



**APPIN AREA 7  
LONGWALL 706 END OF  
PANEL REPORT**

**ATTACHMENT C2 –  
LW706 IMPACT  
REPORTS**







**APPIN AREA 7  
LONGWALL 706 END  
OF PANEL – IMPACT  
REPORTS**



## **Nepean River Impact Report – Gas Release**

**14 August 2014**

Monitoring and inspections of the Nepean River and its associated tributaries is undertaken in accordance with the SMP for Longwall 706 and the approved Appin Area 7 Water Management Plan. Water quality and water levels are recorded along with photographic records and observational notes.

During an inspection on 13<sup>th</sup> August 2014 the Illawarra Coal Environmental Field Team identified and confirmed an area of Gas Release on the Nepean River. This Gas Release has been identified as AA7\_LW706\_001 (Photos 1 & 2), and is outlined below.

### **Active Gas Release – AA7\_LW706\_001 (*Location: E289990, N6214089*)**

AA7\_LW706\_001 consists of 4 gas release sites in two 2m x 1m zones (Photos 1 & 2), approximately 6m apart. The releases are located over previously extracted Tower Mine Longwall 16, approximately 925 metres upstream of Gas Zone 15 (**Map 1**).

Longwall 16 commenced extraction on 28<sup>th</sup> October 1998 and completed extraction on 22<sup>nd</sup> August 1999. The impact is most likely a reactivated gas release from the mining of Longwall 16 due to its proximity to Appin Area 7 mining.

Longwall 706 commenced extraction on 23<sup>rd</sup> April 2014 and had extracted approximately 590m by 9<sup>th</sup> August 2014. At its closest point, Longwall 706 is currently 3,800m north-east of AA7\_LW706\_001.

### **Impact Update: AA7LW701\_Gas Zone 5 (*Location: E292243, N6215209*)**

Gas Zone 5 was originally identified on 2<sup>nd</sup> February 2008. At last inspection on 12<sup>th</sup> August 2014 a low intensity intermittent single point release was recorded, over an area of 0.5m x 0.5m (Photo 3). Monitoring of AA7LW701\_Gas Zone 5 will continue.

### **Impact Update: AA7LW704\_Gas Zone 14 (*Location: E291081, N6215601*)**

Gas Zone 14 was originally identified on 12<sup>th</sup> April 2012. As of 5<sup>th</sup> August 2014 a low intensity intermittent release was recorded, over an area of 2m x 2m (Photo 4). Monitoring of AA7LW704\_Gas Zone 14 will continue.

**Impact Update: AA7LW705\_Gas Zone 16 (Location: E290956, N6215645)**

Gas Zone 16 was originally identified on 4<sup>th</sup> October 2012 and consisted of multiple releases in an approximate 60m x 5m area. The flow rate from Gas Zone 16 was estimated to be approximately 200L/min. This release has not been active since the 17<sup>th</sup> January 2014 (Photo 5).

**Impact Update: AA7LW705\_Gas Zone 17 (Location: E290815, N6215562)**

Gas Zone 17 was originally identified on 7<sup>th</sup> February 2013, consisting of up to seven releases at any one time. No activity has been identified since 19<sup>th</sup> February 2014 (Photo 6). Gas Zone 17 was too small to measure or estimate flow rates.

**Impact Update: AA7LW705\_Gas Zone 18 (Location: E290623, N6215275)**

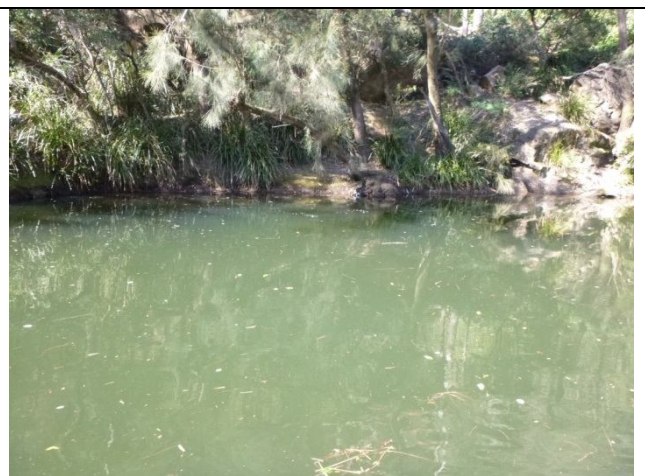
Gas Zone 18 was originally identified on 18<sup>th</sup> February 2013 and consisted of up to 20 releases. No activity has been identified since 2<sup>nd</sup> June 2014 (Photo 7). Gas Zone 18 was too small to measure or estimate flow rates.

