3;Appin Georges River; duplicate of 52-2-2036	Artefact Grinding Groove Art (Pigment or Engraved)	Shelter with Art, Deposit and Grinding Groove
52-2-2036	Sawpit Gully 3;Appin Georges River; duplicate of 52-2-2041	Artefact	Open Site





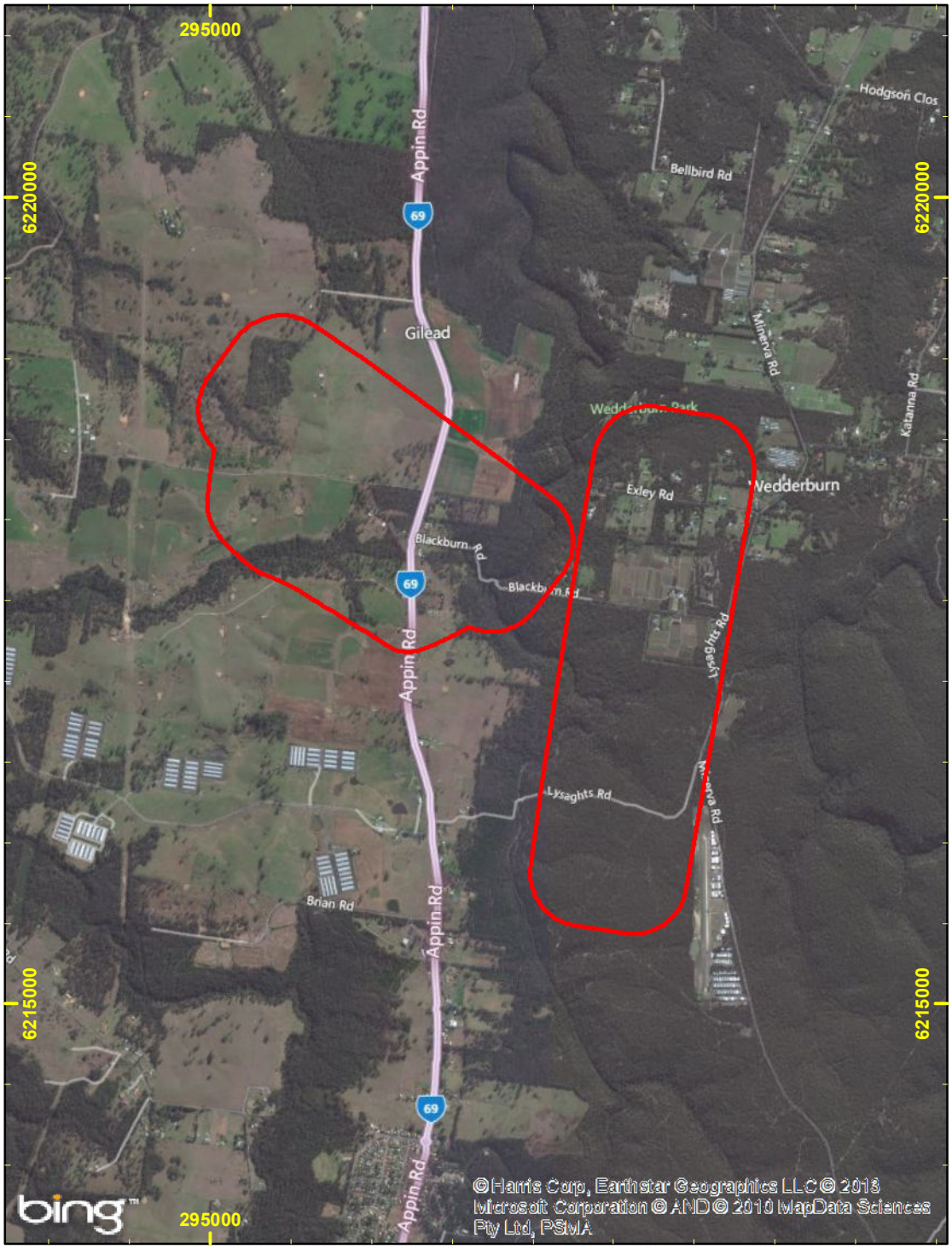


Figure 1: Location Map

1198 West Cliff LW 37-38 Extraction Plan Aboriginal and European Heritage Assessment

Drawn by: EM

Project Mgr: RR

Date: 24/05/2013

Subject Area

N
W E
S

km
0 0.5 1

niche Environment and Heritage

Horizontal Datum:
GDA 1994 MGA Zone 56

Path: P:\spatial\projects\a2011\a1197_WestCliff_LW37_38\Maps\Heritage\1198_Figure_1_Location.mxd

