

Pre- and post-mining inspections and reports of dams, boreholes and natural features set out by the Appin Longwalls 709 to 711 and 905 Extraction Plan (EP) are conducted by the Illawarra Metallurgical Coal Environmental Field Team (IMCEFT) with the consent of the relevant property/infrastructure owner and tenant (where applicable).

This post-mining report includes field observations and laboratory data recorded for relevant features on Lot 16 DP251063, including borehole GW105534 and property dam F08d01.

Additional inspections may be conducted at the request of the landowner upon observations of events possibly linked to subsidence, or if required by the various triggers in the Extraction Plan (EP).

### **Pre-mining Inspection**

On 23 August 2017, a pre-mining inspection of Lot 16 DP251063 was undertaken. A single borehole was identified (GW105534), as was a dam (MSEC ID: F08d01). Observations were recorded and water samples collected for laboratory analysis (Photo 1 to Photo 3).

### **Post-Mining Inspections**

An additional inspection of Lot 16 DP251063 was conducted on 25 July 2018 following the extraction of Longwall 707. The borehole and dam were inspected to identify any potential changes due to mining. No changes were identified.

An additional inspection of Lot 16 DP251063 was conducted by the IMCEFT on 5 September 2022 following the extraction of Longwall 904 as well as on 20 April 2023 following completion of Longwall 905. The borehole and dam were inspected to identify any potential changes due to mining. Water samples were also collected for laboratory analysis.

### **Borehole GW105534**

**Location:** E288637, N6217300

### **Borehole Properties:**

Borehole GW105534 is located on the eastern side of the property (Figure 1). The outlet from the borehole pipe is located 20m from the borehole and flows into the dam. According to the Water NSW report, the borehole is 207m deep and was drilled in 2003. On 23 August 2017 a pre-mining inspection was completed on the property and field water quality was measured, with water samples taken for laboratory analysis (Photo 1 to Photo 3). On 25 July 2018, 5 September 2022 and 20 April 2023 post-mining inspections were completed including measurements of field water quality parameters and samples being taken for laboratory analysis.

**Bore Pumping Purpose and Performance:**

Water from the bore is transferred by pipes (Photo 1) into multiple storage tanks on the property. The water is also used to irrigate the property and for domestic uses including supplying drinking and cleaning water for dog kennels and providing water to the dam that houses freshwater Silver Perch (Photo 2).

On 5 September 2022 the landholder advised that the borehole has currently used very limitedly due to some pump issues and the strong sulfide-type odour exiting the borehole when the pump is turned on. During the inspection some fish were identified in the dam.

**Water properties:**

No signs of iron staining or salinity were observed in the water, or around the borehole outlet during the pre-mining inspection on 23 August 2017 or subsequent inspections (Photo 1 to Photo 6). A sulfur-type odour was present around the borehole outlet during the pre-mining inspection while it was dispelling water however this dissipated after approximately 10 minutes of use. No odour was present during the additional inspection on 25 July 2018. Field water quality was measured and samples were collected after the water was purged through the pump for approximately 5 minutes during both pre-mining and additional inspection on 25 July 2018 (Photo 3 and Photo 4; Table 1). No sign of subsidence impact was observed to the dam wall during the additional inspection on 25 July 2018 (Photo 7 and Photo 8).

During the additional inspection on 5 September 2022 a sulfur-type odour was present while purging water from the borehole. Water quality parameters were measured, and water samples were collected after the water was purged through the pump for approximately 12 minutes. The water from the borehole appeared cloudy (Photo 11 and Photo 12). Field parameter results and results of water sample analysis are included below (Table 1 and Table 2, respectively). No signs of subsidence impacts were observed to the dam wall during the inspection on 5 September 2022 (Photo 9 and Photo 10).

During the recent inspection on 20 April 2023 water was pumped directly from the borehole (Photo 15). A sulfur-type odour was present when pumping the bore, however dissipated after 5 minutes. The water was clear with no discolouration or cloudiness (Photo 16). Field water quality was measured, and water samples collected for laboratory analysis with results included below (Table 1 and Table 2, respectively). No sample was collected from the dam. No signs of subsidence impacts were observed to the dam wall during the inspection.



Photo 1: Borehole GW105534 and pump. Taken on 23 August 2017.



Photo 2: Main property dam where GW105534 outlet flows to. Taken on 23 August 2017.



Photo 3: GW105534 outlet discharge. Taken on 23 August 2017.



Photo 4: GW105534 outlet discharge. Taken on 25 July 2018.



Photo 5: Water collected and sampled from GW105534. Taken on 23 August 2017.



Photo 6: Water collected and sampled from GW105534. Taken on 25 July 2018.





Photo 7: Dam Wall. Taken at 010 degrees on 23 August 2017.



Photo 8: Dam Wall. Taken at 260 degrees on 25 July 2018.



Photo 9: Main property dam where GW105534 outlet flows to. Taken on 5 September 2022.



Photo 10: Dam Wall. Taken at 010 degrees on 5 September 2022.



Photo 11: GW105534 outlet discharge. Taken on 5 September 2022.



Photo 12: Water collected and sampled from GW105534. Taken on 5 September 2022.





Photo 13: Main property dam where GW105534 outlet flows to. Taken on 20 April 2023.