**Monitoring of Active Gas Zones**

Gas releases have been observed during monitoring of the Nepean River. As the flow rate of the gas releases are each less than 3000L/min, they fall within a Level 1 trigger from the Longwall 705-706 SMP (**Appendix A, Table 1**), no Corrective Management Actions are required or recommended at this stage. Monitoring of active gas zones will continue and will be reported as required.



**Photo 1:** AA7\_LW706\_001 Gas Release 13<sup>th</sup> August 2014.



**Photo 2:** AA7\_LW706\_001 Gas Release 13<sup>th</sup> August 2014.





**Photo 3:** Gas Zone 5, looking downstream. Gas releases and iron present. Taken on 2/07/2014.



**Photo 4:** Gas Zone 14, looking downstream. Gas releases present. Taken on 4/08/2014.



**Photo 5:** AA7LW705 Gas Zone 16 looking downstream. Gas zone not active. Taken on 17/01/2014.

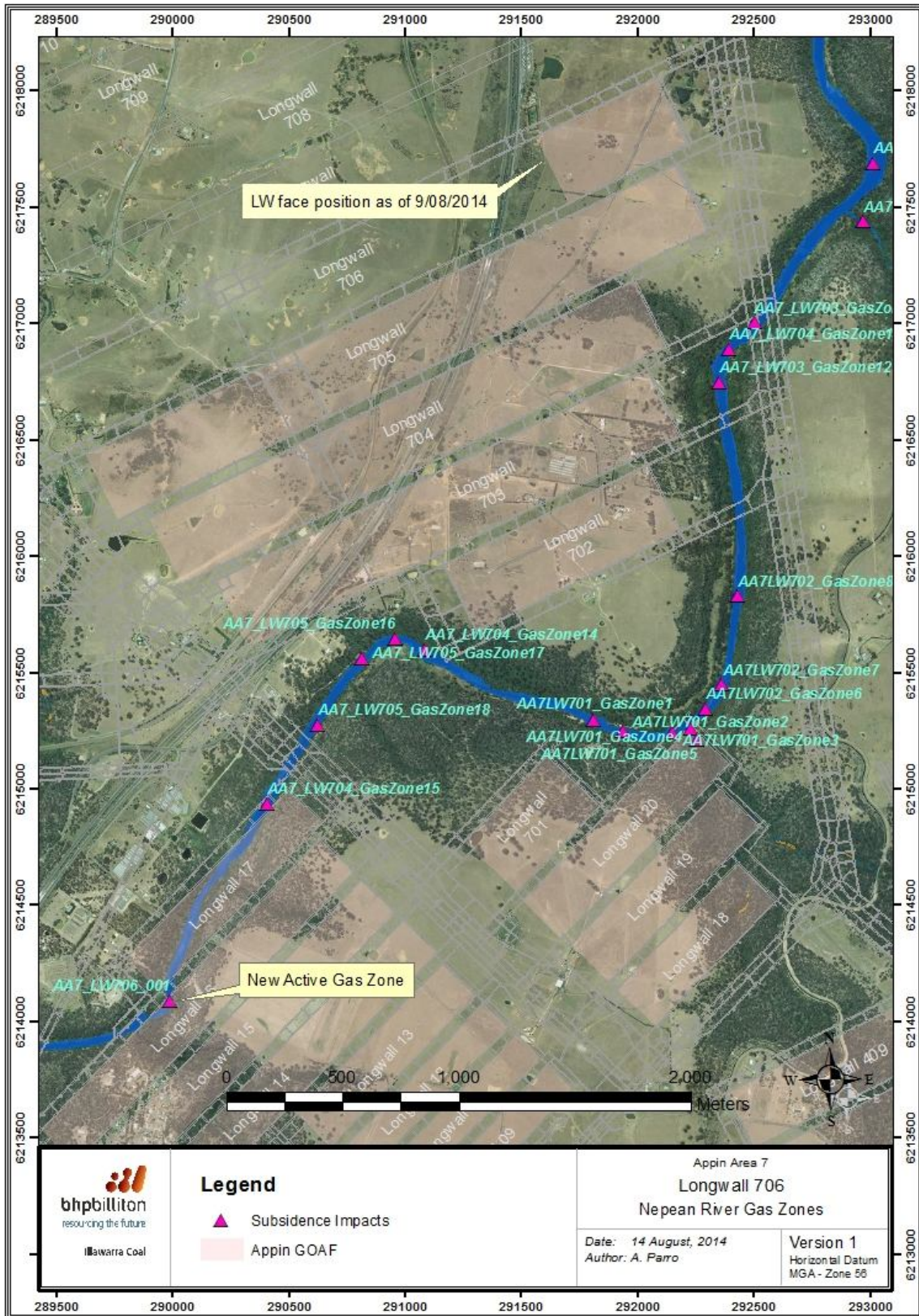


**Photo 6:** AA7LW705 Gas Zone 17 looking across stream. Gas zone not active. Taken on 19/02/2014.



**Photo 7:** Gas Zone 18, looking upstream. No gas releases present. Taken on 4/08/2014.





**Map 1:** Location of Gas Zones relative to Appin Mine Longwalls

## Appendix A

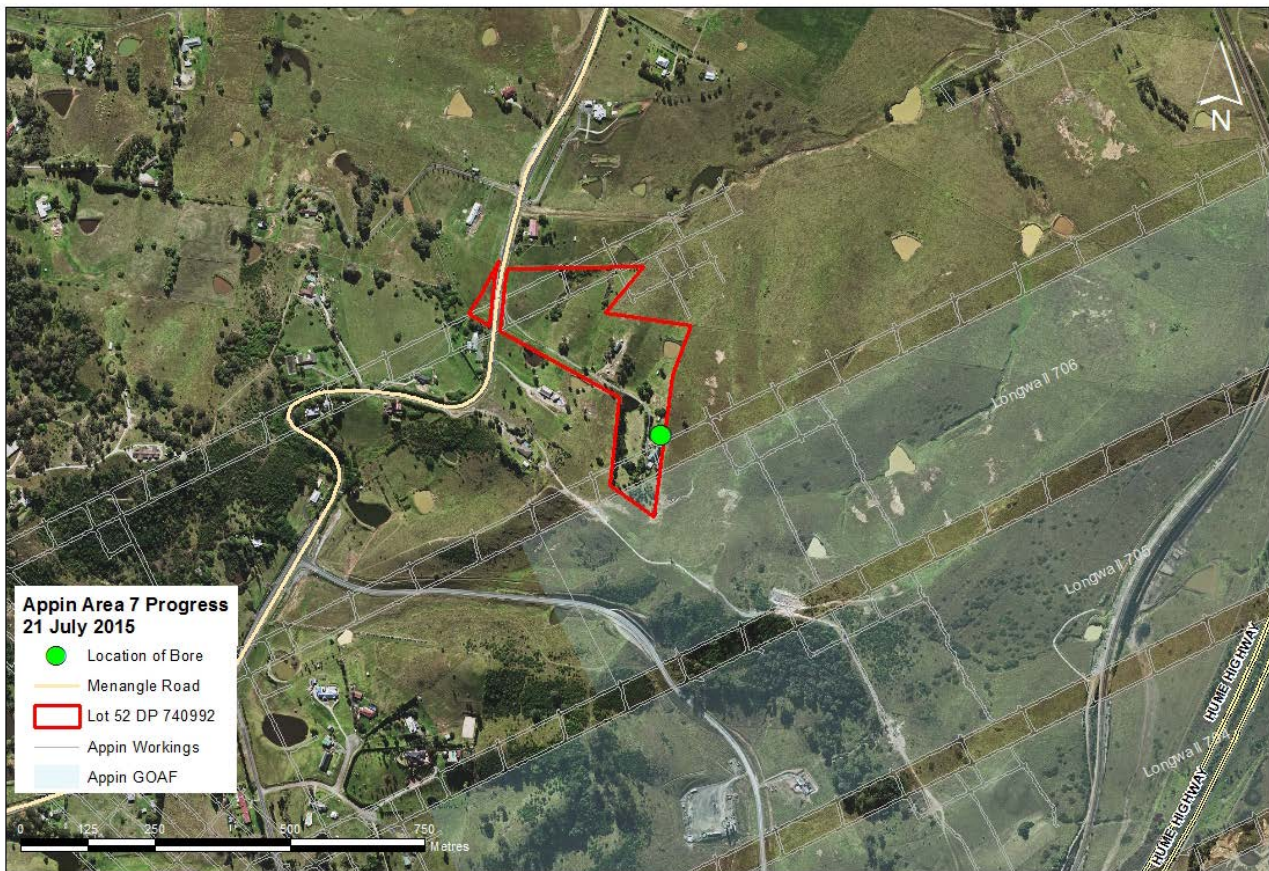
Monitoring	Trigger	Action
<b>WATER QUALITY</b>		
<p><b>Nepean River</b> Impact monitoring sites adjacent to each Longwall:</p> <ul style="list-style-type: none"> <li>▪ NR11</li> <li>▪ NR12</li> <li>▪ NR13</li> <li>▪ NR20</li> <li>▪ NR30</li> </ul> <p>Refer Figure 1a</p> <p><b>Notes:</b> <i>Baseline upriver sites will be used for cross-checking for upriver perturbations<sup>(3)</sup></i> <i>Baseline Upriver site NR2 data to be updated at end of panel following completion of each longwall, subject to checks-for, and discard-of