

Monitoring of watercourses, swamps and landscape features is undertaken to identify subsidence impacts. These features are monitored by the Illawarra Metallurgical Coal Environmental Field Team (IMCEFT) on a monthly basis prior to mining and weekly during mining. Monitoring is conducted in accordance with the approved Subsidence Management Plan (SMP) for Dendrobium Area 3B (DA3B). Extraction of Longwall 18 commenced 3 December 2021 and as of 12 December 2021 had progressed approximately 35m. During a recent inspection, one new subsidence impact was identified.

#### **DA3B\_LW18\_001 (E 288784, N 6191476)**

*DA3B\_LW18\_001* is located on a rock outcrop to the south of Swamp 23 (Figure 1). The impact is comprised of rock fracturing. The fracturing has a continuous length of 4.70m, a width of up to 0.01m and a maximum measurable depth of 0.16m (Photo 1 and Photo 2).

*DA3B\_LW18\_001* is a Level 1 trigger as per the Dendrobium Area 3B Landscape TARP (Table 1), specifically;

- Crack or fracture up to 10m in length;
- Crack or fracture up to 100mm width.



Photo 1: *DA3B\_LW18\_001*, showing the length of the fracturing. Taken 14/12/2021.



Photo 2: *DA3B\_LW18\_001*, showing the width of the fracturing. Taken 14/12/2021.

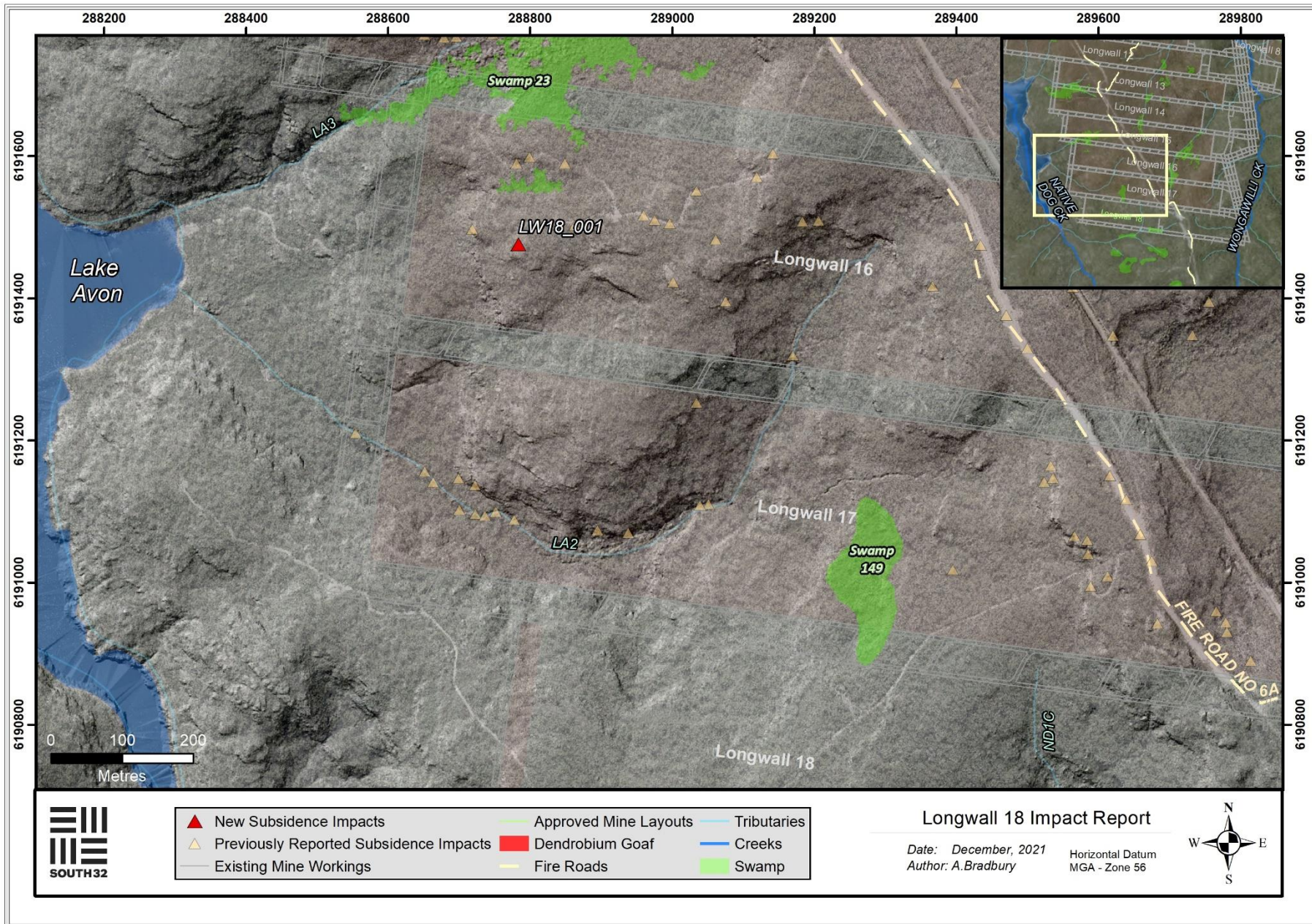


Figure 1: Map showing latest subsidence impacts relevant to DA3B mining operations.

Table 1: Extract from Dendrobium Area 3B Landscape TARP.

Monitoring	Trigger	Action
<b>LANDSCAPE FEATURES</b>		
<p><b>AREA 2</b></p> <p><b>Cliffs</b> A2-CL1 (above LW4)</p> <p><b>Steep Slopes</b> A2-SL1 and A2-SL2 (above LWs 4 &amp; 5)</p> <p><b>Watercourses</b> A2-WC10 and A2-WC11 (above LW3) A2-WC13 &amp; A2-WC16 (above LWs 4 &amp; 5)</p> <p><b>Swamp</b> A2-SW1 (above LWs 4 &amp; 5)</p> <p><b>4WD Track</b> A2-FT1 (above LWs 4 &amp; 5)</p> <p><b>Crinanite Surface Extent</b> A2-CN1 &amp; A2-CN2 (above LWs 3 &amp; 4)</p>	<p><b>Level 1 *</b></p> <ul style="list-style-type: none"> <li>Rock fall from a cliff which is left mostly intact (&lt;10% length), resulting in insignificant ground disturbance</li> <li>Surface movement or rock displacement with negligible soil surface exposed</li> <li>Crack at the surface, which should not result in any significant erosion or further ground movement</li> <li>Crack in a fire trail which should not result in erosion or impede access</li> <li>Crack or fracture up to 100mm width</li> <li>Crack or fracture up to 10m length</li> <li>Erosion in a localised area which would be expected to naturally stabilise without CMA and within the period of monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Continue monitoring program</li> <li>Report impacts to key stakeholders</li> <li>Summarise impacts and Report in the End of Panel Report and AEMR</li> </ul>
<p><b>AREA 3A</b></p> <p><b>Cliffs</b> All mapped cliff sites in subsidence area (Refer to Dendrobium Area 3A SMP Figures 19.3 for location of sites)</p> <p><b>Steep Slopes</b> All mapped steep slopes in subsidence area Refer to Dendrobium Area 3A SMP Figures 19.3 for location of sites</p> <p><b>Watercourses/ Swamps</b> All mapped watercourse and swamps in subsidence area Refer to Dendrobium Area 3A SMP Figure 19.3</p> <p><b>Fire Trails</b> All mapped fire trails in subsidence area Refer to Dendrobium Area 3A SMP Figure 19.3</p>	<p><b>Level 2 *</b></p> <ul style="list-style-type: none"> <li>Rock fall or overhang collapse at a cliff site, where characteristics of the cliff have changed, and there has been significant ground disturbance</li> <li>Surface movement or rock displacement that has exposed significant areas of soil</li> <li>A crack at the surface, which could result in significant erosion or movement at the surface</li> <li>A crack at the surface with potential risk to safety and/or fauna entrapment</li> <li>A crack in the fire trail, which could result in significant erosion or impede vehicle access</li> <li>Crack or fracture between 100 and 300mm width</li> <li>Crack or fracture between 10 and 50m length</li> <li>Significant erosion at any location, which is not likely to naturally stabilise within the period of monitoring, or is located in a sensitive area e.g. swamps, creek, lake shore, and may result in increased sediment transport to Cordeaux Dam, or has been previously identified as Level 1, but is not likely to naturally stabilise within the monitoring period</li> </ul>	<ul style="list-style-type: none"> <li>Actions as stated for Level 1</li> <li>Review monitoring frequency</li> <li>Notify relevant technical specialists and seek advice on any CMA required</li> <li>Provide safety signage and barricades as appropriate</li> <li>Implement approved repairs to ensure safety and serviceability on fire trails</li> <li>Implement agreed CMAs as approved</li> </ul> <p><i>Note: CMAs are to be proposed based on appropriate management of environmental and other consequences of impacts i.e. cracking at the surface with insignificant consequences may not require specific CMAs other than ongoing monitoring to confirm there are no ongoing impacts</i></p>
<p><b>AREA 3B</b></p> <p><b>Cliffs</b> All mapped cliff sites in subsidence area Refer to Dendrobium Area 3B SMP Figures 18.1 for location of sites</p>	<p><b>Level 3 *</b></p> <ul style="list-style-type: none"> <li>Major cliff collapse where the characteristics of the cliff change significantly and there is significant ground disturbance that is unlikely to naturally stabilise within the monitoring period</li> </ul>	<ul style="list-style-type: none"> <li>Actions as stated for Level 2</li> <li>Immediately notify DoPI, DPIM, SCA, resource managers and relevant technical specialists and seek advice on any CMA required</li> <li>Site visits with stakeholders if required</li> </ul>

Table 2: Summary of Longwall 18 impacts and triggers. Highlighted rows indicate the latest impacts featured in this report.

Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW18_001	Rock Fracturing	Rock Outcrop	14/12/2021	1	Rock fracturing to a rock outcrop to the south of Swamp 23	This Report

Monitoring of watercourses, swamps and landscape features is undertaken to identify subsidence impacts. These features are monitored by the Illawarra Metallurgical Coal Environmental Field Team (IMCEFT) on a monthly basis prior to mining and weekly during mining. Monitoring is conducted in accordance with the approved Subsidence Management Plan (SMP) for Dendrobium Area 3B (DA3B). Extraction of Longwall 18 commenced 3 December 2021 and as of 15 December 2021 had progressed approximately 57m. During the most recent inspection of LA4, water quality triggers were identified.

#### LA4

LA4 is a small tributary of Lake Avon that flows southward from DA3B mining operations (Figure 1). The LA4 sub catchment was mined beneath by Longwall 12 in April 2016 and Longwall 13 in March 2017. Rock fracturing and subsequent flow diversion was recorded in the tributary following extraction of Longwall 12 and 13. Water quality parameters are recorded at LA4\_S1, with latest results reaching the TARP level for pH, Dissolved Oxygen (DO) and Electrical Conductivity (EC) as shown in Table 1 and presented in Graph 1 to Graph 3. During the latest inspection, surface flow was observed entering the site but no flow was observed exiting the site (Photo 1 and Photo 2). Water quality results for pH and EC were recorded as a Level 3 Trigger during the extraction of Longwall 17; reported on 9 June 2021 and 6 July 2021, respectively. A specialist review was undertaken in response. Water quality results for DO were recorded as a Level 1 Trigger during the extraction of Longwall 16; reported on 5 August 2020.

**Table 1:** Latest water quality results and associated TARP levels for LA4\_S1, on Lake Avon tributary LA4.

Site	Water Quality Parameter	Result on 18/11/2021	Result on 17/12/2021	TARP Level
LA4_S1	pH (pH Units)	4.11	4.01	Below 4.9
	DO (%)	86.4	67.6	Below 69.5
	EC ( $\mu$ S/cm)	172	160	Above 129.8

\*Red indicates TARP has been reached. Blue indicates TARP has not been reached.

These observations constitute a Level 1 trigger and Exceeding Predictions triggers as per the DA3B Watercourse Impact, Monitoring Management and Contingency Plan (Table 2), specifically:

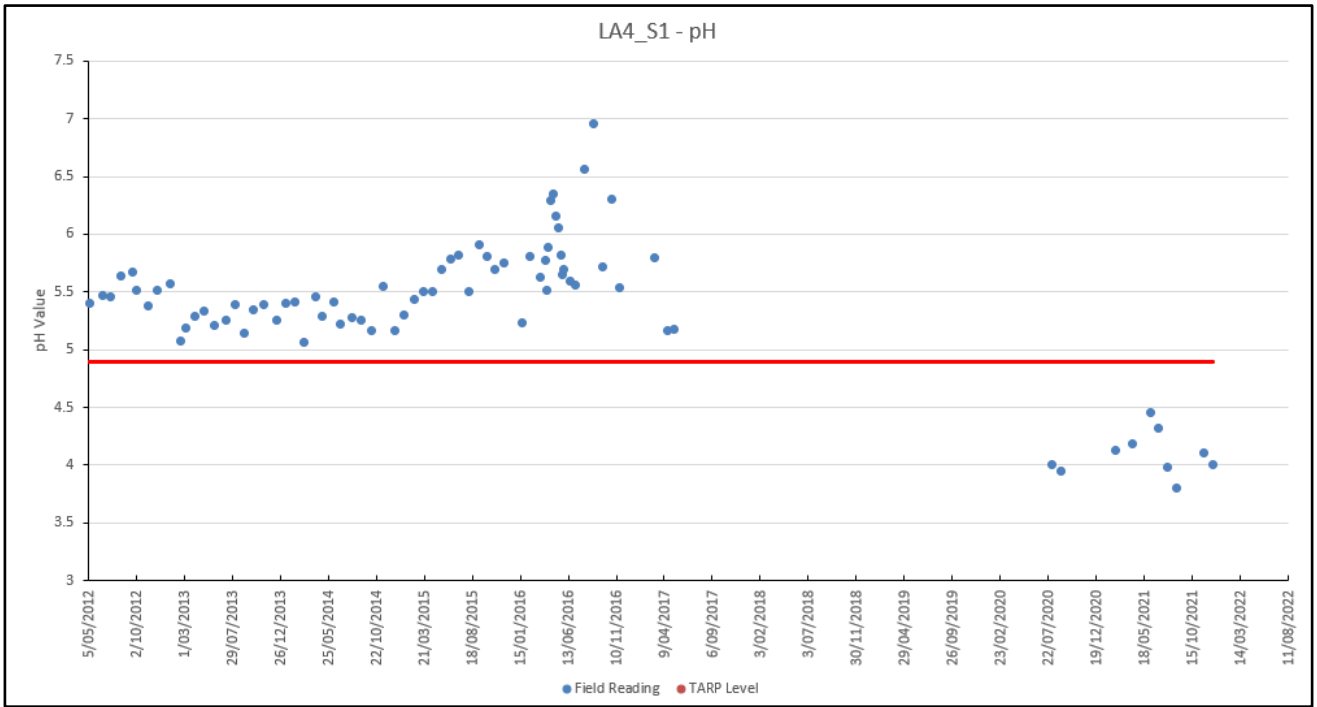
-One exceedance of the  $\pm 3$  standard deviation level (negative for pH and DO, positive for EC) from the baseline mean within six months:

– DO 69.5 %

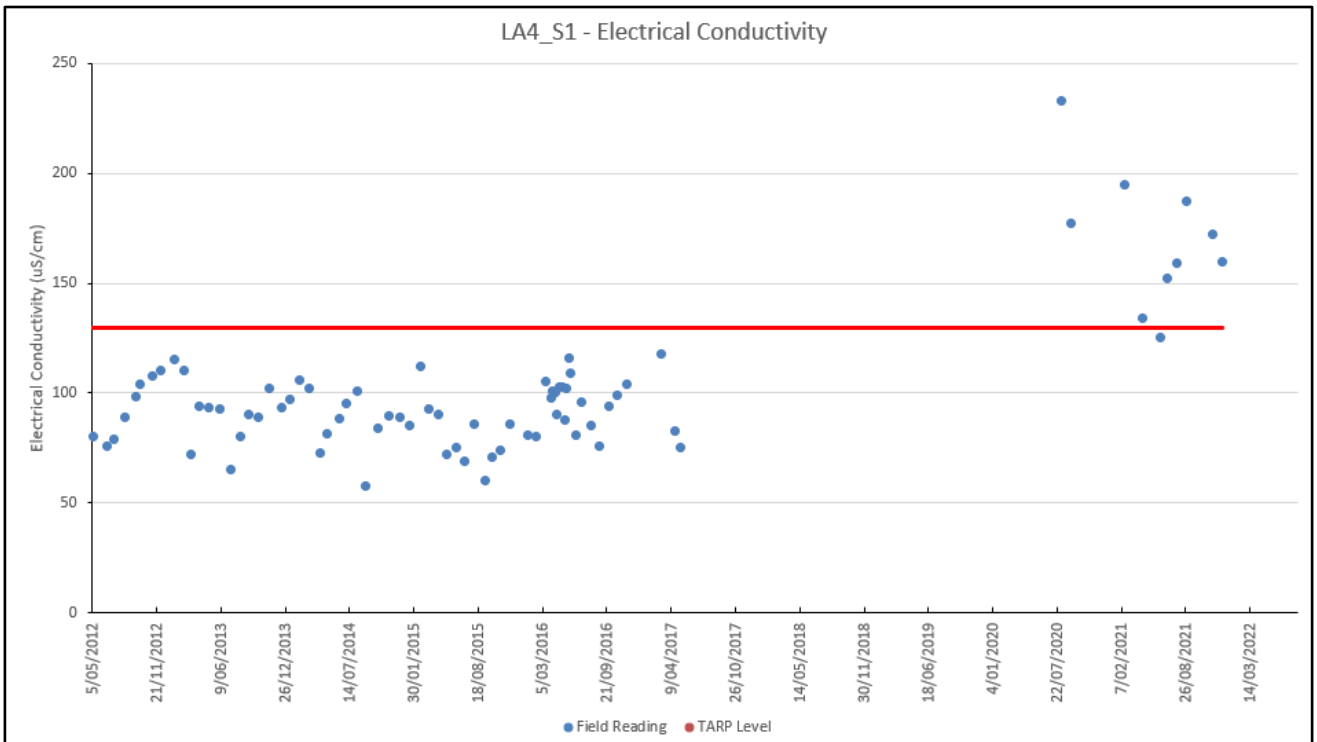
-Mining results in two consecutive exceedances or three exceedances of the  $\pm 3$  standard deviation level (positive for EC, negative for pH and DO) from the baseline mean within six months:

– pH 4.90

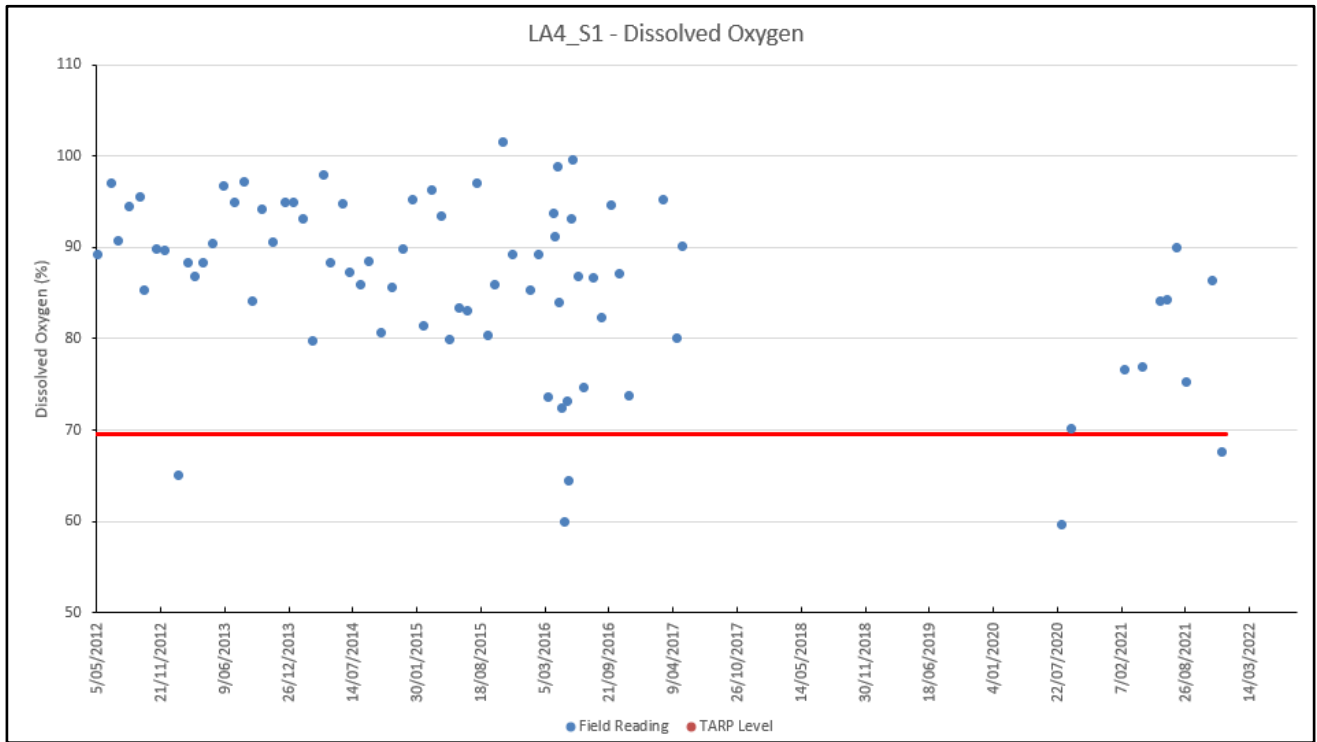
– EC 129.8  $\mu$ S/cm



**Graph 1:** pH results recorded at LA4\_S1, a water quality monitoring site on Lake Avon tributary LA4.



**Graph 2:** Electrical Conductivity results recorded at LA4\_S1, a water quality monitoring site on Lake Avon tributary LA4.



**Graph 3:** Dissolved Oxygen results recorded at LA4\_S1, a water quality monitoring site on Lake Avon tributary LA4.



**Photo 1:** LA4\_S1, looking upstream. Taken on 17/12/2021.



**Photo 2:** LA4\_S1, looking downstream. Taken on 17/12/2021.

**Corrective Management Actions (CMAs)**

CMAs will be implemented as per the Dendrobium Area 3B Watercourse TARP (Table 2). CMAs were previously undertaken in response to the pH and EC Level 3 triggers; as reported 9 June 2021 and 6 July 2021, respectively. An additional specialist review will be undertaken to analyse the most recent dataset.

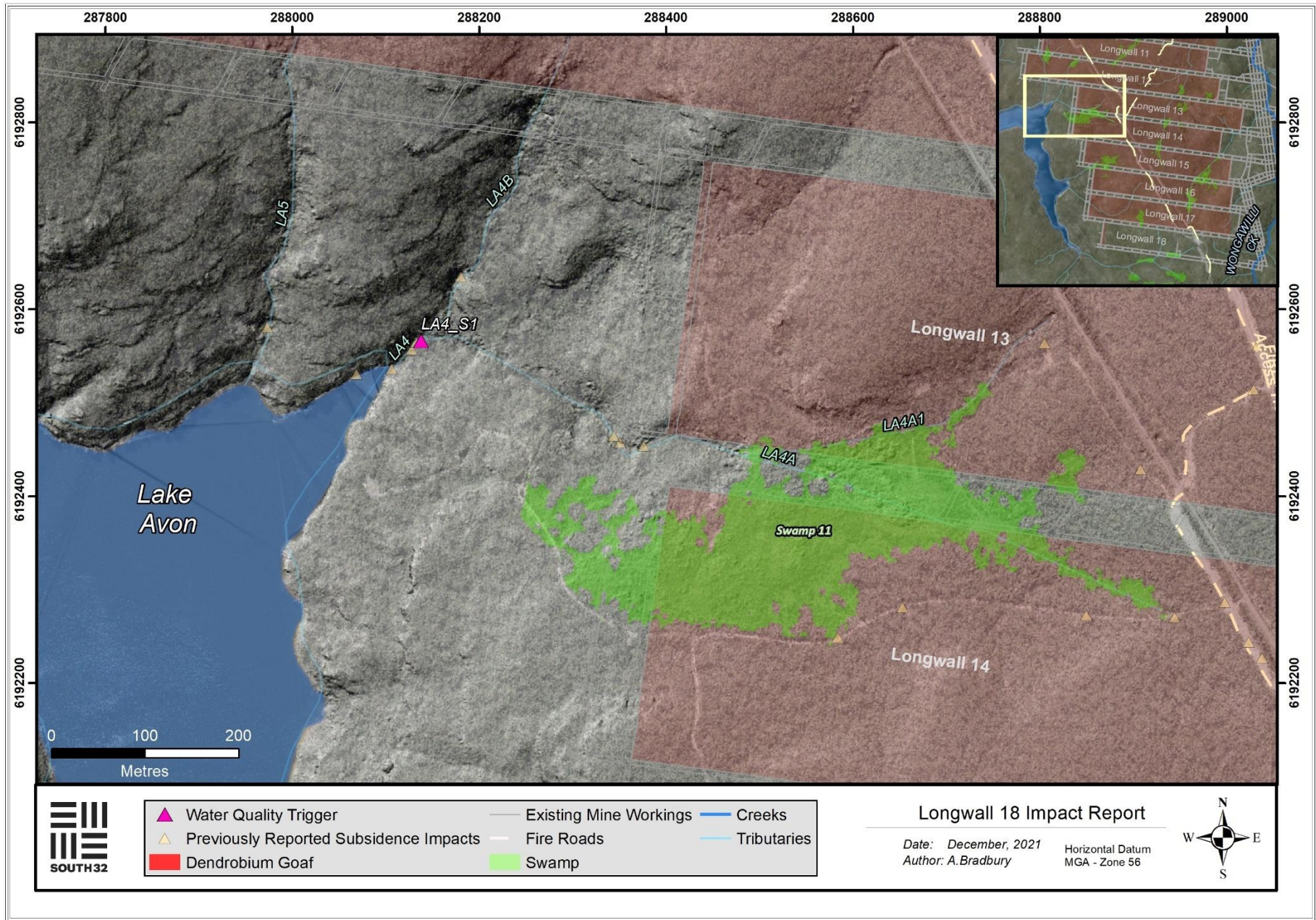


Figure 1: Map showing latest subsidence impacts relevant to DA3B mining operations.



**Table 2:** Extract from Dendrobium Area 3B Watercourse TARP.

<p><b>Lake Avon</b></p> <p><b>Relevant Performance Measure(s):</b></p> <ul style="list-style-type: none"> <li>Lake Avon - negligible reduction in the quality of surface water inflows to Lake Avon</li> </ul>	<p><b>Level 1</b></p> <ul style="list-style-type: none"> <li>One exceedance of the <math>\pm 3</math> standard deviation level (positive for EC, negative for pH and DO) from the baseline mean within six months:             <ul style="list-style-type: none"> <li>pH 4.90</li> <li>EC 129.8 uS/cm</li> <li>DO 69.5%</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Continue monitoring program</li> <li>Submit an Impact Report to BCD, DPIE, DRG, Water NSW</li> <li>Report in the End of Panel Report</li> <li>Summarise actions and monitoring in AEMR</li> </ul>
<p>Lake Avon tributary (LA4_S1)</p> <p>Baseline means:</p> <ul style="list-style-type: none"> <li>pH 5.38</li> <li>EC 90.8 uS/cm</li> <li>DO 89.9%</li> </ul>	<p><b>Level 2</b></p> <ul style="list-style-type: none"> <li>Two non-consecutive exceedances of the <math>\pm 3</math> standard deviation level (positive for EC, negative for pH and DO) from the baseline mean within six months:             <ul style="list-style-type: none"> <li>pH 4.90</li> <li>EC 129.8 uS/cm</li> </ul> </li> <li>DO 69.5%</li> </ul>	<ul style="list-style-type: none"> <li><i>Actions as stated for Level 1</i></li> <li>Review monitoring frequency</li> <li>Submit letter report to DPIE, DRG and Water NSW and seek advice on any CMA required</li> <li>Implement agreed CMAs as approved (subject to agency feedback)</li> </ul>
	<p><b>Level 3</b></p> <ul style="list-style-type: none"> <li>Three exceedances of the <math>\pm 3</math> standard deviation level (positive for EC, negative for pH and DO) from the baseline mean within six months:             <ul style="list-style-type: none"> <li>pH 4.90</li> <li>EC 129.8 uS/cm</li> </ul> </li> <li>DO 69.5%</li> </ul>	<ul style="list-style-type: none"> <li><i>Actions as stated for Level 2</i></li> <li>Offer site visit with BDC, DPIE, DRG, Water NSW</li> <li>Implement additional monitoring or increase frequency if required</li> <li>Review relevant TARP and Management Plan in consultation with key agencies</li> <li>Collect laboratory samples and analyse for:             <ul style="list-style-type: none"> <li>pH, EC, major cations, major anions, Total Fe, Mn &amp; Al</li> <li>Filterable suite of metals</li> </ul> </li> <li>Develop site CMA (subject to agency feedback). This may include:             <ul style="list-style-type: none"> <li>Limestone emplacement to raise pH where it is appropriate to do so</li> <li>Grouting of fractures in rockbar and bedrock base of any significant pool where flow diversion results in pool water level lower than baseline period</li> </ul> </li> <li>Completion of works following approvals and at a time agreed between S32, DPIE, DRG and Water NSW (i.e. may be after mining induced movements and impacts are complete), including monitoring and reporting on success</li> </ul>
	<p><b>Exceeding Prediction</b></p> <ul style="list-style-type: none"> <li>Mining results in two consecutive exceedances or three exceedances of the <math>\pm 3</math> standard deviation level (positive for EC, negative for pH and DO) from the baseline mean within six months:             <ul style="list-style-type: none"> <li>pH 4.90</li> <li>EC 129.8 uS/cm</li> <li>DO 69.5%</li> </ul> </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> <li>Provide residual environmental offset for any mining impact where CMAs are unsuccessful as required by Condition 14 Schedule 3 of the Development Consent</li> </ul>

**Table 3:** Summary of Longwall 18 impacts and triggers. Highlighted rows include all impacts featured in this report.

Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW18_001	Rock Fracturing	Rock Outcrop	14/12/2021	1	Rock fracturing to a rock outcrop to the south of Swamp 23	15/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	1	Trigger for dissolved oxygen at LA4_S1	This Report
LA4_S1	Water Quality Trigger	LA4	17/12/2021	Exceeding Predictions	Trigger for pH at LA4_S1	This Report
LA4_S1	Water Quality Trigger	LA4	17/12/2021	Exceeding Predictions	Trigger for electrical conductivity at LA4_S1	This Report

Monitoring of watercourses, swamps and landscape features is undertaken to identify subsidence impacts. These features are monitored by the Illawarra Metallurgical Coal Environmental Field Team (IMCEFT) on a monthly basis prior to mining and weekly during mining. Monitoring is conducted in accordance with the approved Subsidence Management Plan (SMP) for Dendrobium Area 3B (DA3B). Extraction of Longwall 18 commenced 3 December 2021 and as of 27 January 2022 had progressed approximately 367m. During a recent inspection, two new subsidence impacts were identified.

**DA3B\_LW18\_002 (E 288976, N 6190704)**

*DA3B\_LW18\_002* is located on a rock outcrop/steep slope west of Fire Road 6A (Figure 1). The impact area consists of two rock fractures with associated soil cracking. The largest fracture has a maximum continuous length of 3.46m, a width of up to 0.025m and a maximum measurable depth of 0.68m (Photo 1 and Photo 2).

*DA3B\_LW18\_002* is a Level 1 trigger as per the Dendrobium Area 3B Landscape TARP (Table 1), specifically;

- Crack or fracture up to 10m in length;
- Crack or fracture up to 100mm width.



Photo 1: *DA3B\_LW18\_002*, showing a section of rock fracturing. Taken 31/01/2022.



Photo 2: *DA3B\_LW18\_002*, showing the width of the fracturing. Taken 31/01/2022.

### **DA3B\_LW18\_003 (E 288940, N 6190704)**

*DA3B\_LW18\_003* is located on a rock outcrop west of Fire Road 6A (Figure 1). The impact consists of a rock fracture. The rock fracture has a continuous length of 15.5m, a width of up to 0.08m and a maximum measurable depth of 1.1m (Photo 3 and Photo 4).

*DA3B\_LW18\_003* is a Level 2 trigger as per the Dendrobium Area 3B Landscape TARP (Table 1), specifically;

- Crack or fracture between 10m and 50m in length.



Photo 3: *DA3B\_LW18\_003*, showing a section of rock fracturing. Taken 31/01/2022.



Photo 4: *DA3B\_LW18\_003*, showing the width of the fracturing. Taken 31/01/2022.

### **Corrective Management Actions (CMAs)**

In accordance with the DA3B SMP, the following actions have been initiated:

- Continue monitoring program as required in the DA3B SMP.
- Report impacts to key stakeholders.
- Summarise impacts and report in the End of Panel Report and Annual Review.
- Review monitoring frequency
- Notify relevant technical specialists and seek advice on any CMA required
- Provide safety signage and barricades as appropriate
- Implement agreed CMAs as approved (subject to agency feedback)

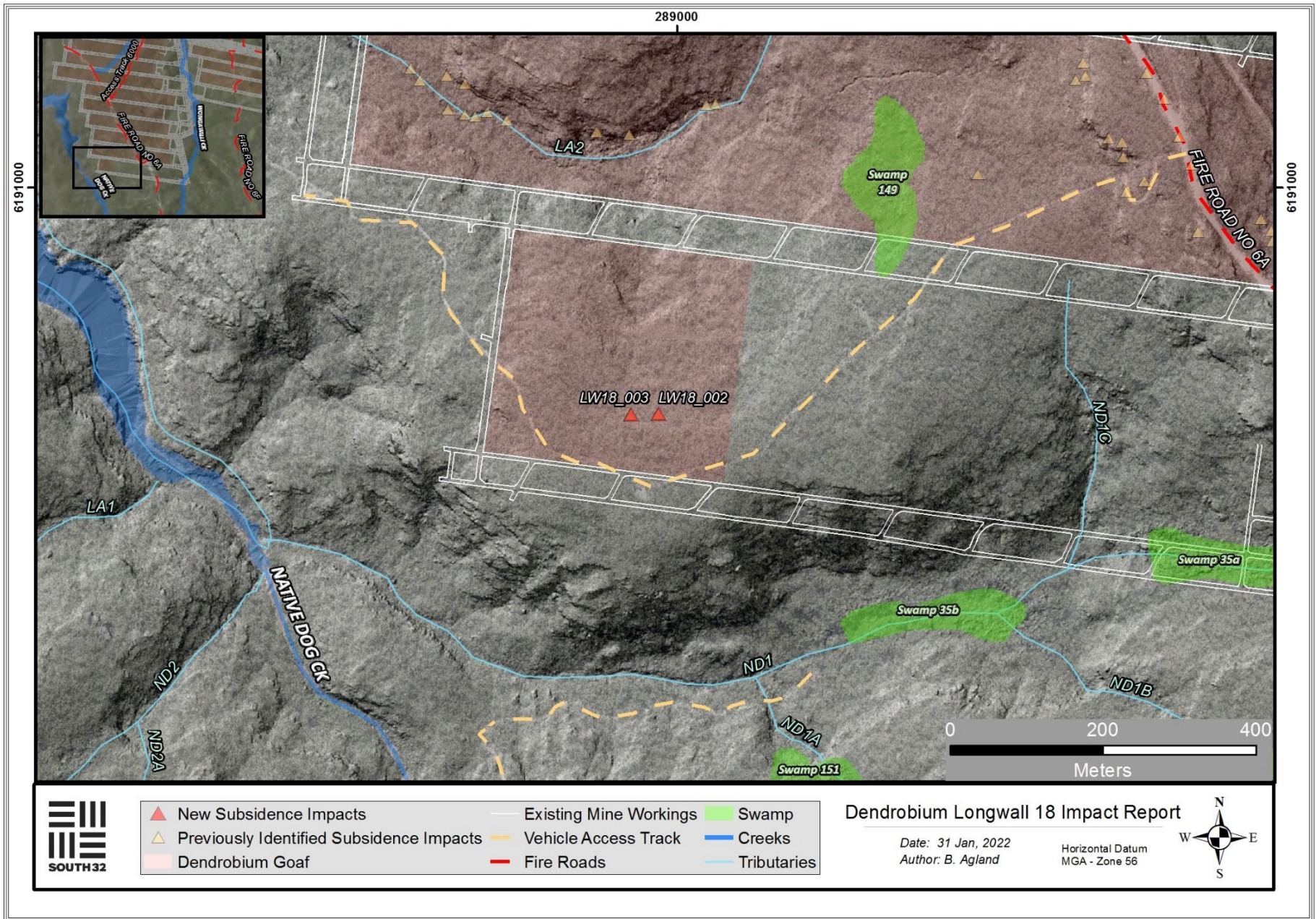


Figure 1: Map showing latest subsidence impacts relevant to DA3B mining operations.