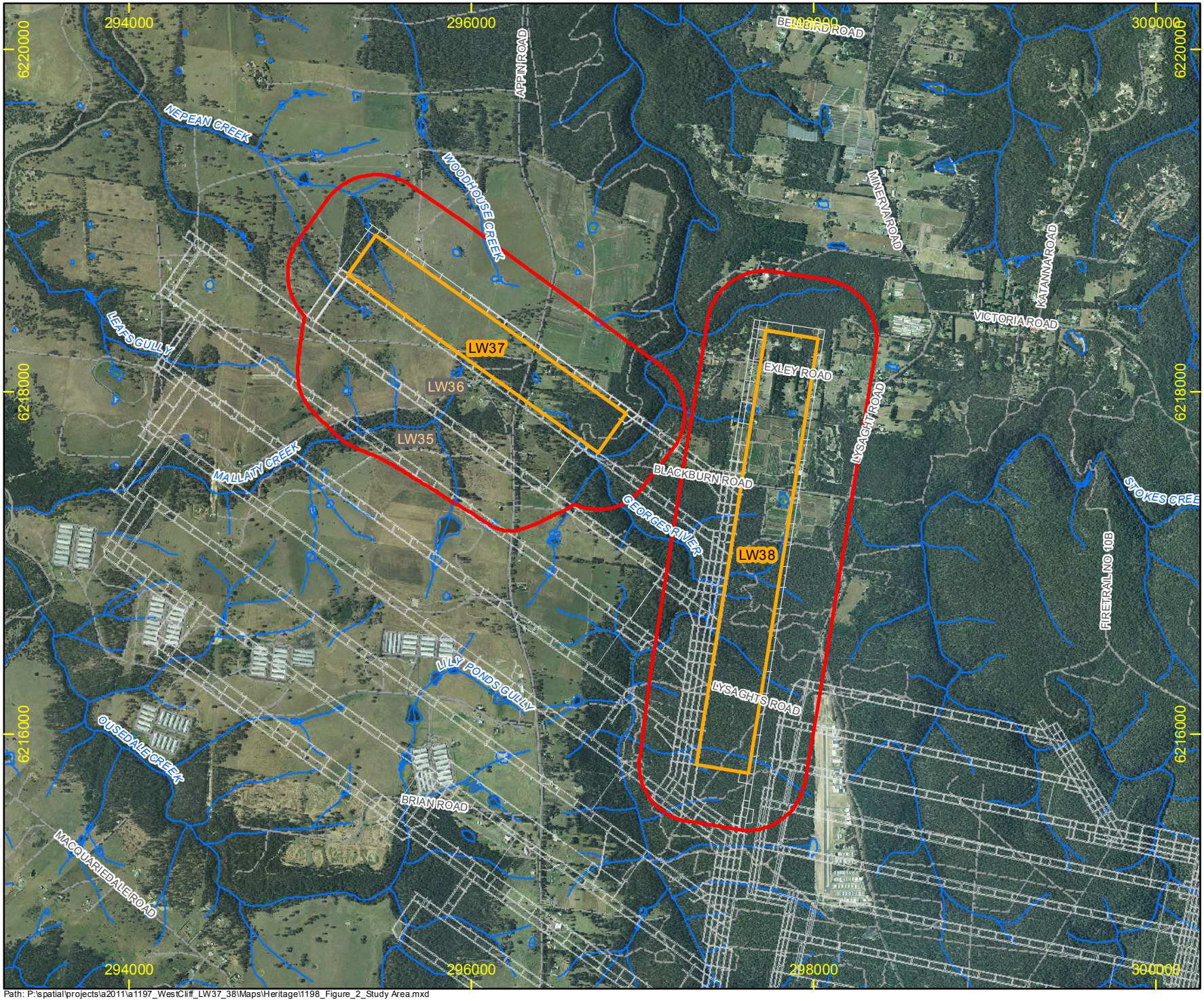


Figure 2: Subject Area and Local Context

1198 West Cliff LW 37-38 Extraction Plan Aboriginal and European Heritage Assessment

Drawn by: EM

Project Mgr: LB

Date: 24/05/2013

- Subject Area
- LW 37 and 38
- Mine workings
- Roads and Trails
- Watercourse

N
W E
S

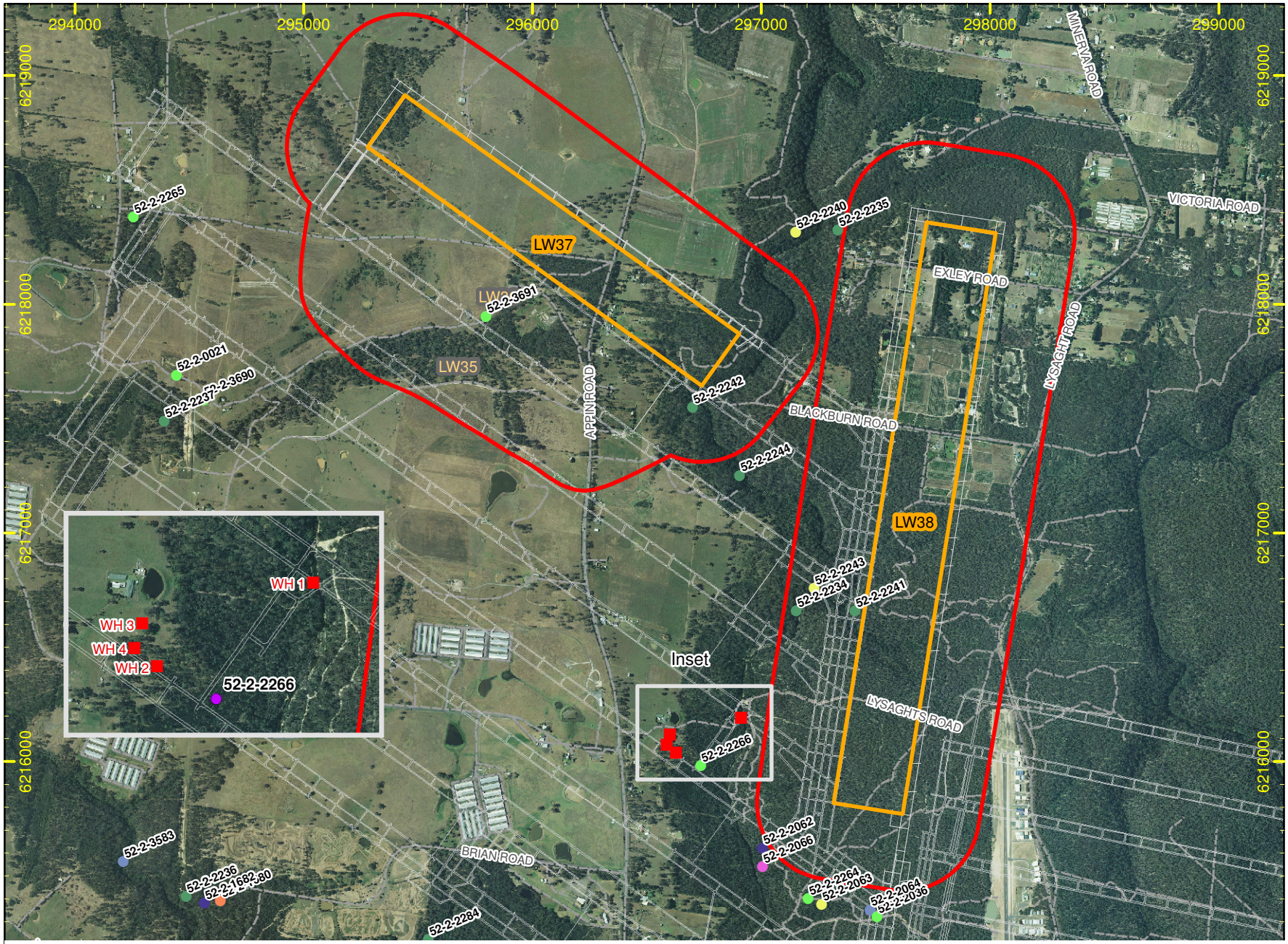
km
0 0.5 1

niche
Environment and Heritage

Horizontal Datum:
GDA 1994 MGA Zone 56

Imagery:
(c) 2009 BHPBIC

Path: P:\spatial\projects\a2011\a1197_WestCliff_LW37_38\Maps\Heritage\1198_Figure_2_Study Area.mxd



Path: P:\Projects\2011\1198 West Cliff LW37-38 Extraction Plan Archaeological Assessment\Figures\1198_Figure_3_AHIMS_JR.mxd

Figure 3: Heritage Sites

1198 West Cliff LW 37-38 Extraction Plan Aboriginal and European Heritage Assessment

Drawn by: EM

Project Mgr: RR

Date: 25/05/2013

N
W E
S

0 500 1,000 m

niche Environment and Heritage

Horizontal Datum:
GDA 1994 MGA Zone 56

Imagery: 2009 BHPBIC

2.3 Non-Aboriginal Heritage Items

National and Commonwealth Heritage Registers

Under the EPBC Act Amendments (No. 88, 2003), two mechanisms have been created for the protection of heritage places of National or Commonwealth significance (http://www.environment.gov.au/heritage/places/national/index.html) – the National Heritage List (NHL) and the Commonwealth Heritage List (CHL). The NHL provides protection to places of cultural significance to the nation of Australia, while the CHL comprises natural, Aboriginal and historic heritage places owned and controlled by the Commonwealth. The Australian Heritage Database (AHD) is maintained by the Department of Sustainability, Environment, Water and Population and Communities (DSEWPaC) and contains information about more than 20, 000 natural, historic and Indigenous places including places listed on the world, national and commonwealth heritage list and those under consideration.

- A search of the AHD was undertaken on the 16 May 2013. There are no objects listed on either the NHL or the CHL but there is on the Interim List of the Register of the National Estate (non-statutory listing) within the subject area.

NSW State Heritage Register

The State Heritage Register (SHR) lists items that have been assessed as being of State heritage significance to New South Wales. Items appearing on the SHR are granted protection under S.60 of the *Heritage Act, 1977*.

- Searches of the SHR were completed on 16 May 2013. There are no items currently listed on the SHR within the subject area.

State Heritage and Conservation (S170) Registers

S.170 of the Heritage Act requires that State Government Agencies establish and maintain a Heritage Conservation Register for heritage items located on land under their control or ownership. Items listed on a S170 Register are listed on the State Heritage Inventory (SHI) and bound by the regulations of the Heritage Act.

- Searches of the SHI were completed on 13 May 2013. There are no items currently listed on the SHR.

Wollondilly Local Environmental Plan (LEP) 2011

A search of the Wollondilly LEP (2011) was undertaken on the 16 May 2013. There were no items listed as a State significant heritage item in Schedule 5 of the LEP.

Campbelltown Local Environmental Plan (LEP) 2002

A search of the Campbelltown LEP (2002) was undertaken on the 23 April 2013. There were no items listed as a state significant heritage item in Division 2 of the LEP.

Previous Assessments

Previous assessment of the West Cliff Area 5 domain identified the following historical sites within the domain (Biosis 2005):

- WH1 – Bridge and Road Remains – Local significance

- WH2 – Grave site – Local significance
- WH3 – House site – Local significance
- WH4 – Pub/cellar site – Local significance

The sites WH2, WH3 and WH4 are not situated in the subject area and are not situated in an area where they may be subject to subsidence movements. These sites are therefore given no further consideration in this report. Site WH1 is not situated in the subject area, but is situated in the bed of the Georges River, an area which may be subject to far-field subsidence movements from Longwall 38 (MSEC 2012: 106).

2.4 Environmental Context

The subject area for Longwalls 37 and 38 is situated approximately 1.5 km north to north east of the township of Appin, NSW. The landscape of the project area consists of undulating plains with steeply incised tributaries, and drainage lines forming steep sided gullies and gorges with exposed sandstone, including the Georges River. The main drainage features are the Georges River, which runs parallel to Longwall 38 and Mallaty Creek, which runs parallel to Longwall 37 and drains westerly to the Nepean River.

Land use in the area includes improved pastures in the vicinity of Longwall 37 and woodlands in the State Conservation Area and other bushland areas in the vicinity of Longwall 38 (Figure 2).

2.5 Soils and Topography

The subject area lies within the Sydney Basin, in the hilly southern margins of the Cumberland Lowlands. This physiographic region generally consists of low lying, gently undulating plains and low hills (Hazelton and Tille 1990: 2). The sandstone plateau, gorges and associated landforms of the Woronora Plateau are present within the assessment area near Longwall 38. The subject area comprises three soil landscapes, as defined by Hazelton and Tille 1990): the Blacktown soil landscape and Lucas Heights soil landscape on the plateaus/plains and the Hawkesbury soil landscape of the gorges and gullies.

The Blacktown Soil Landscape

The Blacktown soil landscape makes up the majority of the soil landscape present within the subject area for the proposed works. The A horizon of this soil landscape is typically up to 60cm deep and is characterised by friable to hard-setting greyish brown loam to sandy loam. Inclusions in this soil formation include rounded stones, iron indurated stones (laterite), fine shale and occasionally charcoal. The soils are developed from in-situ weathering of parent materials (Hazelton and Tille, 1990).

The Lucas Heights Soil Landscape

The Lucas Heights soil landscape is located over Longwall 38. The landscape consists of gently undulating crests, ridges and plateau surfaces of the Mittagong formation. The soils are moderately deep (50-150cm). The soil landscape has moderate potential for stone artefacts as erosion within this soil landscape is generally low (Hazelton and Tille 1990:23-24).

The Hawkesbury Soil Landscape

The Hawkesbury soil landscape is located along the margins of the Georges River, Mallaty Creek and other incised drainage lines. The landscape consists of steep sided gullies and gorges with

exposed sandstone. Sandstone benches and rock overhangs are common features of this soil landscape, hence Aboriginal sandstone shelter sites containing art or archaeological deposit/s are frequently found.

The climate is warm temperate, with unremarkably warm summers and cool winters. Whilst mean annual rainfall at nearby Picton is around 800 mm (Bureau of Meteorology 2011, Hazelton and Tille 1990: 4) the Blue Mountains to the west does exert a rain shadow effect across the general area.