upriver perturbed data</i></p>	<p><b>Level 1 (Within Prediction)<sup>(1)</sup></b> Impact monitoring sites:</p> <ul style="list-style-type: none"> <li>▪ pH reduction greater than 1 standard deviation but less than 2 standard deviation from pre-mining mean resulting from the mining for two consecutive months</li> <li>▪ DO reduction greater than 1 standard deviation but less than 2 standard deviation from pre-mining mean resulting from the mining for two consecutive months</li> <li>▪ Identification of strata gas plume of flow rate &lt; 3000 L/min<sup>(2)</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ Continue monitoring program</li> <li>▪ Report impacts to key stakeholders</li> <li>▪ Summarise impacts and record</li> </ul>
	<p><b>Level 2 (Within Prediction – CMAs may be required)<sup>(1)</sup></b> Impact monitoring sites:</p> <ul style="list-style-type: none"> <li>▪ pH reduction greater than 2 standard deviation from pre-mining mean resulting from the mining for two consecutive months</li> <li>▪ DO reduction greater than 2 standard deviation from pre-mining mean resulting from the mining for two consecutive months</li> <li>▪ EC, total Fe and total Mn increases greater than 2 standard deviation from pre-mining mean resulting from the mining for two consecutive months</li> <li>▪ Identification of strata gas plume of flow rate &gt;3000 L/min<sup>(2)</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ Actions as stated for Level 1 plus:</li> <li>▪ Review monitoring program</li> <li>▪ Notify relevant specialists (BHPBIC) and develop and implement remedial action if necessary</li> </ul> <p><i>Strata Gas Emission Plume:</i></p> <ul style="list-style-type: none"> <li>▪ Estimate gas emission flow rates. Re-estimate should