Table 1: Extract from Dendrobium Area 3B Landscape TARP.

Monitoring	Trigger	Action
<b>LANDSCAPE FEATURES</b>		
<p><b>AREA 2</b></p> <p><b>Cliffs</b> A2-CL1 (above LW4)</p> <p><b>Steep Slopes</b> A2-SL1 and A2-SL2 (above LWs 4 &amp; 5)</p> <p><b>Watercourses</b> A2-WC10 and A2-WC11 (above LW3) A2-WC13 &amp; A2-WC16 (above LWs 4 &amp; 5)</p> <p><b>Swamp</b> A2-SW1 (above LWs 4 &amp; 5)</p> <p><b>4WD Track</b> A2-FT1 (above LWs 4 &amp; 5)</p> <p><b>Crinanite Surface Extent</b> A2-CN1 &amp; A2-CN2 (above LWs 3 &amp; 4)</p>	<p><b>Level 1 *</b></p> <ul style="list-style-type: none"> <li>Rock fall from a cliff which is left mostly intact (&lt;10% length), resulting in insignificant ground disturbance</li> <li>Surface movement or rock displacement with negligible soil surface exposed</li> <li>Crack at the surface, which should not result in any significant erosion or further ground movement</li> <li>Crack in a fire trail which should not result in erosion or impede access</li> <li>Crack or fracture up to 100mm width</li> <li>Crack or fracture up to 10m length</li> <li>Erosion in a localised area which would be expected to naturally stabilise without CMA and within the period of monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Continue monitoring program</li> <li>Report impacts to key stakeholders</li> <li>Summarise impacts and Report in the End of Panel Report and AEMR</li> </ul>
<p><b>AREA 3A</b></p> <p><b>Cliffs</b> All mapped cliff sites in subsidence area (Refer to Dendrobium Area 3A SMP Figures 19.3 for location of sites)</p> <p><b>Steep Slopes</b> All mapped steep slopes in subsidence area Refer to Dendrobium Area 3A SMP Figures 19.3 for location of sites</p> <p><b>Watercourses/ Swamps</b> All mapped watercourse and swamps in subsidence area Refer to Dendrobium Area 3A SMP Figure 19.3</p> <p><b>Fire Trails</b> All mapped fire trails in subsidence area Refer to Dendrobium Area 3A SMP Figure 19.3</p>	<p><b>Level 2 *</b></p> <ul style="list-style-type: none"> <li>Rock fall or overhang collapse at a cliff site, where characteristics of the cliff have changed, and there has been significant ground disturbance</li> <li>Surface movement or rock displacement that has exposed significant areas of soil</li> <li>A crack at the surface, which could result in significant erosion or movement at the surface</li> <li>A crack at the surface with potential risk to safety and/or fauna entrapment</li> <li>A crack in the fire trail, which could result in significant erosion or impede vehicle access</li> <li>Crack or fracture between 100 and 300mm width</li> <li>Crack or fracture between 10 and 50m length</li> <li>Significant erosion at any location, which is not likely to naturally stabilise within the period of monitoring, or is located in a sensitive area e.g. swamps, creek, lake shore, and may result in increased sediment transport to Cordeaux Dam, or has been previously identified as Level 1, but is not likely to naturally stabilise within the monitoring period</li> </ul>	<ul style="list-style-type: none"> <li>Actions as stated for Level 1</li> <li>Review monitoring frequency</li> <li>Notify relevant technical specialists and seek advice on any CMA required</li> <li>Provide safety signage and barricades as appropriate</li> <li>Implement approved repairs to ensure safety and serviceability on fire trails</li> <li>Implement agreed CMAs as approved</li> </ul> <p><i>Note: CMAs are to be proposed based on appropriate management of environmental and other consequences of impacts i.e. cracking at the surface with insignificant consequences may not require specific CMAs other than ongoing monitoring to confirm there are no ongoing impacts</i></p>
<p><b>AREA 3B</b></p> <p><b>Cliffs</b> All mapped cliff sites in subsidence area Refer to Dendrobium Area 3B SMP Figures 18.1 for location of sites</p>	<p><b>Level 3 *</b></p> <ul style="list-style-type: none"> <li>Major cliff collapse where the characteristics of the cliff change significantly and there is significant ground disturbance that is unlikely to naturally stabilise within the monitoring period</li> </ul>	<ul style="list-style-type: none"> <li>Actions as stated for Level 2</li> <li>Immediately notify DoPI, DPIM, SCA, resource managers and relevant technical specialists and seek advice on any CMA required</li> <li>Site visits with stakeholders if required</li> </ul>

Table 2: Summary of Longwall 18 impacts and triggers. Highlighted rows indicate the latest impacts featured in this report.

Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW18_001	Rock Fracturing	Rock Outcrop	14/12/2021	1	Rock fracturing to a rock outcrop to the south of Swamp 23	15/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	1	Trigger for dissolved oxygen at LA4_S1	22/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	Exceeding Predictions	Trigger for pH at LA4_S1	22/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	Exceeding Predictions	Trigger for electrical conductivity at LA4_S1	22/12/2021
DA3B_LW18_002	Rock Fracturing & Soil Cracking	Rock Outcrop/ Steep Slope	31/01/2022	1	Rock fracturing and soil cracking to a rock outcrop/steep slope west of Fire Road 6A.	This Report
DA3B_LW18_003	Rock Fracturing	Rock Outcrop	31/01/2022	2	Rock fracturing to a rock outcrop west of Fire Road 6A.	This Report

Monitoring of watercourses, swamps and landscape features is undertaken to identify subsidence impacts. These features are monitored by the Illawarra Metallurgical Coal Environmental Field Team (IMCEFT) on a monthly basis prior to mining and weekly during mining. Monitoring is conducted in accordance with the approved Subsidence Management Plan (SMP) for Dendrobium Area 3B (DA3B). Extraction of Longwall 18 commenced 3 December 2021 and as of 8 February 2022 had progressed approximately 470m. During a recent inspection, two new subsidence impacts were identified.

**DA3B\_LW18\_004 (E 288864, N 6190839)**

*DA3B\_LW18\_004* is located on a rock outcrop west of Fire Road 6A (Figure 1). The impact is comprised of a rock fracture. The fracture has a maximum continuous length of 2.9m, a width of up to 0.02m and a maximum measurable depth of 0.45m (Photo 1 and Photo 2).

*DA3B\_LW18\_004* is a Level 1 trigger as per the Dendrobium Area 3B Landscape TARP (Table 1), specifically;

- Crack or fracture up to 10m in length;
- Crack or fracture up to 100mm width.



Photo 1: *DA3B\_LW18\_004*, showing the length of rock fracturing. Taken 9/02/2022.



Photo 2: *DA3B\_LW18\_004*, showing the width of the fracturing. Taken 9/02/2022.



### **DA3B\_LW18\_005 (E 288816, N 6190851)**

DA3B\_LW18\_005 is located on a steep slope/ ridgeline west of Fire Road 6A (Figure 1). The impact consists of displacement between soil and adjacent rock strata. The displacement has a discontinuous length of 5.5m, a continuous length of 1.9m, a width of up to 0.06m and a maximum measurable depth of 1.1m (Photo 3 and Photo 4).

DA3B\_LW18\_005 is a Level 1 trigger as per the Dendrobium Area 3B Landscape TARP (Table 1), specifically;

- Crack or fracture up to 10m in length;
- Crack or fracture up to 100mm width.



Photo 3: DA3B\_LW18\_005, showing a section of displacement. Taken 9/02/2022.



Photo 4: DA3B\_LW18\_005, showing the width of the displacement. Taken 9/02/2022.

### **Corrective Management Actions (CMAs)**

In accordance with the DA3B SMP, the following actions have been initiated:

- Continue monitoring program as required in the DA3B SMP.
- Report impacts to key stakeholders.
- Summarise impacts and report in the End of Panel Report and Annual Review.

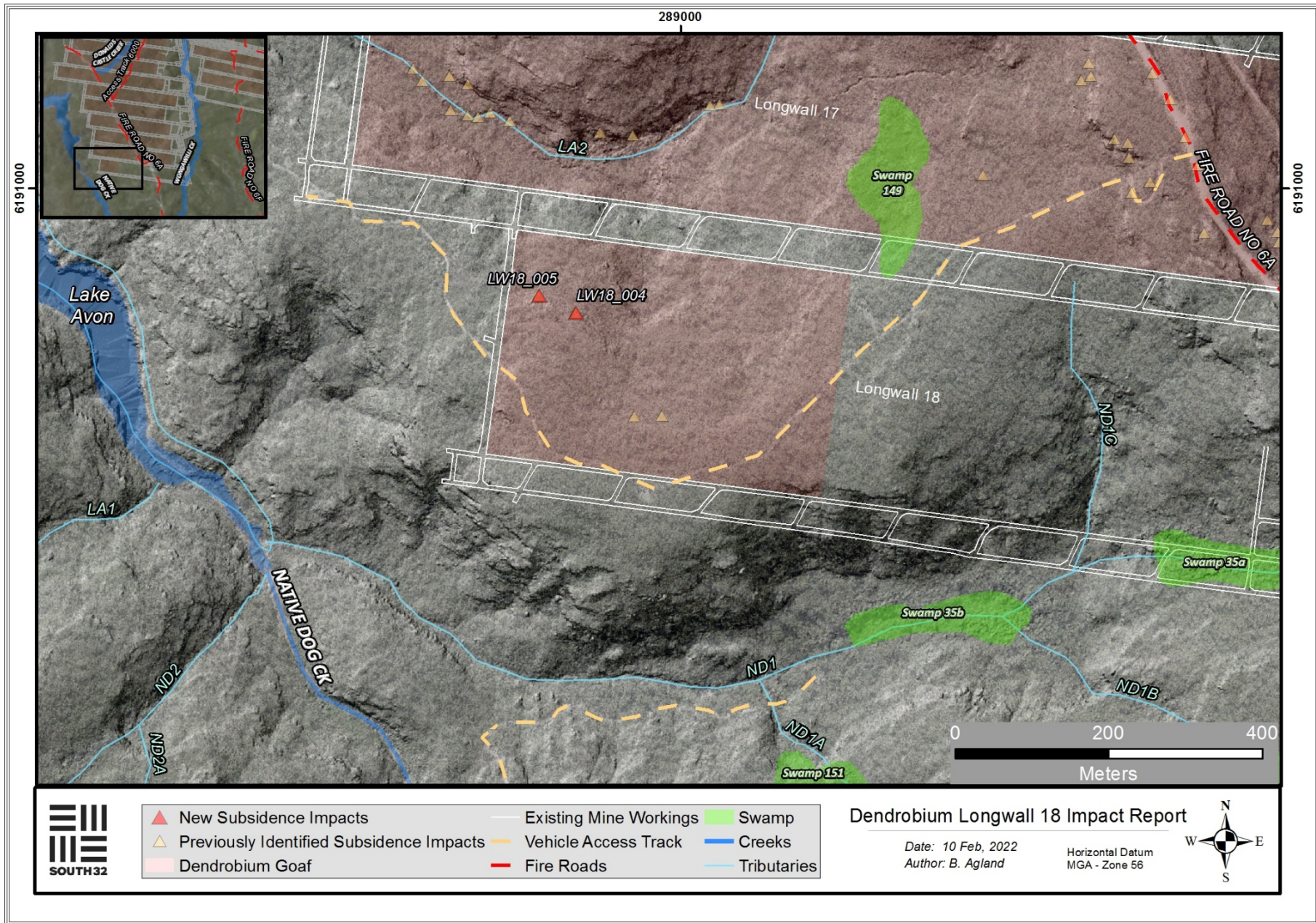


Figure 1: Map showing latest subsidence impacts relevant to DA3B mining operations.

Table 1: Extract from Dendrobium Area 3B Landscape TARP.

Monitoring	Trigger	Action
<b>LANDSCAPE FEATURES</b>		
<p><b>AREA 2</b></p> <p><b>Cliffs</b> A2-CL1 (above LW4)</p> <p><b>Steep Slopes</b> A2-SL1 and A2-SL2 (above LWs 4 &amp; 5)</p> <p><b>Watercourses</b> A2-WC10 and A2-WC11 (above LW3) A2-WC13 &amp; A2-WC16 (above LWs 4 &amp; 5)</p> <p><b>Swamp</b> A2-SW1 (above LWs 4 &amp; 5)</p> <p><b>4WD Track</b> A2-FT1 (above LWs 4 &amp; 5)</p> <p><b>Crinanite Surface Extent</b> A2-CN1 &amp; A2-CN2 (above LWs 3 &amp; 4)</p>	<p><b>Level 1 *</b></p> <ul style="list-style-type: none"> <li>Rock fall from a cliff which is left mostly intact (&lt;10% length), resulting in insignificant ground disturbance</li> <li>Surface movement or rock displacement with negligible soil surface exposed</li> <li>Crack at the surface, which should not result in any significant erosion or further ground movement</li> <li>Crack in a fire trail which should not result in erosion or impede access</li> <li>Crack or fracture up to 100mm width</li> <li>Crack or fracture up to 10m length</li> <li>Erosion in a localised area which would be expected to naturally stabilise without CMA and within the period of monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Continue monitoring program</li> <li>Report impacts to key stakeholders</li> <li>Summarise impacts and Report in the End of Panel Report and AEMR</li> </ul>
<p><b>AREA 3A</b></p> <p><b>Cliffs</b> All mapped cliff sites in subsidence area (Refer to Dendrobium Area 3A SMP Figures 19.3 for location of sites)</p> <p><b>Steep Slopes</b> All mapped steep slopes in subsidence area <i>Refer to Dendrobium Area 3A SMP Figures 19.3 for location of sites</i></p> <p><b>Watercourses/ Swamps</b> All mapped watercourse and swamps in subsidence area <i>Refer to Dendrobium Area 3A SMP Figure 19.3</i></p> <p><b>Fire Trails</b> All mapped fire trails in subsidence area <i>Refer to Dendrobium Area 3A SMP Figure 19.3</i></p>	<p><b>Level 2 *</b></p> <ul style="list-style-type: none"> <li>Rock fall or overhang collapse at a cliff site, where characteristics of the cliff have changed, and there has been significant ground disturbance</li> <li>Surface movement or rock displacement that has exposed significant areas of soil</li> <li>A crack at the surface, which could result in significant erosion or movement at the surface</li> <li>A crack at the surface with potential risk to safety and/or fauna entrapment</li> <li>A crack in the fire trail, which could result in significant erosion or impede vehicle access</li> <li>Crack or fracture between 100 and 300mm width</li> <li>Crack or fracture between 10 and 50m length</li> <li>Significant erosion at any location, which is not likely to naturally stabilise within the period of monitoring, or is located in a sensitive area e.g. swamps, creek, lake shore, and may result in increased sediment transport to Cordeaux Dam, or has been previously identified as Level 1, but is not likely to naturally stabilise within the monitoring period</li> </ul>	<ul style="list-style-type: none"> <li>Actions as stated for Level 1</li> <li>Review monitoring frequency</li> <li>Notify relevant technical specialists and seek advice on any CMA required</li> <li>Provide safety signage and barricades as appropriate</li> <li>Implement approved repairs to ensure safety and serviceability on fire trails</li> <li>Implement agreed CMAs as approved</li> </ul> <p><i>Note: CMAs are to be proposed based on appropriate management of environmental and other consequences of impacts i.e. cracking at the surface with insignificant consequences may not require specific CMAs other than ongoing monitoring to confirm there are no ongoing impacts</i></p>
<p><b>AREA 3B</b></p> <p><b>Cliffs</b> All mapped cliff sites in subsidence area <i>Refer to Dendrobium Area 3B SMP Figures 18.1 for location of sites</i></p>	<p><b>Level 3 *</b></p> <ul style="list-style-type: none"> <li>Major cliff collapse where the characteristics of the cliff change significantly and there is significant ground disturbance that is unlikely to naturally stabilise within the monitoring period</li> </ul>	<ul style="list-style-type: none"> <li>Actions as stated for Level 2</li> <li>Immediately notify <u>DoPI</u>, DPIM, SCA, resource managers and relevant technical specialists and seek advice on any CMA required</li> <li>Site visits with stakeholders if required</li> </ul>

Table 2: Summary of Longwall 18 impacts and triggers. Highlighted rows indicate the latest impacts featured in this report.

Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW18_001	Rock Fracturing	Rock Outcrop	14/12/2021	1	Rock fracturing to a rock outcrop to the south of Swamp 23	15/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	1	Trigger for dissolved oxygen at LA4_S1	22/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	Exceeding Predictions	Trigger for pH at LA4_S1	22/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	Exceeding Predictions	Trigger for electrical conductivity at LA4_S1	22/12/2021
DA3B_LW18_002	Rock Fracturing & Soil Cracking	Rock Outcrop/ Steep Slope	31/01/2022	1	Rock fracturing and soil cracking to a rock outcrop/steep slope west of Fire Road 6A.	31/01/2022
DA3B_LW18_003	Rock Fracturing	Rock Outcrop	31/01/2022	2	Rock fracturing to a rock outcrop west of Fire Road 6A.	31/01/2022
DA3B_LW18_004	Rock Fracturing	Rock Outcrop	9/02/2022	1	Rock fracturing to a rock outcrop west of Fire Road 6A.	This Report
DA3B_LW18_005	Soil/Rock Displacement	Steep Slope	9/02/2022	1	Displacement between rock and soil at a steep slope west of Fire Road 6A.	This Report

Monitoring of watercourses, swamps and landscape features is undertaken to identify subsidence impacts. These features are monitored by the Illawarra Metallurgical Coal Environmental Field Team (IMCEFT) on a monthly basis prior to mining and weekly during mining. Monitoring is conducted in accordance with the approved Subsidence Management Plan (SMP) for Dendrobium Area 3B (DA3B). Extraction of Longwall 18 commenced 3 December 2021 and as of 12 February 2022 had progressed approximately 500m. During a recent inspection, one new subsidence impact was identified.