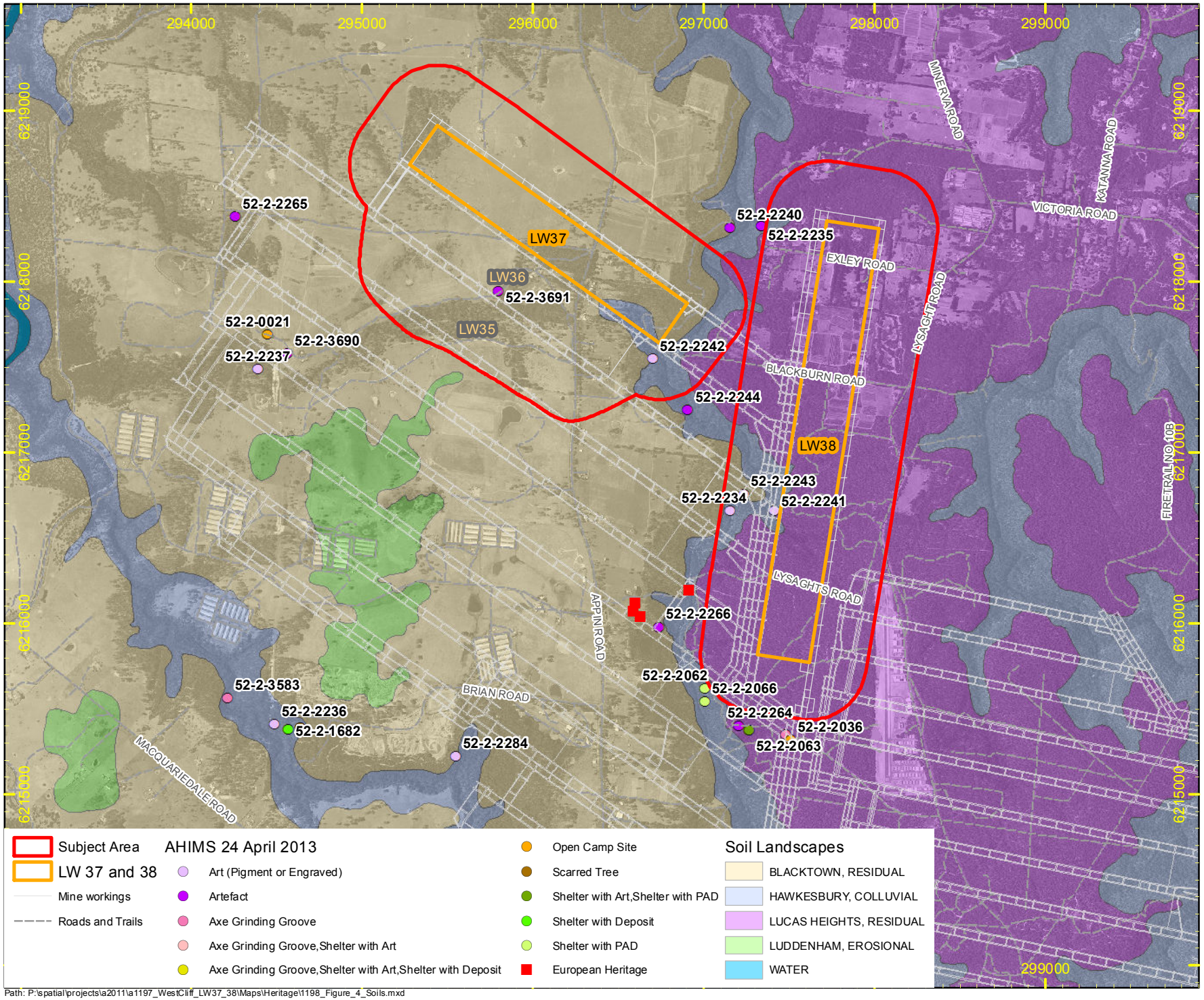
2.6 Ecology and Cultural Heritage

Prior to European settlement and land clearing the native vegetation in the subject area would have consisted of Eucalypt woodland (DECCW 2010c; Hazelton and Tille 1990: 27-28). Following a south west orientation, to the west of the subject area, Mallaty Creek is a shallow sandstone drainage line that runs south to the Nepean River. South of the assessment area the Nepean River was fed by a large catchment off the Woronora Plateau (which is now dammed by the Avon, Cataract, Cordeaux and Bargo Reservoirs) and would have been a permanent water supply. In all, the subject area and its surrounds, being the Nepean River, the Georges River and the western part of the Woronora Plateau, would have provided a suite of locally diverse landscapes and biological communities, thus providing a rich resource for the Aboriginal people living there prior to European arrival, as is typical for the Hawkesbury-Nepean area of the Sydney Basin (Attenbrow 2010: 37). The climate would have provided no seasonal restriction to year-round occupation of the area. However, there is likely to have been differing seasonal use of the region to take advantage of resource abundance, or conducting social and cultural activities (Attenbrow 2010: 79-81). There are a number of rock shelters within the subject area that would have provided shelter in poor weather (AMBS 1996, Biosis Research 2005, 2006a, 2006b, 2007; Dibden 2002; Navin Officer 1996a, 1996b, 2000a, 2000b, 2002a, 2002b; Sefton 1995, 1996, 1988, 1998, 2000, 2002a, 2002b, 2002c, 2006).

2.7 Cultural Context and History of the Subject Area

The Appin area is the traditional country of the Tharawal people. Tindale has identified the Tharawal boundaries as being from the south side of Botany Bay to north of the Shoalhaven River, and running inland to the Campbelltown and Camden area (Attenbrow 2010: 34, SA Museum 2010). The records and histories of the Tharawal and their country at the time of contact with Europeans are subject to bias and are generally fragmented, providing nothing like a complete picture of the way Aboriginal people were living prior to European arrival. Nevertheless, we know the Tharawal regularly communicated, moved, traded and participated in ceremonies between their country and neighbouring areas. It is most likely that family groups or clans would 'intermingle and interact along both physical and social boundaries', rather than be strictly confined to the 'tribal' borders that were to be artificially imposed by European anthropologists (Organ 1990: xliii).

The first European documented to have visited the general area was Francis Barrallier, a Frenchman assigned with the New South Wales Corps. In 1802, Governor King tasked Barrallier with exploring a route across the Blue Mountains. In November 1802, Barrallier forded the Nepean River near Menangle (Barrallier 1975). He counted 162 head of feral cattle near here, and reported an abundance of eels, fish, possums, "squirrels" and kangaroo and noted these as all being food resources for the Aborigines (Barrallier 1975: 3-4). However, by the time



Path: P:\spatial\projects\a2011\a1197_WestCliff_LW37_38\Maps\Heritage\1198_Figure_4_Soils.mxd

Figure 4: Soil Landscapes

1198 West Cliff LW 37-38 Extraction Plan Aboriginal and European Heritage Assessment

Drawn by: EM

Project Mgr: RR

Date: 24/05/2013

N
W E
S

0 500 1,000 m

niche Environment and Heritage

Horizontal Datum:
GDA 1994 MGA Zone 56

Imagery: 2009 BHPBIC

Barrallier crossed this country the traditional life of the local Aboriginal populations had been catastrophically impacted by European arrival. The smallpox epidemic of April 1789 is known to have decimated Aboriginal populations in the Sydney area and surrounds, including the western Cumberland Plains (Attenbrow 2010: 21).

Early in the nineteenth century British colonists arrived and stayed in the Appin area (DEC 2005a). The township of Appin is the oldest in the Wollondilly Shire: the settlement was established in 1810 and was named in 1811. The area was deemed suitable for agriculture by the early British colonists where wheat, barley and vegetables were grown in the early phases of the town's settlement (http://www.stonequarry.com.au/towns/appin.html). This period was a time of drought, and the competition for resources between the Europeans and the Tharawal, who were adapting to the massive changes that were so quickly brought to them, led to several years of conflict. Organ (1990) documents the various skirmishes, killings and reprisals between Europeans and the Tharawal during 1814 – 1815 in the Cowpastures, Camden and Appin districts. Eventually this sporadic bloodshed would lead to larger scale violent conflict, with Governor Macquarie implementing a sustained punitive action against the Aboriginal population in the district. This action resulted in the Appin Massacre on 17 April 1816, in which Aboriginal people were shot and driven over the steep cliffs (probably near Broughtons Pass) to their death during a surprise attack by a detachment of the 46th Regiment, in the middle of the night. The detachments leader, Captain James Wallis, recorded the massacre in his journal:

> *I formed line ranks, entered and pushed on through a thick brush towards the precipitous banks of a deep rocky creek. The dogs gave the alarm and the natives fled over the cliffs. A smart firing now ensued... I regret to say some had been shot and others met their fate by rushing in despair over the precipice (quoted in Organ 1990: 77).*

Surveying the carnage later that morning, Wallis concluded fourteen Aborigines, including women and children, had been killed. By the end of 1816 most of the Aboriginal population had been forcibly removed from the area, and Macquarie ceased hostilities in the district in November 1816 (Organ 1990: 55; 92). The process of dislocating the Tharawal people from their traditional lands continued as pastoralists and European settlers increasingly took hold. With so many people killed or institutionalised the traditional and adaptive systems of kinship and land use, which had held on throughout Macquarie's war, were broken with the Aboriginal population reduced to a marginal and tenuous existence.

After the 1820s, land grants in the Appin area were issued and taken up at pace, increasing the crop production of the area and diversifying agricultural produce to cattle, dairying and fodder production (http://www.stonequarry.com.au/towns/appin.html). Appin became an important waypoint for travellers heading to or from the Illawarra region from Sydney, and the Appin road was an important transport and communications corridor for the early colony (Biosis 2005: 30).

Biosis (2005: 31) briefly sketched out land grants in the West Cliff Area 5 area:

> *An 1857 Appin parish map, shows the subject area within lands granted/leased to N. Delaney and J. Oxley. Delaney's land was a 200 acre holding between the Appin Road and the Georges River. Oxley was issued a 750 acre holding west of the Appin Road. No features (structures etc.) were marked on the map or on subsequent parish maps.*

Nicholas Delaney was a convict transported to Australia after participating in the Irish Rebellion of 1798. He arrived in Australia in 1802 after his death sentence was commuted. Delaney was a labourer and was assigned as overseer of a road gang of ten men. He and his gang worked on several important road projects in the colony including building Mrs Macquarie's New Road (Mrs Macquarie's Drive) and Macquarie Place. In 1823, Delaney was granted a lease for a sheep run in Appin. Additional information concerning the sheep run and Delaney's holding has not been identified.

Two subdivision plans of Delaney's land identify structures within the property. The first of these plans dates to 1952 and shows a bridge crossing the Georges River. No further information regarding structural features is contained in this map.

The Appin township and surrounding area has maintained a rural character throughout the twentieth century, and includes a mix of residential and rural land holdings. The area is well known for its historical connections with the early British colony, including annual remembrances of the Appin Massacre. Appin was the 'boy hood' home of the colonial explorer Hamilton Hume, and it is from Appin that Hume's 1824 overland expedition to Port Phillip set out. Despite the dislocation of their ancestors the Tharawal continue as indigenous custodians of the land, and many continue to live in Tharawal tribal country today.

3 The Consultation Process

Consultation with the Aboriginal community for the proposed works followed on from the consultation that was initiated by Biosis Research during the BSOP archaeological assessment. Draft copies of this assessment were forwarded to these Registered Aboriginal Parties for comment and comments have been included in this report.

As this project is an extension of previous assessments for BSOP, the following representative groups were contacted, based on previous consultation:

- Ms Lorraine Brown- Coomaditchie United Aboriginal Corporation
- Gary Caines (individual)
- Mrs Glenda Chalker- Cubbitch Barta Native Title Claimants
- Uncle Ruben Brown-Korewal Eloura Jerrungah
- Ms Maria Maher-Kullila Welfare and Housing Aboriginal Corporation
- Ms Rhonda Cruse-Illawarra Aboriginal Corporation
- Ms Sharralyn Robinson- Illawarra Local Aboriginal Land Council
- Mrs Dorothy Carroll-Ngunawal Heritage Aboriginal Corporation
- Peter Falk-Peter Falk Consultancy
- Tharawal Local Aboriginal Land Council
- The Wadi Wadi Coomaditchie Corporation (represented by NIAC)
- Ms Kim Davis and Ms Lisa Davis-The Wodi Wodi Elders Corporation
- Mr Scott Franks- Wargon and Burra Aboriginal Centre Incorporated (c/- Biami Pty Ltd)
- Mr Paul Cummins-Woronora Plateau Gundungara Elders Corporation
- Wulungulu Elders Corporation (represented by NIAC)

This report will be issued to the Registered Aboriginal Parties. Upon receipt of comments a summary of the responses will be prepared and supplied.

4 Summary and Analysis of Background Information

There have been many previous historical and archaeological assessments of the Appin region over the last decade, and the history of the area, as one of the earliest colonial settlements beyond Sydney, is well known. Most of the archaeological work has been initiated by impact assessments for various infrastructural, mining and residential subdivision projects. To-date, the main issues that have been dealt with by these studies has been the presence or absence of sites, and broad characterisation of where sites occur in the landscape.

The gorges and gullies of the subject area contain evidence of past Aboriginal land use, in particular shelter sites which contain Aboriginal art and artefacts, from the period prior to (and probably coincident with) British arrival in the Sydney Basin. On the plains away from the Georges River, there is further evidence of past Aboriginal land use in the form of open sites containing stone artefacts, and scarred trees. The area has been well surveyed previously, and this is reflected in the sites recorded on the AHIMS register in the region, and the 10 sites situated in and in very close proximity to the subject area.

The more recent history of the Appin area is one of early colonisation by the British settlers, and this brought about conflict with the traditional Tharawal inhabitants. Appin was an early centre of importance for agriculture and transport for the early colony, including one site – WH1 – which is the remains of a bridge and road crossing of the Georges River. Anecdotal evidence speculated that this crossing may have been associated with the famous colonial transportation company Cobb and Co., however as noted by Biosis there was no direct evidence indicating who constructed the bridge, or why, but it may well have been used by Cobb and Co. coaches (Biosis 2005: 35). Biosis also point out that the establishment and investment of such a road way and bridge indicate substantial use, as opposed to less established crossings, such as fords.

5 Survey Methods

Due to the majority of the assessment area having had previous archaeological assessment undertaken on it (Sefton 1998, 2002a, 2002b; Navin Officer 1992, 2002a, 2006; ERM 2002; Biosis Research 2005, 2007a, 2007b and 2007c) this assessment focused on relocating the ten previously registered Aboriginal archaeological sites that had been identified within close proximity to the proposed Longwalls 37 and 38 works.

