

Attention: Mr Gary Brassington
Manager Approvals
External Affairs - Illawarra Coal, Metallurgical Coal

BHP Billiton Illawarra Coal
Lvl 3 Enterprise, 1 Innovation Campus Squires Way
North Wollongong 2500 NSW

17 June 2014

via e-mail: Michelle.Grierson@bhpbilliton.com

Dear Gary,

**RE: ABORIGINAL AND EUROPEAN HERITAGE ASSESSMENT FOR APPIN COLLIERY - LONGWALL 705
END OF PANEL REPORT**

As requested Niche Environment and Heritage (Niche) has undertaken a review of the predicted and observed impacts resulting from the extraction of Longwall 705 at Appin Colliery on Aboriginal and European Heritage values.

Due to access issues to the site we have not undertaken a site visit but have relied on information supplied by BHP Billiton Illawarra Coal (BHPBIC) and/or its expert consultants reports for the same or earlier projects.

Please do not hesitate to contact me should you require any further information.

Yours sincerely



Renée Regal
Archaeologist



Background and Introduction

Niche Environment and Heritage was commissioned by BHP Billiton Illawarra Coal (BHPBIC) to conduct an End of Panel (EoP) assessment of the European and Aboriginal cultural heritage and archaeological sites within the limit of subsidence of Longwall 705 at Appin Colliery.

Archaeological surveys were initially conducted by Biosis Research in 2008; as part of the Archaeological and Cultural Heritage Impact Assessment of Proposed Longwalls 705 to 710, West Appin, NSW.

Nineteen registered Aboriginal archaeological sites were located within the Longwalls 705 to 710 Subsidence Management Plan Area (SMP). Of these sites four are located in proximity to Longwall 705.

The remaining fifteen Aboriginal archaeological sites within the SMP area were assessed as having negligible potential to be impacted by subsidence caused by the extraction of Longwall 705.

Four registered Aboriginal archaeological sites occur in proximity to Longwall 705. Those sites are identified in Table 1 and have been considered further in this assessment. Two further sites 52-2-3671 and 52-2-3674 which are present within the predicted subsidence zone were not assessed as part of this assessment due to their distance from the impact zone of Longwall 705 (Figure 3).

Table 1: Registered Aboriginal Archaeological sites in close proximity to Longwall 705.

AHIMS site Number	Site Name	Site Description
52-2-3842	Morton Park Road 2	Open Camp Site
52-2-3845	Morton Park Road 5	Open Camp Site
52-2-2096	Nepean River 7	Scarred Tree
52-2-2095	Nepean River 6	Shelter with Deposit

No historical sites are located above Longwall 705. The Mountbatten group of historical sites is located to the southwest of Longwall 705 within the SMP area, but as MSEC subsidence predications for these sites was negligible, they have not been subject to a subsidence monitoring program and are not referred to further.

Access to properties with heritage sites associated with Longwall 705 is restricted and access for a detailed assessment has not yet been granted, so this assessment is based on the results of subsidence monitoring reported by MSEC (MSEC686REVA) and results of environmental monitoring carried out by the Illawarra Coal Environmental Field Team (ICEFT). These are both discussed below.

Subsidence Monitoring Results Summary (MSEC)

The End of Panel Subsidence Report for Longwall 705 prepared by MSEC (MSEC686REVA) reports recorded subsidence parameters resulting from the extraction of Longwall 705.

Subsidence has the potential to impact cultural heritage values and Table 2 outlines the observed impacts of mining in areas that may contain items of cultural heritage significance. Overall, the recorded impacts on natural features resulting from the extraction of Longwall 705 were similar to or less than the MSEC assessments (MSEC686REVA: 34). Specifically in

relation to matters that may affect Aboriginal or European heritage values the following conclusion can be drawn from the MSEC report:

- In relation to the Nepean River, measured subsidence parameters (incremental and total subsidence movements; incremental and total upsidence and closure) are similar to or less than the predicted maximum.

