MALABAR

Maxwell Underground Project
Environmental Monitoring Data
Quarter 3 2021

1 INTRODUCTION

This report has been compiled to present environmental monitoring data for the Maxwell Underground Coal Mine Project (the project) in accordance with Schedule 2, Condition E17 (a) (vii) of SSD-9526.

This report covers the reporting period 1 July to 30 September 2021. Summaries of historic environmental monitoring data (prior to this report) can be found in the Annual Environmental Management Reports located on the Malabar Resources website.

2 MONITORING RESULTS

Deposited dust monitoring results are provided in **Table 1**.

Continuous TEOM PM_{10} monitoring results are provided in **Figure 1**

Continuous TEOM $PM_{2.5}$ monitoring results are provided in **Figure 1**

Mine storage surface water quality monitoring results are provided in **Table 2.**

Downstream surface water quality monitoring results are provided in **Table 3**

Surface water quality field measurements from Saddlers Creek are compared to trigger levels in **Table 4**

Surface water quality laboratory results from Saddlers Creek are compared to trigger levels in **Table 5**

Groundwater quality results for Maxwell Infrastructure bores are provided in **Table** 6**6**

Groundwater quality results for Maxwell Underground bores are provide in **Table 7**

Groundwater level results are provided in **Table 8**

Noise monitoring results are provided from **Table 9**

Locations of monitoring sites are shown in **Appendix 1** to **3**.

Table 1: Deposited dust monitoring results for Quarter 3.

Gauge	Insoluble Solids Result (g/m^2/month)			Annual Mean Limit (g/m^2/month)	Rolling Annual Average to end of September 2021 (g/m^2/month)
	July	August	September		
2175	1.0	1.0	1.3	4	1.8
2230	11.8	1.7	1.0	4	2.8
2235	1.3	1.5	1.3	4	1.8
2247	0.9	1.6	1.2	4	1.4