The survey team consisted of one archaeologist (Renée Regal - 15 April 2013; Lydia Sivaraman - 16 and 17 April 2013) and one ecologist (Luke Baker - Niche Environment and Heritage). During this relocation process, the following observations were made at each of the rock shelter sites:

- Condition of the shelter floor and walls;
- Condition of the art and panels;
- Presence of micro-organisms and animal habitation for example wombats or birds;
- Presence of artefacts or potential deposit;
- Presence of geological features such as cracks, weathering, bedding planes or water flow.

During this assessment the Aboriginal shelter site GEORGES RIVER NO.6 (52-2-2235) and the isolated find Georges River 1 (52-2-2264) could not be relocated. This inability to relocate these sites can be attributed to the original site recording methods which would have been employed. If the sites were recorded using a 1:25,000 topographic map sheet there are likely to be some inaccuracies. The change in co-ordinate systems during the 1990s from AMG to MGA also has increased the likelihood of problems with the original recorded site locations. It was not possible to spend a significant amount of time relocating these sites.

5.1 Survey Results

The Georges River runs parallel to Longwall 38. Native vegetation surrounds the Georges River. Longwall 37 lies in mostly cleared pasture with some sections of remnant vegetation present (Figure 2).

The targeted survey resulted in the relocation of 10 of the previously registered shelter sites. Each site was reassessed and photographed for any changes from its original recording. Accurate site positions were recorded using a hand held GPS. During this assessment two new Isolated Artefact sites were located. One non-Aboriginal heritage site is also discussed below.

Sawpit Gully 3 (52-2-2036)

Artefacts at this open camp site could not be relocated during this inspection. As described by the site card the site is located down track from Wedderburn Road which is immediately south of the airstrip. The site is adjacent to a track above the river. The site was described by Sefton as consisting of six stone artefacts.

Sawpit Gully 11 (52-2-2062)

This site was registered by Sefton 1998. This shelter is located on the eastern side of the Georges River 20 m below a track and just past the small creek that runs east towards the

centre of the landing ground. Comprising of a sandstone overhang 7 m long, 1.8 m wide, 0.9 m high it has been formed by blockfall and cavernous weathering.

The deposit remains the same as described on the site card and is formed of a grey loamy sand, from shelter weathering. The deposit's approximate depth is 20 cm. The three artefacts and piece of fresh water mussel shell described by Sefton were not relocated, however there was one chert flake (20 mm x 16 mm x 5 mm) and one quartz flake (7 mm x 5 mm x 1 mm) relocated in the drip-line.

Sawpit Gully 10 (52-2-2063)

This sandstone shelter is on the northern side of the creek and approximately 300 m up from the junction with the Georges River. The overhang is located on the creek that runs from the southern end of the airport west into the Georges River.

The sandstone shelter measures: 11 m long x 2.9 m wide x 2 m high and was formed by blockfall and cavernous weathering. The rock art is in poor condition and only the two charcoal indeterminate motifs on the backwall could be identified. Previously Sefton had identified red ochre drawings on the roof comprising of:

- 1 indeterminate, 1 frontal female figure
- 1 frontal human figure, 3 indeterminate charcoal drawings
- 1 frontal human figure

Sefton had further noted that all of the art was subject to granular substrate loss, pigment loss and water damage.

All of the original artefacts described by Sefton 1998 are still present within the deposit. There was also a shell fragment identified.

Consent had been granted for impacts to this shelter site under permit number #1578. This consent was granted for longwall coal mining, West Cliff Colliery (Longwalls 5A5-5A8) on 26th February 2003.

Plate 1: General picture of artefacts present in the drip line of site 52-2-2063 (Source: Niche).

Plate 2: General shot of remaining charcoal indeterminate in site 52-2-2063 (Source: Niche).

Sawpit Gully 9 (52-2-2064)

This is an axe grinding groove site located in the base of a small tributary of the Georges River. The site consists of 3 axe gri9nding grooves located next to a pot-hole on a sandstone platform approximately 3 m x 4 m in size. The site is located just below a 2 m drop in the creek bed. The site was inspected and noted to be in the same condition as its original recording by Caryll Sefton in 1998.

GEORGES RIVER NO.1 (52-2-2234)

This small shelter has been previously assessed by Biosis 2007 and Niche 2011. This shelter is in the same condition as previously described. There has been no further weathering to the art panel than that described in Niche 2011. Weathering has caused granular loss, and a white leeching process has occurred over the infill kangaroo motif (Niche 2011:2)

Plate 3: Northern View of the Shelter (site 52-2-2234) (Source: Niche)

GEORGES RIVER NO.5 (52-2-2241)

This shelter has been previously located and assessed by Biosis Research 2007 and Niche 2011. The shelter is in the same condition as described in both of these previous reports. The single quartz artefact that was noted in Niche 2011 could not be relocated during this assessment.

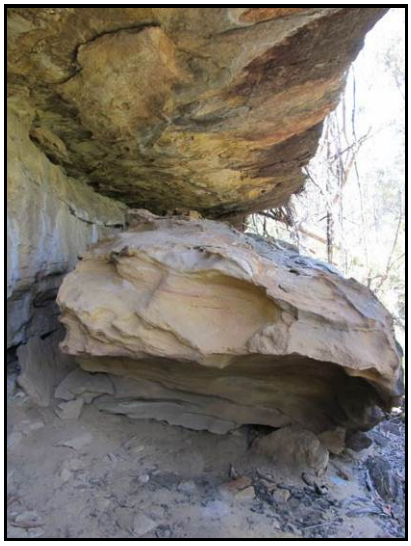


Plate 4: Southern end of the Shelter (site 52-2-2241) (Source: Niche)

GEORGES RIVER NO.4 (52-2-2242)

This shelter was previously located and assessed by Biosis Research 2007. As described by Biosis it is a small shelter site located on the north side of the second gully to the south of Blackburn Road, crossing the Georges River. This site is located 80 m from the river on the western side near where the side drainage line becomes deeply incised (Biosis 2007:42). The overhang is approximately 16 m long, 4 m wide and is 2 m high, facing to the east. It has been formed by cavernous weathering and block fall processes.

The art remains in the same condition as described by Biosis 2007. Water seepage which was noted in the 2007 report appears to be worse with moss and lichen covering nearly all of the wall and floor surfaces. The shelter is still very damp and vegetation is growing almost to the drip line. There was very little deposit observed during the assessment.

GEORGES RIVER NO.2 (52-2-2243)

This is a shelter site with art and deposit, located on the northern side of the Georges River; within close proximity to the pump house and just off Lysaghts Road. This site is under the top cliffline. The art is present on the ceiling and consists of:

- ❒ 2 charcoal indeterminate drawings;
- ❒ 1 charcoal outline and 1 infill frontal man with earlobes and axe;
- ❒ 1 charcoal outline and infill kangaroo; and,
- ❒ 1 charcoal indeterminate.

There is graffiti present on the panels that contain the Aboriginal art. The art has started to loose granular substrate and there has been some cracking and flaking to the panel due to case hardening.

There are a number of artefacts still present in the dripline.

Georges River 1 (52-2-2264)

Described as a grey silcrete flake by Navin Officer 2002, it is described as being located at the intersection of two unsealed tracks approximately 40 m east of the Georges River. The area in which the flake is located has been previously disturbed by the grading of trails, subsequent vehicular traffic and erosion of the track surface. The artefact could not be relocated during this assessment.

Bulli Site 11 (52-2-3691)

This isolated artefact could not be relocated during this site inspection. The site comprises of one quartz flake, and was previously relocated in a large clearing off an unnamed farm access track. This clearing is currently being used as a fire wood storage and chopping area.

The Bridge and Road Remains Site (WH1)

This site is located 470 m to the west of Longwall 38 and consists of eight postholes cut into the sandstone bed of the Georges River. The remains of the posts and some cement packing is still present in some of the postholes. This site has been previously assessed (Biosis 2005 and Niche 2011). The WH1 site is located on the Georges River rockbar RB39, which experienced fractures after the completion of Longwall 33 (MSEC 2012:107). This site was not visited during this assessment, however was inspected on 2 November 2011 by the author. At this time there was no further fracturing noted.

Plate 5: General shot of cracks running through one of the remaining post holes (site WH1) (source: Niche).

6 Cultural Heritage Values and Statement of Significance

6.1 Assessment Criteria

The following assessment has been prepared in accordance with the criteria described by the Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH 2011). The identification and assessment of cultural heritage encompasses the four values described within the Burra Charter: social, historic, scientific and aesthetic values (Australia ICOMOS 1999).

Historic value

Historic value refers to the associations of a place with a historically important person, event, phase or activity in an Aboriginal community. Historic places do not always have physical evidence of their historical importance (such as structures, planted vegetation or landscape modifications). They may have 'shared' historic values with other (non-Aboriginal) communities.

Places of post-contact Aboriginal history have generally been poorly recognised in investigations of Aboriginal heritage. Consequently the Aboriginal involvement and contribution to important regional historical themes is often missing from accepted historical narratives. This means it is often necessary to collect oral histories along with archival or documentary research to gain a sufficient understanding of historic values.

Scientific (archaeological) value

This refers to the importance of a landscape, area, place or object because of its rarity, representativeness and the extent to which it may contribute to further understanding and information (Australian ICOMOS 1988).

Information about scientific values would be gathered through any archaeological investigation undertaken. Archaeological investigations must be carried out according to OEH's Code of practice for archaeological investigation of Aboriginal objects in NSW.

Aesthetic value

This refers to the sensory, scenic, architectural and creative aspects of the place. It is often closely linked with the social values. It may consider form, scale, colour, texture and material of the fabric or landscape, and the smell and sounds associated with the place and its use (Australian ICOMOS 1988).

Assessing values and significance

This stage is used to assess and discuss the cultural significance of the values identified during the identification and assessment of cultural significance by consulting Aboriginal people and to prepare a statement of significance. The assessment of values is a discussion of what is significant and why. An assessment of values is more than simply restating the evidence collected during the background review and identification of values stages of the project. Rather, the assessment should lead to a statement of significance that sets out a succinct summary of the salient values that have been identified.

The assessment and justification in the statement of significance must discuss whether any value meets the following criteria (NSW Heritage Office 2001):

- Does the subject area have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons? – Social value.

- Is the subject area important to the cultural or natural history of the local area and/or region and/or state? – Historic value.
- Does the subject area have potential to yield information that would contribute to an understanding of the cultural or natural history of the local area and/or region and/or state? – Scientific (archaeological) value.
- Is the subject area important in demonstrating aesthetic characteristics in the local area and/or region and/or state? – Aesthetic value.
- Assessment of each of the criteria (above) should be graded in terms that allow the significance to be described and compared; for example, as high, moderate or low. In applying these criteria, consideration should also be given to:
- Research potential: does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state's natural and cultural history?
- Representativeness: how much variability (outside and/or inside the subject area) exists, what is already conserved, how much connectivity is there?
- Rarity: is the subject area important in demonstrating a distinctive way of life, custom, process, land-use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- Education potential: does the subject area contain teaching sites or sites that might have teaching potential?

