

Archaeological Impact Assessment

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***Aboriginal Archaeological Report
Proposed Goaf Gas Drainage Project
Ashton Coal Operations Ltd
Camberwell, NSW***

**Report to
Wells Environmental Services
on behalf of
ACOL**

July 2012

Singleton Council Local Government Area

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NB: Sections of this report, specifically Figure 1, Section 3 and Appendix A, contains culturally sensitive material relating to the location of recorded Aboriginal archaeological sites. This information is included in this report to satisfy the requirements for assessment. This information should not be released into the public domain. This information must be removed from this report prior to it being placed on public display.

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Executive Summary

Insite Heritage Pty Ltd were commissioned by Wells Environmental Services (WES) on behalf of Ashton Coal Operations Ltd (ACOL) to undertake an indigenous archaeological assessment of a proposed Goaf Gas Drainage Project.

The management of Aboriginal sites on the ACOL lease is an ongoing process in the context of existing development consent conditions, permits and approved Aboriginal Cultural Heritage Management Plans. In addition to recent salvage works, a re-survey was completed in November 2011 to update ACOL's database and management plans. The assessment of the potential impact of the Goaf Gas project has been undertaken in the context of the re-survey results and previously known data.

ACOL hold an AHIP (no. 1131017) over the area of Longwalls 1-4, and an AHIP (no. #1130976) over Longwalls 5-9, which encompass the goaf gas drainage project area. The conditions of the AHIP's will apply to the management of Aboriginal objects and sites if they are to be impacted during the construction phase of the project.

Where the salvage of Aboriginal sites is a required mitigation measure, the methodology applied will be consistent with the AHIP that applies to that area.

1. Introduction

1.1 Scope & Objectives

Ashton Coal Operations Ltd (ACOL) are lodging a modification to their existing development approval for the implementation of Goaf Gas Drainage System to:

- Construct a series of up to 80 gas bores for the drainage of goaf gas to maintain safe working conditions in the underground mine ;
- Safely capture, reticulate and manage the goaf gas from a central location; and
- Minimise greenhouse gas (GHG) emissions.

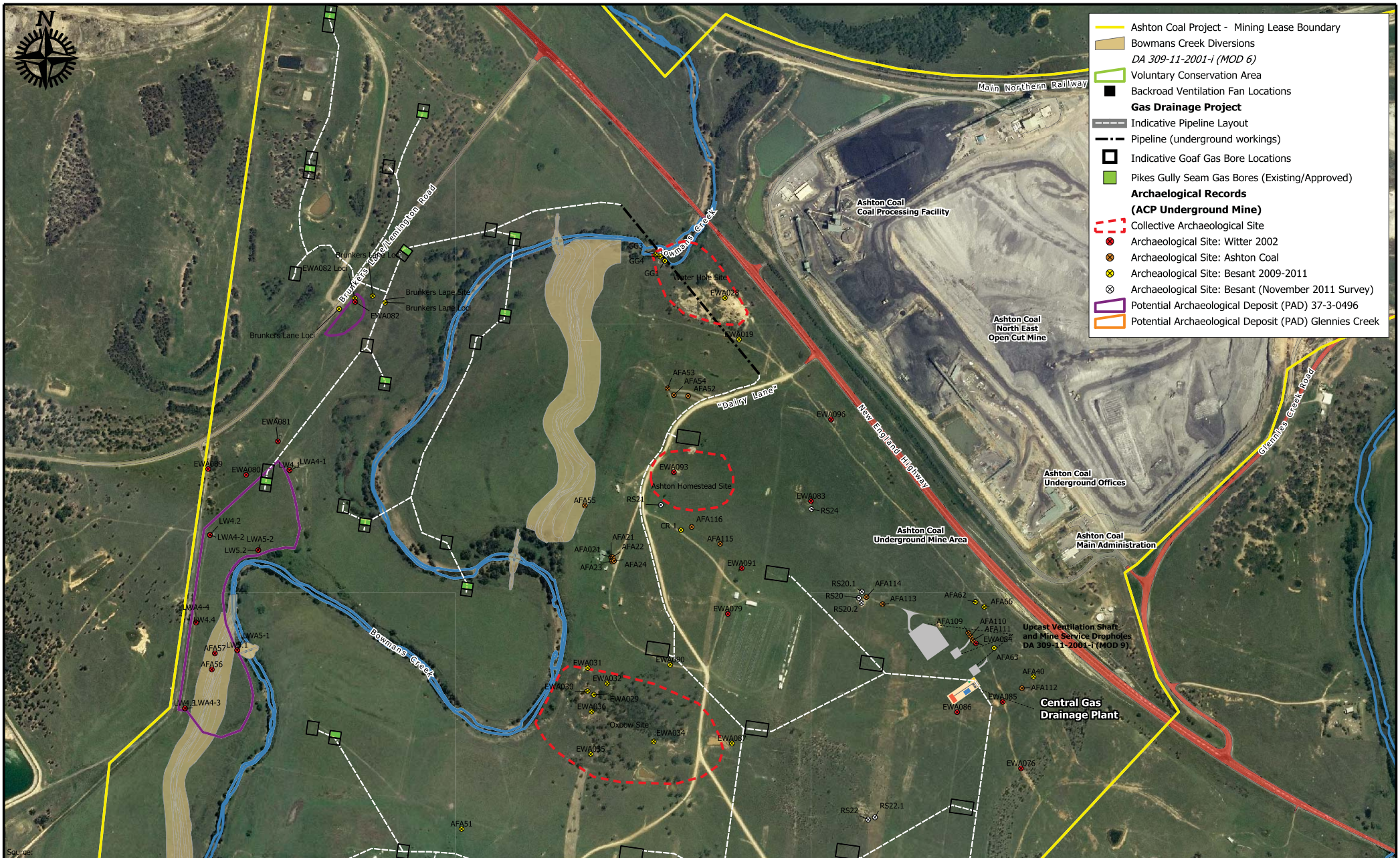
The proposal comprises a series of vertical boreholes drilled to a targeted depth through which goaf gas, consisting mainly of methane, will be drained from the goaf of Longwalls 1 to 8 via a surface pipeline reticulation system connected to a central gas drainage plant. A mobile gas drainage plant may also be used to provide interim drainage.

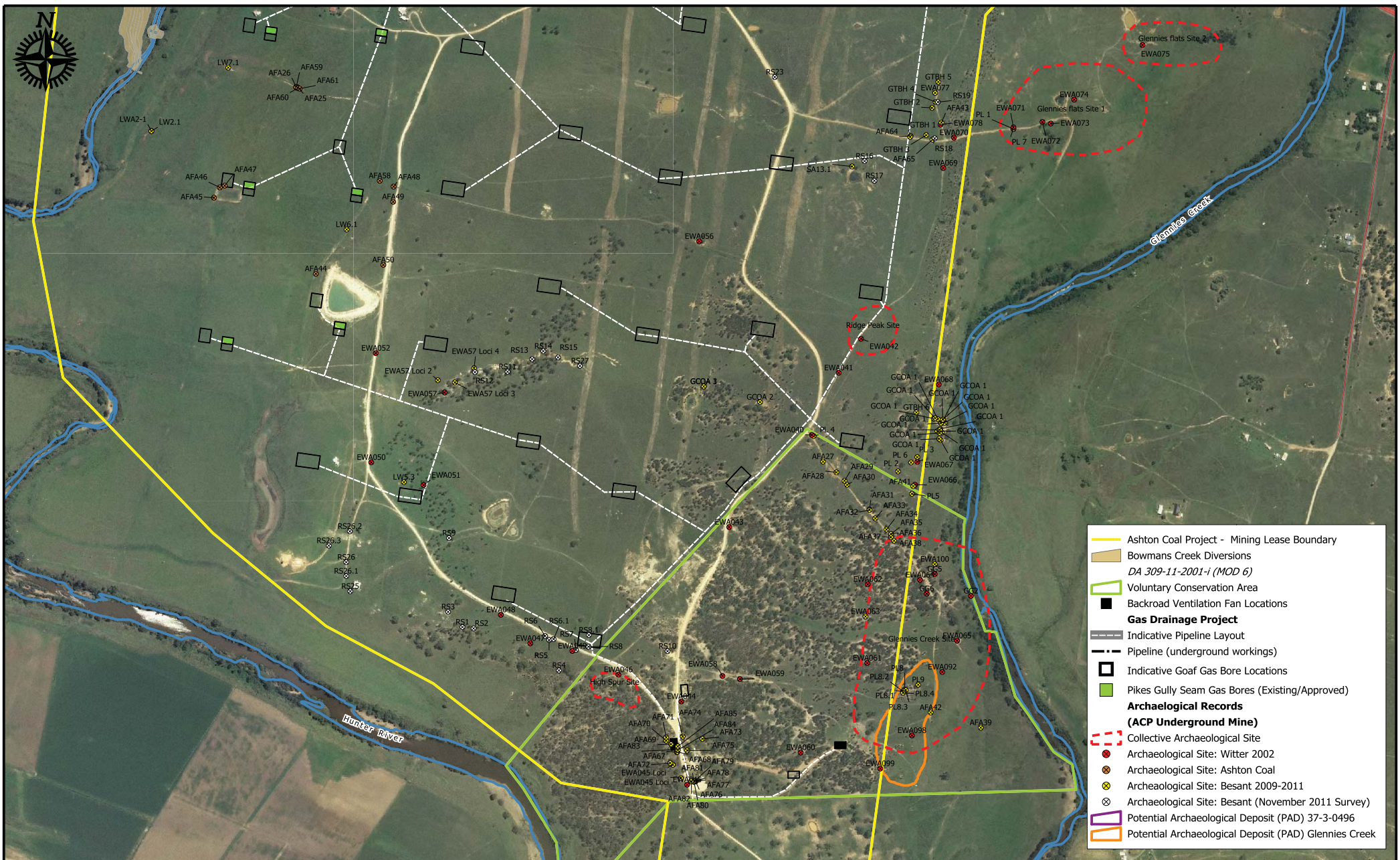
The layout of the gas bores, pipeline reticulation system and proposed central gas drainage plant are shown in **Figures 1A & 1B**. The general layout of the surface infrastructure has been designed having consideration to existing site constraints, location of access tracks and to minimise or prevent adverse impacts on Aboriginal cultural heritage and the environment.

The proposed infrastructure is of a temporary nature and therefore designed to be appropriately decommissioned and the site rehabilitated upon completion of mining. The gas bores and connecting pipeline will require only a relatively small area, and have been sited to avoid and/or minimise any adverse environmental impacts.

Insite Heritage Pty Ltd were commissioned by Wells Environmental Services (WES) on behalf of ACOL to undertake an Aboriginal archaeological assessment as part of the Environmental Assessment for the project. The aim of the archaeological assessment is to identify and assess the potential impacts from the proposed works on Aboriginal archaeological objects and to recommend the appropriate management / mitigation strategies.

The justification for the project is the need to provide adequate gas drainage from the underground workings to maintain safe operating conditions and to minimise greenhouse gas emissions for the mine.





1.2 Aboriginal Stakeholder Consultation

Consultation regarding the project has occurred with ACOL's existing registered Aboriginal stakeholders (comprising 32 Aboriginal stakeholder groups). ACOL have formed an Aboriginal Community Consultative Forum (ACCF), comprising all of ACOL's registered Aboriginal parties (RAPs), which meets on a regular basis. Members of forum have also formed working parties to address specific issues such as field work protocols and artefact analysis who report back to the ACCF. The ACCF are updated at each meeting regarding upcoming and ongoing projects at ACOL. The Goaf Gas Drainage project has been discussed at the three most recent ACCF meetings, held on 11th December 2011, 6th March 2012 and the 2nd May 2012.

The archaeological resource within the project area is well known and the mining lease has been subject to salvage works under AHIP #1131017 and AHIP #1130976. In addition the area of Longwalls 1-4 has recently been resurveyed to provide data to update the ACOL Cultural Heritage Management Plan.

ACOL have invited comment on the draft report and the feedback can be seen in **Appendix B**. One written response was received and those stakeholders with current contact details were contacted by phone and their response to the draft report noted in Table 5 in Appendix B.

No specific issues were raised by stakeholders on review of the draft report.

2. Statutory Obligations

The National Parks & Wildlife Act 1974 (NPW Act) provides statutory protection for all material evidence of Aboriginal occupation of NSW. The objects of the act, as outlined in Section 2A include;

(b) the conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including, but not limited to:

(i) places, objects and features of significance to Aboriginal people

An Aboriginal object means any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises NSW, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.

"Aboriginal place" means any place declared to be an Aboriginal place under section 84 (NPW Act 1974 Sect 5).

It is an offence to harm an Aboriginal object or declared Aboriginal place without first obtaining an AHIP from the Director General of the Office of Environment and Heritage (OEH).

"harm" an object or place includes any act or omission that:

- (a) destroys, defaces or damages the object or place, or
- (b) in relation to an object-moves the object from the land on which it had been situated, or
- (c) is specified by the regulations, or
- (d) causes or permits the object or place to be harmed in a manner referred to in paragraph (a), (b) or (c),

but does not include any act or omission that:

- (e) desecrates the object or place, or
- (f) is trivial or negligible, or
- (g) is excluded from this definition by the regulations (NPW Act 1974 Sect 5).

The NPW Act requires the obtaining of an AHIP issued under Division 2, Part 6 if a person wishes to excavate land to disturb or discover an Aboriginal object or disturb or move an Aboriginal object.

An AHIP is required if an activity will or is likely to harm an Aboriginal object or Aboriginal place. As previously mentioned ACOL hold AHIP's (AHIP #1131017 and AHIP #1130976) over the lands encompassing the underground mine, which include provisions for infrastructure required for the safe ongoing operation of the mine.

3. Existing Environment

3.1 Regional Archaeological Context

In NSW a number of archaeological sites have been dated back to the Pleistocene. Koettig (1986) recorded a date of 20,200 BP from a hearth at Glennies Creek, approximately 10km north of the ACOL mine lease area. An Aboriginal site on the Liverpool Plains has been dated to at least 19,000 BP (Gorecki et al, 1984) and one of the world's oldest ritual cremation sites dated to 26,000 years ago is located at Lake Mungo in western NSW (Mulvaney et al, 1999) Other Pleistocene dates have been found in other environmental contexts such as Moffats Swamp, near Newcastle where Baker (1994) found material dating to 17,000 years ago within the Pleistocene sand dunes.