significant change be observed</li> <li>▪ Take sample of plume (if possible) for: <ul style="list-style-type: none"> <li>- chemical composition</li> <li>- dissolved methane from exactly above gas plume and at established downriver monitoring sites</li> <li>- dissolved sulfide and total phenols from exactly above gas plume and at nearest downriver monitoring site(s)</li> </ul> </li> </ul>
	<p><b>Level 3 (CMAs likely to be required)<sup>(1)</sup></b> Impact monitoring sites:</p> <ul style="list-style-type: none"> <li>▪ Level 2-type reduction in water quality resulting from the mining observed for more than 6 consecutive months</li> </ul>	<ul style="list-style-type: none"> <li>▪ Actions as stated for Level 2 plus:</li> <li>▪ Immediately notify OEH, D&amp;PI, NoW &amp; DRE and any other relevant specialist.</li> <li>▪ Consultation with stakeholders.</li> <li>▪ Collect laboratory samples and analyse for: <ul style="list-style-type: none"> <li>- pH, EC, Total Fe and Mn</li> <li>- Suite of Filterable metals.</li> <li>- Dissolved methane, sulfide and total phenols (if relevant).</li> </ul> </li> <li>▪ Develop site management measures as soon as practically possible (pending stakeholder availability) and seek any approvals required to implement</li> </ul>
	<p><b>Exceeding Prediction</b></p> <ul style="list-style-type: none"> <li>▪ More than negligible gas releases</li> </ul>	<ul style="list-style-type: none"> <li>▪ <i>Actions as stated for Level 3</i></li> <li>▪ Investigate reasons for the exceedance</li> <li>▪ Update future predictions based on the outcomes of the investigation</li> </ul>

**Table 1:** Appin Area 7 Trigger Action Response Plan (TARP) for mining induced impacts on the Nepean River from Longwalls 705 and 706.