The statement of significance is a succinct summary of the salient values drawn from the identification of values.

6.2 Identified Values

6.2.1 Significance

Social/cultural significance

There were social or cultural values identified by the RAPs during the review and consultation phase of this assessment. Comments were only received by Mrs Glenda Chalker from Cubbitch Barta Native Title Claimants and these comments have been included in Appendix 2 of this report.

Aesthetic Significance

Whilst individual sites will hold some aesthetic value as examples of creative aspects of past Aboriginal land use, overall the subject area has been assessed as possessing low aesthetic values under this criterion (OEH 2011: 9). The suite of heritage sites is typical of the region, and generally unremarkable when considered in a wider context, including the suite of sites within the Dharawal SCA. The rural lands surrounding Appin, and the forested gullies and gorges of the Georges River and its tributaries present an accessible but fragmented landscape, of low aesthetic value.

Historic significance

Site WH-1 Bridge and road remains' significance has been previously assessed by Biosis Research 2005 and 2007. The statement of significance as outlined by those reports is as follows:

The road and bridge crossing are significant indicators of transportation routes in the colony. The features provide direct evidence of historic use, reflecting the evolution of the area in an easily understood context (Biosis Research 2005: 40).

This significance assessment goes on to say that the bridge remains in conjunction with the grave, pub/cellar sites that were identified during this assessment informs and enhances the significance of each other, with the overall grouping providing a significant indication of the physical history of the subject area.

The sites recorded are considered collectively to have HIGH LOCAL significance (Biosis Research 2005: 40).

Scientific (archaeological) significance

The subject area for Longwalls 37 and 38 has low scientific significance. There are 10 archaeological sites within close proximity to Longwalls 37 and 38 which require consideration in this assessment. The sites include sandstone shelters with art, deposit or potential archaeological deposit (Figure 3). Other site types including open sites with stone artefacts are not likely to be subject to impact by subsidence but have been considered briefly in this assessment nonetheless. These types of archaeological sites are very common in the area surrounding the subject area.

For further details on archaeological significance please see the previous assessments completed within close proximity to the subject areas (Biosis Research 2006a, 2006b, 2009a and 2009b Niche 2011a, 2011b, 2011c).

Sawpit Gully 3 (52-2-2036)

This site has been previously described as an open camp site. This site is situated in a disturbed context and as a result was unable to be relocated. These low density stone artefact sites are not rare and provide limited research potential and low representative value.

Significance: LOW

Sawpit Gully 11 (52-2-2062)

This is a shelter with archaeological deposit. Whilst the original registered artefacts were not relocated, two further flakes and a fresh water muscle fragment were. Shelters with deposit are one of the most common types of archaeological sites found in the region. The deposit is very disturbed and is of low research potential; the site overall has low archaeological significance.

Significance: LOW

Sawpit Gully 10 (52-2-2063)

This is a shelter with art site. The art that remains consists of two charcoal indeterminates on the backwall, which is the most common art type in the region. The previously identified red ochre paintings on the roof are no longer visible due to weathering. The overall condition of the shelter is poor. There is no deposit. The site has a low research potential and low archaeological value.

Significance: LOW

Sawpit Gully 9 (52-2-2064)

This is an axe grinding groove site consisting of 3 axe grinding grooves located next to a pot-hole. Axe grinding groove sites are not rare. The site has some representative value, but has low research potential beyond its recording.

Significance: LOW

GEORGES RIVER NO.1 (52-2-2234)

This shelter site has been previously assessed for archaeological significance by Biosis Research. That report notes the following:

This is the shelter with art site. The art is five charcoal outline and infill indeterminate motifs in poor condition due to the natural weathering processes. The art technique is considered the most common in the region, meaning the site has low rarity and representative value. There are no aesthetic or historical values associated within the site. The limited floor space and deposit gives the site low research potential and archaeological significance (Biosis Research 2007:49)

Significance: LOW

GEORGES RIVER NO.5 (52-2-2241)

This shelter site has been previously assessed for archaeological significance by Biosis Research. That report notes the following:

This is a shelter with art site. The art consists of between six and ten charcoal outline and infill indeterminate motifs and one identifiable charcoal outline and infill frontal human figure. The art is in a good state of preservation. It is the most common art technique and is considered to be representative of the art in the region. The shelter contains a reasonable living space that contains some intact deposit of moderate research potential, although overall, the site has low archaeological significance (Biosis Research 2007:50).

Significance: LOW

GEORGES RIVER NO.4 (52-2-2242)

This shelter site has been previously assessed for archaeological significance by Biosis Research. That report notes the following:

This is a shelter with art site. The art is located on three separate panels, one charcoal outline and infill frontal human figure on the ceiling (south); one charcoal indeterminate drawing on the rear wall (north); and one charcoal indeterminate drawing on the ceiling (north). Note: both indeterminates could not be relocated during this investigation.

The art is a well preserved example of the most common art technique in the region, meaning the site has low rarity and high representational value. The overall condition within the shelter is poor, and no deposit is present, giving the site low research and archaeological value (Biosis Research 2007: 50).

Significance: LOW

Georges River 2 (52-2-2243)

This site contains archaeological deposit and charcoal motif art, including an unusual frontal human figure with earlobes and an axe. Although in poor condition, including graffiti, the human figure with earlobes and an axe is a rare depiction in the region, giving the site high rarity and moderate representational values. The presence of archaeological deposit provides some research potential value.

Significance: MODERATE

Georges River 1 (52-2-2264)

This site is an isolated stone artefact. This site is situated in a disturbed context and as a result was unable to be relocated. These low density artefact sites are not rare and provide limited research potential and low representative values.

Significance: LOW

Bulli Site 11 (52-2-3691)

This site is a single stone artefact. Sites with single stone artefacts are not rare and provide limited research potential and low representative value.

Significance: LOW

7 Impact Assessment

7.1 Potential Subsidence Impacts

The potential impacts that result from subsidence relate to the tilt and strain that occurs during and after coal has been extracted. The below impact assessment has been based on MSEC (2012) predictions for the Longwalls 37 and 38 mining area.

Subsidence

Subsidence refers to vertical and associated horizontal displacement of a point. In the case of the subject area it refers to subsidence resulting from the extraction of coal using longwall methods. The magnitude of subsidence is usually measured in millimetres (MSEC 2012).

Tilt

Tilt is calculated as the change in subsidence between two points divided by the distance between those points. Tilt is the first derivative of the subsidence profile. The convention usually adopted is for the positive tilt to indicate the ground increasing in subsidence in the direction of measurement. The maximum tilt, or the steepest portion of the subsidence profile, occurs at the point of inflection in the subsidence trough, where the subsidence is roughly equal to one half of the maximum subsidence. Tilt is also expressed in millimetres per metre (mm/m) (MSEC 2012).

Strain

Strain is caused by bending and differential horizontal movements in the strata. Measured strain is determined from monitored survey data by calculating the horizontal change in length of a section of the subsidence profile and dividing this by the initial horizontal length of that section. If the section has been extended, the ground is in tension and the change in length and the resulting strain are positive. If the section has been shortened, the ground is in compression and the change in length and the resulting trains are negative. The unit of measurement adopted for strain is millimetres per metre (mm/m). The maximum systematic strains coincide with the maximum curvature and hence the maximum tensile strains occur towards the sides of the panel whilst the maximum compressive strains occur towards the bottom of the subsidence trough (MSEC 2012).

Aboriginal Archaeological Heritage Sites

The predicted subsidence impacts to Aboriginal sites located within the Longwall 37 and 38 subject area have been identified by MSEC (2012). The results of this modelling have been outlined below. The values are given in millimetres per meter (mm/m) and indicate the maximum parameters within a 20 meter radius of each site. The predicted tilts and strains are the maximum values predicted to occur at any time during or after the extraction process (MSEC 2012) (see Table 2).

Ten Aboriginal heritage sites were considered in this assessment. Impact assessments based on the type of site, as assessed and presented by MSEC (2012) are outlined in Table 2 below.

Table 2. Subsidence parameters for each site within the subject site

Location	Site Type	Maximum Predicted Total Conventional Subsidence (mm)	Maximum Predicted Total Conventional Tilt (mm/m)	Maximum Predicted Total Conventional Hogging Curvature (km^{-1})	Maximum Predicted Total Conventional Sagging Curvature (km^{-1})
52-2-2036	Open site (Artefacts)	<20	<0.5	<0.01	<0.01
52-2-2062	Shelter with Deposit	25	<0.5	<0.01	<0.01
52-2-2063	Shelter with Art and Deposit	<20	<0.5	<0.01	<0.01
52-2-2064	Grinding grooves	<20	<0.5	<0.01	<0.01
52-2-2234	Shelter with Art	25	<0.5	<0.01	<0.01
52-2-2241	Shelter with Art	125	2.0	0.03	<0.01
52-2-2242	Shelter with Art	100	1.0	<0.01	<0.01
52-2-2243	Shelter with Art and Deposit	<20	<0.5	<0.01	<0.01
52-2-2264	Open site (Artefacts)	<20	<0.5	<0.01	<0.01
52-2-3691	Open site (Artefacts)	1025	2.0	0.03	<0.01

Open artefact scatter sites

There were three open artefact sites considered in this assessment. The maximum predicted tilt for the artefact scatter sites is 2 mm/m (i.e. less than 0.1%) which represents a change in grade of 1 in 500. It is highly unlikely that these sites would experience any adverse impacts resulting from the mining induced tilts.

The maximum predicted curvature for artefact sites are 0.03 km-1 hogging and <0.01 km-1 sagging, which represent minimum radii of curvature of 33 kilometres and greater than 100 kilometres, respectively. The maximum predicted conventional strains for these sites, based on applying a factor of 15 to the maximum predicted conventional curvatures, are 0.5 mm/m tensile and less than 0.2 mm/m compressive.

These artefact scatters can potentially be affected by cracking of the surface soils as a result of mine subsidence movement, though this is unlikely. It is possible, however, that if remediation of the surface was required after mining, that these works could potentially impact these site types (MSEC 2012:105).

Sandstone shelter sites

There were six shelter sites considered in this assessment. The maximum predicted tilt for these shelters is 2mm per metre (0.2%), which represents a change in grade from 1 in 500. It is unlikely that these sites would experience any adverse impacts resulting from the mining induced tilts.

These sites can be potentially affected by subsidence movements including the fracturing of sandstone, rockfalls, or water seepage through the joints which affects art work panels.

Tensile strains greater than 0.5 mm/m may be of sufficient magnitude to result in the fracturing of sandstone. Compressive strains greater than 2 mm/m may be of sufficient magnitude to result in the underlying strata buckling, which could result in the fracturing of the sandstone bedrock.

Given the low values of predicted curvature at the shelter sites however this risk of impact is considered to be very low (MSEC 2012: 105).

The likelihood of impact to sandstone shelters that are located outside the extracted longwalls are considerably less then those which are located directly above. It has been reported in the Southern Coalfield, that where longwall mining has been carried out underneath 52 shelters, that approximately 10% of the shelters have been affected by the fracturing of strata (Sefton 2000). This suggests that the likelihood of impact in the subject area is relatively low, as none of the shelter sites are directly above the areas to be longwall mined.