### **DA3B\_LW18\_006 (E 288948, N 6190672)**

*DA3B\_LW18\_006* is located near an access track west of Fire Road 6A (Figure 1). The impact is comprised of soil cracking. The soil cracking has a continuous length of 15m, a width of up to 0.15m and a maximum measurable depth of 0.60m (Photo 1 and Photo 2).

*DA3B\_LW18\_006* is a Level 2 trigger as per the Dendrobium Area 3B Landscape TARP (Table 1), specifically;

- Crack or fracture between 10m and 50m in length;
- Crack or fracture between 100mm and 300mm width.



Photo 1: *DA3B\_LW18\_006*, showing a section of soil cracking. Taken 15/02/2022.



Photo 2: *DA3B\_LW18\_006*, showing the width of the soil cracking. Taken 15/02/2022.

### **Corrective Management Actions (CMAs)**

In accordance with the DA3B SMP, the following actions have been initiated:

- Continue monitoring program as required in the DA3B SMP.
- Report impacts to key stakeholders.
- Summarise impacts and report in the End of Panel Report and Annual Review.
- Review monitoring frequency.

- Notify relevant technical specialists and seek advice on any CMA required.
- Provide safety signage and barricades as appropriate.
- Implement agreed CMAs as approved.

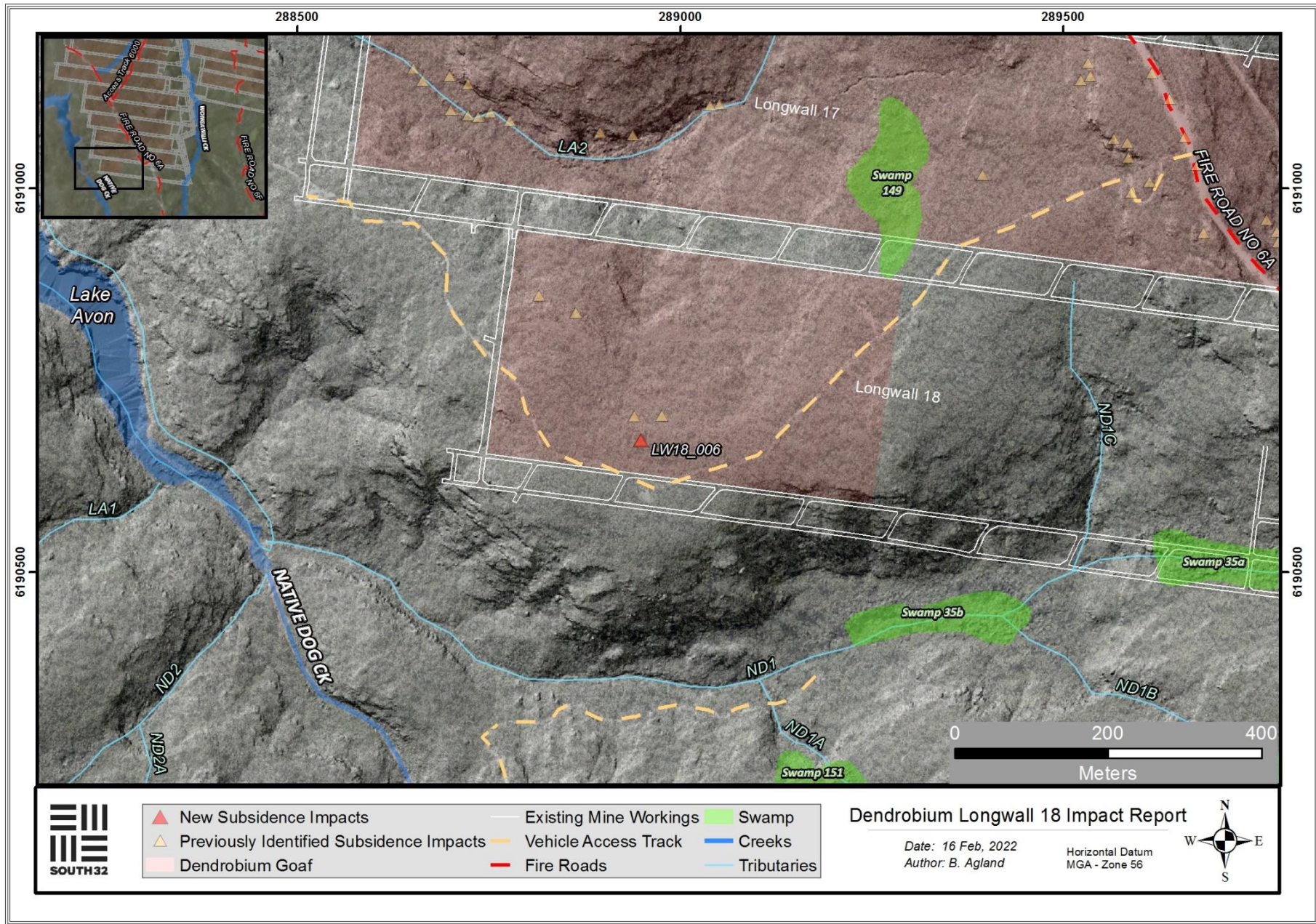


Figure 1: Map showing latest subsidence impact relevant to DA3B mining operations.

Table 1: Extract from Dendrobium Area 3B Landscape TARP.

Monitoring	Trigger	Action
<b>LANDSCAPE FEATURES</b>		
<p><b>AREA 2</b></p> <p><b>Cliffs</b> A2-CL1 (above LW4)</p> <p><b>Steep Slopes</b> A2-SL1 and A2-SL2 (above LWs 4 &amp; 5)</p> <p><b>Watercourses</b> A2-WC10 and A2-WC11 (above LW3) A2-WC13 &amp; A2-WC16 (above LWs 4 &amp; 5)</p> <p><b>Swamp</b> A2-SW1 (above LWs 4 &amp; 5)</p> <p><b>4WD Track</b> A2-FT1 (above LWs 4 &amp; 5)</p> <p><b>Crinanite Surface Extent</b> A2-CN1 &amp; A2-CN2 (above LWs 3 &amp; 4)</p>	<p><b>Level 1 *</b></p> <ul style="list-style-type: none"> <li>Rock fall from a cliff which is left mostly intact (&lt;10% length), resulting in insignificant ground disturbance</li> <li>Surface movement or rock displacement with negligible soil surface exposed</li> <li>Crack at the surface, which should not result in any significant erosion or further ground movement</li> <li>Crack in a fire trail which should not result in erosion or impede access</li> <li>Crack or fracture up to 100mm width</li> <li>Crack or fracture up to 10m length</li> <li>Erosion in a localised area which would be expected to naturally stabilise without CMA and within the period of monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Continue monitoring program</li> <li>Report impacts to key stakeholders</li> <li>Summarise impacts and Report in the End of Panel Report and AEMR</li> </ul>
<p><b>AREA 3A</b></p> <p><b>Cliffs</b> All mapped cliff sites in subsidence area (Refer to Dendrobium Area 3A SMP Figures 19.3 for location of sites)</p> <p><b>Steep Slopes</b> All mapped steep slopes in subsidence area Refer to Dendrobium Area 3A SMP Figures 19.3 for location of sites</p> <p><b>Watercourses/ Swamps</b> All mapped watercourse and swamps in subsidence area Refer to Dendrobium Area 3A SMP Figure 19.3</p> <p><b>Fire Trails</b> All mapped fire trails in subsidence area Refer to Dendrobium Area 3A SMP Figure 19.3</p>	<p><b>Level 2 *</b></p> <ul style="list-style-type: none"> <li>Rock fall or overhang collapse at a cliff site, where characteristics of the cliff have changed, and there has been significant ground disturbance</li> <li>Surface movement or rock displacement that has exposed significant areas of soil</li> <li>A crack at the surface, which could result in significant erosion or movement at the surface</li> <li>A crack at the surface with potential risk to safety and/or fauna entrapment</li> <li>A crack in the fire trail, which could result in significant erosion or impede vehicle access</li> <li>Crack or fracture between 100 and 300mm width</li> <li>Crack or fracture between 10 and 50m length</li> <li>Significant erosion at any location, which is not likely to naturally stabilise within the period of monitoring, or is located in a sensitive area e.g. swamps, creek, lake shore, and may result in increased sediment transport to Cordeaux Dam, or has been previously identified as Level 1, but is not likely to naturally stabilise within the monitoring period</li> </ul>	<ul style="list-style-type: none"> <li>Actions as stated for Level 1</li> <li>Review monitoring frequency</li> <li>Notify relevant technical specialists and seek advice on any CMA required</li> <li>Provide safety signage and barricades as appropriate</li> <li>Implement approved repairs to ensure safety and serviceability on fire trails</li> <li>Implement agreed CMAs as approved</li> </ul> <p><i>Note: CMAs are to be proposed based on appropriate management of environmental and other consequences of impacts i.e. cracking at the surface with insignificant consequences may not require specific CMAs other than ongoing monitoring to confirm there are no ongoing impacts</i></p>
<p><b>AREA 3B</b></p> <p><b>Cliffs</b> All mapped cliff sites in subsidence area Refer to Dendrobium Area 3B SMP Figures 18.1 for location of sites</p>	<p><b>Level 3 *</b></p> <ul style="list-style-type: none"> <li>Major cliff collapse where the characteristics of the cliff change significantly and there is significant ground disturbance that is unlikely to naturally stabilise within the monitoring period</li> </ul>	<ul style="list-style-type: none"> <li>Actions as stated for Level 2</li> <li>Immediately notify DoPI, DPIM, SCA, resource managers and relevant technical specialists and seek advice on any CMA required</li> <li>Site visits with stakeholders if required</li> </ul>



Table 2: Summary of Longwall 18 impacts and triggers. Highlighted rows indicate the latest impacts featured in this report.

Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW18_001	Rock Fracturing	Rock Outcrop	14/12/2021	1	Rock fracturing to a rock outcrop to the south of Swamp 23	15/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	1	Trigger for dissolved oxygen at LA4_S1	22/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	Exceeding Predictions	Trigger for pH at LA4_S1	22/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	Exceeding Predictions	Trigger for electrical conductivity at LA4_S1	22/12/2021
DA3B_LW18_002	Rock Fracturing & Soil Cracking	Rock Outcrop/ Steep Slope	31/01/2022	1	Rock fracturing and soil cracking to a rock outcrop/steep slope west of Fire Road 6A.	31/01/2022
DA3B_LW18_003	Rock Fracturing	Rock Outcrop	31/01/2022	2	Rock fracturing to a rock outcrop west of Fire Road 6A.	31/01/2022
DA3B_LW18_004	Rock Fracturing	Rock Outcrop	9/02/2022	1	Rock fracturing to a rock outcrop west of Fire Road 6A.	9/02/2022
DA3B_LW18_005	Soil/Rock Displacement	Steep Slope	9/02/2022	1	Displacement between rock and soil at a steep slope west of Fire Road 6A.	9/02/2022
DA3B_LW18_006	Soil Cracking	Bushland	15/02/2022	2	Soil cracking to bushland near an access track west of Fire Road 6A.	This Report

Monitoring of watercourses, swamps and landscape features is undertaken to identify subsidence impacts. These features are monitored by the Illawarra Metallurgical Coal Environmental Field Team (IMCEFT) on a monthly basis prior to mining and weekly during mining. Monitoring is conducted in accordance with the approved Subsidence Management Plan (SMP) for Dendrobium Area 3B (DA3B). Extraction of Longwall 18 commenced 2 December 2021 and was completed on 17 May 2022. Due to extensive catchment closures, inspections could not be carried out from 21 February 2022 to 7 June 2022. During recent inspections, five new subsidence impacts were identified and reduced water level to one pool.

**DA3B\_LW18\_007 (E 288950, N 6190822)**

*DA3B\_LW18\_007* is located in bushland west of Fire Road 6A (Figure 1). The impact is comprised of rock fracturing. The rock fracturing has a continuous length of 2.03m, a width of up to 0.02m and a maximum measurable depth of 0.50m (Photo 1 and Photo 2).

*DA3B\_LW18\_007* is a Level 1 trigger as per the Dendrobium Area 3B Landscape TARP (Table 1), specifically;

- Crack or fracture up to 100mm width;
- Crack or fracture up to 10m length.



Photo 1: *DA3B\_LW18\_007*, showing a section of rock fracturing. Taken 8/06/2022.



Photo 2: *DA3B\_LW18\_007*, showing the width of rock fracturing. Taken 8/06/2022.

**DA3B\_LW18\_008 (E 288822, N 6190753)**

*DA3B\_LW18\_008* is located near an access track west of Fire Road 6A (Figure 1). The impact is comprised of soil cracking. The soil cracking has a continuous length of 15.52m, a maximum width of 0.28m and a maximum measurable depth of 2.8m (Photo 3 and Photo 4).

*DA3B\_LW18\_008* is a Level 2 trigger as per the Dendrobium Area 3B Landscape TARP (Table 1), specifically;

- Crack or fracture between 100 and 300mm width;
- Crack or fracture between 10 and 50m length.



Photo 3: *DA3B\_LW18\_008*, showing a section of soil cracking. Taken 9/06/2022.



Photo 4: *DA3B\_LW18\_008*, showing the depth of soil cracking. Taken 9/06/2022.

#### **DA3B\_LW18\_009 (E289595, N 6190657)**

*DA3B\_LW18\_009* is located in bushland near NDC1 (Figure 1). The impact is comprised of rock displacement, fracturing and fragmentation. The rock displacement has a maximum continuous length of 0.9m, a maximum width of 0.2m and a maximum measurable depth of 1.0m (Photo 5 and Photo 6). The rock fracture has a maximum continuous length of 4.2m, a maximum width of 0.02m and a maximum measurable depth of 0.22m (Photo 7 and Photo 8).

*DA3B\_LW18\_009* is a Level 2 trigger as per the Dendrobium Area 3B Landscape TARP (Table 1), specifically;

- Crack or fracture between 100 and 300mm width.



Photo 5: *DA3B\_LW18\_009*, showing a section of rock displacement. Taken 9/06/2022.



Photo 6: *DA3B\_LW18\_009*, showing the width of rock displacement. Taken 9/06/2022.



Photo 7: *DA3B\_LW18\_009*, showing width of rock fracturing. Taken 9/06/2022.



Photo 8: *DA3B\_LW18\_009*, showing a section of rock fragmentation. Taken 9/06/2022.

### **DA3B\_LW18\_010 (E 289751, N 6190685)**

*DA3B\_LW18\_010* is located at the base of a 7m high steep slope, west of Fire Road 6A (Figure 1). The impact is comprised of rock fall and fragmentation. The rockfall site has an approximate length of 1.6m, width of 1.0m and depth of 0.6m (values have been estimated due to safety concerns getting closer) (Photo 9 and Photo 10).

*DA3B\_LW18\_010* is a Level 1 trigger as per the Dendrobium Area 3B Landscape TARP (Table 1), specifically;

- Rock fall from a cliff (steep slope) which is left mostly intact (<10% length), resulting in insignificant ground disturbance



Photo 9: *DA3B\_LW18\_010*, showing rock fall and fragmentation. Taken 10/06/2022.



Photo 10: *DA3B\_LW18\_010*, showing rock fall and fragmentation site. Taken 10/06/2022.

### **DA3B\_LW18\_011 (E 289776, N 6190685)**

*DA3B\_LW18\_011* is located on a 4m high rock outcrop, west of Fire Road 6A (Figure 1). The impact is comprised of a rockfall. The rockfall has an approximate length of 1.0m, width of 0.6m and depth of 0.2m (values have been estimated due to safety concerns) (Photo 11).

*DA3B\_LW18\_011* is a Level 1 trigger as per the Dendrobium Area 3B Landscape TARP (Table 1), specifically;

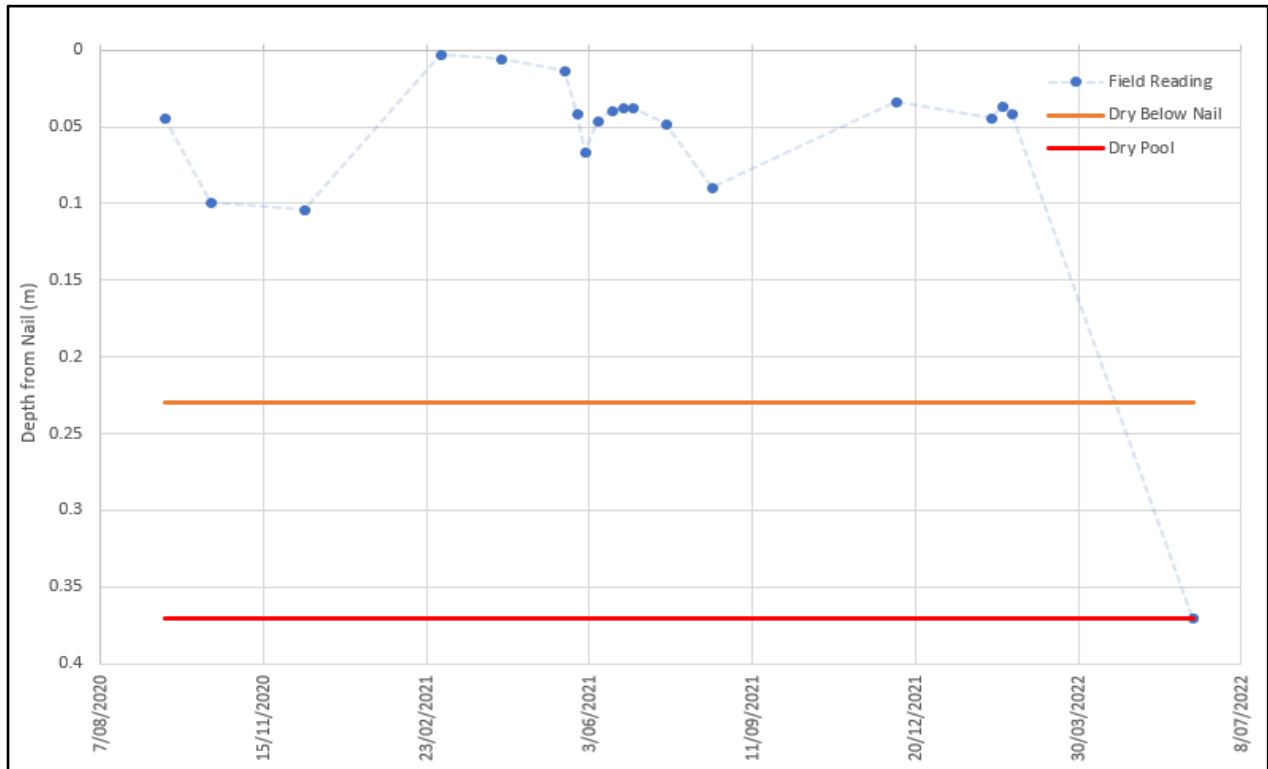
- Rock fall from a cliff (step/outcrop) which is left mostly intact (<10% length), resulting in insignificant ground disturbance



Photo 11: *DA3B\_LW18\_011*, showing rockfall. Taken 10/06/2022.