Photo 14: Dam Wall. Taken at 010 degrees on 20 April 2023.



Photo 15: GW105534 discharge, new sample point direct from bore. Taken on 20 April 2023



Photo 16: Water collected and sampled from GW105534. Taken on 20 April 2023

Table 1: Field water quality parameters taken on 23 August 2017, 25 July 2018, 5 September 2022 and 20 April 2023 from borehole GW105534 and property dam F08d01.

Field Parameter	GW105534				Dam - F08d01			
	Pre-Mining 23 August 2017	Post-Mining 25 July 2018	Post-Mining 5 September 2022	Post-Mining 20 April 2023	Pre-Mining 23 August 2017	Post-Mining 25 July 2018	Post-Mining 5 September 2022	Post-Mining 20 April 2023
Temperature (°C)	19.75	20.84	19.95	20.09	12.77	8.01	12.02	18.62
Dissolved Oxygen (% saturation)	64.6	35.8	26.7	41.4	84.4	88.7	73.9	63.2
Electrical Conductivity (µs/cm)	3530	2460	3590	1970	2100	2320	373	1440
pH (pH units)	6.90	7.15	6.73	7.41	8.09	8.31	7.39	8.11
Oxygen Reduction Potential (mV)	109.66	134.91	133.54	222.437	256.56	204.89	393.086	337.466

Table 2: Results of water chemistry analysis for samples collected on the 23 August 2017, 25 July 2018, 5 September 2022 and 20 April 2023 from borehole GW105534.

Analyte (mg/L unless stated)	GW105534			
	Pre-Mining 23 August 2017	Post-Mining 25 July 2018	Post-Mining 5 September 2022	Post-Mining 20 April 2023
Dissolved Copper	<0.001	<0.001	<0.001	< 0.001
Dissolved Iron	-	1.18	0.60	0.40
Dissolved Manganese	-	0.014	0.013	0.025
Dissolved Nickel	<0.001	<0.001	<0.001	< 0.001
Dissolved Sulphate as SO <sub>4</sub> <sup>2-</sup>	25	38	5	6
Dissolved Zinc	<0.005	<0.005	<0.005	< 0.005
Electrical Conductivity @ 25 °C (µs/cm)	3170	2530	3700	1970
pH Value (pH Unit)	7.47	7.84	7.96	8.02
Total Aluminium	0.02	<0.01	0.42	< 0.01
Total Iron	1.15	1.52	1.13	0.44
Total Manganese	0.012	0.015	0.021	0.023