Sites dating back to the Holocene (the last 10,000 years) are far more common in the open site context as Holocene landforms are more common in the modern landscape. Sites in an open context rarely provide the stratigraphy necessary for effective dating of the site. Microblades and microliths are part of the Australian Small Tool Phase which seem to appear in some parts of Australia around 6,000 years ago (Mulvaney & Kamminga 1999).

Microliths (small backed artefacts) are thought to have been hafted to produce a composite tool (ibid). Reasons for change in technological characteristics have been proposed by Hiscock (1994) who suggested that increased mobility may have become necessary during the Holocene, as people occupied areas of unfamiliar environmental resources, or as climatic fluctuations rendered the environment less predictable. The extension of stone resources to include small pebbles and small outcrops would have increased the amount of time between visits to the stone sources previously used (ibid).

3.2 Ethnographic Context

Tindale (1974) and Horton (1999) place Camberwell in the area of the Wonnarua peoples, bordering the Awabakal to the east and Worimi to the north. The environment of the Hunter Valley has been reviewed by Brayshaw (1984) based on the records of early explorers. The explorers reported areas of rich meadow, thinly timbered with deep loam soils. Food resources included possum, bear, wallaby, kangaroo rat, bandicoot, echidna and flying fox (Dawson in Brayshaw). Rivers were described with abundant fish with wild ducks, pigeons and brush turkeys also hunted. The early explorers also noted that women and children hunted and captured the smaller animals, and sought out the hiding places of various grubs and the nests of the native stingless bees (Green in Brayshaw).

Research in the Hunter Valley has attempted to address various questions related to Aboriginal culture, lifestyles and change over time. Subjects studied include tool manufacture and distribution of stone resources, trade, potential for Pleistocene sites, camp site distribution within the landscape, and landscape modelling.

Material culture of the local Aboriginal people included items made of wood, bark, plant fibres, stone, shell and bone including such items as spears, clubs, shields, dishes, canoes, nets, cloaks, cord and cutting implements.

European settlement of the Hunter Valley commenced in the early 1800's which in turn had a catastrophic impact on the local Wonnarua peoples and their traditional culture.

Populations were greatly reduced due to the introduction of previously unknown diseases and traditional social structures disintegrated.

3.3 Local Archaeological Context

Koettig (1986) excavated a number of sites on the alluvial flats of Glennies Creek, approximately 10km to the north of the ACOL mine lease area, following a survey for the Glennies Creek to Singleton pipeline. Excavations revealed distinct A and B soil units and a geomorphologist who investigated this site suggested that the B unit could date from 10,000 to 30,000 years old. Of note, one site was radiocarbon dated to over 13,000 years BP and contained evidence of a hearth and associated artefacts. Excavation showed that these sites represented discrete activity units, knapping floors, ovens, hearths and heat treating areas; distance between these features was unpredictable, and their distribution along the creek lines did not have a pattern. All the dated sites were of the mid-Holocene period (Koettig 1992).

Stuart (1999) surveyed an area for a proposed waste rock dump to the east of Glennies Creek and to north of the Camberwell village. The survey concentrated on an area along Station Creek, a tributary of Glennies Creek. The survey located 3 artefact scatters and 16 isolated finds. No sites were assessed as being of high significance, one artefact scatter was regarded as being of medium significance and the remainder were of low significance.

HLA Envirosiences (2005) conducted subsurface investigations for the proposed extension of the Rail Unloader Facility at Newdell Junction, just north of Ravensworth for Macquarie Generation. The previous survey identified three sites (MG#1, 2 &3), all open artefact scatters, located on lower slope and in an open depression. The main artefact types recorded at the sites include flakes, broken flakes, retouched flakes and cores, with raw material types of silcrete, mudstone and fine grained siliceous (FGS). Subsurface testing at sites MG#1 and MG#2 and in designated areas of sensitivity across the site recovered a total of 197 whole and broken artefacts, with the majority (156) identified as flakes. 24 retouched flakes were also recorded of which 5 were backed artefacts. 5 cores were also identified. 88 of the artefacts were manufactured from silcrete, and 88 from FGS. Small numbers of chert, volcanic and quartz were also recorded. The majority of artefacts were recovered from areas of testing located on the lower slopes. Only three artefacts were recovered from test pits located on the alluvial flat, but it was considered that artefacts may have been removed from this area due to flooding or buried deeper than 80cm the limit of the excavations. Objects located at deeper levels would be consistent with the Koettig 1992 findings.

Umwelt (2002) conducted an archaeological assessment for enlargement of a mine water storage dam for the Nardell Coal Mine. The survey covered an area of approximately 1200 x 300m and was situated on a hill and gently sloping land to the north of the New England Highway and south of the Macquarie Generation coal conveyor, north of Ravensworth. The survey identified six sites (N1-N5 and the Dam Site) predominantly open artefacts scatters. The Umwelt (2002) survey also revisited five sites identified by Stuart (1996) located in Nardell Colliery land, north of the Macquarie Generation coal conveyor (Nard 8,9,11,12&13). The dominant raw material types were mudstone and silcrete with some porcellanite and glass with main artefact types recorded as flakes, broken flakes, flaked pieces and cores. The largest site recorded by Stuart and re-recorded by Umwelt, Nard 12 (37-3-0523), comprises of 150 artefacts in a 50m x 30m area. Severe sheet erosion and previous disturbances were noted at the site.

In 2004 Umwelt surveyed land at Glendell for a proposed open cut mine project. This area is approximately three kilometres to the north of the study area and comprises similar landform units, within the Glennies and Bowman's Creek catchments. The survey recorded 29 artefact scatters, 7 isolated finds and a quarry site. The majority of sites were within 30m of watercourses (63%). Three sites contained more than 100 artefacts with mudstone being the most commonly utilised material followed by silcrete. Two sites were deemed to be of high significance and three to be of moderate to high significance.

Umwelt (2010) prepared an assessment for Ravensworth Operations over an area of 5590ha to the west of ACOL's holding. The survey resulted in 244 sites being recorded in addition to the 344 known sites on the holding. The majority of the additional sites were small artefact scatters (198 < 10 artefacts, 15 sites > 50 artefacts and one site of 600+ artefacts associated with Nard 17 grinding grooves). The report recommends the collection of 150 sites, the salvage of 11 sites and 2 landforms by means of manual excavation and / or mechanical scrapes. The salvage works commenced in 2011 and continue to date.

3.3.1 Surveys within the ACOL Mine Lease Area

HLA Envirosiences (2001) carried out an archaeological assessment for White Mining Ltd at Camberwell for the Ashton Coal Project. Their study area included the land between Bowmans and Glennies Creeks. Vehicle and foot surveys were conducted over an 801ha area (HLA 2001:16). The survey identified twenty four archaeological sites. Twenty of the recorded sites were identified as artefacts scatters ranging from 2 to approximately 200 artefacts, with the majority containing 4-10 artefacts. Four isolated artefacts were also recorded. The majority of recorded artefact types were flakes pieces and flakes with some cores and tools, with silcrete and mudstone the dominant raw material with minor quartz and quartzite. The majority of sites were located along drainage channels, and adjacent creek flats and low ridge lines.

Witter (2002) resurveyed the area and completed a more detailed analysis. He revisited previously recorded sites and also identified an additional 18 sites, 31 isolated artefacts and 6 sets of grinding grooves. At three of the recorded sites (Waterhole, Oxbow and Glennies Creek sites) over 200 artefacts were identified. All three sites were located on high ground adjacent to a deep section of a permanent creek. There was also a close similarity in artefact type at the three sites. All three sites were noted as having a low component of micro-blade technology, and two sites also had associated grinding grooves.

Mitchell (2002) conducted a geomorphological study into Witter's survey area and this included a pit dug into a terrace within the Ashton Glennies Creek site. Of note, an artefact was exposed in the pit wall by rain wash. This artefact was 550mm below the ground surface within a buried soil profile (Mitchell 2002:22). Mitchell suggested this buried soil profile may be of an early Holocene or possibly a late Pleistocene age.

Sites dating to the Pleistocene are uncommon in the Hunter Valley and, as such, sites with any potential to provide dates of this age are deemed to be very significant.

In 2008 a Section 87 permit *was granted to Communications Planning Ltd* to allow Wonnaruah LALC *to monitor* a telecommunications trench that traversed the Bowmans Creek flat *in the northern extent of the ACOL lease*. No artefacts were found during excavation of the creek flat (S. Worth WLALC pers. com).

In December 2008 Insite Heritage surveyed the area of ACOL's proposed South East Open Cut Project, to the east of Glennies Creek and the mine lease area. The Aboriginal archaeological assessment identified 85 archaeological sites (artefact scatters and isolated finds combined) within the study area. A number of identified sites were of low significance, comprising low density open artefact scatters or isolated finds, however sites located on the terrace and slopes above Glennies Creek are of high significance within a local and regional context (Besant et al 2009).

In 2008/9 Insite Heritage also provided an assessment for ACOL's Longwall 9 project proposal. The Aboriginal archaeological assessment identified seven (7) archaeological sites (artefact scatters and isolated finds) within the longwall footprint. The identified sites were of low significance, comprised of low density open artefact scatters or isolated finds. A terrace flanking Bowmans Creek was identified as containing potential sub-surface deposits or PAD, and has been assessed as being potentially significant (Besant et al 2009a).

Throughout 2010 /11 ACOL have prepared management plans in consultation with ACOL's registered Aboriginal parties (RAP'S) and the ACCF for Longwalls 1-4, Longwalls 6-8 and the Bowmans Creek diversion project.

In 2011 Insite Heritage directed test excavations and salvage of sites on the Bowman's Creek terrace prior to the construction of a haul road and creek diversions under AHIP #1130976. The excavations resulted in a redefinition of the site boundaries of 37-3-0496 and the Bowmans Creek Terrace site. The final number of lithic items collected during the test excavations has yet to be determined. The salvage involved a process based on surface collection, followed by determination of the depth of the A soil horizon and where this exceed 200mm test probes were excavated. Where artefact densities warranted further investigation, test pits were expanded.

Grader scrapes were carried out within the area of the entire haul road and within the area of the proposed creek diversions and longwall crack zones. The western diversion cut through what was assessed and confirmed to be low lying post European terrace toward the southern end of the diversion. The majority of artefacts were located on the terrace flanking Bowman's Creek, above the apparent post European terrace flood plain.

In November 2011 a re-survey of the ACOL Longwall 1-4 area was undertaken to update the ACOL data base and the Cultural Heritage Management Plan (CHMP), and inform this Development Consent modifications. This data has been included below in section 3.7 to provide the context for the impact assessment of the proposed Goaf Gas Drainage project.

In 2012 Insite Heritage and the RAP's have been conducting salvage works in accordance with AHIP #1131017. These works are ongoing and focused on areas of predicted subsidence induced cracking likely to require rehabilitation.

3.4 Archaeological Sites within the Proposed Development Area

The archaeological sites within the ACOL lease are well known as a result of numerous field surveys, and subsurface testing work. The landscape and areas of potential are also well understood. For this project the ACOL database has been used to plot known loci and a recent survey (November 2011) has updated the site condition records. The ACOL database of archaeological sites has identified 157 sites or isolated finds within the ACOL

lease. These sites have been recorded as a result of several site surveys including HLA (2001), Witter (2002) and Insite Heritage (2008-2011). Aboriginal stakeholders, in association with Ashton Coal staff, have also surveyed areas within the project area and the results of these surveys are included in the totals. **Appendix A** contains the AHIMS search for the ACOL holding.

3.5 Landscape Context

3.5.1 Soils & Geology

The generalised geology of the Hunter Valley places the study area within the Late Permian Singleton Coal Measures and comprises coal, tuff, conglomerates, shales, fluvial and barrier sandstones (Drysdale et al, 2000:12). The main soil types are yellow Soloths on slopes with Earthy and Siliceous Sands on mid to lower slopes. Red Soloths, red Solodic Soils and Red Podzolic Soils also occur (Kovac & Lawrie 1991:254).

3.5.2 Landform & Topography

The project area is located on lands west of Glennies Creek through to Bowmans Creeks and the adjoining lands immediately west of Bowmans Creek, all south of the New England Highway. Slope gradients within the development area range between 1 - 20% with elevations ranging from 60-110m.

3.5.3 Hydrology

The landform associated with the project area is predominantly undulating merging to flood plain flats associated with Bowmans Creek to the eastern side of the project area. Surface water from the majority of the project area drains to Bowmans Creek. Small areas of the eastern side of the project area drain to the western bank of Glennie's Creek. There are generally no flats associated with the drainage of this land. The undulating landform continues to the south with the southern portions of the project area draining to the Hunter River. Similar to Glennie's creek there are no flats associated with this. The flats associated with the Hunter River in this stretch of the river are located on the opposite side of the River to the project area.

3.5.4 Land Use History

The project area is located in an area that has been extensively cleared and grazed since post European settlement. Existing farm access tracks form part of the proposed development area. The area overlays the existing Ashton underground mine.

3.6 Predictive Model of Archaeological Potential

The archaeological resource of the ACOL lease area has been well documented over a period of ten years. Artefact scatters are the predominate site type and these are located along the central ridge, on slopes and on terraces of Glennies and Bowmans Creeks and the Hunter River.

Artefact scatters are identified in the ridge context by surface expression that is aided by the thin A soil horizon. On the lower slopes and creek terraces artefact deposits are identified on the basis of elevation, which differentiates between Post European terrace deposits and older stable surfaces. Artefact scatters are known to occur above the 60m contour.

3.7 Field Data

A survey of Longwalls 1-4 and review of Longwalls 5-8 was carried out in November 2011 has provided updated site details for the ongoing management of the ACOL operations. As ACOL is an ongoing active operation, the survey had multiple purposes;

- Providing an updated data set for inclusion in internal ACOL database,
- Re-assessment of the area for the planned project Development Consent Modifications, and
- Incorporated into the Subsidence Management Plan as required by #AHIP's 1131017 & #1130976 prior to the extraction of the ULD seam.

The data gathered will be;

- included internal ACOL data base
- reported in the ACOL Annual Environmental Management Report, and
- Incorporated into updates of the Aboriginal Cultural Heritage Management Plan (ACHMP).