## **ND1C\_POOL2**

*ND1C* is a tributary to Native Dog Creek. *ND1C\_Pool 2* was mined beneath by Longwall 18 on approximately 1 April 2022 (Figure 1). On 8 June 2022, *ND1C\_Pool 2* was observed as dry for the first time since monitoring began at the site (Graph 1, Photo 12 and Photo 13). No fracturing or cracking was identified in the area.



Graph 1: ND1C\_Pool 2 field water level readings.



Photo 12: ND1C\_Pool 2, looking downstream. Taken 8/06/2022.



Photo 13: ND1C\_Pool 2, looking downstream. Taken 19/07/2021.

### Corrective Management Actions (CMAs)

In accordance with the DA3B SMP, the following actions have been initiated:

- Continue monitoring program as required in the DA3B SMP.
- Report impacts to key stakeholders (Biodiversity and Conservation Division; WaterNSW; NSW Resources Regulator; Regional NSW – Mining, Exploration and Geoscience)
- Summarise impacts and report in the End of Panel Report and Annual Review.
- Review monitoring frequency.

- Notify relevant technical specialists and seek advice on any CMA required.
- Provide flagging at Level 2 Impact sites.
- Implement agreed CMAs as approved.

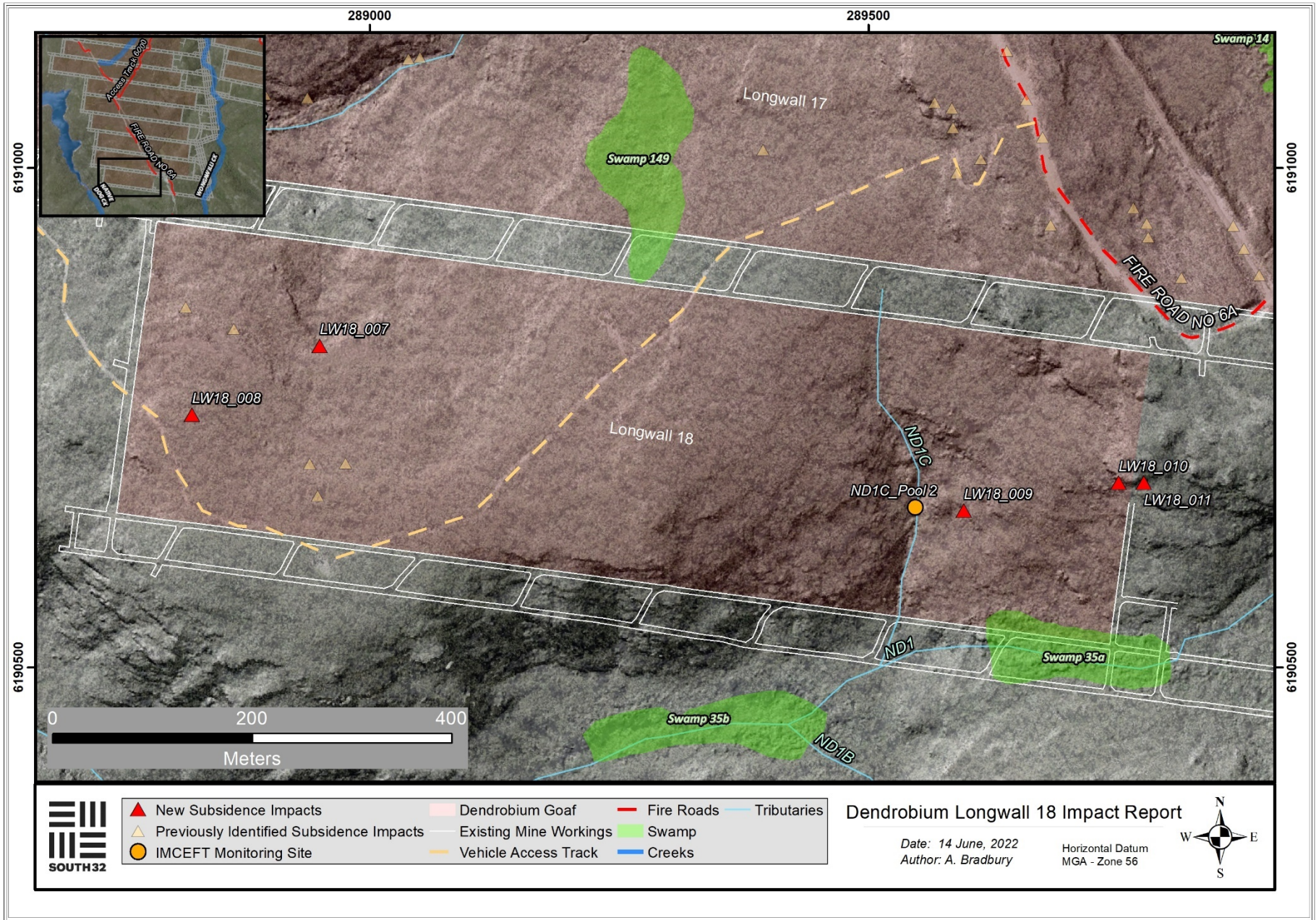


Figure 1: Map showing latest subsidence impact relevant to DA3B mining operations.



Table 1: Extract from Dendrobium Area 3B Landscape TARP.

Monitoring	Trigger	Action
<b>LANDSCAPE FEATURES</b>		
<p><b>AREA 2</b></p> <p><b>Cliffs</b> A2-CL1 (above LW4)</p> <p><b>Steep Slopes</b> A2-SL1 and A2-SL2 (above LWs 4 &amp; 5)</p> <p><b>Watercourses</b> A2-WC10 and A2-WC11 (above LW3) A2-WC13 &amp; A2-WC16 (above LWs 4 &amp; 5)</p> <p><b>Swamp</b> A2-SW1 (above LWs 4 &amp; 5)</p> <p><b>4WD Track</b> A2-FT1 (above LWs 4 &amp; 5)</p> <p><b>Crinanite Surface Extent</b> A2-CN1 &amp; A2-CN2 (above LWs 3 &amp; 4)</p>	<p><b>Level 1 *</b></p> <ul style="list-style-type: none"> <li>• Rock fall from a cliff which is left mostly intact (&lt;10% length), resulting in insignificant ground disturbance</li> <li>• Surface movement or rock displacement with negligible soil surface exposed</li> <li>• Crack at the surface, which should not result in any significant erosion or further ground movement</li> <li>• Crack in a fire trail which should not result in erosion or impede access</li> <li>• Crack or fracture up to 100mm width</li> <li>• Crack or fracture up to 10m length</li> <li>• Erosion in a localised area which would be expected to naturally stabilise without CMA and within the period of monitoring</li> </ul>	<ul style="list-style-type: none"> <li>• Continue monitoring program</li> <li>• Report impacts to key stakeholders</li> <li>• Summarise impacts and Report in the End of Panel Report and AEMR</li> </ul>
<p><b>AREA 3A</b></p> <p><b>Cliffs</b> All mapped cliff sites in subsidence area (Refer to Dendrobium Area 3A SMP Figures 19.3 for location of sites)</p> <p><b>Steep Slopes</b> All mapped steep slopes in subsidence area Refer to Dendrobium Area 3A SMP Figures 19.3 for location of sites</p> <p><b>Watercourses/ Swamps</b> All mapped watercourse and swamps in subsidence area Refer to Dendrobium Area 3A SMP Figure 19.3</p> <p><b>Fire Trails</b> All mapped fire trails in subsidence area Refer to Dendrobium Area 3A SMP Figure 19.3</p>	<p><b>Level 2 *</b></p> <ul style="list-style-type: none"> <li>• Rock fall or overhang collapse at a cliff site, where characteristics of the cliff have changed, and there has been significant ground disturbance</li> <li>• Surface movement or rock displacement that has exposed significant areas of soil</li> <li>• A crack at the surface, which could result in significant erosion or movement at the surface</li> <li>• A crack at the surface with potential risk to safety and/or fauna entrapment</li> <li>• A crack in the fire trail, which could result in significant erosion or impede vehicle access</li> <li>• Crack or fracture between 100 and 300mm width</li> <li>• Crack or fracture between 10 and 50m length</li> <li>• Significant erosion at any location, which is not likely to naturally stabilise within the period of monitoring, or is located in a sensitive area e.g. swamps, creek, lake shore, and may result in increased sediment transport to Cordeaux Dam, or has been previously identified as Level 1, but is not likely to naturally stabilise within the monitoring period</li> </ul>	<ul style="list-style-type: none"> <li>• Actions as stated for Level 1</li> <li>• Review monitoring frequency</li> <li>• Notify relevant technical specialists and seek advice on any CMA required</li> <li>• Provide safety signage and barricades as appropriate</li> <li>• Implement approved repairs to ensure safety and serviceability on fire trails</li> <li>• Implement agreed CMAs as approved</li> </ul> <p><i>Note: CMAs are to be proposed based on appropriate management of environmental and other consequences of impacts i.e. cracking at the surface with insignificant consequences may not require specific CMAs other than ongoing monitoring to confirm there are no ongoing impacts</i></p>
<p><b>AREA 3B</b></p> <p><b>Cliffs</b> All mapped cliff sites in subsidence area Refer to Dendrobium Area 3B SMP Figures 18.1 for location of sites</p>	<p><b>Level 3 *</b></p> <ul style="list-style-type: none"> <li>• Major cliff collapse where the characteristics of the cliff change significantly and there is significant ground disturbance that is unlikely to naturally stabilise within the monitoring period</li> </ul>	<ul style="list-style-type: none"> <li>• Actions as stated for Level 2</li> <li>• Immediately notify DoPI, DPIM, SCA, resource managers and relevant technical specialists and seek advice on any CMA required</li> <li>• Site visits with stakeholders if required</li> </ul>

Table 2: Summary of Longwall 18 impacts and triggers. Highlighted rows indicate the latest impacts featured in this report.

Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW18_001	Rock Fracturing	Rock Outcrop	14/12/2021	1	Rock fracturing to a rock outcrop to the south of Swamp 23	15/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	1	Trigger for dissolved oxygen at LA4_S1	22/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	Exceeding Predictions	Trigger for pH at LA4_S1	22/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	Exceeding Predictions	Trigger for electrical conductivity at LA4_S1	22/12/2021
DA3B_LW18_002	Rock Fracturing & Soil Cracking	Rock Outcrop/ Steep Slope	31/01/2022	1	Rock fracturing and soil cracking to a rock outcrop/steep slope west of Fire Road 6A.	31/01/2022
DA3B_LW18_003	Rock Fracturing	Rock Outcrop	31/01/2022	2	Rock fracturing to a rock outcrop west of Fire Road 6A.	31/01/2022
DA3B_LW18_004	Rock Fracturing	Rock Outcrop	9/02/2022	1	Rock fracturing to a rock outcrop west of Fire Road 6A.	9/02/2022
DA3B_LW18_005	Soil/Rock Displacement	Steep Slope	9/02/2022	1	Displacement between rock and soil at a steep slope west of Fire Road 6A.	9/02/2022
DA3B_LW18_006	Soil Cracking	Bushland	15/02/2022	2	Soil cracking to bushland near an access track west of Fire Road 6A.	16/02/2022
DA3B_LW18_007	Rock Fracturing	Rock Outcrop	8/06/2022	1	Rock fracturing to rock outcrop west of Fire Road 6A.	This Report
DA3B_LW18_008	Soil Cracking	Bushland	9/06/2022	2	Soil cracking near access track west of Fire Road 6A.	This Report
DA3B_LW18_009	Rock Displacement, Fracturing and Fragmentation	Rock Outcrop	9/06/2022	2	Rock fracturing, displacement and fragmentation in bushland near NDC1.	This Report
DA3B_LW18_010	Rockfall and Fragmentation	Cliffline	10/06/2022	1	Rockfall at 7m high cliffline, west of Fire Road 6A.	This Report
DA3B_LW18_011	Rockfall	Rock Outcrop	10/06/2022	1	Rockfall to 4m high rock outcrop, west of Fire Road 6A.	This Report

Monitoring of watercourses, swamps and landscape features is undertaken to identify subsidence impacts. These features are monitored by the Illawarra Metallurgical Coal Environmental Field Team (IMCEFT) on a monthly basis prior to mining and weekly during mining. Monitoring is conducted in accordance with the approved Subsidence Management Plan (SMP) for Dendrobium Area 3B (DA3B). Extraction of Longwall 18 commenced 2 December 2021 and was completed on 17 May 2022. During recent inspections, one new subsidence impact and one update to an existing impact were identified.

**DA3B\_LW18\_005 (Update) (E 288816, N 6190851)**

DA3B\_LW18\_005 is located on a steep slope/ridgeline west of Fire Road 6A (Figure 1). The impact was identified on 9 February 2022, consisting of displacement between soil and adjacent rock strata. The displacement has a discontinuous length of 5.5m, a continuous length of 1.9m, a width of up to 0.06m and a maximum measurable depth of 1.1m. On 30 June 2022, additional soil cracking was observed. The soil cracking has a maximum continuous length of 16m, discontinuous length of 42.4m, maximum width of 0.09m and maximum measurable depth of 3.09m (Photo 1 and Photo 2).

DA3B\_LW18\_005 is now a Level 2 trigger as per the Dendrobium Area 3B Landscape TARP (Table 1), specifically;

- Crack or fracture between 10 and 50m length.



Photo 1: DA3B\_LW18\_005, showing a section of soil cracking. Taken 30/06/2022.



Photo 2: DA3B\_LW18\_005, showing the depth of soil cracking. Taken 30/06/2022.

**DA3B\_LW18\_012 (E 288802, N 6190825)**

DA3B\_LW18\_012 is located in bushland west of Fire Road 6A (Figure 1). The impact is comprised of two soil cracks running in parallel, with discontinuous lengths of 26m and 9.5m. The soil cracking has a maximum continuous length of 10.8m, a width of up to 0.06m and a maximum measurable depth of 3.70m (Photo 3 and Photo 4). Visible rock fracturing can be seen in lower sections of the soil cracking (Photo 5).

DA3B\_LW18\_012 is a Level 2 trigger as per the Dendrobium Area 3B Landscape TARP (Table 1), specifically;

- Crack or fracture between 10 and 50m length.



Photo 3: DA3B\_LW18\_012, showing a section of soil cracking. Taken 30/06/2022.



Photo 4: DA3B\_LW18\_012, showing depth of soil cracking. Taken 30/06/2022.



Photo 5: DA3B\_LW18\_012, showing exposed rock within the cracking. Taken 30/06/2022.

### **Corrective Management Actions (CMAs)**

In accordance with the DA3B SMP, the following actions have been initiated:

- Continue monitoring program as required in the DA3B SMP.
- Report impacts to key stakeholders (Biodiversity and Conservation Division; WaterNSW; NSW Resources Regulator; Regional NSW – Mining, Exploration and Geoscience)
- Summarise impacts and report in the End of Panel Report and Annual Review.
- Review monitoring frequency.
- Notify relevant technical specialists and seek advice on any CMA required.
- Provide flagging at Level 2 Impact sites.
- Implement agreed CMAs as approved.