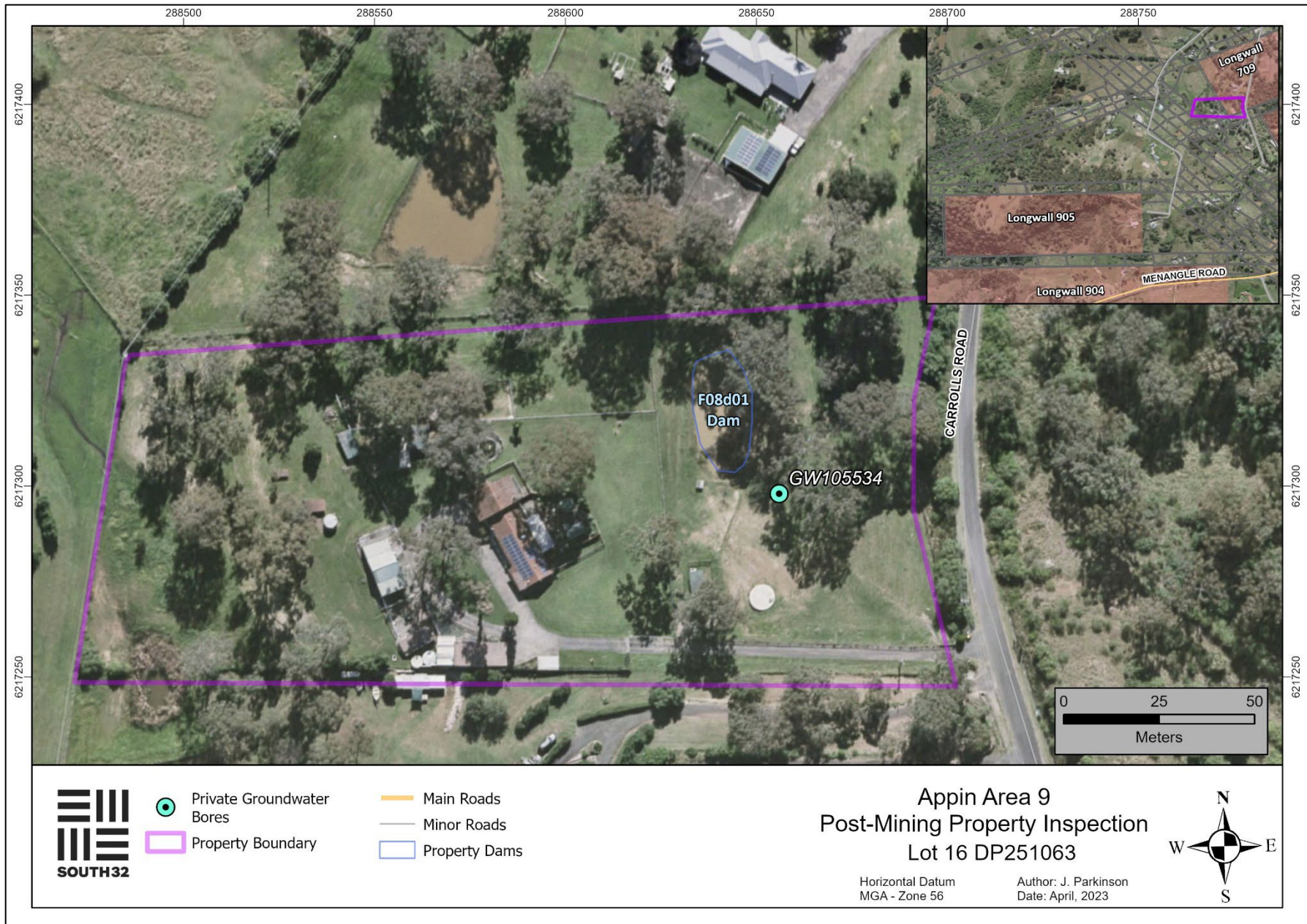


Figure 1: Map showing location of inspected borehole GW105534 and dam on Lot 16 DP251063.

Pre- and post-mining inspections are undertaken for private boreholes as prescribed in the Appin Longwalls Longwall 709 to 711 and 905 Extraction Plan (EP). Inspections can also focus on other property features as required, including farm dams, and are undertaken in consultation with the property owner or tenant, where access is approved. Inspections are typically conducted by the Illawarra Metallurgical Coal Environmental Field Team (IMCEFT). Additional inspections may be undertaken at the request of the landholder and/or in response to any trigger in the EP.

This post-mining report includes observations and field data recorded for relevant features on Lot 900 DP1072947, including borehole GW101986 and property dam (MSEC ID: F17d01) (Figure 1).

### **Pre-mining Inspection**

On 22 February 2018, a pre-mining inspection of property Lot 900 DP1072947 was undertaken. The borehole on the property was inspected. During this inspection water quality was measured using the water in the tub, to which water flows from the bore (Photo 1). Water samples were collected from water that was pumped directly from the bore into a glass container (Photo 2).



Photo 1: Photo of GW101986 and pump. Taken on 22/2/2018.



Photo 2: Photo of water sample taken from GW101986. Taken on 22/2/2018.



## **Post-mining Inspections**

A Longwall 707 post-mining inspection of the property was conducted by IMCEFT on 6 August 2018 and a follow-up inspection undertaken on 14 September 2018. Water pumped directly from the bore to a bucket was used to measure field water quality and collect water samples from. No changes to the borehole or water were observed.

A Longwall 708 post-mining inspection of the property was conducted on 17 March 2022. During this inspection the samplers were unable to use the borehole pump without the property owner and therefore a water sample was unable to be collected.

The most recent inspection was undertaken on 20 April 2023 following the completion of Longwall 905. The borehole was inspected to compare key observations with those from the pre-mining inspection. Water from the bore is pumped into a water tank. During the inspection water was piped from the tank into a bucket to measure field water quality parameters and collect a water sample (Photo 4 and Photo 5). A direct feed of water from the bore was not able to be obtained, hence the reason for sampling from piped water from the tank (an indirect supply from the bore).



Photo 3: Borehole GW101986 and pump. Taken on 6/08/2018.



Photo 4: Borehole GW101986 and pump. Taken on 20/04/2023.



Photo 5: Borehole GW101986 outflow and pump. Taken on 20/04/2023.



Photo 6: Water sample from borehole GW101986. Taken on 14/09/2018.



Photo 7: Water sample from borehole GW101986. Taken on 20/04/2023



Photo 8: Property dam. Taken on 14/09/2018





Photo 9: Property dam. Taken on 17/03/2022



Photo 10: Property dam. Taken on 20/04/2023

### **Property Borehole (GW101986)**

**Location:** E288261, N6217360

**Borehole Properties:** The borehole is located approximately 200 metres northeast of the residence (Figure 1). According to the NSW Office of Water report, the borehole was drilled to a depth of 210m and was completed on 20 February 1998. On 22 February 2018 a pre-mining inspection was completed on the property with field water quality measured and water samples collected for laboratory analysis. On 6 August 2018 and 14 September 2018 post-mining inspections were completed on the property, with field water quality measured and water samples collected (Photo 3 and Photo 6). The Longwall 708 post-mining inspection was undertaken on 17 March 2022 however water samples were unable to be collected as the bore pump could not be operated. The borehole water is now pumped directly into a water tank. On the most recent inspection the borehole was inspected and water samples were collected from the tank outlet (Photo 4 and Photo 5).

**Water Properties:** No signs of iron, salinity staining or gas release were observed in the water, around the borehole or around the outlet. Sample results from laboratory analysis and field parameters are included below (Table 1 and Table 2, respectively).

### **Dam (F17d01)**

On 17 March 2022, the dam was full and surrounding banks were saturated following recent heavy rainfall (Photo 9). The water was brown in colour. On 20 April 2023 the dam level was high, with the water a green/brown colour (Photo 10). The water was turbid, likely from recent rainfall runoff. The dam wall appeared to be in a good condition. Field water quality parameters were recorded and compared with results from previous inspections (Table 2).