Axe grinding groove sites

A single axe grinding groove site was assessed as part of this assessment. The maximum predicted tilts for the grinding groove sites are less than 0.5 mm/m (i.e. less than 0.1 %), which represents changes in grade of less than 1 in 2,000. It is unlikely that these sites would experience any adverse impacts resulting from the mining induced tilts of these magnitudes.

The maximum predicted curvature for grinding groove sites are less than 0.01 km-1 hogging and sagging, which represents a minimum radius of curvature greater than 100 kilometres. The maximum predicted conventional strains for these sites, based on applying a factor of 15 to the maximum predicted conventional curvatures, are less than 0.2 mm/m.

The sites are located in the base of the stream valleys and, therefore, could experience valley related movements. The maximum predicted upsidence and the maximum predicted compressive strains due to the closure movements are expected to occur in the bases of the valleys and could potentially impact the grinding groove sites. It is possible, therefore, that minor and isolated fracturing could occur in the vicinity of the grinding groove sites. The likelihood of any fracturing being coincident with the sites is considered low.

European Heritage Sites

There are no items within the subject area which are listed on the State Heritage register. The distances of the heritage items located within the subject area to the nearest goaf varies between 480 to 760 m. At these distances the heritage items are unlikely to be subjected to any significant conventional subsidence movements resulting from the extraction, however they may be effected by minor far field movements (MSEC 2012: 106).

WH1 (the bridge and road remains site) is located 470 m to the west of Longwall 38. Since this site is located at the base of a valley it may be subjected to further minor valley related movements due to the extraction of Longwall 38. The predicted additional closure due to the extraction of Longwall 38 is small, however given the rockbar has experienced impacts from the previously extracted Longwall 33, this closure may cause minor movements at existing fractures in rockbar RB39. The small magnitude of the predicted additional closure is considered unlikely to result in new impacts (MSEC 2012: 106-107).

8 Recommendations

Based on the predictions provided by MSEC (2012) it is unlikely that there will be significant impact to heritage sites that fall within the subject area, and within the zone of potential far-field effects, as a result for the extraction of Longwalls 37 and 38.

In accordance with the Bulli Seam Operation Heritage Management Plan (Biosis 2012) the following recommendations are made:

1. **A detailed Heritage Management Plan should be developed in accordance with Biosis 2012 *Bulli Seam Operations Project: Heritage Management Plan*;**

   In accordance with section 7.5.1 Subsidence Monitoring Requirements detailed baseline recording of heritage sites will be undertaken prior to the extraction of any proposed Longwalls. This would require monitoring of the seven sandstone shelter sites within the subject area. The purpose of the detailed baseline recording as outlined in Biosis (2012: 20-21) is to:

   - *Mitigate the risk of potential impact through more detailed archival recording; and,*
   - *Provide a set of baseline records for the monitoring program.*

   The requirements of detailed baseline recording are outlined in full in the Bulli Seam Operations Project: Heritage Management Plan (Biosis 2012), and include:

   - *Comprehensive photographic coverage of shelters and grinding grooves sites using high resolution digital photography;*
   - *Art panels to be digitally photographed at scales appropriate to their size and complexity, including;*
   - *Spherical photographic coverage using high resolution digital photography and appropriate image stitching techniques at selected sites;*
   - *Elevation plans of shelter walls recording structural and surface features including, but not limited to, the art, graffiti, joints, bedding planes, exfoliation scars, cracks, joints, areas of seepage located on or adjacent to art panels, or in other parts of the shelter.*

   The general schedule for subsidence monitoring programs for Aboriginal sites includes the following (Biosis 2012:22):

   - *Baseline recording; prior to longwall mining impacting the site.*

- *Impact assessment recording: three to six months after each predicted subsidence movement at the site (that is when a longwall makes its closest traverse to the site), and/or following completion of the longwall.*
- *Final assessment recording: at the completion of all subsidence movements at the site. The results of this assessment to be reported in the End of Panel Reports and/or Annual Environmental Management Reports.*

2. **Continued consultation with the Registered Aboriginal Parties is recommended to ensure they are kept informed of the project. This should include notification of any additional Aboriginal objects located during any surface works. This recommendation is further supported by Cubbitch Barta- See Appendix 2**

3. **Site WH1 (the bridge and road remains site) is located 470 m to the west of Longwall 38. The site is located on the Georges River rockbar RB39, which experienced fractures after the completion of Longwall 33 (MSEC 2012:107). Since this site is located at the base of a valley, based on a conservative assessment, it may be subjected to further minor valley related movements due to the extraction of Longwall 38. The small magnitude of the predicted additional closure is considered unlikely to result in additional impacts (MSEC 2012: 106-107) however it is recommended that this site be included in any stream or rock bar observational monitoring program and any changes reported and recorded.**

9 References

Australia ICOMOS 1999. *The Burra Charter*. Australia ICOMOS, Burwood.

Attenbrow, V. 2010. *Sydney's Aboriginal Past: Investigating the archaeological and historical records*. University of New South Wales Press, Sydney.

Barrallier, F. 1975. *Journal of the Expedition into the Interior of New South Wales 1802*. Marsh Walsh Publishing, Melbourne.

Biosis Research 2005. *West Cliff Colliery Area 5 Longwalls 31-33: Impacts of Subsidence on Indigenous and Historic Archaeological Sites*. An unpublished report for BP Billiton Illawarra Coal.

Biosis Research 2006a. *Douglas Area 7 Longwalls 701 to 704: Impacts on Indigenous and Historical archaeological sites*. An unpublished report for BHP Billiton Illawarra Coal

Biosis Research 2006b. *Archaeological Assessment of Longwall 409, Appin Colliery NSW*. An unpublished report for BHP Billiton Illawarra Coal.

Biosis Research 2007a. *Mallaty Creek Stockpile Area- Aboriginal Heritage*. A report to Agility

Biosis Research 2007b. *Desktop reports for West Cliff Area 5: Proposed Trial surface Goaf Wells: Archaeological Assessment*. An unpublished report for BHP Billiton Illawarra Coal.

Biosis Research 2007c. *Archaeological Cultural Heritage Assessment: Review of West Cliff Area 5- Longwalls 34-36*, Appin NSW. An unpublished report for BHP Billiton Illawarra Coal

Biosis Research 2010. *West Cliff Area 5 Longwall 33 End of Panel Report: Cultural Heritage*. An unpublished report for BHP Billiton Illawarra Coal.

Biosis 2012. *Bulli Seam Operations Project: Heritage Management Plan*. An unpublished report prepared for BHP Billiton Illawarra Coal.

Burke, H. and C. Smith. 2004, The Archaeologists Field Handbook. Allen and Unwin, Crows Nest, NSW.

Cardno Forbes Rigby 2008. *West Cliff Colliery Area 5 Longwalls 34 to 36 Subsidence Management Plan Application Proposed Subsidence Management Plan*. An unpublished report for BHP Billiton Illawarra Coal

Dibden, J. 2002. *Proposed Subdivision at Appin, NSW: Cultural Heritage Assessment*. An unpublished report to McRoss Developments Pty Ltd.

Department Environment, Climate Change and Water NSW, 2010a *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010: Part 6 of the National Parks and Wildlife Act 1974*. Department of Environment, Climate Change and Water NSW.

Department Environment, Climate Change and Water NSW, 2010b *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*. Department of Environment, Climate, Change and Water NSW.

DECCW 2010c. Sydney basin sub-regions. Available at: http://www.environment.nsw.gov.au/bioregions/SydneyBasin-Subregions.htm. Accessed 6 May 20101.

ERM 2002. *Indigenous and Historic Heritage Assessment of the Appin Road Site Appin, NSW*. An unpublished report for the Roads and Traffic Authority.

Hazelton and Tille, 1990 *Soil Landscapes of the Wollongong-Port Hacking 1:100,000 Sheet*. Soil conservation service NSW, Sydney.

MSEC 2006 *The predictions of subsidence parameters and the Assessment of Mine Subsidence Impacts on Sub-surface Features Due to mining Longwalls 31 to 33 at West Cliff Colliery in Support of an SMP Application*. An unpublished report prepared for BHP Billiton Illawarra Coal. Report Number MSEC208, Revision B, Mine Subsidence Engineering Consultants.

MSEC 2011 *BHP Billiton Illawarra Coal: West Cliff Colliery- Longwall 34 End of Panel Subsidence Monitoring Report for West Cliff Longwall 24*. An unpublished report prepared f BHP Billiton Illawarra Coal. Report Number MSEC510, Revision 2, Mine Subsidence Engineering Consultants.

Navin Officer 1996a. *An Archaeological Assessment of three proposed mining exploration borehole sites at Appin Colliery*. An unpublished report prepared for Quality Environmental Management

Navin Officer 1996b Seismic Lines 96A-D, Appin Colliery Archaeological Survey. An unpublished report for BHP Australia Coal

Navin Officer 2000. *Appin Colliery Proposed Methane Gas Pipeline and Water Pipeline: Archaeological Survey for Aboriginal Sites and European Historical Sites*. An unpublished report for BHP Billiton Illawarra Coal.

Navin Officer 2002a. *Proposed PED Antenna Route, West Cliff Colliery, NSW*. An unpublished report for BHP Billiton Illawarra Coal.

Navin Officer 2000b. *Westcliff Longwall Panels 5a5-5A14, North Appin: Review of listed Items of Historic Cultural Heritage*. An unpublished report to IEC and BHP Billiton Illawarra Coal

Mulvaney, J. and Kamminga, J. 1999. *A Prehistory of Australia*. Allen and Unwin Sydney.

Niche Environment and Heritage 2011a *Aboriginal Objects Due Diligence Assessment West Cliff Goaf Gas Drainage Project Longwall 35*. An unpublished report for BHP Billiton Illawarra Coal.

Niche Environment and Heritage 2011b *Aboriginal Objects Due Diligence Assessment West Cliff Goaf Gas Drainage Project Longwalls 36 and 37*. An unpublished report for BHP Billiton Illawarra Coal.

Niche Environment and Heritage 2011c Heritage Assessment Appin Mine Surface Gas Drainage Project. An unpublished report for BHP Billiton Illawarra Coal

Niche 2011d *Aboriginal and European Heritage Assessment for West Cliff Colliery- Longwall 34 End of Panel Report*. An unpublished report for BHP Billiton Illawarra Coal.

NSW Minerals Council, 2010. *NSW Minerals Industry Due Diligence Code of Practice for the Protection of Aboriginal Objects,* Sydney, 13 September 2010.

OEH 2011. Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW. NSW Office of Environment and Heritage, Hurstville.

Organ, M. 1990. *Illawarra and South Coast Aborigines 1770-1850*. Aboriginal Education Unit, University of Wollongong, Wollongong.

Pearson, M. 2009. *Bulli Seam Operations Non-Aboriginal Heritage Assessment (Statement of Heritage Impact)*. An unpublished report prepared for Illawarra Coal Holdings Pty Ltd.