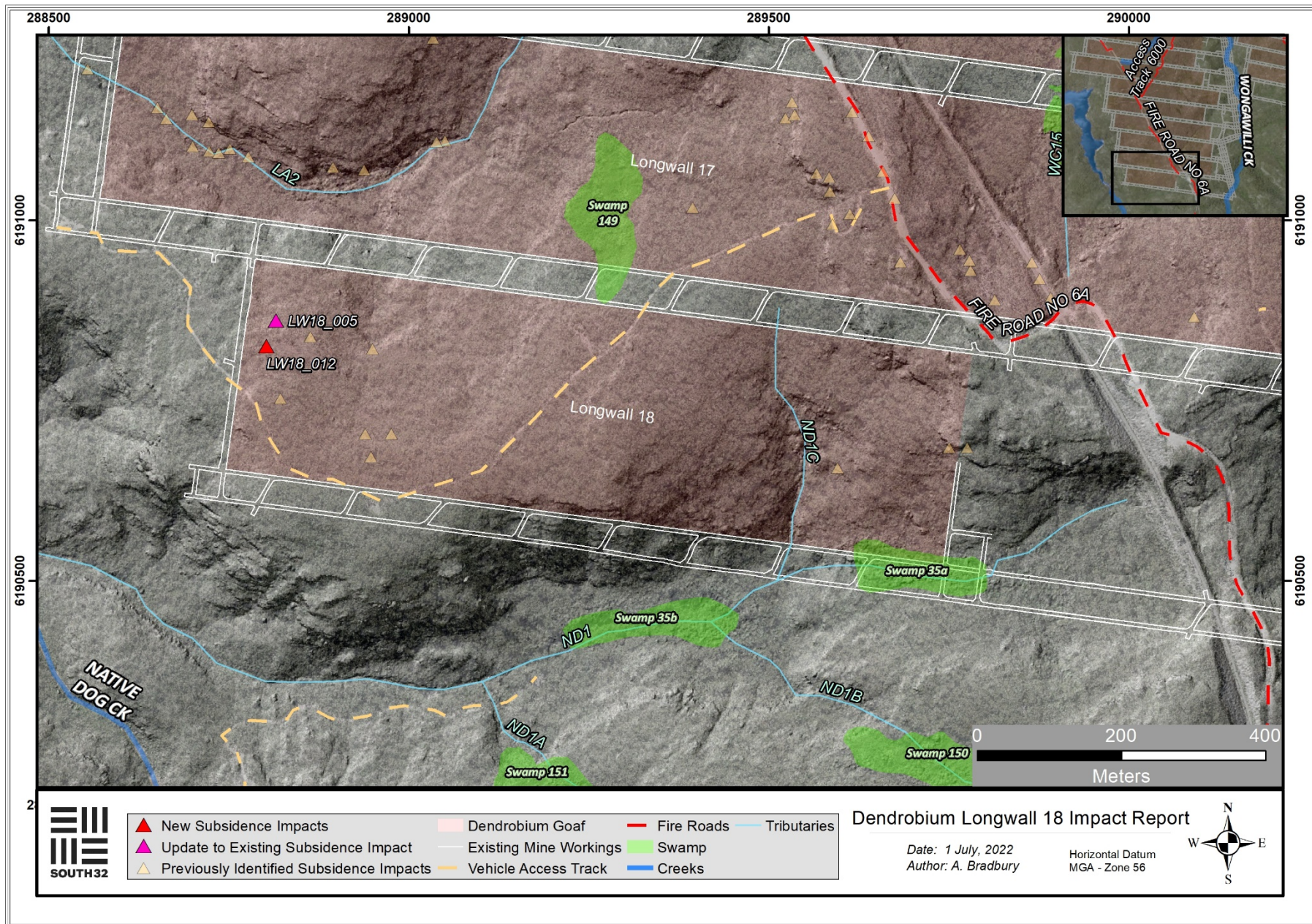


Figure 1: Map showing latest subsidence impact relevant to DA3B mining operations.

Table 1: Extract from Dendrobium Area 3B Landscape TARP.

Monitoring	Trigger	Action
<b>LANDSCAPE FEATURES</b>		
<p><b>AREA 2</b></p> <p><b>Cliffs</b> A2-CL1 (above LW4)</p> <p><b>Steep Slopes</b> A2-SL1 and A2-SL2 (above LWs 4 &amp; 5)</p> <p><b>Watercourses</b> A2-WC10 and A2-WC11 (above LW3) A2-WC13 &amp; A2-WC16 (above LWs 4 &amp; 5)</p> <p><b>Swamp</b> A2-SW1 (above LWs 4 &amp; 5)</p> <p><b>4WD Track</b> A2-FT1 (above LWs 4 &amp; 5)</p> <p><b>Crinanite Surface Extent</b> A2-CN1 &amp; A2-CN2 (above LWs 3 &amp; 4)</p>	<p><b>Level 1 *</b></p> <ul style="list-style-type: none"> <li>Rock fall from a cliff which is left mostly intact (&lt;10% length), resulting in insignificant ground disturbance</li> <li>Surface movement or rock displacement with negligible soil surface exposed</li> <li>Crack at the surface, which should not result in any significant erosion or further ground movement</li> <li>Crack in a fire trail which should not result in erosion or impede access</li> <li>Crack or fracture up to 100mm width</li> <li>Crack or fracture up to 10m length</li> <li>Erosion in a localised area which would be expected to naturally stabilise without CMA and within the period of monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Continue monitoring program</li> <li>Report impacts to key stakeholders</li> <li>Summarise impacts and Report in the End of Panel Report and AEMR</li> </ul>
<p><b>AREA 3A</b></p> <p><b>Cliffs</b> All mapped cliff sites in subsidence area (Refer to Dendrobium Area 3A SMP Figures 19.3 for location of sites)</p> <p><b>Steep Slopes</b> All mapped steep slopes in subsidence area Refer to Dendrobium Area 3A SMP Figures 19.3 for location of sites</p> <p><b>Watercourses/ Swamps</b> All mapped watercourse and swamps in subsidence area Refer to Dendrobium Area 3A SMP Figure 19.3</p> <p><b>Fire Trails</b> All mapped fire trails in subsidence area Refer to Dendrobium Area 3A SMP Figure 19.3</p>	<p><b>Level 2 *</b></p> <ul style="list-style-type: none"> <li>Rock fall or overhang collapse at a cliff site, where characteristics of the cliff have changed, and there has been significant ground disturbance</li> <li>Surface movement or rock displacement that has exposed significant areas of soil</li> <li>A crack at the surface, which could result in significant erosion or movement at the surface</li> <li>A crack at the surface with potential risk to safety and/or fauna entrapment</li> <li>A crack in the fire trail, which could result in significant erosion or impede vehicle access</li> <li>Crack or fracture between 100 and 300mm width</li> <li>Crack or fracture between 10 and 50m length</li> <li>Significant erosion at any location, which is not likely to naturally stabilise within the period of monitoring, or is located in a sensitive area e.g. swamps, creek, lake shore, and may result in increased sediment transport to Cordeaux Dam, or has been previously identified as Level 1, but is not likely to naturally stabilise within the monitoring period</li> </ul>	<ul style="list-style-type: none"> <li>Actions as stated for Level 1</li> <li>Review monitoring frequency</li> <li>Notify relevant technical specialists and seek advice on any CMA required</li> <li>Provide safety signage and barricades as appropriate</li> <li>Implement approved repairs to ensure safety and serviceability on fire trails</li> <li>Implement agreed CMAs as approved</li> </ul> <p><i>Note: CMAs are to be proposed based on appropriate management of environmental and other consequences of impacts i.e. cracking at the surface with insignificant consequences may not require specific CMAs other than ongoing monitoring to confirm there are no ongoing impacts</i></p>
<p><b>AREA 3B</b></p> <p><b>Cliffs</b> All mapped cliff sites in subsidence area Refer to Dendrobium Area 3B SMP Figures 18.1 for location of sites</p>	<p><b>Level 3 *</b></p> <ul style="list-style-type: none"> <li>Major cliff collapse where the characteristics of the cliff change significantly and there is significant ground disturbance that is unlikely to naturally stabilise within the monitoring period</li> </ul>	<ul style="list-style-type: none"> <li>Actions as stated for Level 2</li> <li>Immediately notify DoPI, DPIM, SCA, resource managers and relevant technical specialists and seek advice on any CMA required</li> <li>Site visits with stakeholders if required</li> </ul>

Table 2: Summary of Longwall 18 impacts and triggers. Highlighted rows indicate the latest impacts featured in this report.

Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW18_001	Rock Fracturing	Rock Outcrop	14/12/2021	1	Rock fracturing to a rock outcrop to the south of Swamp 23	15/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	1	Trigger for dissolved oxygen at LA4_S1	22/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	Exceeding Predictions	Trigger for pH at LA4_S1	22/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	Exceeding Predictions	Trigger for electrical conductivity at LA4_S1	22/12/2021
DA3B_LW18_002	Rock Fracturing & Soil Cracking	Rock Outcrop/ Steep Slope	31/01/2022	1	Rock fracturing and soil cracking to a rock outcrop/steep slope west of Fire Road 6A.	31/01/2022
DA3B_LW18_003	Rock Fracturing	Rock Outcrop	31/01/2022	2	Rock fracturing to a rock outcrop west of Fire Road 6A.	31/01/2022
DA3B_LW18_004	Rock Fracturing	Rock Outcrop	9/02/2022	1	Rock fracturing to a rock outcrop west of Fire Road 6A.	9/02/2022
DA3B_LW18_005	Soil/Rock Displacement	Steep Slope	9/02/2022	1	Displacement between rock and soil at a steep slope west of Fire Road 6A.	9/02/2022
DA3B_LW18_006	Soil Cracking	Bushland	15/02/2022	2	Soil cracking to bushland near an access track west of Fire Road 6A.	16/02/2022
DA3B_LW18_007	Rock Fracturing	Rock Outcrop	8/06/2022	1	Rock fracturing to rock outcrop west of Fire Road 6A.	15/06/2022
DA3B_LW18_008	Soil Cracking	Bushland	9/06/2022	2	Soil cracking near access track west of Fire Road 6A.	15/06/2022
DA3B_LW18_009	Rock Displacement, Fracturing and Fragmentation	Rock Outcrop	9/06/2022	2	Rock fracturing, displacement and fragmentation in bushland near NDC1.	15/06/2022
DA3B_LW18_010	Rockfall and Fragmentation	Cliffline	10/06/2022	1	Rockfall at 7m high cliffline, west of Fire Road 6A.	15/06/2022
DA3B_LW18_011	Rockfall	Rock Outcrop	10/06/2022	1	Rockfall to 4m high rock outcrop, west of Fire Road 6A.	15/06/2022
DA3B_LW18_012	Soil Cracking	Bushland	30/06/2022	2	Soil cracking near access track west of Fire Road 6A.	This Report



Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW18_005 (Update)	Rock Displacement and Soil Cracking	Steep Slope	9/02/2022	2	Displacement between rock and soil at a steep slope west of Fire Road 6A.	9/02/2022 & This Report

Monitoring of watercourses, swamps and landscape features is undertaken to identify subsidence impacts. These features are monitored by the Illawarra Metallurgical Coal Environmental Field Team (IMCEFT) on a monthly basis prior to mining and weekly during mining. Monitoring is conducted in accordance with the approved Subsidence Management Plan (SMP) for Dendrobium Area 3B (DA3B). Extraction of Longwall 17 commenced 12 December 2020 and was completed on 13 October 2021. During recent inspection on 2 August 2022, one new subsidence impact was identified.

#### **DA3B\_LW17\_041 (E 290813, N 6190391)**

*DA3B\_LW17\_041* is located at Waterfall 54, a feature of Wongawilli Creek (Figure 1). The impact was identified on 2 August 2022 and consists of a rock fall. The rockfall site has an approximate length of 3m, depth of 1.5m and height of 1m (Photo 1). Rock debris is evident at the base of the waterfall (Photo 2). Analysis of photo records to determine the time when the fall occurred, indicates that the rockfall occurred between the 6 October 2021 and 28 October 2021. This period coincides with the extraction and finishing of Longwall 17 (Photo 3 and Photo 4). Visual inspections beneath Waterfall 54 during this period and during active subsidence were restricted due to safety concerns. During active subsidence inspections were conducted from a distance set back from the waterfall. The rockfall occurred behind densely vegetated area and was therefore not observed due to the vegetation and setback observation point.

An increase in iron staining was also observed at the waterfall (Photo 5), compared to observations recorded in the baseline period. No visual changes to water flow were identified (Photo 6). A specialist review will be undertaken for this impact.

*DA3B\_LW17\_041* is exceeding predictions as per the Wongawilli Creek Waterfall 54 Trigger Action Response Plan (TARP) (Table 1), specifically;

- Mining results in rock fall at WC-WF54 or its overhang



Photo 1: *DA3B\_LW17\_041*, showing site of rock fall. Taken 2/08/2022.



Photo 2: *DA3B\_LW17\_041*, showing a section of potential rock fall. Taken 2/08/2022.



Photo 3: Waterfall 54 inspection. Taken 6/10/2021.



Photo 4: Waterfall 54 inspection displaying visual change in rock debris (bottom left corner of image). Taken 28/10/2021.



Photo 5: DA3B\_LW17\_041, showing a section of iron staining. Taken 2/08/2022.



Photo 6: DA3B\_LW17\_041, showing overview of Waterfall 54. Taken 2/08/2022.

### **Corrective Management Actions (CMAs)**

In accordance with the Wongawilli Creek And Waterfall 54 Management Strategy, the following actions have been initiated:

- Continue monitoring program as required in the Wongawilli Creek And Waterfall 54 Management Strategy.
- Report impacts to key stakeholders (Biodiversity and Conservation Division; WaterNSW; Resources Regulator)
- Summarise impacts and report in the End of Panel Report and Annual Review.
- Independent expert to advise on monitoring frequency.
- Review monitoring frequency.
- Notify relevant technical specialists and seek advice on any CMA required.
- Implement agreed CMAs as approved.
- Investigate reasons for the exceedance.
- Offer site visit with Biodiversity and Conservation Division; WaterNSW; NSW Resources Regulator.
- Review relevant TARP and Management Plan in consultation with key agencies.

- Update future predictions based on the outcomes of the investigation.
- Provide residual environmental offset for any mining impact where CMAs are unsuccessful as required by Condition 14 Schedule 3 of the Development Consent.

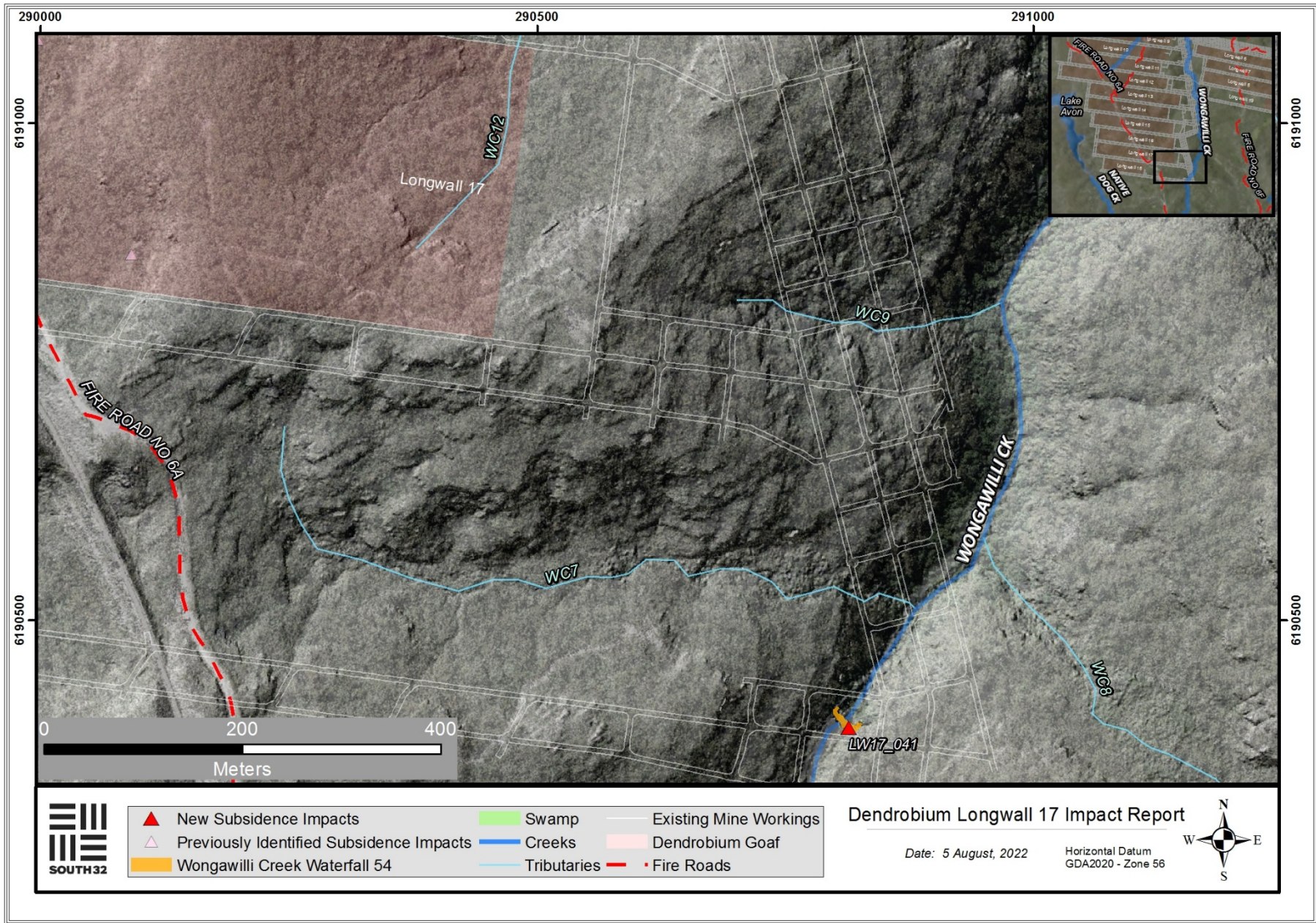


Figure 1: Map showing latest subsidence impact relevant to DA3B mining operations.

Table 1: Extract from Wongawilli Creek and Waterfall 54 Management Strategy.