Table 1: Results of water chemistry analyses for samples collected from the property borehole (GW101986).

Analytes (mg/L unless stated)	GW101986 22/02/2018	GW101986 6/08/2018	GW101986 14/9/2018	GW101986 20/04/2023
Dissolved Arsenic	<0.001	-	-	< 0.001
Dissolved Copper	0.001	<0.001	0.017	0.010
Dissolved Iron	0.14	0.72	<0.05	< 0.05
Dissolved Lead	<0.001	-	-	< 0.001
Dissolved Nickel	<0.001	<0.001	<0.001	< 0.001
Dissolved Sulfate as SO4 2-	47	28	22	29
Dissolved Zinc	0.011	0.008	0.156	0.026
Electrical Conductivity @ 25° C (µs/cm)	5650	3570	4110	3520
pH Value (pH Unit)	7.76	7.34	7.28	8.19
Suspended Solids	28	8	<5	< 5
Total Aluminium	<0.01	<0.01	<0.01	< 0.01
Total Dissolved Solids @180° C	2900	1900	2080	1950
Total Iron	0.29	0.82	0.67	0.08
Total Manganese	0.007	0.006	0.010	0.003



Table 2: Field water quality parameters from the property dam (L900\_D1072947\_DAM). Note: Electrical Conductivity removed from the 22/02/2018 due to measurement error in field. See lab results above for value

Analytes	Unit	Borehole (GW101986)				Dam (L900_D1072947_DAM)		
		22/02/2018	06/08/2018	14/09/2018	20/04/2023	14/9/2018	17/03/2022	20/04/2023
Field pH	pH Unit	8.25	6.99	7.84	7.78	8.45	7.85	8.43
Dissolved Oxygen	%	51	55.9	70.7	87.4	100.2	80.2	98.2
Final ORP	mV	288.555	204.089	350.978	406.878	329.614	398.072	353.165
Electrical Conductivity	µS/cm	-	3780	7310	3510	4080	246	1900
Temperature	Degrees Celsius	-	-	-	19.46	-	22.04	19.05