Sefton, C. 1998. *Site and Artefact Patterns on the Woronora Plateau*. MA Thesis, University of Wollongong

Sefton, C. 1995. *Archaeological Investigation of Longwall 27 and future mining extensions, Appin Colliery*. An unpublished report for BHP Australia Coal.

Sefton, C. 1996. *Archaeological Investigations of Area 4, Appin Colliery*. An unpublished report for Collieries Division, BHP Coal

Sefton, C. 1998 *Archaeological Investigation of Longwalls 1-6 Area 5 West Cliff Colliery*. An unpublished report for Collieries Division, BHP Coal.

Sefton, C. 1999. *Archaeological Investigation of Longwalls 18-24 Tower Colliery*. An unpublished report for BHP Coal- Illawarra Collieries.

Sefton, C. 2000 *Overview of the Monitoring of Sandstone Overhangs for the effects of Mining Subsidence Illawarra Coal Measures*. An unpublished report for Collieries Division, BHP Coal.

Sefton, C. 2002a. Archaeological Survey of West Cliff Colliery Area 5. An unpublished report for HP Billiton, Carbon Steel Materials, Illawarra Coal

Sefton, C. 2002b. *Archaeological Investigations of West Cliff Colliery Longwalls 5A5 to 5A8*. An unpublished report for BHP Billiton, Carbon Steel Materials, Illawarra Coal.

Sefton, C. 2002c. *Archaeological Investigation of Proposed Longwalls 406 to 408, Appin Colliery*. An unpublished report for BHP Carbon Steel Materials Illawarra Coal.

SA Museum 2010. Tribal Boundaries in Aboriginal Australia, Norman S Tindale. Available at http://www.samuseum.sa.gov.au/page/default.asp?site=2&page=TIN_Tribal. Accessed 28 August 2010.

White, B and J. McDonald 2010. Lithic Artefact Distribution in the Rouse Hill Development Area, Cumberland Plain, New South Wales. *Australian Archaeology,* Number 70, pp:29-38.

Appendix I

AHIMS results

Office of Environment & Heritage NSW

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref Number : 1198

Client Service ID :64183

Note: This Excel report shows the sites found in AHIMS on the 27/02/2012. If this date is not the same as the original date of the Search Results letter obtained during the Basic Search, then the search results might be different. The PDF version of this report will always coincide with the Basic Search Results letter.

SiteID	SiteName	Contact	Datum	Zone	Easting	Northing	Context	SiteStatus	SiteFeatures	SiteTypes	Permits	Reports	Recorders
52-2-2101	Restriction applied. Please contact						Closed	Valid				97824,9	Mrs.Caryll
52-2-2104	Sawpit Gully 11; duplicate of 52-2-2062		AGD	56	296900	6215430	Closed	Valid	Art (Pigment or	Axe		97824,9	Mrs.Caryll
52-2-2105	Sawpit Gully 10; duplicate of 52-2-2063		AGD	56	297158	6215184	Closed	Valid	Art (Pigment or	Axe	1578,222	97824,9	Mrs.Caryll
52-2-2113	Sawpit Gully 14; duplicate of 52-2-2066		AGD	56	296900	6215350	Closed	Valid	Artefact : -	Shelter		97824,9	Mrs.Caryll
52-2-2059	Ousedale Creek 1;Georges River Appin; duplicate of 52-2-2101		AGD	56	295452	6214981	Closed	Valid	Art (Pigment or	Shelter	953	98155	Mrs.Caryll
52-2-2062	Sawpit Gully 11;Georges River Appin; duplicate 0f 52-2-2104		AGD	56	296900	6215430	Closed	Valid	Potential	Shelter		98155	Mrs.Caryll
52-2-2064	Sawpit Gully 9 Georges River Appin		AGD	56	297370	6215160	Open	Valid	Grinding	Axe		97824,9	Mrs.Caryll
52-2-2066	Sawpit Gully 14 (Georges River Appin); duplicate of 52-2-2113		AGD	56	296900	6215350	Closed	Valid	Potential	Shelter		98155	Mrs.Caryll
52-2-0021	Douglas Park 1		GDA	56	294444	6217690	Open	Valid	Artefact : -	Open		98155	Ms.Laila
52-2-1680	Ousedale Creek 4		AGD	56	294530	6215200	Open	Valid	Modified Tree	Scarred	2229	2451,98	Mr.K
52-2-1681	Ousedale Creek 2; duplicate of 52-2-2236		AGD	56	294380	6215220	Open	Valid	Artefact : -	Open		2451	Mr.K
52-2-1682	Ousedale Creek 3		AGD	56	294460	6215190	Closed	Valid	Artefact : -	Shelter	2229	2415,98	Mr.K
52-2-2234	GEORGES RIVER NO.1		AGD	56	297048	6216469	Closed	Valid	Art (Pigment or				Mrs.Caryll
52-2-2235	GEORGES RIVER NO.6		AGD	56	297230	6218134	Open	Valid	Artefact : -				Mrs.Caryll
52-2-2236	OUSEDALE CREEK NO.2; duplicate of 52-2-1681		AGD	56	294380	6215220	Closed	Valid	Artefact : -, Art				Mr.K
52-2-2237	OUSEDALE CREEK NO.3		AGD	56	294285	6217298	Closed	Valid	Art (Pigment or		1578,295		Mrs.Caryll
52-2-2240	GEORGES RIVER NO.7		AGD	56	297045	6218124	Open	Valid	Artefact : -				Mrs.Caryll
52-2-2241	GEORGES RIVER NO.5		AGD	56	297305	6216467	Closed	Valid	Art (Pigment or				Mrs.Caryll
52-2-2242	GEORGES RIVER NO.4		AGD	56	296594	6217358	Closed	Valid	Art (Pigment or				Mrs.Caryll
52-2-2243	GEORGES RIVER NO.2		AGD	56	297126	6216565	Open	Valid	Art (Pigment or				Mrs.Caryll
52-2-2244	GEORGES RIVER NO.3		AGD	56	296800	6217061	Open	Valid	Artefact : -				Mrs.Caryll
52-2-2063	Sawpit Gully 10;Georges River Appin; duplicate of 52-2-2105		AGD	56	297158	6215184	Closed	Valid	Potential	Shelter	951	98155	Mrs.Caryll
52-2-2264	Georges River 1		AGD	56	297100	6215210	Open	Valid	Artefact : -		1585		Navin Officer
52-2-2265	Leafs Gully 1		AGD	56	294150	6218190	Open	Valid	Artefact : -		1585		Navin Officer
52-2-2266	Georges River 2		AGD	56	296630	6215790	Open	Valid	Artefact : -		1585		Navin Officer
52-2-2284	MD2		AGD	56	295440	6215030	Closed	Valid	Art (Pigment or				Miss.Julie
52-2-3583	WA010	Searle	GDA	56	294212	6215562	Open	Valid	Grinding				Heritage
52-2-3690	Bulli Site 10		AGD	56	294456	6217391	Open	Valid	Artefact : -				Ms.Renee
52-2-3691	Bulli Site 11		AGD	56	295692	6217756	Open	Valid	Artefact : -				Ms.Renee
52-2-2041	Sawpit Gully 3;Appin Georges River; duplicate of 52-2-2036		AGD	56	297400	6215130	Closed	Valid	Artefact : -,	Axe		98155	Mrs.Caryll
52-2-2036	Sawpit Gully 3;Appin Georges River; duplicate of 52-2-2041		AGD	56	297400	6215130	Closed	Valid	Grinding	Axe		98155	Mrs.Caryll

Report generated by AHIMS Web Service on 27/02/2012 for Renee Regal for the following area at Datum :GDA, Zone : 56, Eastings : 294100 - 298300, Northings : 6215200 - 6219400 with a Buffer of 50 meters.Additional Info : To complete a Due Diligence Assessment. Number of Aboriginal sites and Aboriginal objects found is 31

Appendix 2

Consultation records

niche
Environment and Heritage

www.niche-eh.com

11 April 2012

Attention: Mrs Lorraine Brown
Coomaditchie United Aboriginal Corporation
PO Box 160
Warrawong NSW 2502

Dear Mrs Brown,

RE: Notification of West Cliff Longwalls 37 to 38 Extraction Plan Heritage Assessment

BHP Billiton Illawarra Coal (BHPBIC) proposes to continue its underground mining operations at West Cliff Colliery in the Southern Coalfield of New South Wales. Illawarra Coal extracts coal for steelmaking from the Bulli Seam using longwall mining techniques.

As you are aware; your group was consulted with during the Bulli Seam Operations Project (BSO) approval process. On 22 December 2011 the Planning and Assessment Commission (PAC), under delegation of the Minister for Planning, approved the BSO under Part 3A of the Environmental Planning and Assessment Act to continue mining operations.

As a condition of this Project Approval, BHPBIC is required to prepare an Extraction Plan to manage the potential subsidence effects, impacts and environmental consequences associated with the extraction of coal from the approved areas.

The Longwalls 37 to 38 Extraction Plan (Figure 1) is required to use the findings from previous assessments of the Study Area undertaken as part of the BSO Environmental Assessment (EA) in combination with any supplementary reports and stakeholder consultation.

This letter is to invite Aboriginal people who hold knowledge relevant to the Aboriginal cultural heritage values of the area to register an interest in commenting on the Draft Extraction Plan Report, and post extraction monitoring assessments. Registrations must be received prior to close of business Thursday 26 April 2012.

Sydney Office
PO Box 231, Concord, NSW 2137
Mobile: 0488 224 888 **Fax:** 02 4017 0071
jreeves@niche-eh.com

Central Coast/Hunter Office
PO Box 3104, Umina Beach, NSW 2257
Mobile: 0488 224 999 **Fax:** 02 4017 0071
rharrington@niche-eh.com

Illawarra/Southern NSW Office
PO Box 12, Macarthur Square, NSW 2560
Mobile: 0488 224 777 **Fax:** 02 4017 0071
mrichardson@niche-eh.com

Renée Regal of Niche Environment and Heritage is our heritage consultant for this project. Please register in writing to Renée via email to rregal@niche-eh.com or fax to 02 4017 0071.
To know more about this project please call Renée Regal on 0488 224 758 or Jamie Reeves on 0488 224 888.