Table 2: Observed impacts from Longwall 705 on landscape features due to subsidence and their correlation to potential cultural heritage impacts

Subsidence Monitoring Areas with Potential to Impact Heritage Values	Correlation to Cultural Heritage Values	Heritage Impacts Due to Longwall 705
Cliff instabilities	Cultural heritage values including sites such as overhangs containing art or deposit are located within the cliff line landscape feature. One such site occurs within the limit of subsidence of Longwall 705.	No overhangs sites have been reported as becoming unstable due to the extraction of Longwall 705 therefore no impacts to sites are likely in cliff areas*.
Slope slippage	Cultural heritage values of sites containing archaeological deposits such as Nepean River 6 (52-2-2095) is located within or may be influenced by impacts to the steep slope landscape feature.	No slope slippage has occurred therefore it is considered unlikely that there are any impacts on sites due to slope slippage*.
Fracturing	MSEC (2006) predicted that minor fracturing could occur in overhang sites Nepean River 6 (52-2-2095).	There has been no fracturing recorded as a result of the extraction of Longwall 705; it is unlikely that impacts have occurred at this site*.

*Once access has been granted for a detailed assessment, any impacts to the site will be confirmed

Environmental Monitoring

The monitoring program for Longwall 705 undertaken by the BHPBIC Environmental Field Team is detailed in

Table 3 below.

Table 3: Environmental Monitoring

SMP Commitments	Monitoring to date	Future Monitoring
Monthly observational monitoring of riparian vegetation, including extent and recovery of any gas release related vegetation die-off	The monitoring program for Longwall 705 undertaken by the BHPBIC Environmental Field Team involves weekly inspections of the Nepean River valley, including (BHPBIC 2014): <ul style="list-style-type: none"> <input type="checkbox"/> observations <input type="checkbox"/> water level measurements <input type="checkbox"/> photographic records <input type="checkbox"/> impact monitoring (i.e. strata gas and iron staining) <input type="checkbox"/> cliff line and steep slope assessments <input type="checkbox"/> water quality monitoring. 	Ongoing monitoring by BHPBIC Environmental Field Team occurring.
EOP cultural heritage assessment	No detailed archaeological field survey undertaken to date due to access restrictions.	Site assessments should future access be granted to the site.

The BHPBIC Environmental Field Team assessment has reported minor impacts from the ongoing monitoring of environmental values within the limit of influence of Longwall 705. All observed impacts were within predicted and approved levels. Impacts from mining of Longwall 705 identified by the Illawarra Coal Environmental Field Team (BHPBIC 2014) and potentially relevant to heritage sites include:

- No cliff falls or slope instability was observed.

Assessment of Impacts

One Aboriginal shelter with deposit (52-2-2095), Two Open Camp Sites (52-2-3842 and 52-2-3845) and one scarred tree (52-2-2096) and no European heritage sites are located within close proximity to Longwall 705.

Impacts associated with Longwall 705 have been within predictions of the initial impact assessment (Biosis Research 2008).

Impacts associated with Longwalls 701 to 703 have been within predictions of the initial impact assessment (Biosis Research 2006). No previous observations of subsidence movement impact assessments have reported any impacts to any site due to the extraction of Longwalls 701 to 703 (Biosis 2008; Biosis 2009 and Biosis 2011).

Potential for impacts to the shelter site were previously considered to be low, and while it is considered unlikely that the sites have been impacted by the extraction of Longwall 705, this will be further assessed once access for a detailed assessment has been granted by the property owner.

The two open camp sites and scarred tree do not require further inspection as impacts from longwall mining on these types of sites were predicted to be negligible. These sites will however also be assessed once access to the area is granted for the detailed assessment.

Conclusion

Based on the reported observations of MSEC and the BHPBIC environmental field team large landscape changes which may affect the overhang sites and scarred tree site have not

occurred. A detailed archaeological assessment is planned for all of these sites once access to the area has been granted. Given the lack of major movement and the predictions of low impact to aboriginal sites, subsidence is considered to have a negligible impact on cultural heritage values..

References

BHP Billiton Illawarra Coal (2014) *Longwall 705 Landscape Monitoring report*. An unpublished report for BHP Billiton.

Biosis Research 2009. *Appin Area 7: Longwalls 701-704: Cultural Heritage Management Plan and Monitoring Methodology*. A report to BHP Billiton Illawarra Coal.