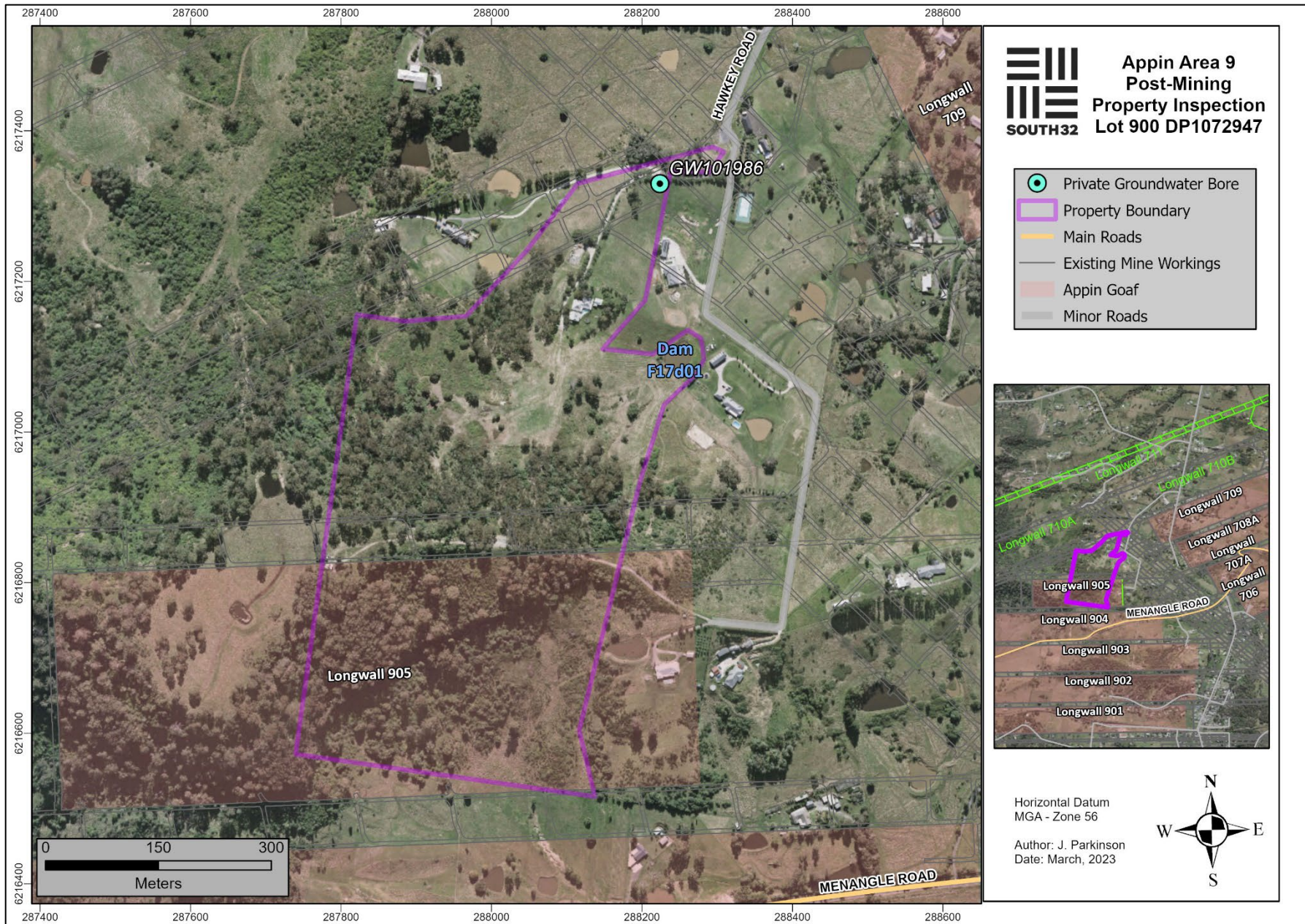


Figure 1: Map showing location of inspected borehole GW101986 and dam F17d01 on Lot 900 DP1072947.



Pre- and post-mining inspections and reports of dams, boreholes and natural features set out by the Appin Longwalls 709 to 711 and 905 Extraction Plan (EP) are conducted by the Illawarra Coal Environmental Field Team (IMCEFT) with the consent of the relevant property/infrastructure owner and tenant (where applicable).

This report includes both pre- and post-mining observations and data gathered for relevant features on Lot 1 DP810978, particularly the registered borehole GW110671. Additional inspections may be conducted at the request of the landowner or if required by various triggers in the EP. Borehole GW110671 is located approximately 480m south-east of Longwall 905 (Figure 1).

### **Pre-mining Inspection**

On 15 November 2017, a pre-mining inspection of property Lot 1 DP810978 was undertaken. Borehole GW110671 (Photo 1) and a small dam (Photo 4) were inspected. Field observations of the dam were recorded, samples were collected for borehole GW110671 and sent for laboratory for analysis.

### **Post-mining Inspections**

A Longwall 903 post-mining inspection was undertaken on 25 May 2021 and a Longwall 904 post-mining inspection on 26 August 2022. The borehole (Photo 1 and Photo 8) was inspected with field water quality measured and water samples collected. The dam was inspected (Photo 7) with key observations recorded.

The most recent inspection was undertaken on 20 April 2023 following the completion of Longwall 905. The borehole was inspected to compare key observations with those from the pre-mining inspection. Water from the bore is pumped into a water tank, the water was then pumped into a bucket to measure water quality and to collect a water sample (Photo 8, Photo 9 and Photo 11).



Photo 1 Borehole GW110671, taken on 15 November 2017 during pre-mining inspection.



Photo 2: Water from GW110671, collected into a bucket. Samples and field parameters were taken from the bucket, photo taken on 15 November 2017.



Photo 3: Electric pump for GW110671, photo taken on 15 November 2017.



Photo 4: Dam located on Lot 1 DP810978, photo taken on 15 November 2017.



Photo 5: Electric pump for GW110671, photo taken on 26 August 2022.



Photo 6: Water from GW110671. collected into a bucket. Samples and field parameters were taken from the bucket, photo taken on 26 August 2022.





Photo 7: Dam located on Lot 1 DP810978, photo taken on 26 August 2022.



Photo 8: Borehole GW110671, taken on 20 April 2023 during post-mining inspection.



Photo 9: Water from GW110671. collected into a bucket. Samples and field parameters were taken from the bucket, photo taken on 20 April 2023.



Photo 10: Dam located on Lot 1 DP810978, photo taken on 20 April 2023.



Photo 11: Electric pump for GW110671, photo taken on 20 April 2023.

## **Borehole GW110671**

**Location:** 288717 E, 6216340 N

### **Borehole Properties:**

Borehole GW110671 is located approximately 480m south-east of Longwall 905 (Figure 1). According to the NSW Office of Water Work Summary Report, the borehole was installed on 22 February 2010 and drilled to a depth of 240m. On this date, the standing water level was measured 82m below ground level. During the Longwall 903 post-mining inspection on 25 May 2021 the standing water level was measured to be 69.91m below ground level. During the Longwall 904 on 26 August 2022, and the most recent inspection on 20 April 2023, the standing water level was unable to be measured due to pumping equipment obstructing the borehole (Photo 8). The piezometer was downloaded which records groundwater data. Further analysis will be included in the Longwall 905 End of Panel Report. The landholder advised that the borehole is mainly used for watering the lawn and garden.

### **Water Properties:**

On 27 November 2017 a pre-mining inspection was completed on the property with field water quality measured and samples collected for laboratory analysis. The borehole was purged for approximately 10 minutes before water samples were collected and field parameters recorded (Photo 2). Results are presented in Table 1 and Table 2, respectively.

During the Longwall 903 post-mining inspection, an odour, likened to hydrogen sulphide, was noted when the bore pump was turned on. The bore was purged for 10 minutes with field water quality measured and samples collected. During the Longwall 904 post-mining inspection, an odour, likened to hydrogen sulphide, was noted when the bore pump was turned on. The bore was purged for 10 minutes then water samples and field parameters were collected (Photo 5). The water from the bore pump had a slight brown colouration (Photo 6).