The following field data represents the most up to date knowledge of the archaeological resource within the Longwall 1-8 component of the ACOL lease. This data provides the context for the assessment of potential impact of the Goaf Gas Drainage project.

The Gas Bores over Longwalls 5-9 are located on land that has been subject to salvage under AHIP #1130976. Much of this land has been cleared of sites and only one of the proposed gas bores and a short section of pipeline have the potential to impact on any objects that remain extant.

3.8 Survey Details

The Longwall 1-4 re-survey was undertaken over four days (8-9 November, 20-21 November 2011). Previously recorded sites were inspected during the survey to assess their condition and to ascertain whether surface visibility had improved so as to assess the extent of the known sites and to identify any other loci in the vicinity. While the project area has been surveyed on several occasions previously, surface visibility is generally very low across most of the project area due to dense grass cover. Seasonal variation results in changes to surface visibility which may reveal previously unrecorded sites to emerge. This survey utilised a vehicle to cover broad areas with low visibility to identify areas of higher visibility and/or greater potential for sites. Areas of higher visibility or higher potential were inspected on foot. Previously recorded sites were inspected to assess their condition.

The following personnel were involved in this survey:

- Christopher Carter (Archaeologist)
- Terry Moore (Archaeologist)
- Barry French
- Brian Horton
- Shane Wilkinson
- Christine Archibald
- James Jones
- Owen Davison

The stakeholder representatives were drawn from the continuous ACOL stakeholder roster. For the purposes of this survey the project area was divided into landform units, shown in **Figure 2**. Continuity of landform can be regarded as site continuity as surface visibility rarely allows a complete picture of material belonging within a particular site. An arbitrary figure of 50m between artefacts to define a site may result in the identification of a number of sites when in fact the sub-surface spread of artefacts may be continuous. The results of Bowman's Creek test excavations display such a situation. For the purpose of this report, previously recorded sites were collated and regarded as separate loci within each landform unit but, in certain instances, were incorporated as a larger, individual site.

The survey concentrated on areas that will be impacted by the drilling of gas bores, the installation of the pipelines (both underground and surface) as well as any areas that may be disturbed to provide general access. The survey was hampered by a heavy cover of grasses and exotic weeds. Surface visibility in some paddocks was negligible. In such situations, initial survey was conducted by driving through the paddocks looking for areas that provided some ground surface visibility.



Goaf Gas Drainage Project
Indicative Goaf Gas Drainage Network

Figure 2
 Survey Landform Units

Date: 7/05/2012
 Wells Environmental Services
 Drawn: PB



3.8 Survey Results

Table 1 describes each survey unit and the area surveyed specifically for this project. Note the data does not include details from previous surveys.

Table 1 Survey Data

Unit	Landform	Unit Area ¹	Survey Area	Visibility %	Exposure % (Mean % of the survey area sufficient to reveal Aboriginal objects)	Effective Coverage Area (sq m)*	Notes
1	Ridge	Approx. 65 ha	8 ha	<20%	<10%	1600	Predominantly grassed except for public road and farm tracks. Some areas of visibility in eroded exposures and previous surface disturbance
2	Mid-Slope	Approx. 21 ha	1 ha	<20%	<50%	1000	Good visibility along fire trails and under casuarina stands
3	Slope	Approx 12 ha	1 ha	<20%	<50%	1000	Good visibility along fire trails and under casuarina stands
4	Spur	Approx. 7 ha	0.7 ha	50-90%	50-90%	2520	Good visibility along access track.
5	Drainage depression	Approx. 12 ha	1 ha	<5%	<5%	25	Very dense grass cover, visibility around dam (disturbed surface)
6	Spur slope	Approx. 8 ha	0.6 ha	<10%	<20%	120	Visibility along trails and isolated exposures around trees.
7	Drainage depression	Approx. 22 ha	0.8 ha	50-80%%	80%	3200	General low visibility due to grass cover, high visibility along creek banks.
8	Spur slope	Approx. 30 ha	1 ha	<5%	<5%	25	Low visibility away from tracks.
9	Drainage depression	Approx. 18 ha	1 ha	<25%	<10%	250	Gravel exposures across surveyed area.
10	Slope	Approx. 25 ha	1.6 ha	<50%	<10%	800	Higher areas with gravelly exposures but low archaeological visibility (disturbed)

¹ Area was calculated using NSW Department of Lands Spatial Information Exchange System
Insite Heritage Pty Ltd

Unit	Landform	Unit Area ¹	Survey Area	Visibility %	Exposure % (Mean % of the survey area sufficient to reveal Aboriginal objects)	Effective Coverage Area (sq m)*	Notes
11	River flat	Approx. 10 ha	-	-	-	-	Not surveyed (no proposed works)
12	Drainage depression	Approx. 12 ha	1 ha	<5%	<5%	25	Very low surface visibility away from road (heavy grass cover and area used for storage of mine equipment)
13	Spur	Approx. 20 ha.	1.5 ha	<20%	<10%	300	Visibility along tracks and on eroded crest. Poor elsewhere.
14	Drainage depression	Approx. 5 ha	0.2 ha	<10%	<10%	20	Very low visibility due to grass cover
15	River terrace east	Approx. 22 ha	2 ha	<10%	<50%	1000	Surveyed along tracks and around house yard. Heavy grass cover elsewhere.
16	River flat east	Approx. 18 ha	-	-	-	-	Not surveyed as very heavy grass cover and assessed as post-European deposit.
17	River terrace east	Approx. 60 ha	2 ha	<5%	<50%	500	Surveyed along tracks and eroded areas. Very heavy grass cover elsewhere
18	River flat	Approx. 10 ha	-	-	-	-	Not surveyed as very heavy grass cover and assessed as post-European deposit.
19	River terrace west	Approx. 24 ha	-	-	-	-	Not surveyed as this area contains previously excavated areas.
20	River flat	Approx. 11 ha	-	-	-	-	Not surveyed as very heavy grass cover and assessed as post-European deposit
21	Slope	Approx. 32 ha					Macquarie Generation land – all known sites have been salvaged in this area.

* (= survey unit area x visibility% x exposure %)

This survey resulted in the identification of 30 previously unrecorded loci containing artefacts. Three of these loci were included in the RS site number (i.e. RS6.1, RS 8.1 & RS26.1) resulting in 27 sites being recorded. The 30 loci included 15 isolated finds and 15 artefact scatters. Whilst these loci are new recordings many are adjacent or within previously recorded site boundaries and therefore, will be included under existing AHIMs identification numbers by means of site card amendments.

The following describes each landform, the most recent survey activity and previously recorded sites.

Unit 1

This unit contains the major landform within the project area. The ridge is aligned roughly north/south and divides the watershed between Glennies and Bowmans Creek. The ridge runs for approximately 3.5kms from the New England Highway in the north to over the confluence of Glennies Creek and the Hunter River in the south. It ranges in elevation from slightly above 100 m ASL to terminate at 80m ASL at the Hunter River floodplain. The ridge is undulating with a series of five low knolls along its spine. Plates 1 – 3 show examples of the landform within Unit 1. Some areas adjacent to the Right of Way and private roads provide the highest level of surface visibility however archaeological visibility has been reduced by grading and deposit of gravels. Surface visibility away from the road is generally very low due to vegetation.

The northern sector of the ridge has been cleared for grazing and had a heavy grass cover at the time of the survey. A few exposures occur along track lines or within erosion scalds. Previously recorded sites were re-inspected and on several occasion artefacts were not located due to regrowth (particularly saffron thistle) and reduced surface visibility.

The proposed works within this unit include the central gas drainage plant, remote flares and ventilation stack and eleven gas bores. These facilities will all be connected via the gas reticulation network.

The following recorded sites are located within Unit 1:

Ridge Peak site

GTBH1-5

EWA040-46, 76-78, 84, 85, 86

SA13.3

GCOA2

AFA40, 43, 70-82

FS1-3

PL4

Additional loci were identified within Unit 1 during this survey including:

RS18 (adjacent to EWA078)

RS19 (adjacent to EWA077)

Plate 1 EWA 85 View south east



Plate 2 EWA78 - RS18



Plate 3 EWA 46 High Spur site



Unit 2

Located to the east of Unit 1, this mid-slope area falling moderately toward the terrace above Glennies Creek and covers an area of approximately 21 hectares. It consists of mixed open woodland (Casuarina spp. and Eucalypt spp.). Visibility is high in some areas, particularly under stands of Casuarina. There are also several access tracks through this

unit which has increased surface visibility. Artefacts were located along these tracks and as a result of erosion caused by runoff following track lines.

High concentrations of artefacts occur along a rough access track that traverses the slope running from the ridge toward the creek terrace.

The following recorded sites are located within Unit 2:

EWA058-60, 62-64, 66-67, 99,100

AFA27-38

GG6

GCOA1

EWA059 was relocated along a rough track running down from the ridge line toward Glennies Creek. Sites AFA27-38 consist of a series of artefacts located along a track in the northern sector of the unit. Artefacts are spread almost continuously from the ridge line (Unit 1, EWA040) down through Unit 2 and continue into Unit 3 and the Glennies Creek site.

GCOA1 is located on a steeper, northern section of this unit. It is located within an erosion scald and numerous artefacts (>100) were noted on the surface. Recent run-off has washed artefacts down the slope.

Unit 3

This unit is a low, gentle slope above the river terrace to the west of Glennies Creek. It consists mainly of open woodland and overall surface visibility is reduced due to dense grass cover. Plates 4 – 5 show the examples of the landform within Unit 3. Surface exposures are limited to access tracks and erosion scalds. Visibility is higher under some stands of Casuarina.

High concentrations of artefacts have been recorded within this unit. The collective site name is the Glennies Creek site and consists of several loci.

The following recorded sites are located within Unit 3:

Glennies Creek site

EWA61,98, 99

AFA38, 39

GTBH6

EWA099 was relocated. It lies within a gently sloping exposure measuring approximately 20m x 20m (80% surface visibility) beneath a stand of casuarinas. More than 30 artefacts were noted although no detailed records were taken. No artefacts were located within the area recorded as EWA098 although surface visibility was good (>50%) within this area.

EWA061 was relocated in a similar locale as EWA099. Numerous artefacts were visible on the ground surface but not recorded in any detail.

No additional sites/loci were identified within Unit 3 during this survey.

Plate 4 EWA 99



Plate 5 EWA 61 (part Glennies Creek site)



Unit 4

This unit consists of a spur line running west from the southern end Unit 1 covering an area of approximately 7 hectares. The spur crest and northern slope is cleared of trees however, eucalypt woodland covers the majority of the southern slope and continues down on to the Hunter River floodplain. The toe of the spur slopes moderately to the west to abut the Bowman's Creek terrace. A private road runs east/west along the spur. A gravel pit is located toward the western end of the spur. Visibility is very low due a dense cover of grass across the higher sections. There were limited exposures along the sloping southern flank and erosion scalds along the graded shoulder of the road.

The following recorded sites are located within Unit 4:

EWA47-49

The recorded sites are located toward the eastern end of the unit.

Additional sites/loci were identified within Unit 4 during this survey including:

RS1-8

RS1-8 are spread along the spur over a distance of 175m.

Unit 5

This unit contains a gently sloping drainage depression. A dam has been constructed in the mid-section of the unit. Visibility was very low across most of the unit due to heavy grass cover. This unit was driven over in order to locate exposures. Plates 6 – 7 show the landform within Unit 5. There were some surface exposures adjacent to the dam however these did not yield any artefacts.

The sites EWA050, EWA051 and LW5.3 were previously recorded within this unit, within the western limits close to its boundary with Unit 17. These sites were not able to be relocated due to very low surface visibility. Two artefacts (RS9) were located in the vicinity of these sites. RS9 was located within an exposure (20m x .5m) adjacent to a contour bank.

Plate 6 Location of EWA 51



Plate 7 Location RS9



Unit 6

This unit consists of a gently sloping spur falling to the west from the ridge of Unit 1. Surface visibility across this unit is very low due to heavy grass cover.

No sites have been previously recorded within this unit and no artefacts were located during this survey.

Unit 7

This unit is a broad gently sloping drainage depression with a first order watercourse. The unit has been cleared of most of trees and has a heavy grass cover. The lower area of the unit, where it abuts Unit 17, is near level and the watercourse currently holds water in a series of ponds.

The site EWA057 was located in the vicinity of these ponds and the site consists of several loci each containing an isolated find. The previously identified loci were not located during this survey however eleven artefacts (RS11-15) were located in exposures adjacent to the banks along 125m of this watercourse. An isolated artefact (RS27) was located further upstream close the bank. Surface visibility within this unit was generally very low due to grass cover. Artefacts were located spread across a broad area of exposures adjacent to the lower sections of the watercourse. Plate 8 shows the landform within Unit 7 at RS11.

Plate 8 RS 11 view to the northwest



Unit 8

This unit is a broad spur slope covering an area of approximately 30 hectares. The area is generally cleared of trees however there are some eucalypts scattered across the mid and upper sections of the unit. One artefact scatter (EWA056) was previously recorded in an exposure along a stock track. This site could not be relocated due to heavy grass and no others sites or artefacts were located within this unit.

Unit 9

This unit contains a gently sloping drainage depression covering an area of approximately 18 hectares. A farm dam has been constructed in the upper sector and another in the central sector of the unit, prior to ACOL's ownership of the land. Surface visibility is generally very low with some limited exposures around the dams and along the watercourse channels. Plate 9 show the landform within Unit 9. One site (SA13.1) was previously recorded in a gravelly exposure to the north of a dam in the upper part of this unit. An artefact scatter (RS17) was located in this area during this survey. While the GPS coordinates differ, it is likely that these two loci are from the same site.

Plate 9 Vicinity of SA13.1 note natural *Casuarina* regeneration, facilitated by ACOL's land use practices implemented to enhance natural ecosystem regeneration.



Unit 10

This unit is a broad slope to the west of the ridge line (Unit 1). No sites have been previously recorded within this unit. This unit has been historically cleared of trees. A sequence of aerial photos shows that improved land use practices implemented to enhance regeneration of natural ecosystems has resulted in a stand of trees (*Casuarina*) across the central section of the unit. A large proportion of this unit has been ripped to remediate subsidence cracking. Surface visibility was generally low due to grass cover.