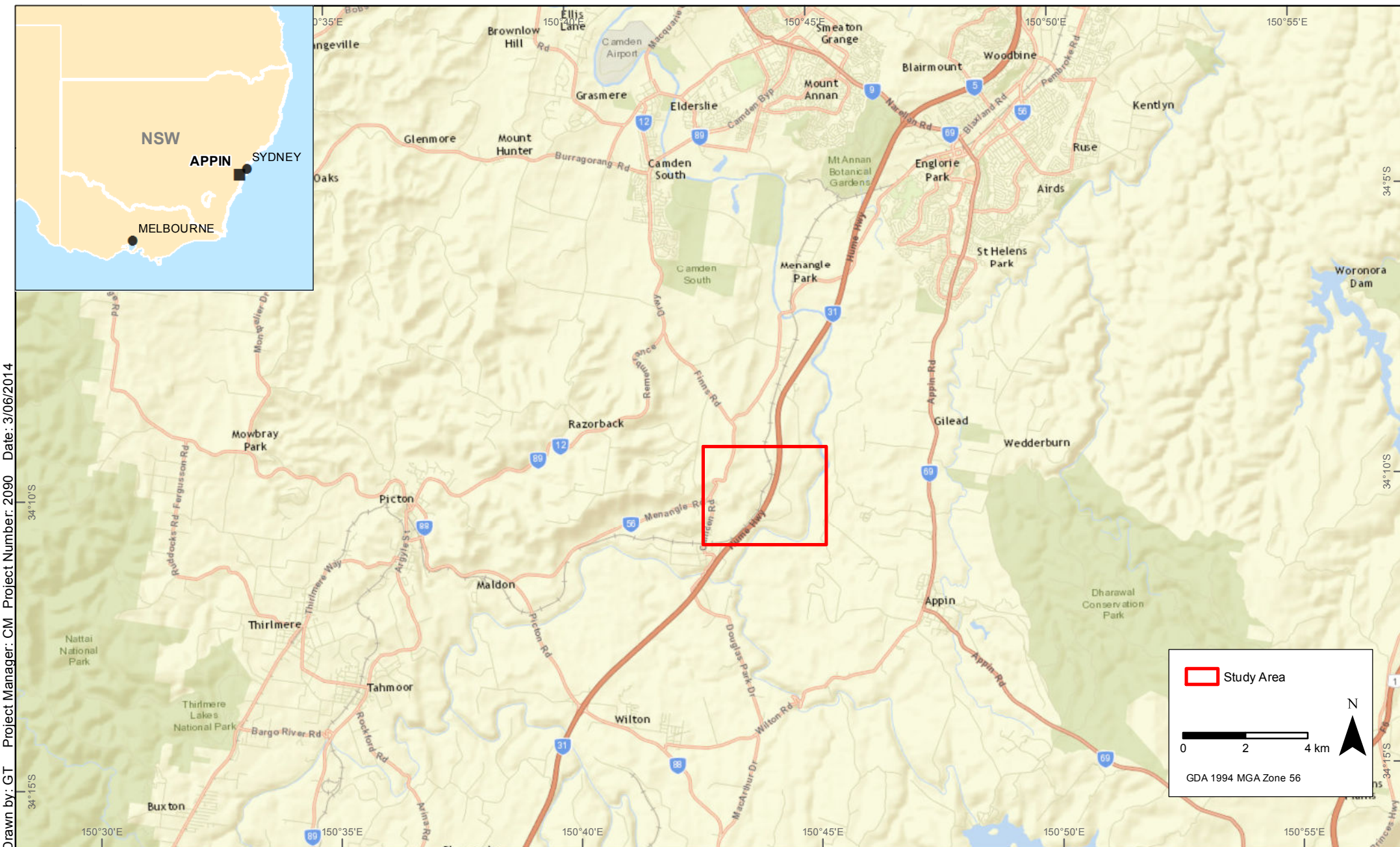
Biosis Research 2008 *Appin Area 7 Longwall 701 End of Panel Report: Cultural Heritage*. A report prepared for BHP Billiton Illawarra Coal.

Biosis Research 2009 *Appin Area 7 Longwall 702 End of Panel Report: Cultural Heritage*. A report prepared for BHP Billiton Illawarra Coal.

Biosis Research 2011 *Appin Area 7 Longwall 703 End of Panel Report: Cultural Heritage*. An unpublished report prepared for BHP Billiton Illawarra Coal.

MSEC (2014). *BHP Billiton Illawarra Coal: Appin Colliery Longwall 705 End of Panel Subsidence Monitoring Report for Appin Longwall 705 REVA*.

Niche (2012). *Appin Area 7 Longwall 704 European and Aboriginal Heritage Assessment End of Panel Report*.