During the Longwall 905 post-mining inspection, the no signs of iron, salinity staining were observed in the water, around the borehole or around the outlet. A slight odour was noted when the pump was first turned on but dissipated quickly. Some material was visible in the bucket (Photo 9) after the hose had been purged for 5mins. This looked like debris that had settled in the tank or fragments of the hose. Sample results from laboratory analysis are included below in (Table 1).

### **Dam**

The dam is located towards the north-eastern corner of the property (Figure 1). Observations on 15 November 2017 show that the dam level was relatively low and the water in the dam was considerably turbid (Photo 4).



During the Longwall 903 post-mining inspection on 25 May 2021, the dam level was close to full. The water in the dam was discoloured (dark brown/grey) and turbid. The dam walls were in good condition, with no signs of leaks or slumping. During the Longwall 904 post-mining inspection on 26 August 2022, the dam level was full. The water in the dam was discoloured (dark brown/grey) and turbid. The dam walls were in good condition, with no signs of leaks or slumping (Photo 7).

During the Longwall 905 post-mining inspection on 20 April 2023, the dam level was high. The water in the dam was dark brown and turbid, likely from rainfall run-off. The dam wall remains in good condition, with no signs of leaking or slumping (Photo 10).

Table 1: Results of water chemistry analysis for water samples collected during pre-mining and post-mining, from borehole GW110671.

Analyte	Units	Pre-mining 15 November 2017	Post-mining 25 May 2021	Post-mining 26 August 2022	Post-mining 20 April 2023
Electrical Conductivity @ 25 degrees C	$\mu\text{S/cm}$	2050	2240	2220	2000
Total Dissolved Solids @ 180 degrees C	$\text{mg/L}$	1170	1240	1210	1040
Suspended Solids	$\text{mg/L}$	<5	<5	40	< 5
pH Value	$\text{pH Unit}$	8.23	7.47	8.08	8.65
Dissolved Sulfate as $\text{SO}_4^{-2}$	$\text{mg/L}$	30	22	14	20
Total Iron	$\text{mg/L}$	<0.05	0.33	1.38	< 0.05
Dissolved Iron	$\text{mg/L}$	<0.05	0.28	0.49	< 0.05
Dissolved Manganese	$\text{mg/L}$	0.001	0.013	0.022	< 0.001
Dissolved Aluminium	$\text{mg/L}$	<0.01	<0.01	<0.01	< 0.01
Dissolved Arsenic	$\text{mg/L}$	<0.001	<0.001	0.008	< 0.001
Dissolved Copper	$\text{mg/L}$	0.002	<0.001	<0.001	< 0.001
Dissolved Lead	$\text{mg/L}$	<0.001	<0.001	<0.001	< 0.001
Dissolved Nickel	$\text{mg/L}$	<0.001	0.001	0.004	< 0.001
Dissolved Zinc	$\text{mg/L}$	0.008	0.017	0.027	< 0.005

Table 2: Field parameters recorded during pre-mining and post-mining from water collected from borehole GW110671, using a Horiba water quality probe.

<b>Parameter</b>	<b>Unit</b>	<b>Pre-mining 15 November 2017</b>	<b>Post-mining 25 May 2021</b>	<b>Post-mining 26 August 2022</b>	<b>Post-mining 20 April 2023</b>
Temperature	<i>Degrees Celsius</i>	20.15	18.79	19.06	16.62
Dissolved Oxygen	<i>% Saturation</i>	66.9	44.9	29.6	85.8
Oxygen Reduction Potential	<i>mV</i>	364.40	173.34	296.158	357.866
pH	<i>pH Unit</i>	7.53	7.11	6.91	8.87
Electrical Conductivity	<i>μS/cm</i>	2200	2220	2320	1960