Two sites were located during this survey. One site (RS22) contained six artefacts located in gravelly exposures. Another site (RS23) contains 23 artefacts eroding out of an exposure of 2 sqm.

Unit 11

This unit is located on a river flat adjacent to an oxbow loop in Bowman's Creek. The unit contains the Oxbow site that is considered a site of high significance. The Goaf Gas drainage project does not involve this unit.

Unit 12

This unit consists of a drainage depression and covers approximately 12 hectares. An isolated find (EWA086) was previously recorded in the upper sector of this unit but could not be relocated. Surface visibility is very low and no other sites were located during this survey.

Unit 13

This unit contains a broad spur slope to the west of a dominant ridge (Unit 1). This unit covers approximately 20 hectares. This unit has been cleared of trees. Surface visibility is generally low due to the dense grass cover. Plate 10 shows the landform within Unit 13 / EWA93. There have been a number of sites recorded within in this unit. AFA 115-6 and EWA091 are located on an access track running along the crest of the spur. An isolated find (EWA083) was recorded within a gravelly exposure on a knoll in the central sector of the unit and two AFA's (113 & 114 located on a track on the ridge crest. Two artefact scatters were located, the first (RS24) was located to the east of EWA083 and RS 20 in 3 exposures were located adjacent to AFA's 113-114.

Plate 10 EWA 93 Ashton Homestead Site view to the west



Unit 14

This unit consists of a side slope to the north of unit 13, toward New England Highway and covers approximately 5 hectares. An access track runs along the length of the unit parallel to the highway. This unit has a heavy grass cover away from the track. EWA96 was relocated on the track. No new sites were identified during this survey.

Unit 15

This unit lies on a river terrace above the Bowman's Creek floodplain. It is bordered to the east by a private right of way running south from the New England Highway to access

properties located within and beyond the project area. It covers an area of approximately 22 hectares.

Several previously recorded sites are located within this unit including the Waterhole site that comprises grinding grooves and artefact scatters (EWA019,28). These sites cluster in the northern sector of the unit immediately to the south of the highway. Several artefacts scatters were recorded in the central sector (AFA52-55) to the west of the Ashton Homestead site (AFA55 has been salvaged). AFA21-24 were recorded adjacent to the house these have been previously salvaged in accordance with AHIP 1131017. EWA090 is located on a track in the southern sector in the vicinity of the boundary with Unit 11 (Oxbow site).

Surface visibility within this unit away from the public road and access tracks is very low due to heavy grass cover. One artefact scatter (RS21) was located during this survey. Three artefacts were located on a track located in the central eastern sector of the unit where it adjoins Unit 13.

Unit 16

This unit is located on a river flat in a flood prone area. It covers an area of approximately 18 hectares. No sites were previously recorded within this unit and nothing was located during this survey. Despite very low surface visibility, no sites were anticipated within this unit as the soils consist of post-European deposit and the entire area is flood prone.

Unit 17

This unit consists of a river terrace running along the eastern flank of Bowman's Creek. It is bordered to the north by an oxbow loop and the Hunter River to the south (beyond the project area). Surface visibility across the majority of the unit is very low. This area has been pasture improved and remains in use for grazing stock. Surface exposures are restricted to tracks and areas disturbed by stock or construction works. Plates 11 – 13 show the landform within Unit 17.

Several sites were previously recorded within this unit. A broad scatter of artefacts was recorded in exposures in the central sector of this unit (AFA25-26, 59-61, LW7.1) with another cluster to the south (AFA45-47). Other artefacts were located broadly across the unit (AFA48-51, EWA097, LWA2.1, LW5.1, LW6).

An artefact scatter with several separate loci was located during this survey (RS25-27). One large flake that appears to have been utilised as a hatchet was located in RS25. RS26 contained at least 26 artefacts spread along 200m of track.

Similar landforms on the opposite bank of Bowman's Creek (Unit 19) have shown the potential for archaeological sites to be found in areas of little surface exposure above the 60m contour. There is good potential for further sites to be located within this unit particularly on the terrace above the 60-61m contour.

Plate 11 Possible hatchet RS25



Plate 12 RS26 view south



Plate 13 AFA51 view south east



Units 18 – 21 were not surveyed as they have been subject to extensive salvage works during September to December 2011 in accordance with AHIP #1130976. The archaeological resource in this area is well known.

Unit 18

This unit is located on a river flat in a flood prone area and covers an area of approximately 10 hectares. This landform unit was tested with probes and subject to grader scrapes in 2011 in accordance with AHIP #1130976 and no sites were located which was consistent with the assessment of the area as low in archaeological potential due to post-European deposits.

Unit 19

This unit contains a sloping river terrace above the west bank of Bowman's Creek. It covers an area of approximately 24 hectares. A number of sites were previously recorded within this unit including the Brunkers Lane site, The known loci of material at EWA080, 81 & 89, LW 4.1, 4.2, 4-3, 4-4, & 5-2 and AFA's 56 & 57 were collected and salvaged according to the methodology prescribed in AHIP # 1130976.

In 2002 an area of potential Pleistocene PAD associated with the Brunkers Lane site was recorded within this unit. The PAD is located in the northern sector of the unit. In October 2011 test and salvage excavations within the PAD resulted in downgrading the site to an eroded Pleistocene landform overlain with Holocene deposits and artefacts representative of the Holocene period were salvaged.

Unit 20

This unit is located on a river flat within an oxbow loop in a flood prone area. It covers an area of approximately 11 hectares. No sites were previously recorded within this unit and no in-situ artefacts were found during the monitoring of the Bowmans Creek diversion. No in-

situ objects will occur in this unit as the terrace in this landform consist of post-European deposit.

Unit 21

This unit is located within Macquarie Generation land and has been subject to extensive salvage works by Umwelt in 2011 and Insite Heritage in 2011, and no further archaeological works are required.

Table 2 details the additional sites recorded during this survey.

Table 2 Location of newly identified loci/sites

Site No.	Easting	Northing	Landform	Site Type	Artefacts	Site Details
RS1	318146	6403870	Spur Unit 4	AS	2 MS ² flakes	Steep slope above Hunter, 10x10 exposure, poor SV elsewhere
RS2	318171	6403867	Spur Unit 4	AS	1 silcrete flake 1 MS flake	Level area, heavy grass cover, slight cracking, 10%SV
RS3	318114	6403904	Spur	IF	1 MS flake	Adjacent gravel pit, gentle slope,
RS4	318362	6403773	Spur	IF	1 FGS ³ flake	On edge of track 6 x .5 exp, 50% SV
RS5	318340	6403841	Spur	IF	1 silcrete flake	3x1 exp. 50% SV, near road
RS6	318331	6403850	Spur	AS	5 MS flakes	50x.5 exp along edge of road, 75%SV
RS6.1	318350	6403843	Spur	AS	2 MS flakes	50x.5exp along edge of road, 75%SV
RS7	318400	6403819	Spur	IF	1 MS flake	On edge of road, nil SV away from road
RS8	318428	6403826	Spur	IF	1 silcrete flake	On track, 10x1 exp, 50%SV, nil SV away from track
RS8.1	318429	6403852	Spur	AS	1 MS flake 1 silcrete flake	On track, 10x1 exp, 50%SV, nil SV away from track
RS9	318116	6404069	Drainage depression	AS	2 MS flakes	On ant's nest near contour bank, 20x.5 exp, 75%SV
RS10	318605	6403816	Ridge	IF	1 silcrete flake	Level area, disturbed (gravel pit), 20x5 exp, 75%SV, low AV
RS11	318247	6404441	Drainage depression	IF	1 silcrete flake	level area, 5x2 exp, 50%SV, major cracking nearby >300mm
RS12	318174	6404441	Drainage depression	AS	2 MS flakes	level area, 3x3 exp, 80%SV, 5m from channel
RS13	318302	6404469	Drainage depression	AS	2 MF flakes	Nth bank, 5x5 exp, 75%SV, 3m from channel
RS14	318327	6404487	Drainage depression	AS	3 MS flakes 1 silcrete flake	Nth bank, 10x10exp, 75% SV, 5m from channel, sub-surface potential
RS15	318360	6404473	Drainage depression	IF	1 MS flake	Nth bank, 20x3 exp, 50% SV
RS16	319046	6404912	Slope	IF	1 silcrete flake	Gentle slope above dam, ironstone gravel background, 5x2 exp 50%SV
RS17	319068	6404868	Drainage depression	AS	2 MS flakes	Above dam, 10x2 exp, 75%SV
RS18	319203	6404963	Ridge	IF	1 silcrete flake	Near level, 20x10 exp. <50% SV
RS19	319210	6405044	Ridge	IF	1 MS core	Near tack
RS20	318946	6405860	Spur	AS	2 MS flakes 1 silcrete flake	50m diam exp on top of knoll, varied SV20-75%, gravel background
RS21	318496	6406064	Spur slope	AS	3 MS flakes	On road junction, large exposure, high SV

² MS = mudstone

³ FGS – fine grained siliceous

Site No.	Easting	Northing	Landform	Site Type	Artefacts	Site Details
RS22	318965	6405360	Spur	AS	5 MS flakes 1 MS core	Gravelly exp 20x20, 50%SV, ripped for cracking remediation
RS23	318845	6405100	Spur slope	AS	8 MS flakes 1 MS core 14 silcrete flakes	Cluster coming out of edge of road cut, eroding, sub-surface potential
RS24	318833	6406055	Knoll	IF	1 silcrete flake	Disturbed area, 10x5 exp 75% SV
RS25	317895	6403950	Terrace	IF	1 silcrete flake	Base of slope, very low SV. Large flake utilised as a hatchet.
RS26	317886	6404015	Terrace	AS	21 MS flakes 2 MS cores 1 silcrete flake 1 silcrete core 1 chert flake	On farm track, 200x2 exp, 50% SV
RS26.1	317847	6404052	Terrace	IF	1 MS flake	Track to gas well leading from farm track, 100x2 exp, 75% SV
RS27	318409	6404454	Creek bank	IF	1 MS core	Eroded gully, at head of stream, isolated waterholes

*MS - Mudstone

*FGS - Fine Grained Siliceous

3.9 Scientific Values & Significance Assessment

3.9.1 Significance Criteria

The basic processes of assessing significance for items of heritage are outlined by The Australian ICOMOS Charter for the Conservation of Places of Cultural Significance: the Burra Charter (amended 1999) and its associated Guidelines. Sites may be significant according to several criteria, including scientific or archaeological significance, significance to Aboriginal people, aesthetic value, the degree to which a site is representative of archaeological and/or cultural type, and value as an educational resource. In New South Wales the nature of significance relates to historic, aesthetic, social, scientific, cultural or educational criteria and sites are also assessed on the degree to which they exhibit rare or representative characteristics of their type, or whether they exhibit historic or cultural connections.

Scientific Significance

In order to determine scientific significance it is necessary to first place sites within a local and regional context. This process enables the assessment of any individual site in terms of merit against other sites of similar nature within similar contexts.

Public Significance

The sites are assessed in terms of their educational value, to enhance community knowledge and appreciation of cultural heritage.

Cultural Significance

Generally, all sites are of significance to the Aboriginal people. Cultural significance can only be determined by Aboriginal people. The registered Aboriginal parties for the project will determine the cultural significance of the identified sites.

Representative Significance

Site significance is rated low, medium and high. The significance of individual sites is determined by factors such as representativeness, rarity, and the sites potential to add scientific data to what is known about past human occupation of the Australian continent. Conservation outcomes are determined by comparison of a site's qualities with known sites in the region that have been protected.

3.9.2 Scientific Significance Assessment

Artefact scatters and isolated finds are one of the most common site types identified in the Hunter Valley. **Table 3** contains an assessment of the sites located within the project area (this includes previous and newly recorded sites):

Table 3 Site scientific significance ranking

Sites	Significance
Glennies Creek site (37-3-0541), Waterhole site (37-3-0500), Oxbow site (37-3-0006, 37-3-0511, 37-3-0501, 37-3-0502, 37-3-0503), GG1-6, GTBH1-5, EWA019, 28-36,40-45, 60-70, 84, 98, 99, GCOA2, AFA43, 70-82, FS1-4, PL4, RS10,18,19, 27, EWA060, 62-68,99,100, AFA27-38, GG6, GCOA1 EWA061, 98,99, AFA39, GTBH6	High
Ridge Peak site (37-3-0533), High spur site (37-3-0536), 37-3-0516, 37-3-548, 37-3-551, 37-3-564, 37-3- GTBH1-5, EWA040-50, 57, 60, 69,70,76-78, 84-87, 93, 99,100, GCOA2, AFA43, 70-82, FS1-4, PL4, AFA25-38, 45-50, 58-61, GCOA1, RS10-14, 18, 19 22, 23, 25-27, LWA2-1, 5-1,	Moderate
Brunkers Lane site (37-3-0496), 37-3-0515, EWA 51, 56, 79, 83, 91, 96 LWA5-3, AFA52-55, GCOA2, 3, FS5-8, RS16, 17, 19, 21, 24	Low

3.9.3 Cultural Significance Assessment

The cultural significance of the sites on the ACOL lease have been described as high by the stakeholders in the course of ongoing consultation and the development of management plans. On a site specific scale, higher cultural significance is placed on the Waterhole, Oxbow and Glennies Creek sites. These are identified as being of very high significance because of their locale's and the complexity of the sites both of which include grinding grooves.

The ACOL ACCF has nominated a working group to have direct input into the development of the analysis / interpretation focus of sites as they are salvaged over the ACOL lease. This input has resulted in focusing the analysis toward the interpretation of cultural aspects of the sites which consider Aboriginal occupation / activities across the landscape, rather than the technological aspects of artefact manufacture.

4. Impacts

The goaf gas drainage project encompasses an area of 12.7 ha, from which a maximum of 80 gas bore locations will be selected. The project will result in an actual surface disturbance of up to 10.9 ha, from:

- 80 (25m x 15m) gas bore pads: 3 ha
- Pipeline (5m corridor): 7.7 ha
- Central Gas Plant: 0.2 ha

The gas pipeline that connects the gas bores over the Longwalls 6B, 7B, 8 & 9 underlies the Waterhole Site. This pipeline will be inserted into a hole that will be bored down to the existing underground main gate on the western side of Bowmans Creek and the pipeline run through the main gate and resurface at Dairy Lane south east of the boundary of the Waterhole Site. Therefore, the Waterhole Site will not be impacted by the project.