Lot 52 DP 740992 (575 Menangle Road, Douglas Park) is partially located within Longwall 706 and Longwall 707 (refer Figure 1). The property contains a dwelling, ancillary structures and a private borehole.

The borehole (GW112441) is registered with NSW Office of Water. Department records indicate the borehole is authorised for domestic and stock use, and the bore was drilled to a depth of 294 metres. The indicative location of the borehole is shown in Figure 1.



**Figure 1: Location of subject property in context of LW706**

Appin Mine is currently mining Longwall 706, with the subject property being within the 20mm subsidence zone for Longwall 706. The active subsidence period associated with Longwall 706 for this property has commenced.

An inspection of the borehole was undertaken on the 15<sup>th</sup> July by Illawarra Coal (IC) representatives in response to feedback from the landholder in relation to water cloudiness and the smell of gas from the borehole. Strata gas was detected from the borehole. Gas and water samples were taken at the time of the inspection, with lab testing



confirming the presence of methane.

### **Corrective Management Actions**

At the advice of IC representatives, the landholder has now ceased using the borehole and the area around the borehole has been restricted (refer Photo 1). A qualified electrician has isolated power supply to the pump to prevent use.



**Photo 1: Temporary fencing to existing borehole**

A 10,000 litre water tank has been provided by IC, in a location determined by the landholder for the purpose of providing water to livestock. Potable water from the water tank adjacent to the house will be used for the animals in the paddock closest to the house.

The landholder has advised that their preference is to advise IC representatives when they require potable and non-potable water to be delivered.

A work program is currently being developed by IC to grout the existing borehole.

A replacement borehole is anticipated to be drilled in a location determined in consultation with the landholder following the active subsidence period for Longwall 707 (unless an alternative water supply is provided at the agreement of the landholder).

### **Reporting**

IC will provide an update of the status of the borehole in the next 4-monthly Subsidence Management Status Report for Appin Area 7.

Built Feature Management Plans (BFMPs) have been prepared by South32 Illawarra Coal (S32IC), formerly BHP Billiton Illawarra Coal, for all landholders for Appin Area 7 Longwall 706. Inspections of built features are conducted with the consent of the relevant property/infrastructure owner and any tenant (if applicable). Inspections of dams and boreholes are conducted by the Illawarra Coal Environmental Field Team (ICEFT).

A post-mining inspection on the property Lot 2 DP804133 was completed on the 4<sup>th</sup> of January 2016. Soil cracking was identified at two locations on the property (Figure 1) and are described below.

### AA7\_LW706\_003

Multiple soil cracks were identified within a 30m x 35m area of the property. The approximate maximum dimensions were 2.4m long, 0.03m wide and 0.425m deep (Photos 1 and 2). The cracks do not appear to pose a safety hazard and with no further movements are expected to self-remediate. The landholders have been advised to report any changes to S32IC.

Cracking was identified along a fence line located within the property (Photo 3). Total length of cracking was approximately 65m, with a maximum width of 0.03m and depth of 0.1m. The cracks do not appear to pose a safety hazard and with no further movements are expected to self-remediate.



**Photo 1:** Longest identifiable soil crack on landholder's property. Taken on 04/01/2016.



**Photo 2:** Widest identifiable crack on landholder's property. Taken on 04/01/2016.





**Photo 3:** Cracking along fence line. Taken on 04/01/2016.

**AA7\_LW706\_004**

A soil crack was identified at the base of the north-western section of the Dam E16d01 wall (Photo 4). The crack was approximately 1.3m long, with a maximum width and depth of 0.02m and 0.03m respectively. The crack does not appear to pose a safety hazard and with no further movements is expected to self-remediate.