OBSERVATIONAL MONITORING		
<p><b>Wongawilli Creek Waterfall 54</b></p> <p><b>Relevant Performance Measure(s):</b></p> <ul style="list-style-type: none"> <li>• Waterfall WC-WF54 – negligible environmental consequences                             <ul style="list-style-type: none"> <li>- no rock fall occurs at WF54 or from its overhang;</li> <li>- the structural integrity of the waterfall, its overhang and its pool are not impacted;</li> <li>- cracking in Wongawilli Creek within 30 m of the waterfall is of negligible environmental and hydrological consequence; and</li> <li>- negligible diversion of water occurs from the lip of the waterfall</li> </ul> </li> </ul>	<p><b>Level 1</b></p> <ul style="list-style-type: none"> <li>• Visible fracturing, ecological impact or water diversion on Wongawilli Creek due to mining of Longwalls 17 or 18</li> </ul>	<ul style="list-style-type: none"> <li>• Continue monthly monitoring program</li> <li>• Submit an Impact Report to BCS, DPIE, MEG and WaterNSW</li> <li>• Report in the End of Panel Report</li> <li>• Summarise actions and monitoring in AR</li> <li>• Independent expert to advise on monitoring frequency</li> </ul>
	<p><b>Level 2</b></p> <ul style="list-style-type: none"> <li>• Visible fracturing, ecological impact or water diversion within 300 – 150 m of WC-WF54</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Actions as stated for Level 1</i></li> <li>• Increase monitoring to weekly</li> <li>• Submit letter report to DPIE, MEG and Water NSW and seek advice on any CMA required</li> <li>• Implement agreed CMAs as approved (subject to agency feedback)</li> </ul>
	<p><b>Level 3</b></p> <ul style="list-style-type: none"> <li>• Visible fracturing, ecological impact or water diversion within 150 m of WC-WF54</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Actions as stated for Level 2</i></li> <li>• Increase monitoring frequency to twice weekly</li> <li>• Offer site visit with BCS, DPIE, MEG and WaterNSW</li> <li>• Develop site CMA (subject to agency feedback). This may include: grouting of rockbar where it is appropriate to do so in consultation with BCS, DPIE, MEG and Water NSW</li> <li>• Completion of works following approvals and at a time agreed between S32, DPIE, MEG and Water NSW (i.e. may be after mining induced movements and impacts are complete), including monitoring and reporting on success</li> <li>• Review relevant TARP and Management Plan in consultation with key agencies</li> </ul>
	<p><b>Exceeding Prediction</b></p> <ul style="list-style-type: none"> <li>• Mining results in rock fall at WC-WF54 or its overhang</li> <li>• Mining results in impacts on the structural integrity of WC-WF54, its overhang or its pool</li> <li>• Mining results in greater than negligible cracking in Wongawilli Creek within 30 m of the waterfall; and</li> <li>• Mining results in greater than negligible diversion of water from the lip of the waterfall.</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> <li>• Provide residual environmental offset for any mining impact where CMAs are unsuccessful as required by Condition 14 Schedule 3 of the Development Consent</li> </ul>

Monitoring of watercourses, swamps and landscape features is undertaken to identify subsidence impacts. These features are monitored by the Illawarra Metallurgical Coal Environmental Field Team (IMCEFT) on a monthly basis prior to mining and weekly during mining. Monitoring is conducted in accordance with the approved Subsidence Management Plan (SMP) for Dendrobium Area 3B (DA3B). Extraction of Longwall 18 commenced 2 December 2021 and was completed on 17 May 2022. During a recent inspection, twelve new subsidence impacts were identified.

#### **DA3B\_LW18\_013 (E 289038, N 6191123)**

*DA3B\_LW18\_013* is located on a steep slope/step on the northern slope of LA2 valley (Figure 1). The impact was mined beneath by Longwall 17. The impact is comprised of a rock fracture and fragmentation (Photo 1 and Photo 2). The rock fracture has a maximum length of 1.1m, a maximum measurable depth of 0.5m and a maximum width of 0.015m. The rock fragmentation has an approximate volume of 0.015m<sup>3</sup> (0.14m x 0.2m x 0.55m).

*DA3B\_LW18\_013* is a Level 1 trigger as per the DA3B Landscape TARP (Table 1), specifically:

- Crack or fracture up to 10m length
- Crack or fracture up to 100mm width



Photo 1: *DA3B\_LW18\_013*, showing overview of rock fracture. Taken 16/08/2022.



Photo 2: *DA3B\_LW18\_013*, showing rock fragmentation. Taken 16/08/2022.

**DA3B\_LW18\_014 (E 288978, N 6191094)**

DA3B\_LW18\_014 is located on a steep slope/step on the northern slope of LA2 valley (Figure 1). The impact was mined beneath by Longwall 17. The impact is comprised of multiple rock fractures and a rockfall (Photo 3 to Photo 6). The rock fracture has a maximum length of 1.4m, a maximum width of 0.19m and a maximum measurable depth of 2m.

DA3B\_LW18\_014 is a Level 2 trigger as per the DA3B Landscape TARP (Table 1), specifically:

- Crack or fracture between 100 and 300mm width



Photo 3: DA3B\_LW18\_014, showing overview of site. Taken 16/08/2022.



Photo 4: DA3B\_LW18\_014, maximum width of fracture. Taken 16/08/2022



Photo 5: DA3B\_LW18\_014, showing section of rock fracturing. Taken 16/08/2022.



Photo 6: DA3B\_LW18\_014, showing rockfall debris. Taken 16/08/2022.



### **DA3B\_LW18\_015 (E 288920, N 6191077)**

*DA3B\_LW18\_015* is located on a steep slope/step on the northern slope of LA2 valley (Figure 1). The impact site was mined beneath by Longwall 17. The impact is comprised of a vertical rock fracture at the base of a steep slope/step (Photo 7 and Photo 8). The rock fracture has a maximum length of 0.45m, a maximum measurable depth of 0.25m and a maximum width of 0.02m.

*DA3B\_LW18\_015* is a Level 1 trigger as per the DA3B Landscape TARP (Table 1), specifically:

- Crack or fracture up to 10m length
- Crack or fracture up to 100mm width



Photo 7: *DA3B\_LW18\_015*, showing overview of rock fracture. Taken 16/08/2022.



Photo 8: *DA3B\_LW18\_015*, showing width of rock fracture. Taken 16/08/2022.

### **DA3B\_LW18\_016 (E 288886, N 6191095)**

*DA3B\_LW18\_016* is located on a steep slope/step on the northern slope of LA2 valley (Figure 1). The impact was mined beneath by Longwall 17. The impact is comprised of multiple rock fractures in an area of 15m<sup>2</sup> (Photo 9 to Photo 10). The rock fracturing has a maximum length of 2.9m, a maximum width of 0.11m and a maximum measurable depth of 0.94m.

*DA3B\_LW18\_014* is a Level 2 trigger as per the DA3B Landscape TARP (Table 1), specifically:

- Crack or fracture between 100 and 300mm width



Photo 9: DA3B\_LW18\_016, showing largest rock fracture. Taken 16/08/2022.



Photo 10: DA3B\_LW18\_016, showing maximum width of rock fracturing. Taken 16/08/2022

### DA3B\_LW18\_017 (E 288877, N 6191083)

DA3B\_LW18\_017 is located on a steep slope/step on the northern slope of LA2 valley (Figure 1 Figure 1). The impact was mined beneath by Longwall 17. The impact is comprised of a rockfall, rock displacement and rock fracturing (Photo 11 and Photo 12). The dislodged rock has a volume of approximately  $0.13\text{m}^3$  ( $1.1\text{m} \times 0.16\text{m} \times 0.75\text{m}$ ). Minor rock fracturing present.

DA3B\_LW18\_017 is a Level 1 trigger as per the DA3B Landscape (Table 1), specifically:

- Rockfall from a cliff which is left mostly intact (<10% length), resulting in insignificant ground disturbance
- Crack or fracture up to 100mm width
- Crack or fracture up to 10m length



Photo 11: DA3B\_LW18\_017, showing rock displacement. Taken 16/08/2022.



Photo 12: DA3B\_LW18\_017, showing rockfall. Taken 16/08/2022.

**DA3B\_LW18\_018 (E 288841, N 6191078)**

*DA3B\_LW18\_018* is located on a steep slope/step on the northern slope of LA2 valley (Figure 1). The impact was mined beneath by Longwall 17. The impact is comprised of multiple rock fractures and rockfalls in an area of 20m x 5m (Photo 13 to Photo 16). The rock fracturing has an estimated maximum length of 3.5m and an estimated maximum width of 0.08m. The largest rockfall has an estimated volume of 0.26m<sup>3</sup> (1.5m x 0.7m x 0.25m). Measurements were estimated due to safety concerns.

*DA3B\_LW18\_018* is a Level 1 trigger as per the DA3B Landscape TARP (Table 1), specifically:

- Crack or fracture up to 10m in length
- Crack or fracture up to 100mm width
- Rockfall from a cliff which is left mostly intact (<10% length), resulting in insignificant ground disturbance



Photo 13: *DA3B\_LW18\_018*, showing section of rockfall and rock fracturing. Taken 16/08/2022.



Photo 14: *DA3B\_LW18\_018*, showing section of rockfall. Taken 16/08/2022.

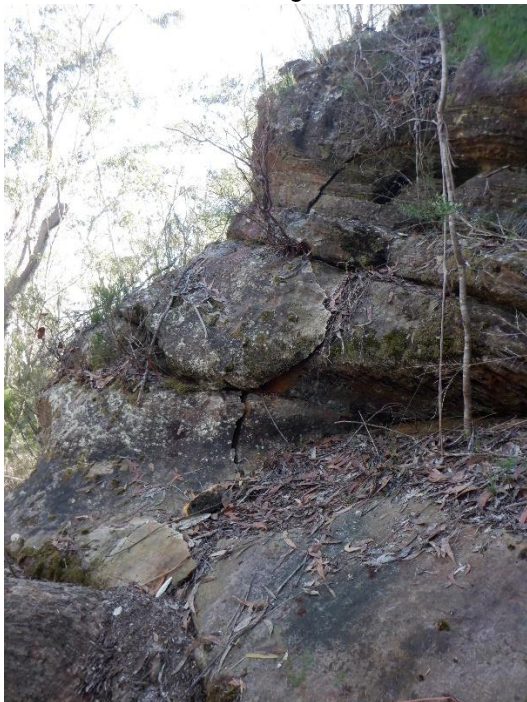


Photo 15: *DA3B\_LW18\_018*, showing section of rock fracturing. Taken 16/08/2022.



Photo 16 *DA3B\_LW18\_018*, showing section of rock fracturing. Taken 16/08/2022.

### **DA3B\_LW18\_019 (E 288821, N 6191105)**

*DA3B\_LW18\_019* is located on a steep slope/step on the northern slope of LA2 valley (Figure 1). The impact was mined beneath by Longwall 17. The impact is comprised of a vertical rock fracture (Photo 17 and Photo 18). The fracture has a maximum length of 3.6m (discontinuous length 5m), a maximum measurable depth of 0.6m and a maximum width of 0.03m.

*DA3B\_LW18\_019* is a Level 1 trigger as per the DA3B Landscape TARP (Table 1), specifically:

- Crack or fracture up to 10m in length
- Crack or fracture up to 100mm width



Photo 17: *DA3B\_LW18\_019*, showing overview of rock fracture. Taken 16/08/2022.

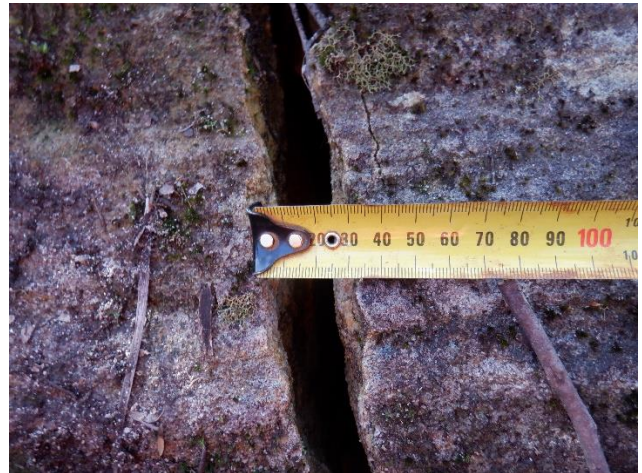


Photo 18: *DA3B\_LW18\_019*, showing maximum width of rock fracture. Taken 16/08/2022.

### **DA3B\_LW18\_020 (E 288808, N 6191114)**

*DA3B\_LW18\_020* is located on a step on the northern slope of LA2 valley (Figure 1). The impact site was mined beneath by Longwall 17. The impact is comprised of a rockfall from a small overhang on a step (Photo 19 and Photo 20). The rockfall is 7.3m in length, 3.9m in width and 0.9m in depth, having an approximate volume of 25.6m<sup>3</sup>. The debris area is 7.3m by 3.9m.

*DA3B\_LW18\_020* is a Level 1 trigger as per the DA3B Landscape (Table 1), specifically:

- Rockfall from a cliff which is left mostly intact (<10% length), resulting in insignificant ground disturbance



Photo 19: *DA3B\_LW18\_020*, showing overview of impact. Taken 16/08/2022.



Photo 20: *DA3B\_LW18\_020*, showing rockfall closer up. Taken 16/08/2022.

### **DA3B\_LW18\_021 (E 288826, N 6191147)**

*DA3B\_LW18\_021* is located on a rock outcrop north of the LA2 valley (Figure 1). The impact was mined beneath by Longwall 17. The impact is comprised of multiple rock fractures in an area of 15m x 10m (Photo 21 to Photo 24). The rock fracturing has a maximum length of 10m, a maximum width of 0.13m and a maximum measurable depth of 0.94m.

*DA3B\_LW18\_021* is a Level 2 trigger as per the DA3B Landscape TARP (Table 1), specifically:

- Crack or fracture between 10 and 50m in length
- Crack or fracture between 100 and 300mm width



Photo 21: *DA3B\_LW18\_021*, showing section of rock fracturing. Taken 16/08/2022.



Photo 22: *DA3B\_LW18\_021*, showing maximum width of rock fracturing. Taken 16/08/2022.



Photo 23: *DA3B\_LW18\_021*, showing overview of largest fracture. Taken 16/08/2022.



Photo 24 *DA3B\_LW18\_021*, showing section of rock fracturing. Taken 16/08/2022.

#### **DA3B\_LW18\_022 (E 288932, N 6191153)**

*DA3B\_LW18\_022* is located on a steep slope/step on the northern slope of LA2 valley (Figure 1). The impact site was mined beneath by Longwall 17. The impact is comprised of a rockfall from a steep slope/step (Photo 25 and Photo 26). The rockfall was 2.6m in length, 1.3m in width and 1.2m in depth, having a volume of approximately 4m<sup>3</sup>.

*DA3B\_LW18\_022* is a Level 1 trigger as per the DA3B Landscape (Table 1), specifically:

- Rockfall from a cliff which is left mostly intact (<10% length), resulting in insignificant ground disturbance



Photo 25: *DA3B\_LW18\_022*, showing overview of impact. Taken 16/08/2022.



Photo 26: *DA3B\_LW18\_022*, showing section of rockfall/debris. Taken 16/08/2022.

**DA3B\_LW18\_023 (E 288971, N 6191224)**

DA3B\_LW18\_023 is in bushland north of the LA2 valley (Figure 1). The impact was mined beneath by Longwall 17 and consists of soil cracking (Photo 27 to Photo 29). The cracking has a maximum width of 0.25m, a maximum continuous length of 26m and maximum measurable depth of 2m. Flagging tape is in place as a safety precaution.

DA3B\_LW18\_023 is a Level 2 trigger as per the DA3B Landscape TARP (Table 1), specifically:

- Crack or fracture between 10 and 50m in length
- Crack or fracture between 100 and 300mm width



Photo 27: DA3B\_LW18\_023, showing section of soil cracking. Taken 16/08/2022.



Photo 28: DA3B\_LW18\_023, showing maximum width of soil cracking. Taken 16/08/2022.



Photo 29: DA3B\_LW18\_023, showing overview of soil cracking. Taken 16/08/2022.

**DA3B\_LW18\_024 (E 288499, N 6191616)**

LA3 is a tributary of Lake Avon, that flows southward from DA3B mining operations (Figure 2). The upper reaches of the LA3 sub catchment were mined beneath by Longwall 15 and Longwall 16. No surface impacts have been observed in LA3 prior to this latest inspection. During recent inspections, iron staining was observed to originate at *LA3\_Boulderfield 4a* and extend downstream to *LA3\_Step 2* (Photo 30 to Photo 33). Iron staining was not observed upstream or downstream of these features (Photo 34 and Photo 35).

*DA3B\_LW18\_024* is a Level 1 trigger as per the DA3B Watercourse Impact, Monitoring Management and Contingency Plan (Table 2), specifically:

- Observable increase in iron staining within the mining area.



Photo 30: *LA3\_Boulderfield 4a* looking upstream at the origin of the iron staining. Taken 16/08/2022.



Photo 31: *LA3\_Boulderfield 4a* looking downstream from the origin of the iron staining. Taken 16/08/2022.



Photo 32: *LA3\_Pool 4*, looking downstream. Taken 15/08/2022.



Photo 33: *LA3\_Step 2*, looking upstream. Taken 16/08/2022.





Photo 34: *LA3\_Rockbar 4b*, looking downstream.  
Taken 15/08/2022.



Photo 35: *LA3\_Rockbar 2b*, looking downstream.  
Taken 16/08/2022.

### **Corrective Management Actions (CMAs)**

In accordance with the DA3B SMP, the following actions have been initiated:

- Continue monitoring program as required in the DA3B SMP.
- Report impacts to key stakeholders (Biodiversity and Conservation Division; WaterNSW; NSW Resources Regulator; Regional NSW – Mining, Exploration and Geoscience)
- Summarise impacts and report in the End of Panel Report and Annual Review.
- Provide flagging as appropriate
- Review monitoring frequency.
- Notify relevant technical specialists and seek advice on any CMA required.
- Implement agreed CMAs as approved.