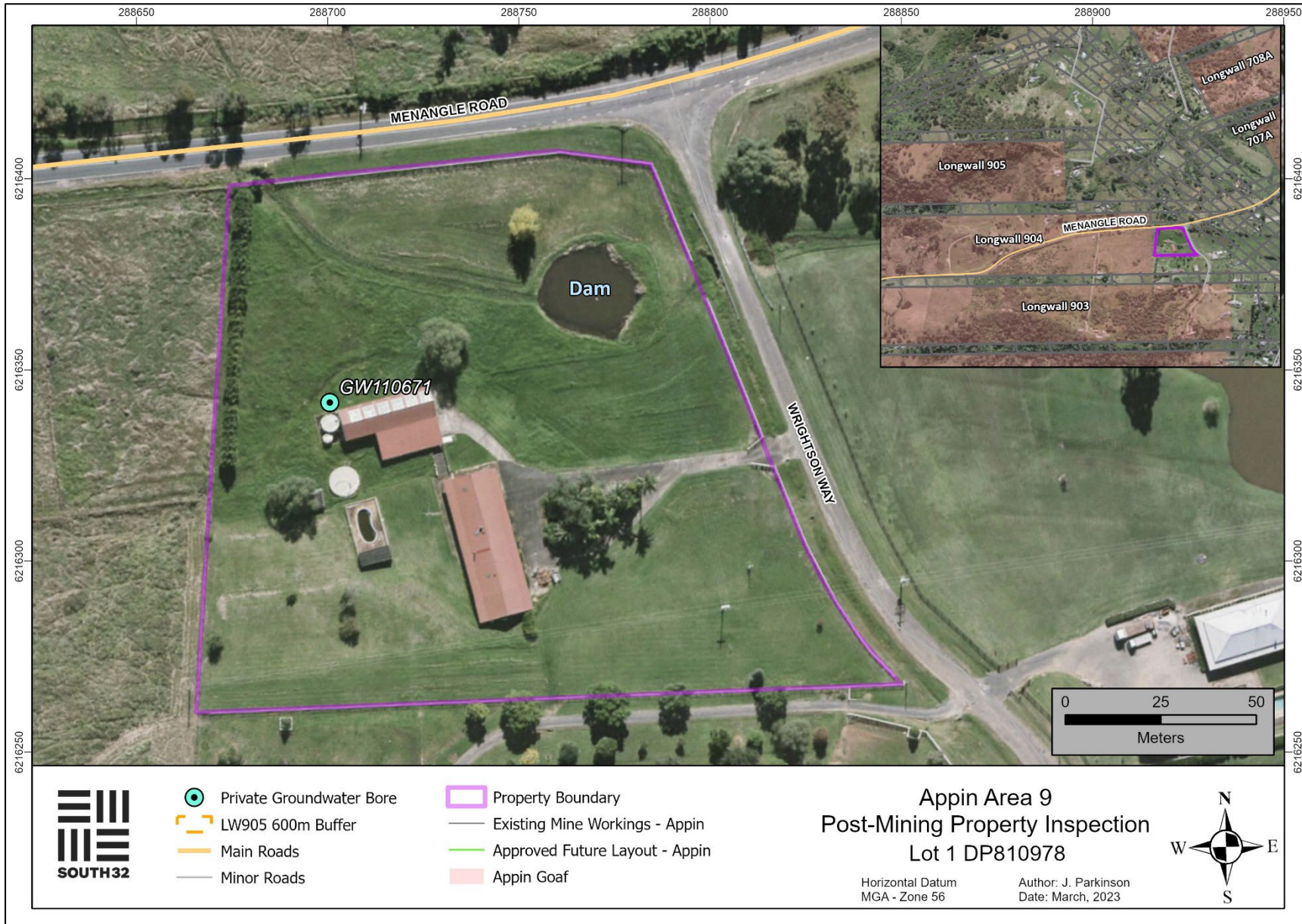


Figure 1: Overview of property Lot 1 DP810978 in relation to Appin Area mining operations.

Pre- and post-mining inspections are undertaken for private boreholes as prescribed in the Appin Longwalls 709 to 711 and 905 Extraction Plan (EP). Inspections can also focus on other property features as required, including farm dams, and are undertaken in consultation with the property owner or tenant, where access is approved. Inspections are typically conducted by the Illawarra Metallurgical Coal Environmental Field Team (IMCEFT). Additional inspections may be undertaken at the request of the landholder and/or in response to any trigger in the EP.

This post-mining report includes observations and field data recorded for relevant features on Lot 22 DP803255, including borehole GW072249 (Figure 1).

### **Pre-mining Inspection**

On 29 June 2015, a pre-mining inspection of property Lot 22 DP803255 was undertaken and one borehole-GW072249 was identified and inspected (Photo 1 and Photo 2). Field water quality was measured, and water samples collected and sent for laboratory analysis, with results presented below (Table 1 and Table 2). The pre-mining inspection identified water pressure was stable for greater than 10 minutes at a flow rate of approximately 0.5 – 1 L/s.

### **Post-mining Inspections**

On 2 November 2017, following completion of Longwall 901, a post-mining inspection of Lot 22 DP803255 was undertaken (Figure 1). The borehole GW072249 was inspected, field water quality measured, and water samples collected and sent for laboratory analysis with results presented in (Table 1 and Table 2). The post-mining inspection identified the water pressure from the borehole was steady, with a rate of approximately 0.5 – 1 L/s, however reduced after 5 minutes. This change in water pressure indicated that longwall mining activities had likely reduced the amount of water accessible to be extracted from the borehole and as such, a Water Management Plan was prepared for the property.

On 6 June 2019, a post-mining inspection was undertaken following completion of Longwall 902. The borehole was inspected, field water quality measured, and water samples collected for laboratory analysis, with results presented below (Table 1 and Table 2).

On 26 August 2022, a post-mining inspection was undertaken following Longwall 904. The borehole was inspected, field water quality measured, and water samples collected for laboratory analysis, with results presented below (Table 1 and Table 2).

The most recent inspection was undertaken on 20 April 2023 following the completion of Longwall 905. The borehole was inspected to compare key observations with those from the pre-mining inspection. The borehole was inspected, field water quality measured, and water samples collected for laboratory analysis, with results presented below (Table 1 and Table 2).

**Borehole: GW072249**

**Location:** 288072 E, 6215479 N

***Borehole Properties:***

The borehole is located approximately 20 metres south of the main dwelling on this property (Figure 1; Photo 1). According to the NSW Office of Water Work Summary, the borehole was drilled to a depth of 97m and was completed on 31 March 1994. On the Longwall 902 post-mining inspection date on 6 June 2019 the standing water level was dipped at 65.4m (+/- 0.2m) below ground level. On the Longwall 904 post-mining inspection date on 26 August 2022, and the most recent inspection on 20 April 2023, standing water level was unable to be measured due to pumping equipment obstructing the borehole (Photo 8 and Photo 12). The piezometer was downloaded which records groundwater data. Further analysis will be included in the End of Panel Report.