Yours sincerely,

Renée Regal

Archaeologist

For Gary Brassington

Sydney Office
PO Box 231, Concord, NSW 2137
Mobile: 0488 224 888 **Fax:** 02 4017 0071
jreeves@niche-eh.com

Central Coast/Hunter Office
PO Box 3104, Umina Beach, NSW 2257
Mobile: 0488 224 999 **Fax:** 02 4017 0071
rharrington@niche-eh.com

Illawarra/Southern NSW Office
PO Box 12, Macarthur Square, NSW 2560
Mobile: 0488 224 777 **Fax:** 02 4017 0071
mrichardson@niche-eh.com

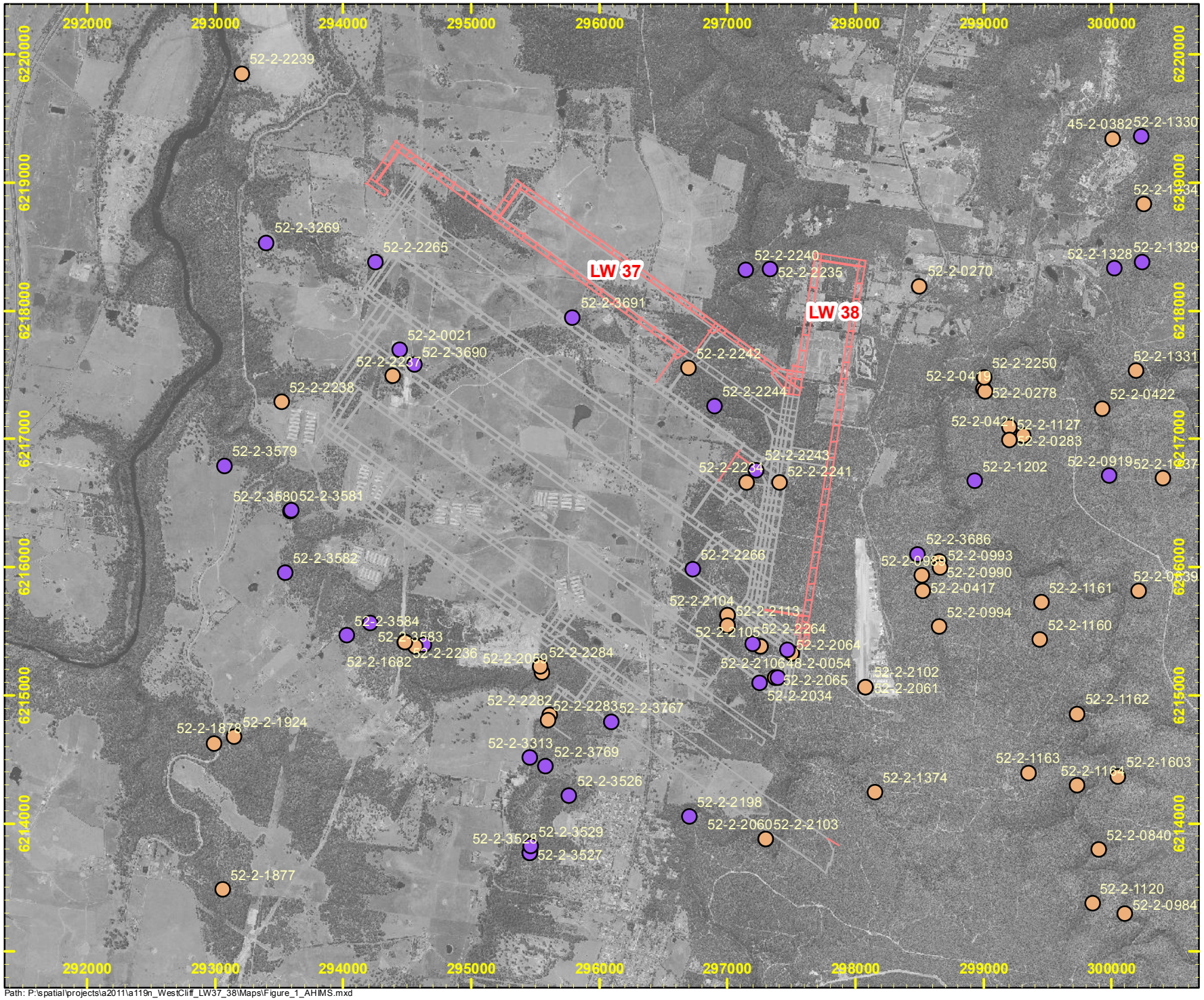


Figure 1: AHIMS

WestCliff LW 37 - 38 Extraction Plan

Drawn by: RJ
Project Mgr: MR

Date: 2/02/2012

AHIMS 24 Nov 2010

- Enclosed Shelter
- Open Site

N
W E
S

Metres

0 250 500 1,000 1,500

niche Environment and Heritage

Horizontal Datum:
GDA 1994 MGA Zone 56

Imagery: 2007 BHPBIC

Path: P:\spatial\projects\a2011\a119n_WestCliff_LW37_38\Maps\Figure_1_AHIMS.mxd

Renee Regal

From: Ngunawal Heritage Aboriginal Corporation <ngunawalhac@gmail.com>
Sent: Thursday, 26 April 2012 4:15 PM
To: Renee Regal
Cc: Melinda Tubolec
Subject: Notification of West Cliff Longwalls 37 to 38 Extraction Plan Heritage Assessment

Hi Renee,

Thank you for your recent correspondence.

Please be informed that we would like to register our interest for the Notification of West Cliff Longwalls 37 to 38 Extraction Plan Heritage Assessment.

We look forward to reviewing and commenting on the draft report and assessments when they become available.

Kind Regards

Dean Delponte
Director
Senior Site Officer
Mob: 0413 186 133
Email: ngunawalhac@gmail.com

Renee Regal

From: Gary Caines <thecaines@bigpond.com>
Sent: Tuesday, 24 April 2012 4:33 PM
To: Renee Regal
Cc: Markus Caines
Subject: BHPBIC's BSO Project ~ Extraction Plan Heritage Assessment ~ West Cliff Longwalls 37 to 38

Good Day to you, Renée,

Thank you for your Letter dated 120411.

As stated, by way of your assertion of my [limited] awareness of an engagement in prior consultations covering the BSO Project (BSOP), may I request continuance of same/similar registration[s] for this abovementioned Subject's sub-set/component of the proponent's program of works and usages continuing to impact over/under/in my indigenous Country/soul. May that response/recompense to proposals for approvals in planned activities be embodied/entrusted mutually to a new holding of acknowledgements over perceived nuisances in nuances? With an envisaged reciprocal appreciation to offer, may we seek acceptable consideration in our commitment for a concurrently exercised undertaking to produce mutually respectful plan of review and recognition.

If I were to be Asked Last, if not in an initial approach, I would want to see A Matrix somewhere in between such days . . .

Kind regards, G.

Cubitch Barta Native Title Claimants
Aboriginal Corporation
55 Nightingale Road,
PHEASANTS NEST. N.S.W. 2474,
13th April, 2012.

Ms Renee Regal,
Niche Environmental & Heritage
P.O. Box 12,
MACARTHUR SQUARE. N.S.W. 2560.

Dear Renee,

Re; WESTCLIFF LONGWALLS
37 TO 38

The Cubbitch Barta Native Title Claimants Aboriginal Corporation would like to take this opportunity of register their interest in the above project.

As we have been involved in all the past Heritage assessments and longwall subsidence monitoring now for the last twenty years, there is a great deal of knowledge to the cultural heritage values of the area held by our organisations members.

Yours faithfully,

G. Chalker

Glenda Chalker
Hon. Chairperson
Phone/Fax 02 46841129 0427218425

Peter Falk Consultancy
P.O. Box 1018
Mittagong NSW 2575
04091938060

NICHE

PO Box 231

Concord

NSW 2137

Subject: BHP West Cliff Longwalls 37 and 38 Aboriginal Heritage Assessment

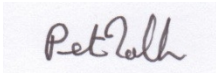
Attn: Renee Regal

Dear Renee,

As I was involved with Jamie Reeves on the assessment and survey for BHP in this area and I have knowledge of the Cultural Heritage values, I wish to be registered for this project.

I also wish to comment on all reports and assessments**.**

Yours faithfully,



Peter Falk

TOCOMWALL

Tocomwall PTY LTD
ACN 137 694 618
ABN 13 137694618
PO Box 76
CARINGBAH NSW 1495
yarrawalk@tpg.com.au

Trading as Yarrawalk

25 April 2012

Attention: Renee Regal

Dear Rennee,

RE: Request for Registration for WEST CLIFF LONG WALLS 37 TO 38

Tocomwall, trading as Yarrawalk is seeking *primary involvement* as a primary Knowledge Holder in all consultation meetings and field work for The above mentioned project

Tocomwall represents traditional owners from this and retains local and oral history on behalf of its membership. We do not accept or support any person or organisation that comments regarding the said area unless confirmed in writing by myself.

Please also be advised that this Aboriginal organisation does not do volunteer work or attend unpaid meetings.

All correspondence should be emailed to the following yarrawalk@tpg.com.au or to the above postal address.

Yours faithfully

Scott Franks
Director & Aboriginal Heritage Manager

Tocomwall
Trading as Yarrawalk

Niche Environment and Heritage
PO Box W36 Parramatta NSW 2150
T 02 9689 2098 F 02 4017 0071
E info@niche-eh.com ABN 19 137 111 721

29 May 2013

Mrs Lorraine Brown

Coomaditchie United Aboriginal Corporation
PO Box 160
Warrawong NSW 2502

Dear Mrs Brown,

RE: West Cliff Longwalls 37 to 38 Extraction Plan Heritage Assessment for review and comment

BHP Billiton Illawarra Coal (BHPBIC) proposes to continue its underground mining operations at West Cliff Colliery in the Southern Coalfield of New South Wales. Illawarra Coal extracts coal for steelmaking from the Bulli Seam using longwall mining techniques.

As you are aware; your group was consulted with during the Bulli Seam Operations Project (BSO) approval process. On 22 December 2011 the Planning and Assessment Commission (PAC), under delegation of the Minister for Planning, approved the BSO under Part 3A of the Environmental Planning and Assessment Act to continue mining operations.

As a condition of this Project Approval, BHPBIC is required to prepare an Extraction Plan to manage the potential subsidence effects, impacts and environmental consequences associated with the extraction of coal from the approved areas.

The Longwalls 37 to 38 Extraction Plan (enclosed) is required to use the findings from previous assessments of the Study Area undertaken as part of the BSO Environmental Assessment (EA) in combination with any supplementary reports and stakeholder consultation.

This report is enclosed for your review and comment. It would be appreciated if you could please forward any comments you have by close of business 25 June 2013 through to:

Renée Regal
Niche Environment and Heritage
PO Box W36
Parramatta NSW 2150

Phone 0488 224 758
Fax 02 4017 0071
rregal@niche-eh.com

Yours sincerely,

Renée Regal
Niche Environment and Heritage
For Gary Brassington

Cubbitch Barta Native Title Cla
Aboriginal Corporation
55 Nightingale Road,
PHEASANTS NEST. N.S.W. 2
16th June, 2013.

Ms. Renee Regal,
Niche Environment & Heritage
P.O. Box w36,
PARRAMATTA. N.S.W. 2150.

Dear Renee,

WESTCLIFF LONGWALL 37 – 38

Thank you for the opportunity of commenting on the Heritage Assessment for the Longwalls Extra for Longwalls 37 – 38.

1. The requirement of detailed baseline recording should be carried out with Aboriginal repre present at all times.
2. The baseline monitoring of all sites within the predicted subsidence area should be carried Aboriginal representatives present at all times with every stage of the monitoring.
3. **Continued Consultation** might be okay with other Registered Aboriginal parties, but part Cubbitch Barta and TLALC should be not only be consulted but participating in all record monitoring.

Cubbitch Barta is the only registered party that has had registered native title claims within the ar

If you have any queries to my response please feel free to contact me at any time.

Yours faithfully,

G. Chalkers

Glenda Chalker
Hon. Chairperson
Phone/Fax 0246841129 0427218425