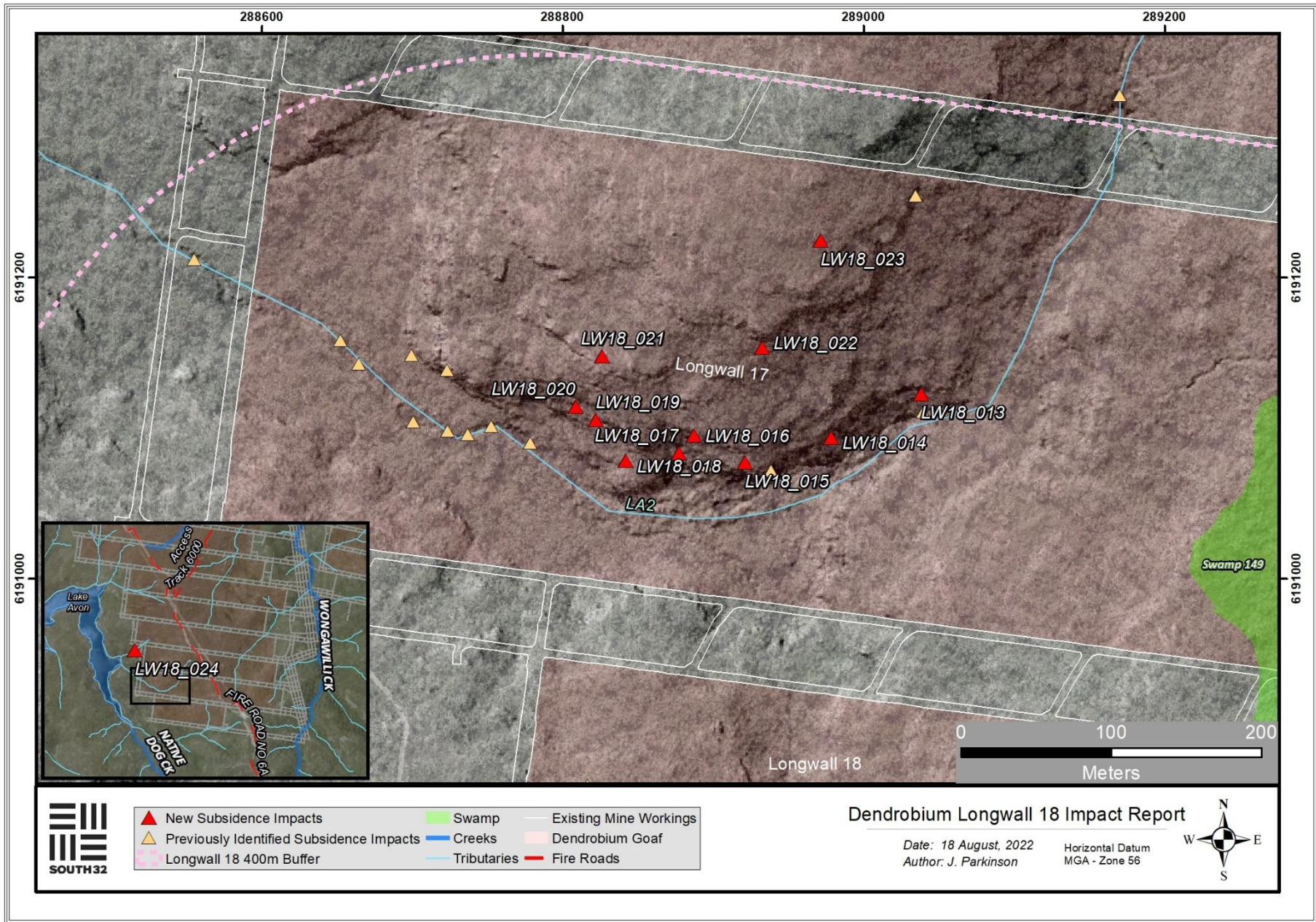


Figure 1: Map showing latest subsidence impact relevant to DA3B mining operations.

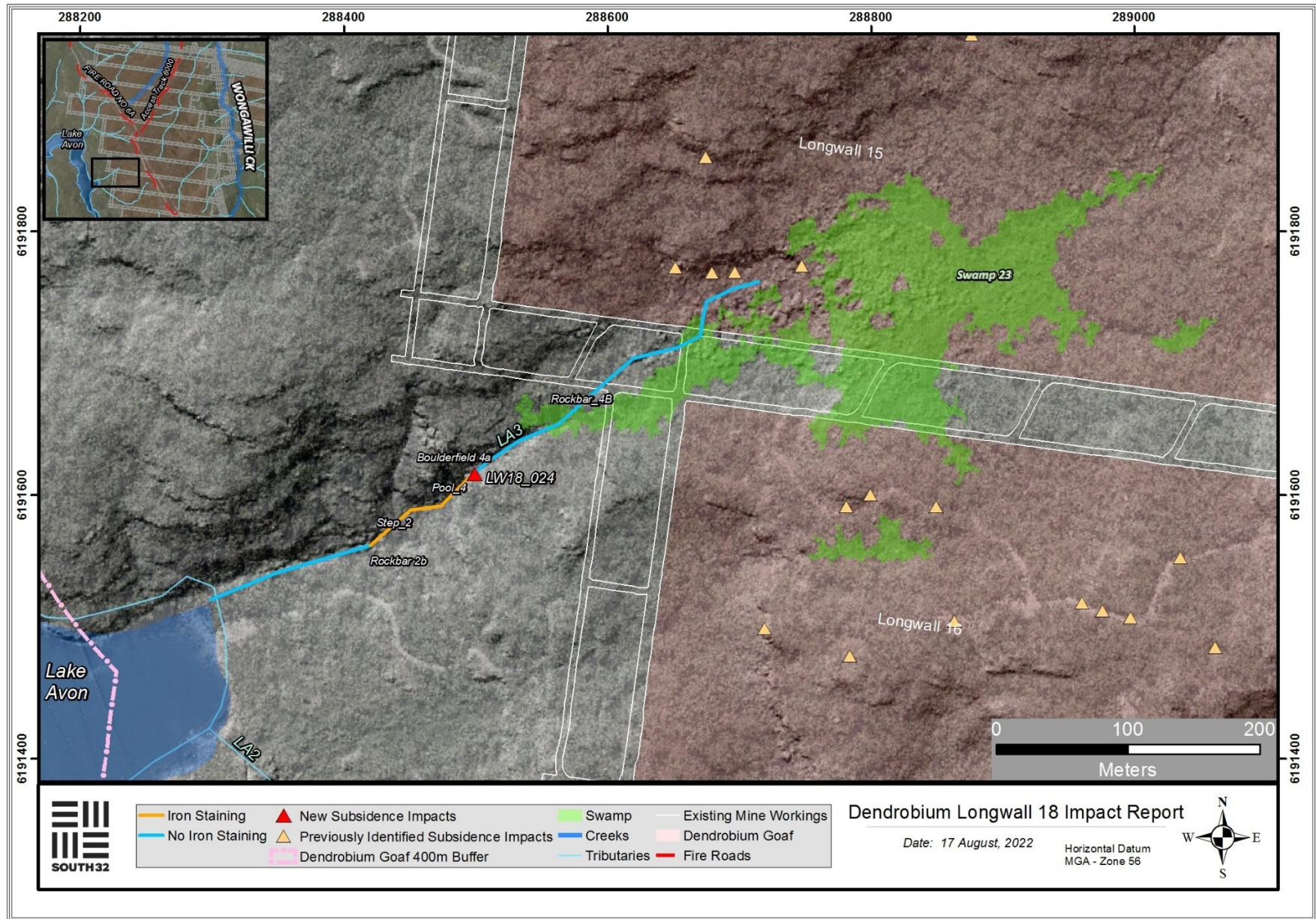


Figure 2: Map showing iron staining on LA3 tributary.

Table 1: Extract from Dendrobium Area 3B Landscape TARP.

Monitoring	Trigger	Action
<b>LANDSCAPE FEATURES</b>		
<p><b>AREA 2</b></p> <p><b>Cliffs</b> A2-CL1 (above LW4)</p> <p><b>Steep Slopes</b> A2-SL1 and A2-SL2 (above LWs 4 &amp; 5)</p> <p><b>Watercourses</b> A2-WC10 and A2-WC11 (above LW3) A2-WC13 &amp; A2-WC16 (above LWs 4 &amp; 5)</p> <p><b>Swamp</b> A2-SW1 (above LWs 4 &amp; 5)</p> <p><b>4WD Track</b> A2-FT1 (above LWs 4 &amp; 5)</p> <p><b>Crinanite Surface Extent</b> A2-CN1 &amp; A2-CN2 (above LWs 3 &amp; 4)</p>	<p><b>Level 1 *</b></p> <ul style="list-style-type: none"> <li>Rock fall from a cliff which is left mostly intact (&lt;10% length), resulting in insignificant ground disturbance</li> <li>Surface movement or rock displacement with negligible soil surface exposed</li> <li>Crack at the surface, which should not result in any significant erosion or further ground movement</li> <li>Crack in a fire trail which should not result in erosion or impede access</li> <li>Crack or fracture up to 100mm width</li> <li>Crack or fracture up to 10m length</li> <li>Erosion in a localised area which would be expected to naturally stabilise without CMA and within the period of monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Continue monitoring program</li> <li>Report impacts to key stakeholders</li> <li>Summarise impacts and Report in the End of Panel Report and AEMR</li> </ul>
<p><b>AREA 3A</b></p> <p><b>Cliffs</b> All mapped cliff sites in subsidence area (Refer to Dendrobium Area 3A SMP Figures 19.3 for location of sites)</p> <p><b>Steep Slopes</b> All mapped steep slopes in subsidence area Refer to Dendrobium Area 3A SMP Figures 19.3 for location of sites</p> <p><b>Watercourses/ Swamps</b> All mapped watercourse and swamps in subsidence area Refer to Dendrobium Area 3A SMP Figure 19.3</p> <p><b>Fire Trails</b> All mapped fire trails in subsidence area Refer to Dendrobium Area 3A SMP Figure 19.3</p>	<p><b>Level 2 *</b></p> <ul style="list-style-type: none"> <li>Rock fall or overhang collapse at a cliff site, where characteristics of the cliff have changed, and there has been significant ground disturbance</li> <li>Surface movement or rock displacement that has exposed significant areas of soil</li> <li>A crack at the surface, which could result in significant erosion or movement at the surface</li> <li>A crack at the surface with potential risk to safety and/or fauna entrapment</li> <li>A crack in the fire trail, which could result in significant erosion or impede vehicle access</li> <li>Crack or fracture between 100 and 300mm width</li> <li>Crack or fracture between 10 and 50m length</li> <li>Significant erosion at any location, which is not likely to naturally stabilise within the period of monitoring, or is located in a sensitive area e.g. swamps, creek, lake shore, and may result in increased sediment transport to Cordeaux Dam, or has been previously identified as Level 1, but is not likely to naturally stabilise within the monitoring period</li> </ul>	<ul style="list-style-type: none"> <li>Actions as stated for Level 1</li> <li>Review monitoring frequency</li> <li>Notify relevant technical specialists and seek advice on any CMA required</li> <li>Provide safety signage and barricades as appropriate</li> <li>Implement approved repairs to ensure safety and serviceability on fire trails</li> <li>Implement agreed CMAs as approved</li> </ul> <p><i>Note: CMAs are to be proposed based on appropriate management of environmental and other consequences of impacts i.e. cracking at the surface with insignificant consequences may not require specific CMAs other than ongoing monitoring to confirm there are no ongoing impacts</i></p>
<p><b>AREA 3B</b></p> <p><b>Cliffs</b> All mapped cliff sites in subsidence area Refer to Dendrobium Area 3B SMP Figures 18.1 for location of sites</p>	<p><b>Level 3 *</b></p> <ul style="list-style-type: none"> <li>Major cliff collapse where the characteristics of the cliff change significantly and there is significant ground disturbance that is unlikely to naturally stabilise within the monitoring period</li> </ul>	<ul style="list-style-type: none"> <li>Actions as stated for Level 2</li> <li>Immediately notify DoPI, DPIM, SCA, resource managers and relevant technical specialists and seek advice on any CMA required</li> <li>Site visits with stakeholders if required</li> </ul>

Table 2: Extract from Dendrobium Area 3B Watercourse TARP.

Monitoring	Trigger	Action
<p><b>Native Dog Creek, ND1, ND2, WC15, WC12, WC7, LA1 and LA2</b></p> <p>General observation of streams in active mining areas when longwall is within 400m</p>	<p><b>Level 1 *</b></p> <ul style="list-style-type: none"> <li>Crack or fracture up to 100mm width at its widest point with noobservable loss of surface water or erosion</li> <li>Crack or fracture up to 10m length with no observable loss ofsurface water or erosion</li> <li>Erosion in a localised area (not associated with cracking or fracturing) which would be expected to naturally stabilise without CMA and within the period of monitoring</li> <li>Observable release of strata gas at the surface</li> </ul> <p>Observable increase in iron staining within the mining area</p>	<ul style="list-style-type: none"> <li>Continue monitoring program</li> <li>Submit an Impact Report to BCD, DPIE, MEG, Water NSW</li> <li>Report in the End of Panel Report</li> <li>Summarise actions and monitoring in AEMR</li> </ul>
	<p><b>Level 2 *</b></p> <ul style="list-style-type: none"> <li>Crack or fracture between 100 and 300mm width at its widest point or any fracture which results in observable loss of surfacewater or erosion</li> <li>Crack or fracture between 10 and 50m length</li> <li>Soil surface crack that causes erosion that is likely to stabilisewithin the monitoring period without intervention</li> <li>Observable increase in iron staining within the mining area continues to outside the mining area i.e. 400m from the longwall</li> </ul>	<ul style="list-style-type: none"> <li><i>Actions as stated for Level 1</i></li> <li>Review monitoring frequency</li> <li>Submit letter report to DPIE, MEG and WaterNSW and seek advice on any CMA required.</li> <li>Implement agreed CMAs as approved (subject to agency feedback)</li> </ul>
	<p><b>Level 3 *</b></p> <ul style="list-style-type: none"> <li>Crack or fracture over 300mm width at its widest point</li> <li>Crack or fracture over 50m length</li> <li>Fracturing observed in the bedrock base of any significant permanent pool which results in observable loss of surfacewater</li> <li>Soil surface crack that causes erosion that is unlikely to stabilisewithin the monitoring period without intervention</li> <li>Gas release results in vegetation dieback, mortality or loss ofaquatic habitat</li> </ul>	<ul style="list-style-type: none"> <li><i>Actions as stated for Level 2</i></li> <li>Offer site visit with BCD, DPIE, MEG, WaterNSW</li> <li>Implement additional monitoring or increase frequency if required</li> <li>Develop site CMA (subject to stakeholder feedback). This may include: grouting of rockbar and bedrock base of any significant pool where it isappropriate to do so in consultation with BCD, DPIE, MEG, WaterNSW</li> <li>Completion of works following approvals and at a time agreed between S32, DPIE, MEG and WaterNSW (i.e. may be after mining induced movements and impacts are complete), including</li> </ul>

Table 3: Summary of Longwall 18 impacts and triggers. Highlighted rows indicate the latest impacts featured in this report.

Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW18_001	Rock Fracturing	Rock Outcrop	14/12/2021	1	Rock fracturing to a rock outcrop to the south of Swamp 23.	15/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	1	Trigger for dissolved oxygen at LA4_S1.	22/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	Exceeding Predictions	Trigger for pH at LA4_S1.	22/12/2021
LA4_S1	Water Quality Trigger	LA4	17/12/2021	Exceeding Predictions	Trigger for electrical conductivity at LA4_S1.	22/12/2021
DA3B_LW18_002	Rock Fracturing & Soil Cracking	Rock Outcrop/ Steep Slope	31/01/2022	1	Rock fracturing and soil cracking to a rock outcrop/steep slope west of Fire Road 6A.	31/01/2022
DA3B_LW18_003	Rock Fracturing	Rock Outcrop	31/01/2022	2	Rock fracturing to a rock outcrop west of Fire Road 6A.	31/01/2022
DA3B_LW18_004	Rock Fracturing	Rock Outcrop	9/02/2022	1	Rock fracturing to a rock outcrop west of Fire Road 6A.	9/02/2022
DA3B_LW18_005	Soil/Rock Displacement	Steep Slope	9/02/2022	1	Displacement between rock and soil at a steep slope west of Fire Road 6A.	9/02/2022
DA3B_LW18_006	Soil Cracking	Bushland	15/02/2022	2	Soil cracking to bushland near an access track west of Fire Road 6A.	16/02/2022
DA3B_LW18_007	Rock Fracturing	Rock Outcrop	8/06/2022	1	Rock fracturing to rock outcrop west of Fire Road 6A.	15/06/2022
DA3B_LW18_008	Soil Cracking	Bushland	9/06/2022	2	Soil cracking near access track west of Fire Road 6A.	15/06/2022
DA3B_LW18_009	Rock Displacement, Fracturing and Fragmentation	Rock Outcrop	9/06/2022	2	Rock fracturing, displacement and fragmentation in bushland near NDC1.	15/06/2022
DA3B_LW18_010	Rockfall and Fragmentation	Cliffline	10/06/2022	1	Rockfall at 7m high cliffline, west of Fire Road 6A.	15/06/2022

Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW18_011	Rockfall	Rock Outcrop	10/06/2022	1	Rockfall to 4m high rock outcrop, west of Fire Road 6A.	15/06/2022
DA3B_LW18_012	Soil Cracking	Bushland	30/06/2022	2	Soil cracking near access track west of Fire Road 6A.	01/07/2022
DA3B_LW18_005 (Update)	Rock Displacement and Soil Cracking	Steep Slope	9/02/2022	2	Displacement between rock and soil at a steep slope west of Fire Road 6A.	9/02/2022 & 01/07/2022
DA3B_LW18_013	Rock Fracturing and Fragmentation	Steep Slope/Step	16/08/2022	1	Rock fracturing and fragmentation to steep slope/step north of LA2.	This Report
DA3B_LW18_014	Rock Fracture	Steep Slope/Step	16/08/2022	2	Rock fracture to steep slope/step north of LA2.	This Report
DA3B_LW18_015	Rock Fracturing	Steep Slope/Step	16/08/2022	1	Rock fracturing to steep slope/step north of LA2.	This Report
DA3B_LW18_016	Rock Fracturing	Steep Slope/Step	16/08/2022	2	Rock fracturing to steep slope/step north of LA2.	This Report
DA3B_LW18_017	Rock Displacement and Rockfall	Steep Slope/Step	16/08/2022	1	Rock displacement and rockfall to steep slope/step north of LA2.	This Report
DA3B_LW18_018	Rock Fracturing and Rockfall	Steep Slope/Step	16/08/2022	1	Rock fracturing and rockfall to steep slope/step north of LA2.	This Report
DA3B_LW18_019	Rock Fracture	Steep Slope/Step	16/08/2022	1	Rock fracture to steep slope/step north of LA2.	This Report
DA3B_LW18_020	Rockfall	Step	16/08/2022	1	Rockfall to steep slope/step north of LA2.	This Report
DA3B_LW18_021	Rock Fracturing	Rock Outcrop	16/08/2022	2	Rock fracturing to rock outcrop north of LA2.	This Report
DA3B_LW18_022	Rockfall	Steep Slope/Step	16/08/2022	1	Rockfall to steep slope/step north of LA2.	This Report
DA3B_LW18_023	Soil Cracking	Bushland	16/08/2022	2	Soil cracking in bushland north LA2.	This Report

Site ID	Impact Type	Feature Affected	Identification Date	Trigger Level	Description	Refer to Impact Report/s Dated
DA3B_LW18_024	Iron Staining	LA3	16/08/2022	1	Iron staining in tributary LA3.	This Report