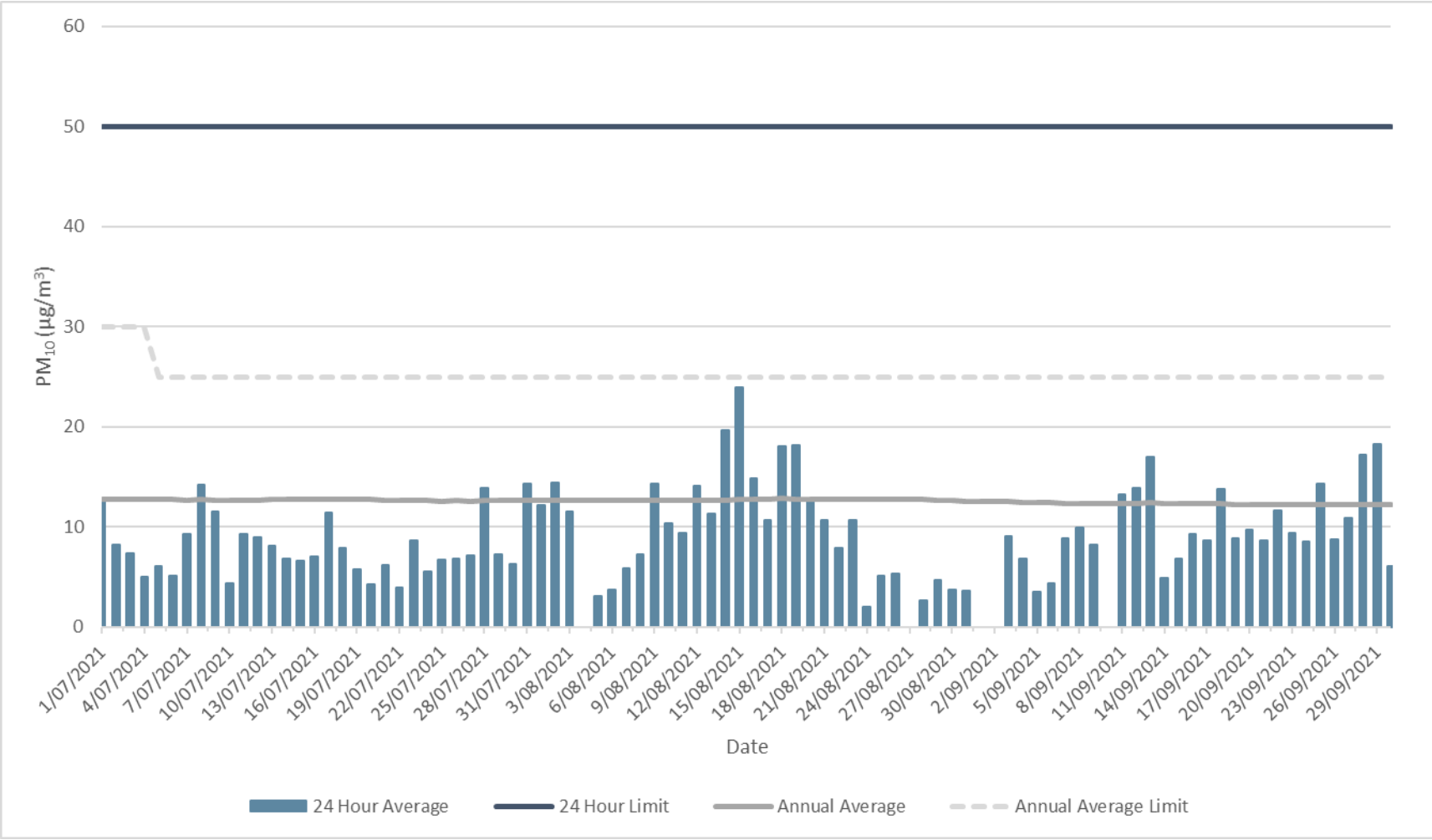


Figure 1: TEOM PM_{10} monitoring results for Quarter 3.