The gas bores over Longwalls 1-5, 6A & 7A may impact on site loci (parts of larger sites). As the works require excavation works and or the establishment of small compounds, it would be a requirement that Aboriginal objects are salvaged in accordance with the existing AHIP's prior to impact.

The following impact assessment takes recorded sites into account but also includes areas where loci have not been recorded but where the landform unit is known to be likely to contain sub surface objects.

As the gas bores are located to avoid the crack zone of the underground workings it is unlikely that salvage works would have been conducted prior to gas bore construction. The connective pipeline route will have been cleared where this lies on the crack zone of Longwall 1, 7B and 8, and areas of existing infrastructure as they are the main location of salvage works to date.

Unit 1

Along with 11 gas bores, the proposed pipeline route passes along the entire length of the ridge within this unit. Where the pipeline is laid on the ground surface, impact will be minimal apart from traffic during installation and maintenance.

The proposed route passes through areas with loci of high site densities. Previous salvage works in this area has shown negligible potential for sub-surface deposit due to the shallow character of the A soil horizon. Excavation for an underground pipeline will impact on surface objects which would require mitigation as per the methodology in the AHIP1131017.

Unit 2

Impact will be restricted within this unit. A pipeline and two gas bores are proposed for the southern end of the unit in the vicinity of EWA060. One gas well is planned to be installed toward northern end of the unit. A number of sites (AFA27-38) of moderate significance are located adjacent to the zone of impact. These areas can be managed in accordance with the AHIP 1131017.

Unit 3

The goaf gas bore project footprint does not continue into this survey unit, therefore there will be no impact in this area.

Unit 4

The installation of a short length of pipeline will result in minimal impact within this unit although the proposed route will pass in close proximity to a recorded site (RS8) and adjacent to the High Spur site (moderate significance). The two gas bore locations will require the salvage of EWA 47 & 48 in accordance with AHIP 1131017.

Unit 5

Impact will be limited to the western portion of this unit. Two gas bores and short length of pipeline are proposed. Three isolated finds and one artefact scatter are located within this unit (EWA50-51, LW5.3 and RS9). EWA051 and RS9 are located in the proximity to proposed works.

Artefacts from these sites were located in areas with very low surface visibility due to dense grass cover. It is highly likely that more artefacts are located in the vicinity of the recorded sites and these should be managed in accordance with the AHIP methodology.

Unit 6

A pipeline is planned to run the entire length of this unit along the spur crest. No sites have been identified within this unit however there is potential for sites to be located along the crest of the spur. There is also moderate potential for sites to be located on the lower slopes of this unit where it abuts Unit 17.

Unit 7

Impact will be limited within this unit. A gas well and short length of pipeline are proposed at both the western and eastern area of the unit. Two isolated finds (GCOA2-3) are located toward the eastern end of the unit and in the vicinity of a proposed gas well and pipeline. This area has been heavily disturbed by past activities including the construction of a dam and contour banks.

A site with a series of loci spread along a watercourse of moderate significance (EWA57, RS11-15, 27) is located in the central western area of the unit. The recorded sites within this unit are outside of the area that will be impacted by the construction of a gas well and pipeline. However, EWA052 is located in Unit 17 to the west of EWA57 and the proposed pipeline passes between these two sites. The area to the west of the sites contains a heavy cover of grass. While no sites have been located in that specific area, there is potential for artefacts to be in this area.

Unit 8

Impact will be limited to the northern flank of this unit where a pipeline will be laid. A gas well will be installed in the central section. One isolated find (EWA056) was recorded toward the eastern end of the unit. Impact will be minimal to known sites however there is some potential for sites to be located along the crest of the spur.

Unit 9

A pipeline is planned to run across this unit along the slopes of the depression. This pipeline will pass through the site SA13.1/RS17 and will impact on this site depending on the amount of sub-surface works required.

Unit 10

Impact will be limited within this unit to the installation of four gas bores and pipeline. A site of moderate significance (RS23) is located within this unit but is not in the vicinity of any proposed works. An artefact scatter (RS22) is located within this unit and is in the vicinity of the proposed pipeline and gas well and may be impacted during construction.

Unit 11

This unit contains the Oxbow site which has been assessed as being of high significance. No gas drainage works are proposed to be located within this unit.

Unit 12

Impact will be limited within this unit to the installation of four gas bores and pipeline. No recorded sites are contained within this unit, however the western border of this unit abuts the Oxbow. A proposed pipeline skirts the Oxbow site and may impact on unidentified artefacts that extend beyond the known boundaries of the site.

Unit 13

There are several recorded sites in this unit (Ashton Homestead site, FS5-8, EWA09, 79, 83, 91) Six gas bores and connecting pipelines are proposed for this unit. Impact will be limited as proposed pipelines within this unit are temporary and surface based.

The western pipeline passes through the Ashton Homestead site and works may impact the site. The pipeline route passes in the vicinity of FS5-6 and may impact upon it. The gas bore and pipeline in the central area of the unit are located in the vicinity of EWA091 and may impact on the site.

Unit 14

There are no works proposed within this unit.

Unit 15

The proposed works include one gas bore and 100m of pipeline. Several sites are recorded in this unit (Waterhole site, EWA019,28,90, AFA21-24,52-55, GG1,3,4). The Waterhole site is of high significance. This site is located near the northern boundary of the unit adjacent to the New England Highway. The pipeline in this area has been designed to ensure no impacts occur to the site.

A pipeline is proposed to pass through the southern sector of the unit. The pipeline will pass in the vicinity of EWA090 and is relatively close to the Oxbow site in Unit 11. There is moderate potential to impact on previously unrecorded sites within this particular area.

Unit 16

Proposed works within this unit include two gas bores and pipeline. No sites are known within this unit and the potential to impact on unknown sites is low as the soils of this low-lying area are predominantly made up of post-European deposit.

Unit 17

The impact within this unit has the potential to be considerable. The proposed gas bores and pipeline pass through areas containing a number of sites (EWA052, EWA097, AFA25-27, 44-47, 59-61, LW5.1, LW6, 5-1,6-1,7-1). Surface visibility is generally low across the unit and known sites are scattered. Based on the predictive model and previous experience within the study area, there is high potential for sub surface objects and salvage of the areas of impact should be carried out in accordance with the AHIP.

Unit 18

There are no works proposed within this unit.

Unit 19

There are seven gas bores and 1km of pipeline proposed for this unit. This unit contains several recorded sites (Brunkers Lane site, EWA080, 81, BCT site that includes LWA4-1, 4-2,4-3,4-4,5-2, AFA57-58). Much of this unit has been subject to archaeological salvage in 2011. The southern gas bore is located within the BCT site the impact of which is minor and can be managed according to AHIP 1130976. A few metres of pipeline abuts the Brunkers Lane site (37-3-0496) and will have minimal impact.

Unit 20

Proposed works within this unit include 500m of pipeline. No sites are known within this unit and the potential to impact on unknown sites is low as the soils of this low-lying area are predominantly made up of post-European deposit.

Unit 21

Eight gas bores and 500m of pipeline are proposed for this unit. The known archaeological sites within this unit were salvaged in 2011. There is negligible potential for impacts in the unit.

Table 4 below summarises the assessed impacts to Archaeological sites from the proposal, it is noted all sites identified as being impacted will be salvaged in accordance with the existing AHIP's.

Table 4 Impact assessment summary

Unit	Work within Unit ⁴	Sites Located within Unit	Impact	Degree of impact	Consequence of impact
1	11 gas bores 2kms pipeline	Ridge Peak site, High spur site, GTBH1-5, EWA040-45, 069,70,76-78,84-86 GCOA2, AFA43, 70-82, FS1-4, PL4, RS10,18,19	Direct	Major	Potential total loss of value to sites. Minor impact Ridge Peak site. Salvage of EWA44 &46
2	2 gas bores 200m pipeline	Glennies Creek site, EWA060, 62-64,66,67,100, AFA27-38, GG6, GCOA1	Direct	Partial	No impact on Glennies Ck site. Salvage of EWA 60, partial salvage high ridge spur site.
3	50m pipeline	Glennies Creek site, EWA061, 98,99, AFA39, GTBH6	Nil	N/A	Glennies creek site avoided.
4	1 gas well 800m pipeline	High spur site, EWA046-49, RS1-8	Direct	Partial	Salvage of EWA 47,& 48
5	2 gas bores 200m pipeline	EWA050-051, LW5.3, RS9	Direct	Partial	Salvage of EWA 51
6	4 gas bores 750m pipeline	-	Direct	Minor	Limited loss of value
7	3 gas bores 250m pipeline	EWA57,RS11-15, 27, GCOA2, 3	Direct	Partial	Salvage of pipeline route
8	4 gas bores 250m pipeline	EWA56	Direct	Partial	No impact on recorded loci – may impact in unrecorded subsurface objects

⁴ This is an estimate only, based on a small scale map without precise locations.

Unit	Work within Unit ⁴	Sites Located within Unit	Impact	Degree of impact	Consequence of impact
9	6 gas bores 600m pipeline	SA13.1,RS17	Direct	Minor	Limited loss of value
10	4 gas bores 400m pipeline	RS 22,23	Direct	Partial/ Moderate	Partial/moderate loss of value
11	Nil	Oxbow site	NA		No impact
12	2 gas bores 700m pipeline Remote flares Ventilation stack	EWA086	Direct	Partial	Limited loss of value
13	6 gas bores 500m pipeline	Ashton Homestead site, FS5-8, EWA09,79,83,91,93, RS20	Direct	Partial to moderate	Partial to moderate loss of value
14	Nil	EWA096	NA		Works adjacent to existing road – no known arch potential
15	1 gas bore 200m pipeline	Waterhole site, EWA019, 28, AFA21-24,52-55, RS21	Nil Nil	N/A	No impact Pipeline will be within underground main gate. Gasbore/pipeline avoids these loci
16	4 gas bores 500m pipeline	-No sites – post European creek terrace On isolated find not in-situ has been collected.	Direct	N/A	NA
17	14 gas bores 2km pipeline	EWA097, AFA25-27,52,59-61,44-47,50,51, LW5.1, LWA2-1,5-1,6-1,7-1, RS25-27	Direct	Partial	Partial impact to sub surface objects between loci.
18	Nil	No sites – recent terrace	NA		
19	7 gas bores 1km pipeline	Brunkers Lane site, EWA's 080,81 have been salvaged. BCT site includes LWA4-1,4-2,4-3,4-4,5-2, AFA57-58	Direct	Partial	Minor pipeline impact on the Brunkers lane site, minor impact on the BCT site adjacent to the existing gasbore 15.
20	500m pipeline	-No sites – area of negligible arch potential – recent terrace	Direct	NA	NA
21	8 gas bores 500m pipeline	All previously known sites in this survey unit have been salvaged by Ravensworth and ACOL 2011	NA	Nil	No impact

5. Management & Monitoring

5.1 Review of Existing Measures

The management of archaeological sites within the ACP is undertaken as per the ACOL Archaeology and Cultural Heritage Management Plan (ACHMP), which specifically includes the requirements of ACOL's AHIP's. The ACHMP includes protocols for new works which initially involves avoiding known locations of sites followed by site inspection and archaeological investigation to assess the impacts of the proposed development.

On 23 December 2011, AHIP #1131017 was granted to ACOL over an area encompassing Longwalls 1 to 4. An AHIP for Longwalls 5-8 was issued on the 26th August 2011 #1130976. Both include conditions relating to the management of Aboriginal objects within each of the respective permit areas which together encompass the project area associated with this modification. Some salvage works for the purpose of the ongoing underground operations have already been carried out within the project area in accordance with AHIP's 1131017 and 1130976. Some of these salvage areas are coincident with areas anticipated to be impacted by the project associated with this modification.

Similarly the mitigation measures that will be implemented prior to construction of the Goaf Gas Project will be consistent with the conditions of AHIP #1131017 and AHIP #1130976.

The permits allow for activities that are required for the safe ongoing operation of the mine.

The Longwall 5-8 AHIP 1130976 (Section D) includes '*gas bores and other activities and establishment of infrastructure to provide for the safe ongoing operation of the mine, such as but not limited to, dewatering facilities, ventilation, and geological investigations.*

The Longwall 1-4 AHIP 1131017, (Section D Proposed Works), allows '*activities and establishment of infrastructure to provide for the safe ongoing operation of the mine*'.

5.2 Recommendations for Additional Measures

- Where works are within close proximity to known sites yet do not require the known site to be impacted, the objects will be left in-situ and highly visible perimeter barricades should be placed around the known objects to avoid unintentional impacts during construction and operation.
- All areas of impact that have not already been salvaged in accordance with the methodologies detailed in AHIP #1131017 or 1130976 should be inspected and assessed in accordance with the methodology prescribed in the relevant AHIP.
- Where possible, gas bores should be located as far from known sites as the operational plan allows.
- Pipelines should be laid within previously disturbed areas wherever possible (eg along road verges, adjacent to tracks or along fence lines).
- Wherever possible, access should be via existing tracks.

5.3 Recommendations for Specific Action

Note – these specific actions may vary by the time of project approval in consideration of salvage works that may have been carried out during the project approval process.

Unit 1

Once the route of the pipeline has been marked and prior to works commencing, the route should be assessed to determine where salvage works have already been undertaken in accordance with the methodologies in AHIP #1131017. Areas where salvage has not been previously undertaken should be inspected and any artefacts that will be impacted are to be collected in accordance with the AHIP 1131017 methodology.

Unit 2

A number of sites of moderate significance (AFA27-38) are located adjacent to the zone of impact. Assessment as per the AHIP methodology is recommended.

Unit 3

An extensive site of high significance (Glennies Creek site) is located within this unit.

Unit 4

The proposed pipeline route may pass in close proximity to the site RS8. Test excavations in accordance with the AHIP for this area are recommended prior to any works commencing within 50m of this site.

Unit 5

Sites EWA051 and RS9 are located in the proximity of proposed works. Test excavations as per AHIP methodology are recommended prior to any works commencing within 50m of these sites.

Unit 6

A pipeline is planned to run the entire length of this unit along the spur crest. No sites have been identified within this unit however there is some potential for sites to be located along the crest of the spur. The AHIP methodology should be applied to areas of impact within this unit.