***Bore Pumping Purpose and Performance:***

During the Longwall 902 post-mining inspection, the landholder advised that the water is extracted from the bore for land care and domestic uses. No test of pumping pressure was undertaken due to the absence of pumping equipment. Instead, water was hand-bailed from the bore.

During the Longwall 904 post-mining inspection, as well the most recent inspection, pumping equipment was present with water released via a garden tap (Photo 9 and Photo 13). No test of pumping pressure was undertaken.

***Water Properties:***

During the Longwall 902 post-mining inspection the water appeared to be slightly discoloured when compared to photos from the inspection on 2 November 2017 (Photo 4 and Photo 6). However, there were no signs of iron staining or salinity in the water, or around the borehole outlet. No gas or odours were identified during the inspection. During the Longwall 904 post-mining inspection the water appeared clear (Photo 10). There were no signs of iron staining or salinity in the water, or around the borehole outlet. No gas or odours were identified during the inspection.

During the Longwall 905 post-mining inspection the water appeared clear with no discolouration (Photo 14). There were no signs of iron staining or salinity in the water, or around the borehole outlet. No gas or odours were identified during the inspection





Photo 1: Borehole GW072249. Taken on 29 June 2015.



Photo 2: Borehole GW072249 – pumping equipment. Taken on 2 November 2017.



Photo 3: Water from Borehole GW072249. Taken on 29 June 2015.



Photo 4: Water collected from bore discharge. Taken on 2 November 2017.



Photo 5: Borehole GW072249. Taken on 6 June 2019.



Photo 6: Image of water collected from bore. Taken on 6 June 2019.





Photo 7: Borehole GW072249 and cover. Taken on 26 August 2022.



Photo 8: Borehole GW072249 – pumping equipment. Taken on 26 August 2022.



Photo 9: Tap from where water samples were collected. Taken on 26 August 2022.



Photo 10: Water collected from bore tap after purging for approximately 2 minutes. Taken on 26 August 2022.





Photo 11: Borehole GW072249 and cover. Taken on 20 April 2023.



Photo 12: Borehole GW072249 – pumping equipment. Taken 20 April 2023.



Photo 13: Tap which water samples were collected from. Taken on 20 April 2023.



Photo 14: Water collected from bore tap after purging for approximately 5 minutes. Taken on 20 April 2023.



Table 1: Field water quality data for borehole GW072249. Recorded on 29 June 2015, 2 November 2017, 6 June 2019, 26 August 2022 and 20 April 2023.

Analyte	Units	Pre-mining 29 June 2015	Post-Longwall 901 2 November 2017	Post-Longwall 902 6 June 2019	Post-Longwall 904 26 August 2022	Post-Longwall 905 20 April 2023
Temperature	<i>Degrees Celsius</i>	17.04	18.97	17.27	18.06	18.87
Dissolved Oxygen	<i>% Saturation</i>	10.5	46.2	47.3	69.7	61.1
Electrical Conductivity	<i>µs/cm</i>	2600	2780	3290	3760	3770
pH	<i>pH Value</i>	7.17	7.14	7.54	7.13	7.18
Oxygen Reduction Potential	<i>mV</i>	265	265	325	403	171

Table 2: Results of water chemistry analysis for samples collected from GW072249. Samples collected on 29 June 2015, 2 November 2017, 6 June 2019, 26 August 2022 and 20 April 2023. Note that some parameters were not tested between pre-mining and post-mining inspections.

Analyte	Units	Pre-Mining 29 June 2015	Post-Longwall 901 2 November 2017	Post-Longwall 902 6 June 2019	Post-Longwall 904 26 August 2022	Post-Longwall 905 20 April 2023
Dissolved Copper	<i>mg/L</i>	<0.001	0.001	<0.001	0.015	< 0.001
Dissolved Iron	<i>mg/L</i>	0.32	0.08	<0.05	<0.05	6.69
Dissolved Manganese	<i>mg/L</i>	0.043*	0.032	0.046	0.082	0.069
Dissolved Nickel	<i>mg/L</i>	<0.001	<0.001	<0.001	0.008	0.001
Dissolved Sulfate as SO <sub>4</sub> <sup>2-</sup>	<i>mg/L</i>	-	21	30	26	13
Dissolved Zinc	<i>mg/L</i>	0.008	0.007	0.028	0.060	< 0.005
Electrical Conductivity @ 25°C	<i>µs/cm</i>	2680	2700	3570	3780	3840
pH Value	<i>pH Unit</i>	7.33	7.73	8.24	8.04	8.00
Total Aluminium	<i>mg/L</i>	<0.01	0.03	0.05	<0.01	< 0.01
Total Iron	<i>mg/L</i>	0.34	0.38	0.96	0.07	6.76
Total Manganese	<i>mg/L</i>	0.042	0.032	0.075	0.086	0.067

\* Previous report incorrectly reported the Dissolved Magnesium value. Result has now been corrected to Dissolved Manganese.



Figure 1: Borehole GW072249 on Lot 22 DP803255 in relation to Appin Area 9 mining operations.