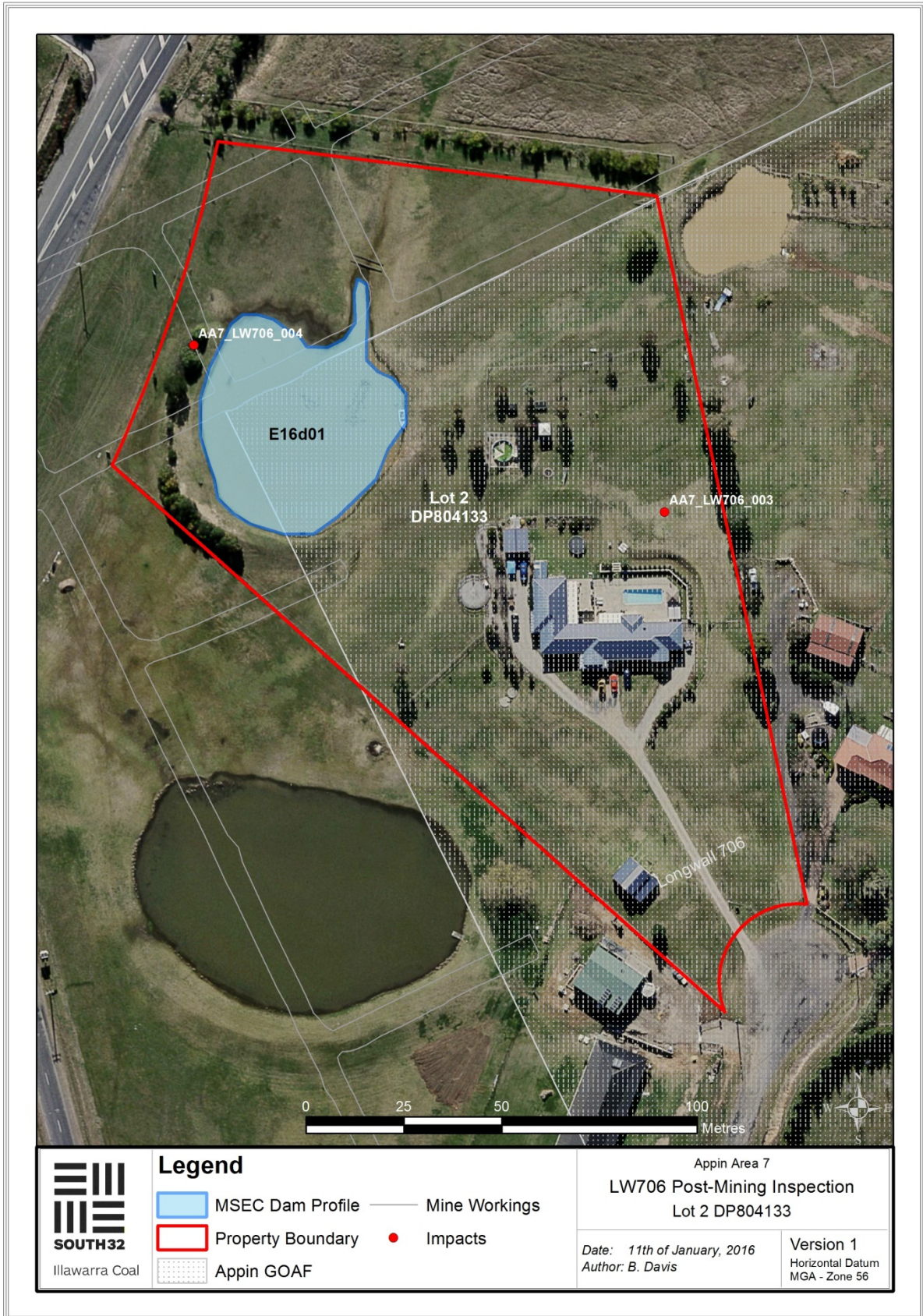


**Photo 4:** Cracking to base of dam wall. Taken on 04/01/2016.

**Table 1:** Subsidence impacts recorded for Longwall 706, Appin Area 7. Highlighted row refers to latest impact.

Site	Identification Date	Activating Longwall	Type	Trigger Level	Comment
AA7_LW706_001	13/08/2014	LW706	Gas Release	n/a	Gas release
AA7_LW706_002	15/07/2015	LW706	Gas Emission-Private Borehole	n/a	Gas release
AA7_LW706_003	04/01/2015	LW706	Soil Cracking	n/a	Soil cracking
AA7_LW706_004	04/01/2015	LW706	Soil Cracking	n/a	Soil cracking





**Figure 1:** Location of impacts relative to Longwall 706, Appin Area 7.