Unit 7

Impact will be limited within this unit. The sites GCOA2-3 are located toward the eastern end of the unit and in the vicinity of a proposed gas well and pipeline.

A site with a series of loci spread along a watercourse of moderate significance (EWA57, RS11-15, 27) is located in the central western area of the unit.

The AHIP methodology should be applied to works in this survey unit.

Unit 8

No sites have been identified as being impacted within this unit however there may be potential for unknown sites to be located along the general route. Inspection and where required salvage in accordance with the AHIP is to be applied to this area.

Unit 9

The proposed pipeline will pass through the site SA13.1/RS17. Salvage as per AHIP methodology is recommended.

Unit 10

No sites have been identified as being impacted within this unit however there may be potential for unknown sites to be located along the general route. Inspection and where required salvage in accordance with the AHIP is to be applied to this area.

Unit 11

Works are not required in this unit and it should be avoided.

Unit 12

No sites have been identified as being impacted within this unit however there may be potential for unknown sites to be located along the general route. Inspection and where required salvage in accordance with the AHIP is to be applied to this area.

Unit 13

The western pipeline passes through the Ashton Homestead site. Salvage excavations in accordance with the AHIP are recommended for this site.

The pipeline passes in the vicinity of FS5-6 and EWA091. Test in accordance with the AHIP excavations are recommended prior to any works commencing within 50m of these sites.

Unit 14

There are no works proposed within this unit.

Unit 15

The pipeline will pass in the vicinity of EWA090 and is relatively close to the Oxbow site in Unit 11. Test excavations in accordance with the AHIP are recommended prior to any works commencing within 50m of these sites.

Unit 16

No works required in this unit.

Unit 17

The proposed gas bores and pipeline pass through areas containing a number of sites (EWA052, EWA097, AFA25-27,44-47, 59-61, LW5.1, LW6, 5-1,6-1,7-1). Test excavations are recommended in accordance with the AHIP prior to any works commencing within 50m of these sites.

Unit 18

There are no works proposed within this unit.

Unit 19

This unit contains several recorded sites (Brunkers Lane site, EWA080,81, LWA4-1,4-2,4-3,4-4,5-2, AFA57-58). Extensive salvage excavations have been carried out within this unit. The works are adjacent to the remnants of the Brunkers Lane site and this location should be checked on the ground prior to construction. The southern gas bore is located in the BCT site and may require some salvage works in accordance with AHIP 1130976 prior to construction.

Unit 20

No archaeological works are required in this unit.

Unit 21

No archaeological work is required in this unit as all sites have been salvaged.

6. Conclusions

The Goaf Gas Project is consistent with activities permitted under the existing AHIP #1130976 and AHIP #1131017.

The footprint of the Goaf Gas Project on the western side of Bowmans Creek will have a very minor impact on the north-west margin of the of the Bowmans Creek Terrace (BCT) site. This impact can be mitigated by implementation of the methodology approved in the AHIP #1130976. The works also avoid the Brunkers Lane site and this site has been extensively salvaged and no additional impact is likely to occur.

The area of the Goaf Gas project to the east of Bowmans Creek is an approved activity under the existing ACOL AHIP #1131017 and AHIP #1130976. The AHIP prescribes the methodology to be employed for the purpose of mitigation of harm, in addition to allowing harm.

The project will require the salvage of archaeological and cultural resources within the project area east of Bowmans Creek. The salvage process will be progressive as the Goaf Gas Project is implemented.

The salvage of objects will be carried out in accordance with the AHIP methodology associated with the respective area.

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	2004	<i>Aboriginal Archaeological Assessment – Glendell Open Cut Mine Project</i> , report to Glendell Joint Venture
	2010	<i>Ravensworth Operations Environmental Assessment Volume 5 Appendix 11A</i> . Report to Ravensworth Operations
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		<i>Camberwell 9133-III-S 1:25 000 Topographic Map</i> . Central Mapping Authority of NSW.

Appendix A – AHIMS search



SiteID	SiteName	Datum	Zone	Easting	Northing	Context	SiteFeatures	SiteTypes	Reports
37-3-0515	ASH19 Contact	AGD	56	318063	6403714	Open site	Artefact		
		Recorders	Ms. Vanessa Hardy					Permits	
37-3-0533	Ashton Ridge Peak site Contact	AGD	56	318933	6404325	Open site	Artefact		98163
		Recorders	Dan Witter					Permits	2783
37-3-0540	Ashton Glennies Bluff Site Contact	AGD	56	319059	6404050	Open site	Artefact		98163
		Recorders	Dan Witter					Permits	
37-3-0544	Ashton EWA 50 Contact	AGD	56	317813	6404021	Open site	Artefact		98162
		Recorders	Dan Witter					Permits	
37-3-0552	Ashton EWA 70 Contact	AGD	56	319141	6404775	Open site	Artefact		98163
		Recorders	Dan Witter					Permits	
37-3-0554	Ashton EWA 78 Contact	AGD	56	319111	6404804	Open site	Artefact		98163
		Recorders	Dan Witter					Permits	
37-3-0799	LW2.1 Contact	GDA	56	317450	6404979	Open site	Artefact		101733
		Recorders	Insite Heritage Pty Ltd					Permits	
37-3-0808	SA8/1, SA8/5-SA8/9, SA9/1-SA9/2 Contact	GDA	56	319795	6403149	Open site	Artefact		101747
		Recorders	Mrs. Angela Besant					Permits	
37-3-0810	SA1/8-SA1/11, SA4/2, SA11/1-SA11/6 Contact	GDA	56	319710	6404240	Open site	Artefact,Potential Archaeological Deposit (PAD)		101747
		Recorders	Mrs. Angela Besant					Permits	
37-3-0817	Narama Extended 4 Contact	GDA	56	316274	6404978	Open site	Artefact		101826
		Recorders	Meaghan Russell					Permits	3339
37-3-0827	Narama Extended 14 Contact	GDA	56	316214	6404893	Open site	Artefact		101826
		Recorders	Meaghan Russell					Permits	3339
37-3-1146	AFA50 Contact	GDA	56	317969	6404680	Open site	Artefact		102139
		Recorders	Ashton Coal Operations Limited					Permits	
37-3-1115	REA243 Contact	GDA	56	316165	6404358	Open site	Artefact		
		Recorders	Umwelt (Australia) Pty Limited					Permits	
37-3-1121	REA249 Contact	GDA	56	316509	6404940	Open site	Artefact		
		Recorders	Umwelt (Australia) Pty Limited					Permits	
37-3-1100	REA228 Contact	GDA	56	316344	6404617	Open site	Artefact		
		Recorders	Umwelt (Australia) Pty Limited					Permits	
37-3-1112	REA240 Contact	GDA	56	316086	6404364	Open site	Artefact		
		Recorders	Umwelt (Australia) Pty Limited					Permits	
37-3-1114	REA242 Contact	GDA	56	316207	6404367	Open site	Artefact		
		Recorders	Umwelt (Australia) Pty Limited					Permits	
37-3-0546	Ashton EWA 52	AGD	56	317847	6404293	Open site	Artefact		98163

Report generated by AHIMS Web Service on 28/03/2011 for Elizabeth Wyatt for Datum :GDA, Zone : 56, Eastings : 316000 - 320000, Northings : 6403000 - 6405000 with a Buffer of 50 meters. Additional

Info : To check co-ords of recorded sites. Number of Aboriginal sites and Aboriginal objects found is 43

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Dan Witter					Permits	
37-3-1145	AFA48, AFA49 & AFA58	GDA	56	317992	6404855	Open site	Artefact		102139
	Contact	Recorders	Ashton Coal Operations Limited					Permits	
37-3-1088	REA216	GDA	56	316388	6404919	Open site	Artefact		
	Contact	Recorders	Umwelt (Australia) Pty Limited					Permits	
37-3-1098	REA226	GDA	56	316083	6404440	Open site	Artefact		
	Contact	Recorders	Umwelt (Australia) Pty Limited					Permits	
37-3-1101	REA229	GDA	56	316217	6404490	Open site	Artefact		
	Contact	Recorders	Umwelt (Australia) Pty Limited					Permits	
37-3-0553	Ashton EWA 71	AGD	56	319247	6404798	Open site	Artefact		98163
	Contact	Recorders	Dan Witter					Permits	
37-3-1144	AFA45, AFA46, AFA47	GDA	56	317603	6404853	Open site	Artefact		102139
	Contact	Recorders	Ashton Coal Operations Limited					Permits	
37-3-1113	REA241	GDA	56	316197	6404407	Open site	Artefact		
	Contact	Recorders	Umwelt (Australia) Pty Limited					Permits	
37-3-0516	ASH20	AGD	56	317953	6404179	Open site	Artefact		
	Contact	Recorders	Ms Vanessa Hardy					Permits	
37-3-0536	Ashton High Spur site	AGD	56	318390	6403574	Open site	Artefact		98163
	Contact	Recorders	Dan Witter					Permits	2783
37-3-0539	Ashton Glennies Flats site 1	AGD	56	319410	6404860	Open site	Artefact		98163
	Contact	Recorders	Dan Witter					Permits	
37-3-0550	Ashton EWA 68	AGD	56	319107	6404223	Open site	Artefact		98163
	Contact	Recorders	Dan Witter					Permits	
37-3-0551	Ashton EWA 69	AGD	56	319117	6404707	Open site	Artefact		98163
	Contact	Recorders	Dan Witter					Permits	
37-3-1099	REA227	GDA	56	316325	6404608	Open site	Artefact		
	Contact	Recorders	Umwelt (Australia) Pty Limited					Permits	
37-3-1116	REA244	GDA	56	316066	6404202	Open site	Modified Tree (Carved or Scarred)		
	Contact	Recorders	Umwelt (Australia) Pty Limited					Permits	
37-3-1085	REA213	GDA	56	316072	6404179	Open site	Modified Tree (Carved or Scarred)		
	Contact	Recorders	Umwelt (Australia) Pty Limited					Permits	
37-3-0534	Ashton Hunter River slope site	AGD	56	318457	6402767	Open site	Artefact		98163
	Contact	Recorders	Dan Witter					Permits	
37-3-0545	Ashton EWA 51	AGD	56	317954	6404021	Open site	Artefact		98163
	Contact	Recorders	Dan Witter					Permits	

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	SiteFeatures	SiteTypes	Reports
37-3-0547	Ashton EWA 56 Contact	AGD	56	318571	6404615	Open site	Artefact	Permits 2783	98163
37-3-0815	Narama Extended 2 Contact	GDA	56	316184	6404820	Open site	Artefact	Permits 3339	101826
37-3-0855	Narama Extended 43 Contact	GDA	56	315960	6404569	Open site	Artefact	Permits	101826
37-3-1143	AFA44 Contact	GDA	56	317818	6404660	Open site	Artefact	Permits	102139
37-3-1147	AFA52, AFA53, AFA54 Contact	GDA	56	318525	6403610	Open site	Artefact	Permits	102139
37-3-1119	REA247 Contact	GDA	56	315974	6404445	Open site	Artefact	Permits	
37-3-0541	Ashton Glennies Creek site Contact	AGD	56	318948	6403776	Open site	Grinding Groove,Artefact	Permits	98163
37-3-0548	Ashton EWA 57 Contact	AGD	56	317954	6404205	Open site	Artefact	Permits	98163

Report generated by AHIMS Web Service on 28/03/2011 for Elizabeth Wyatt for Datum :GDA, Zone : 56, Eastings : 316000 - 320000, Northings : 6403000 - 6405000 with a Buffer of 50 meters. Additional Info : To check co-ords of recorded sites. Number of Aboriginal sites and Aboriginal objects found is 43

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	SiteFeatures	SiteTypes	Reports
37-3-0495	MO-IF3 Contact	AGD	56	317465	6406023	Open site	Artefact	Permits	
37-3-0511	ASH15 Contact	AGD	56	318402	6405307	Open site	Artefact	Permits	2783
37-3-0513	ASH17 Contact	AGD	56	318536	6405790	Open site	Artefact	Permits	1691
37-3-0518	ASH22 Contact	AGD	56	319117	6405476	Open site	Artefact	Permits	
37-3-0529	Ashton EWA 24 Contact	AGD	56	319546	6405851	Open site	Artefact	Permits	98163
37-3-0537	Ashton High Ridge Workshop site (EWA 86) Contact	AGD	56	319096	6405565	Open site	Artefact	Permits	98163
37-3-0538	Ashton Glennies Flats 2 site Contact	AGD	56	319563	6404982	Open site	Artefact	Permits	98163
37-3-0552	Ashton EWA 70 Contact	AGD	56	319141	6404775	Open site	Artefact	Permits	98163
37-3-0554	Ashton EWA 78 Contact	AGD	56	319111	6404804	Open site	Artefact	Permits	98163
37-3-0558	Ashton EWA 96 Contact	AGD	56	318772	6406066	Open site	Artefact	Permits	98163
37-3-0500	ASH4 Waterhole Site Contact	AGD	56	318580	6406552	Open site	Artefact	Permits	
37-3-0503	ASH7 Contact	AGD	56	318245	6405418	Open site	Artefact	Permits	2783
37-3-0798	Liddell EW 15 Contact	GDA	56	317877	6407170	Open site	Artefact	Permits	101420
37-3-0592	Bettys Creek 1 Contact	AGD	56	319224	6406960	Open site	Artefact	Permits	99019,100895
37-3-0610	Bettys Creek 20 Contact	AGD	56	319625	6407469	Open site	Artefact	Permits	99019,100895
37-3-0622	Swamp Creek 5 Contact	AGD	56	318807	6407530	Open site	Artefact,Potential Archaeological Deposit (PAD)	Permits	99019,100895
37-3-0799	LW2.1 Contact	GDA	56	317450	6404979	Open site	Artefact	Permits	101733
37-3-0816	Naramba Extended 3	GDA	56	316490	6405817	Open site	Artefact	Permits	101826

Report generated by AHIMS Web Service on 28/03/2011 for Elizabeth Wyatt for Datum :GDA, Zone : 56, Eastings : 316000 - 320000, Northings : 6405000 - 6408000 with a Buffer of 50 meters. Additional Info : to check co-ords of registered sites. Number of Aboriginal sites and Aboriginal objects found is 106