Regional Project Location
 Longwall 705 End of Panel report

FIGURE 1

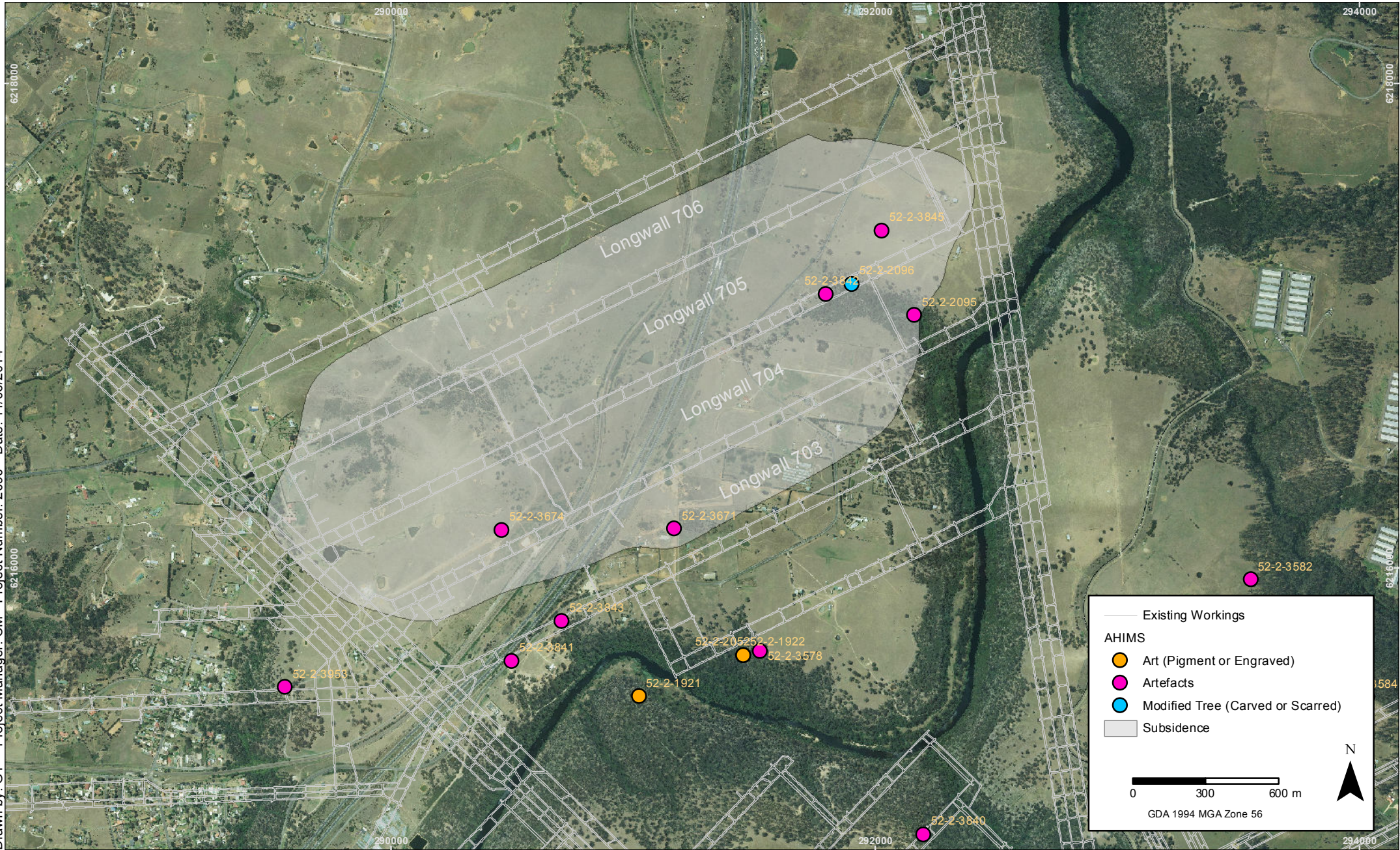
Drawn by: GT Project Manager: CM Project Number: 2090 Date: 11/06/2014



Site Map
Longwall 705 End of Panel report

FIGURE 2

Imagery: (c) 2009 BHPBIC



Existing Workings

AHIMS

- Art (Pigment or Engraved)
- Artefacts
- Modified Tree (Carved or Scarred)
- Subsidence

0 300 600 m

GDA 1994 MGA Zone 56

N

AHIMS
Longwall 705 End of Panel report

FIGURE 3