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	SiteFeatures	SiteTypes	Reports
	Contact	Recorders		Meaghan Russell				Permits	3339
37-3-0817	Narama Extended 4	GDA	56	316274	6404978	Open site	Artefact		101826
	Contact	Recorders		Meaghan Russell				Permits	3339
37-3-0821	Narama Extended 8	GDA	56	317209	6406020	Open site	Artefact		101826
	Contact	Recorders		Meaghan Russell				Permits	3339
37-3-0824	Narama Extended 11	GDA	56	316867	6405530	Open site	Artefact		101826
	Contact	Recorders		Meaghan Russell				Permits	3339
37-3-0826	Narama Extended 13	GDA	56	316870	6405296	Open site	Artefact		101826
	Contact	Recorders		Meaghan Russell				Permits	3339
37-3-0830	Narama Extended 17	GDA	56	316461	6405735	Open site	Artefact		101826
	Contact	Recorders		Meaghan Russell				Permits	3339
37-3-0832	Narama Extended 19	GDA	56	316465	6405222	Open site	Artefact		101826
	Contact	Recorders		Meaghan Russell				Permits	3339
37-3-0834	Narama Extended 21	GDA	56	316515	6405416	Open site	Artefact		101826
	Contact	Recorders		Meaghan Russell				Permits	3339
37-3-0838	Narama Extended 25	GDA	56	316422	6405430	Open site	Artefact		101826
	Contact	Recorders		Meaghan Russell				Permits	3339
37-3-0840	Narama Extended 27	GDA	56	317098	6406139	Open site	Artefact		101826
	Contact	Recorders		Meaghan Russell				Permits	3339
37-3-0841	Narama Extended 28	GDA	56	317157	6405891	Open site	Artefact		101826
	Contact	Recorders		Meaghan Russell				Permits	
37-3-0853	Narama Extended 41	GDA	56	317127	6405980	Open site	Artefact		101826
	Contact	Recorders		Meaghan Russell				Permits	
37-3-0854	Narama Extended 42	GDA	56	316304	6405704	Open site	Artefact		101826
	Contact	Recorders		Meaghan Russell				Permits	
37-3-1142	AFA25, AFA26, AFA59, AFA60, AFA61	GDA	56	318385	6405947	Open site	Artefact		102139
	Contact	Recorders		Ashton Coal Operations Limited				Permits	
37-3-0920	Ravensthorpe Underground Mine (RUM) Open Camp Site No. 1 with PAD	GDA	56	317298	6408018	Open site	Artefact,Potential Archaeological Deposit (PAD)		
	Contact	Recorders		Doctor Jodie Benton				Permits	
37-3-1011	REA133	GDA	56	317656	6407681	Open site	Artefact		
	Contact	Recorders		Umwelt (Australia) Pty Limited				Permits	
37-3-1012	REA140	GDA	56	317599	6407485	Open site	Artefact		
	Contact	Recorders		Umwelt (Australia) Pty Limited				Permits	
37-3-1016	REA144	GDA	56	318003	6406831	Open site	Artefact		
	Contact	Recorders		Umwelt (Australia) Pty Limited				Permits	

Report generated by AHIMS Web Service on 28/03/2011 for Elizabeth Wyatt for Datum :GDA, Zone : 56, Eastings : 316000 - 320000, Northings : 6405000 - 6408000 with a Buffer of 50 meters. Additional Info : to check co-ords of registered sites. Number of Aboriginal sites and Aboriginal objects found is 106

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	SiteFeatures	SiteTypes	Reports
37-3-1017	REA145 Contact	GDA	56	317728	6406420	Open site	Artefact	Permits	
37-3-1018	REA146 Contact	GDA	56	317572	6406204	Open site	Artefact	Permits	
37-3-1059	REA187 Contact	GDA	56	317349	6405551	Open site	Artefact	Permits	
37-3-0004	Bayswater Creek ; Contact	AGD	56	316120	6407715	Open site	Artefact	Open Camp Site Permits 24	919
37-3-0802	SA13/3 Contact	GDA	56	319339	6405385	Open site	Artefact	Permits	101747
37-3-0814	Narama Extended 1 Contact	GDA	56	316965	6406152	Open site	Artefact	Permits	101826
37-3-0833	Narama Extended 20 Contact	GDA	56	316208	6405134	Open site	Artefact	Permits	3339,3355
37-3-0837	Narama Extended 24 Contact	GDA	56	316462	6405537	Open site	Artefact	Permits	3339
37-3-0843	Narama Extended 30 Contact	GDA	56	317398	6405687	Open site	Artefact	Permits	3339
37-3-0844	Narama Extended 31 Contact	GDA	56	316516	6405815	Open site	Artefact	Permits	101826
37-3-0845	Narama Extended 33 Contact	GDA	56	316722	6406158	Open site	Artefact	Permits	3339
37-3-0850	Narama Extended 38 Contact	GDA	56	317017	6405879	Open site	Artefact	Permits	3339
37-3-1013	REA141 Contact	GDA	56	318206	6407185	Open site	Artefact	Permits	
37-3-1015	REA143 Contact	GDA	56	318066	6406896	Open site	Artefact	Permits	
37-3-1070	REA198 Contact	GDA	56	316967	6405262	Open site	Artefact	Permits	
37-3-0514	ASH18 Contact	AGD	56	318428	6405883	Open site	Artefact	Permits	
37-3-0542	Ashton EWA 81 Contact	AGD	56	317534	6406017	Open site	Art (Pigment or Engraved)	Permits	98163
37-3-0556	Ashton EWA 89 Contact	AGD	56	317378	6405955	Open site	Artefact	Permits	98163

Report generated by AHIMS Web Service on 28/03/2011 for Elizabeth Wyatt for Datum :GDA, Zone : 56, Eastings : 316000 - 320000, Northings : 6405000 - 6408000 with a Buffer of 50 meters. Additional Info : to check co-ords of registered sites. Number of Aboriginal sites and Aboriginal objects found is 106

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	SiteFeatures	SiteTypes	Reports
37-3-0819	Narama Extended 6 Contact	GDA	56	316559	6405188	Open site	Artefact	Permits 3339	101826
37-3-0828	Narama Extended 15 Contact	GDA	56	317190	6406064	Open site	Artefact	Permits	101826
37-3-0829	Narama Extended 16 Contact	GDA	56	316657	6406173	Open site	Artefact	Permits 3339	101826
37-3-1141	AFA21, AFA22, AFA23, AFA24 Contact	GDA	56	318385	6405947	Open site	Artefact	Permits	102139
37-3-1148	AFA 55 Contact	GDA	56	318326	6406063	Open site	Artefact	Permits	102139
37-3-1014	REA142 Contact	GDA	56	318192	6407007	Open site	Artefact	Permits	
37-3-1069	REA197 Contact	GDA	56	317082	6405289	Open site	Artefact	Permits	
37-3-1071	REA199 Contact	GDA	56	316933	6405213	Open site	Artefact	Permits	
37-3-0553	Ashton EWA 71 Contact	AGD	56	319247	6404798	Open site	Artefact	Permits	98163
37-3-0496	Ashton Brunkers Lane Site Contact	AGD	56	317707	6406329	Open site	Artefact,Potential Archaeological Deposit (PAD)	Permits	101733
37-3-0623	Swamp Creek 6 Contact	AGD	56	318801	6407753	Open site	Artefact	Permits 2267	99019,100895
37-3-0822	Narama Extended 9 Contact	GDA	56	317252	6405954	Open site	Artefact	Permits	101826
37-3-0823	Narama Extended 10 Contact	GDA	56	316980	6405630	Open site	Artefact	Permits 3339	101826
37-3-0517	ASH21 Contact	AGD	56	318567	6405704	Open site	Artefact	Permits	
37-3-0530	Ashton EWA 25 Contact	AGD	56	319418	6406709	Open site	Art (Pigment or Engraved)	Permits 1691	98163
37-3-0539	Ashton Glennies Flats site 1 Contact	AGD	56	319410	6404860	Open site	Artefact	Permits	98163
37-3-0502	ASH6 Contact	AGD	56	318205	6405462	Open site	Artefact	Permits 2783	

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	SiteFeatures	SiteTypes	Reports
37-3-0818	Narama Extended 5	GDA	56	316547	6405115	Open site	Artefact		101826
	Contact							Permits	
37-3-0825	Narama Extended 12	GDA	56	316748	6405629	Open site	Artefact		101826
	Contact							Permits 3339	
37-3-0836	Narama Extended 23	GDA	56	316418	6405598	Open site	Artefact		101826
	Contact							Permits 3339	
37-3-0842	Narama Extended 29	GDA	56	317232	6405793	Open site	Artefact		101826
	Contact							Permits	
37-3-0846	Narama Extended 34	GDA	56	317293	6405962	Open site	Artefact		101826
	Contact							Permits	
37-3-0851	Narama Extended 39	GDA	56	316278	6405229	Open site	Artefact		101826
	Contact							Permits 3339	
37-3-1068	REA196	GDA	56	317109	6405344	Open site	Artefact		
	Contact							Permits	
37-3-0512	ASH16	AGD	56	318299	6405801	Open site	Artefact		
	Contact							Permits 1691	
37-3-0549	Ashton EWA 60	AGD	56	317583	6405075	Open site	Artefact		98163
	Contact							Permits	
37-3-0559	Ashton EWA 88	AGD	56	319535	6406043	Open site	Artefact		98163
	Contact							Permits 1691	
37-3-0499	ASH 3	AGD	56	317478	6406176	Open site	Artefact		
	Contact							Permits	
37-3-0501	ASH5	AGD	56	318425	6405388	Open site	Artefact		
	Contact							Permits 2783	
37-3-0831	Narama Extended 18	GDA	56	316268	6405909	Open site	Artefact		101826
	Contact							Permits 3339	
37-3-0839	Narama Extended 26	GDA	56	316541	6405558	Open site	Artefact		101826
	Contact							Permits	
37-3-0847	Narama Extended 35	GDA	56	317332	6405744	Open site	Artefact		101826
	Contact							Permits	
37-3-0848	Narama Extended 36	GDA	56	316995	6405693	Open site	Artefact		101826
	Contact							Permits	
37-3-0852	Narama Extended 40	GDA	56	316210	6405216	Open site	Artefact		101826
	Contact							Permits	
37-3-1072	REA200	GDA	56	316828	6405176	Open site	Artefact		
	Contact							Permits	
37-3-0519	ASH23	AGD	56	319057	6406200	Open site	Artefact		

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	SiteFeatures	SiteTypes	Reports
	Contact	Recorders						Permits	
37-3-0525	Ashton EWA 21	AGD	56	319631	6406100	Open site	Artefact	1691	98163
	Contact	Recorders						Permits	
37-3-0497	ASH1 also known as (Ashton Bridge Site)	AGD	56	318516	6406521	Open site	Artefact	1691	
	Contact	Recorders						Permits	
37-3-0504	ASH8 also known as Ashton TSR site	AGD	56	319727	6406284	Open site	Artefact	1691	
	Contact	Recorders						Permits	
37-3-0006	Camberwell;Bowman's Creek [duplicate copy 37-3-0500]	AGD	56	318353	6405653	Open site	Artefact	Open Camp Site	98163,100761
	Contact	Recorders						Permits	
37-3-0017	Camberwell;Bowmans Creek;	AGD	56	316904	6404894	Open site	Artefact	Open Camp Site	98163,100761
	Contact	Recorders						Permits	
37-3-0737	Ashton EWA 77	AGD	56	319099	6404875	Open site	Artefact		100602
	Contact	Recorders						Permits	
37-3-0555	Ashton EWA 83	AGD	56	318727	6405883	Open site	Artefact		98163
	Contact	Recorders						Permits	
37-3-0820	Narama Extended 7	GDA	56	316269	6405353	Open site	Artefact		101826
	Contact	Recorders						Permits	
37-3-0835	Narama Extended 22	GDA	56	316387	6405568	Open site	Artefact		101826
	Contact	Recorders						Permits	
37-3-0849	Narama Extended 37	GDA	56	317060	6405642	Open site	Artefact		101826
	Contact	Recorders						Permits	
37-3-1010	REA132	GDA	56	317660	6407881	Open site	Artefact		3339
	Contact	Recorders						Permits	
37-3-0524	Ashton EWA 20	AGD	56	319737	6406100	Open site	Artefact		98163
	Contact	Recorders						Permits	
37-3-0535	Ashton EWA 97	AGD	56	317583	6405075	Open site	Artefact	1691	98163
	Contact	Recorders						Permits	
37-3-0543	Ashton EWA 80	AGD	56	317463	6405942	Open site	Artefact		98163
	Contact	Recorders						Permits	
37-3-0557	Ashton EWA 91	AGD	56	318572	6405733	Open site	Artefact		98163
	Contact	Recorders						Permits	
37-3-0581	Ashton EWA 93 also known as Homestead site	AGD	56	318420	6405517	Open site	Artefact	2783	
	Contact	Recorders						Permits	
37-3-0609	Bettys Creek 19	AGD	56	319774	6407650	Open site	Artefact		99019,100895
	Contact	Recorders						Permits	

Report generated by AHIMS Web Service on 28/03/2011 for Elizabeth Wyatt for Datum :GDA, Zone : 56, Eastings : 316000 - 320000, Northings : 6405000 - 6408000 with a Buffer of 50 meters. Additional Info : to check co-ords of registered sites. Number of Aboriginal sites and Aboriginal objects found is 106

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	SiteFeatures	SiteTypes	Reports
37-3-0511	ASH15 Contact	AGD	56	318402	6405307	Open site	Artefact	Permits 2783	
37-3-0515	ASH19 Contact	AGD	56	318063	6403714	Open site	Artefact	Permits	
37-3-0533	Ashton Ridge Peak site Contact	AGD	56	318933	6404325	Open site	Artefact	Permits 2783	98163
37-3-0538	Ashton Glennies Flats 2 site Contact	AGD	56	319563	6404982	Open site	Artefact	Permits	98163
37-3-0540	Ashton Glennies Bluff Site Contact	AGD	56	319059	6404050	Open site	Artefact	Permits	98163
37-3-0544	Ashton EWA 50 Contact	AGD	56	317813	6404021	Open site	Artefact	Permits	98162
37-3-0552	Ashton EWA 70 Contact	AGD	56	319141	6404775	Open site	Artefact	Permits	98163
37-3-0554	Ashton EWA 78 Contact	AGD	56	319111	6404804	Open site	Artefact	Permits	98163
37-3-0799	LW2.1 Contact	GDA	56	317450	6404979	Open site	Artefact	Permits	101733
37-3-0810	SA1/8-SA1/11, SA4/2, SA11/1-SA11/6 Contact	GDA	56	319710	6404240	Open site	Artefact,Potential Archaeological Deposit (PAD)	Permits	101747
37-3-0826	Nararna Extended 13 Contact	GDA	56	316870	6405296	Open site	Artefact	Permits 3339	101826
37-3-1146	AFA50 Contact	GDA	56	317969	6404680	Open site	Artefact	Permits	102139
37-3-0802	SA13/3 Contact	GDA	56	319339	6405385	Open site	Artefact	Permits	101747
37-3-1070	REA198 Contact	GDA	56	316967	6405262	Open site	Artefact	Permits	
37-3-0546	Ashton EWA 52 Contact	AGD	56	317847	6404293	Open site	Artefact	Permits	98163
37-3-1145	AFA48, AFA49 & AFA58 Contact	GDA	56	317992	6404855	Open site	Artefact	Permits	102139
37-3-1069	REA197 Contact	GDA	56	317082	6405289	Open site	Artefact	Permits	
37-3-1071	REA199 Contact	GDA	56	316933	6405213	Open site	Artefact	Permits	

Report generated by AHIMS Web Service on 25/03/2011 for Elizabeth Wyatt for Lat, Long From : -32.49218, 151.0495 - Lat, Long To : -32.47326, 151.08109 with a Buffer of 50 meters. Additional Info : To compare co-ordinates of AHIMS site with site card information. Number of Aboriginal sites and Aboriginal objects found is 37

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SiteID	SiteName	Datum	Zone	Easting	Northing	Context	SiteFeatures	SiteTypes	Reports
	Contact	Recorders						Permits	
37-3-0553	Ashton EWA 71	AGD	56	319247	6404798	Open site	Artefact		98163
	Contact	Recorders						Permits	
37-3-1144	AFA45, AFA46, AFA47	GDA	56	317603	6404853	Open site	Artefact		102139
	Contact	Recorders						Permits	
37-3-0516	ASH20	AGD	56	317953	6404179	Open site	Artefact		
	Contact	Recorders						Permits	
37-3-0536	Ashton High Spur site	AGD	56	318390	6403574	Open site	Artefact		98163
	Contact	Recorders						Permits	2783
37-3-0539	Ashton Glennies Flats site 1	AGD	56	319410	6404860	Open site	Artefact		98163
	Contact	Recorders						Permits	
37-3-0550	Ashton EWA 68	AGD	56	319107	6404223	Open site	Artefact		98163
	Contact	Recorders						Permits	
37-3-0551	Ashton EWA 69	AGD	56	319117	6404707	Open site	Artefact		98163
	Contact	Recorders						Permits	
37-3-1068	REA196	GDA	56	317109	6405344	Open site	Artefact		
	Contact	Recorders						Permits	
37-3-0545	Ashton EWA 51	AGD	56	317954	6404021	Open site	Artefact		98163
	Contact	Recorders						Permits	
37-3-0547	Ashton EWA 56	AGD	56	318571	6404615	Open site	Artefact		98163
	Contact	Recorders						Permits	2783
37-3-0549	Ashton EWA 60	AGD	56	317583	6405075	Open site	Artefact		98163
	Contact	Recorders						Permits	
37-3-1143	AFA44	GDA	56	317818	6404660	Open site	Artefact		102139
	Contact	Recorders						Permits	
37-3-1147	AFA52, AFA53, AFA54	GDA	56	318525	6403610	Open site	Artefact		102139
	Contact	Recorders						Permits	
37-3-1072	REA200	GDA	56	316828	6405176	Open site	Artefact		
	Contact	Recorders						Permits	
37-3-0541	Ashton Glennies Creek site	AGD	56	318948	6403776	Open site	Grinding Groove,Artefact		98163
	Contact	Recorders						Permits	
37-3-0017	Camberwell,Bowmans Creek,	AGD	56	316904	6404894	Open site	Artefact	Open Camp Site	98163,100761
	Contact	Recorders						Permits	
37-3-0737	Ashton EWA 77	AGD	56	319099	6404875	Open site	Artefact		100602
	Contact	Recorders						Permits	2783
37-3-0535	Ashton EWA 97	AGD	56	317583	6405075	Open site	Artefact		98163
	Contact	Recorders						Permits	

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<u>SiteID</u>	<u>SiteName</u>	<u>Datum</u>	<u>Zone</u>	<u>Easting</u>	<u>Northing</u>	<u>Context</u>	<u>SiteFeatures</u>	<u>SiteTypes</u>	<u>Reports</u>
37-3-0548	Ashton EWA 57	AGD	56	317954	6404205	Open site	Artefact		98163
	<u>Contact</u>	<u>Recorders</u>	Dan Witter					<u>Permits</u>	

Report generated by AHIMS Web Service on 25/03/2011 for Elizabeth Wyatt for Lat, Long From : -32.49218, 151.0495 - Lat, Long To : -32.47326, 151.08109 with a Buffer of 50 meters. Additional Info : To compare co-ordinates of AHIMS site with site card information. Number of Aboriginal sites and Aboriginal objects found is 37

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Appendix B - Stakeholder Comments

From: Laurie Perry [mailto:l.perry@optusnet.com.au]
Sent: Sunday, 3 June 2012 2:24 PM
To: Cassandra Storm; maree waugh; Sandra Jones; Rebecca lester; Tracey Skene
Subject: Ashton Coal Gas Drainage Development Consent Modification

Hi Cassandra

I have read the Aboriginal Archaeological report for the proposed Goaf Gas Drainage project for Ashton Coal and am satisfied with the report and recommendations and would like to be consulted when required for the archaeological and cultural resources within the project area east of Bowmans Creek and the salvage of objects in accordance with the AHIP methodology associated with the respective area.

I have also included the WNAC culture and heritage team in this email.

Cheers

Laurie Perry
CEO
Wonnarua Nation Aboriginal Corporation
Ground Floor 254 John St Singleton NSW
PO BOX 3066
Singleton Delivery Centre 2330
Ph: 02 6571 8595
Fax: 02 6571 8551
Mob : 0412 593 020
Email: wonnarua@bigpond.com.au
Home : l.perry@optusnet.com.au
Website: www.wonnarua.org.au

Table 5 Additional Goaf Gas Consultation by phone

Stakeholder	Current Address	Representatives	Phone contact 13/6/12
Aboriginal Native Title Consultants	16A Mahogany Avenue MUSWELLBROOK NSW 2333	John Matthews Margaret Matthews	11.34am spoke to John and he has read the report and has no issues with the recommendations
Bullen Bullen	21 Bando Street GUNNEDAH NSW 2380	Lloyd Matthews	Been busy and unable to comment on time however is happy with recommendations
Cacatua Culture Consultants	Unit 1B / 11 Glenwood Drive THORNTON NSW 2322 email: cacatua@resetdsl.net.au	George Sampson Donna Sampson –	Spoke to Donna and she verbally agrees with management as per AHIP methodology
Carrawonga Consultants	16B Mahogany Avenue MUSWELLBROOK NSW 2333	Justin Matthews Michael Matthews Cheryl Matthews	Both numbers listed are disconnected
Culturally Aware	7 Crawford Place MILLFIELD NSW 2325 email: anigunya@hotmail.com	Tracey Skene Maree Waugh Josh Giese Kirsten Berry	Tracey returned call at 11.57 and stated that she has no problems with the report
Gidawaa Walang	76 Lang Street KURRI KURRI NSW 2327 email: barkumanc@hotmail.com	Annie Hickey	Annie stated that she is happy with the report and the management of impacts as per the existing AHIP methodology.
Girwirr Consultants	8 Fitzgerald Avenue MUSWELLBROOK NSW 2333 email: bigrodshouse@hotmail.com	Michele Stair Jamie-Lee Stair Barry Stair	Rodney Mathews returned call @12.14 and agrees with management of the impacts as per the existing AHIP methodology
HTO Environmental Management Services	14 Barton Avenue SINGLETON NSW 2330 email: pauletteryan@live.com email: hto.paulette@gmail.com.au	Paulette Ryan – left message on mobile 12.08pm	Paulette rang back and said she would read the report tonight 18/6 – no comments received.
Hunter Valley Aboriginal Corporation	PO Box 579 MUSWELLBROOK NSW 2333 180-182 Bridge Street MUSWELLBROOK NSW 2333 email: h973809@bigpond.net.au ivanandliz@bigpond.com	Elaine Freihaut Rhonda Griffiths	No answer or message service
Hunter Valley Cultural Consultants	40 Humphries Street MUSWELLBROOK NSW 2333 crissy_archbold@hotmail.com.au	Christine Archbold –	Left message on second mobile no. 1 st no. message bank full

Hunter Valley Cultural Surveying	165 Susan Street SCONE NSW 2337 email: Hunter Valley Cultural Surveying@optusnet.com	Luke Hickey	No issues with the report – manage as per existing AHIP methodology
Hunter Valley Natural & Cultural Resource Management	Flat 1/7-11 Tindale Street MUSWELLBROOK NSW 2333 dfrenchdfrench@hotmail.com	David French	Landline wrong no. left message on mobile.
Junburra Consulting	PO Box 3043 SINGLETON NSW 2330 email: junburra@bigpond.com	Victor Perry	Left message on mobile 12.54
Kayaway Eco Cultural & Heritage Services	6-20/22 Government Road METFORD NSW 2323 email: kayaway@rocketmail.com	Mark Hickey	Left message
Lower Hunter Wonnarua Council	Tom Miller 51 Bowden Street HEDDON GRETA NSW 2321 email: tn.miller@southernphone.com.au	Tom Miller.	Tom hasn't had a chance to look at it - will read and call me back. No call recieved
Lower Hunter Wonnarua Council Inc.	Shop 2, 145 Lang Street KURRI KURRI NSW 2327 email: lhwc@bigpond.com email: kylie-miller2011@hotmail.com	Rhoda Perry Tom Miller Dean Miller as above	As above
Lower Wonnarua Tribal Consultancy	156 The Inlet Road BULGA NSW 2330	Barry French.	No available number
Mingga Consultants	11 Coolibah Close MUSWELLBROOK NSW 2333 Phone: (02) 6541 4137	Clifford Matthews	No additional comments – the report looks good
Muswellbrook Cultural Consultants	10 Scott Street MUSWELLBROOK NSW 2333 brian_horton68@hotmail.com	Brian Horton	No additional comments – Brian agrees with the recommendations
Tocomwall	PO Box 76 CARINGBAH NSW 1495 Scott Franks	Scott Franks Danny Franks	Sent an email to yarrowalk@bigpond.com.au Delivered receipt received 11.31am. Tocomwall email address undeliverable No comments received 18/6/12

Ungooroo Aboriginal Corporation	PO Box 3095 SINGLETON NSW 2330 admin@ungooroo.com.au email: admin@ungooroo.com.au email: taasha@ungooroo.com.au	Allen Paget Taasha Layer Annette Dunstan	Spoke to Alan – he has no problems with the management recommendations and feels that everything is going well at Ashton.
Ungooroo Cultural & Community Services Inc	8 Blaxland Avenue SINGLETON NSW 2330 email: ungooroo5969@hotmail.com email: ungooroo59@hotmail.com	Rhonda Ward Samantha Ward	left message on mobile 1.07pm
Upper Hunter Heritage Consultants	14 Edinglassie Drive MUSWELLBROOK NSW 2333 email: darrel_matthews@hotmail.com	Darrel Matthews Margaret Matthews John Matthews	Left message on first mobile listed.
Valley Culture	140 Sydney Street MUSWELLBROOK NSW 2333	Larry Van Vliet	Larry has just gone to bed after night shift – left message with his (partner?) to give me a call later. No call recieved
Wanaruah Custodians	35 Acacia Circuit SINGLETON NSW 2330 Barbara Foot	David Foot	Landline disconnected and mobile is wrong no
Wanaruah Local Aboriginal Land Council	PO Box 127 MUSWELLBROOK NSW 2333 19 Maitland Street MUSWELLBROOK NSW 2333 email: wanarua@bigpond.net.au	Owen Davidson Noel Downs Katrina Cavanagh Suzie Worth	Left message on Suzie's mobile – Noel away at meetings.
Warren Taggart	(WT is a RAP and an Ashton employee but doesn't do heritage work) warrentaggart@bigpond.com		Left message on landline. 1.53pm
Wattaka Wonnarua C.C. Service	4 Kennedy Street SINGLETON NSW 2330 email: deshickey@bigpond.com.au	Des Hickey	Des will check report and respond by email hopefully this afternoon.
Wonn1 Contracting (Kauwul P/L)	619 Main Road GLENDALE NSW 2285 email: wonn1sites@gmail.com email: arthur.c.fletcher@gmail.com	Arthur Fletcher	Arthur is happy with the recommendations 1.19pm
Wonnarua Culture Heritage	19 O'Donnell Crescent METFORD NSW 2323	Joseph Griffith Gordon Griffith Shannon Griffiths	Gordon will ring me with comments on Friday (15/6) as he has not had a chance to read the report yet. No comment received 18/6.

Wonnarua Nations Aboriginal Corporation	Flat 4/ 1 Pitt Street SINGLETON NSW 2330 email: wonnarua@bigpond.com.au l.perry@optusnet.com.au bw820@iprimus.com.au - FIONA ACCOUNTS ONLY	Laurie Perry Maree Waugh Fiona Whyte (Bookkeeper)	Laurie has already responded
Upper Hunter Wonnarua Council	PO Box 184 SINGLETON NSW 2330 or Flat 4/1 Pitt Street SINGLETON NSW 2330 via Victor Perry : junburra@bigpond.com uhsdc@bigpond.com	Rhoda Perry	No answer
Yarrowalk Enterprises	913 Wollombi Road BROKE NSW 2325 Attn: Barry McTaggart email: yarrowalk@tpg.com.au	Barry McTaggart Barry French Sue Cutmore Scott Franks	Sent email to Scott Franks see previous
Yinarr Cultural Services	111 Westwood Road GUNGAL NSW 2333 email: yinarrculturalservices@gmail.com	Kathleen Kinchella	left message on mobile
Dan Hardy	dthardy@activ8.net.au		