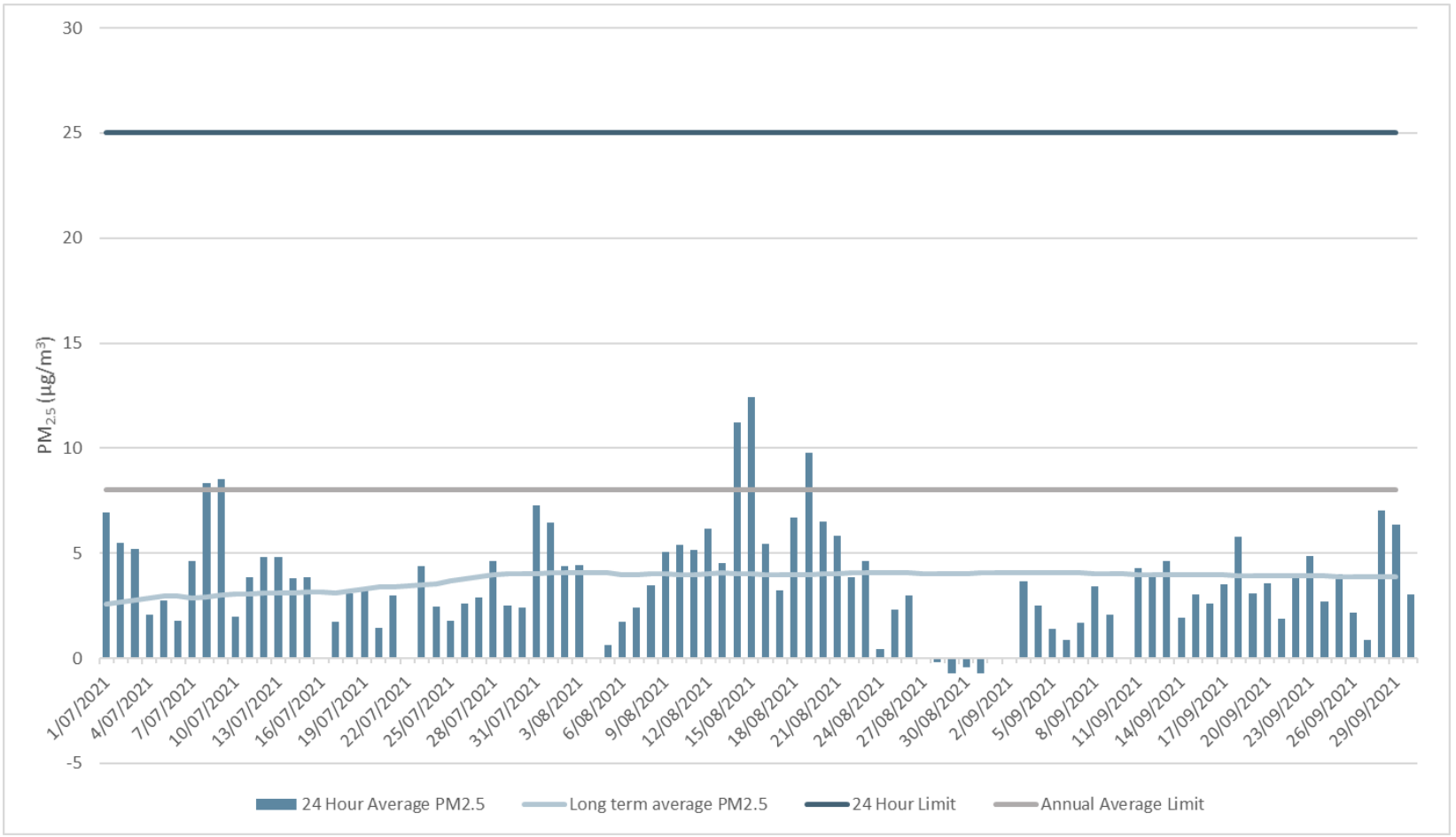


Figure 2: TEOM $PM_{2.5}$ monitoring results for Quarter 3.

Notes:

- From early March 2021, the monitoring equipment is a 1405-DF TEOM, which measures $PM_{2.5}$ in addition to PM_{10} (as required by the Development Consent for the Maxwell Underground Project).
- Notification of Commencement of Maxwell Underground Coal Mine Project occurred on 5 July 2021, hence the 25µg/m^3 limit for annual concentrations of PM_{10} is deemed to apply after this date.
- All 24-hour averages during Quarter 3 were below the 24-Hour Limits for both PM_{10} and $PM_{2.5}$. The results of the investigations into any exceedances (if required) are provided in the Maxwell Infrastructure Annual Environmental Management Report.
- The rolling annual average remained very low during the reporting period, which reflects lower recorded concentrations following the significant rainfall for the year to date with the resultant higher vegetation cover locally and across regional NSW. Levels are much lower than those experienced in 2019 and early 2020, which were predominantly due to regional dust storms and bush fires.
- On 4 August 2021, the scheduled quarterly calibration of the TEOM resulted in <75% valid data to calculate a 24-hour average.
- On 27 August 2021, the scheduled annual calibration of the TEOM resulted in <75% valid data to calculate a 24-hour average. This also identified the need for replacement of the vacuum pump and flow sensor, which was conducted on 1 September 2021, together with the application of the zero filter required by the scheduled annual calibration. This resulted in <75% valid data to calculate a 24-hour average on both 1&2 September 2021.

Table 2. All mine water storage monitoring locations: laboratory water quality monitoring results for Quarter 3 (year to date average shown). See notes for further details.

Site	Month	Bicarbonate ($CaCO_3$) (mg/L)	Calcium (mg/L)	Chloride (mg/L)	EC (µS/cm)	Magnesium (mg/L)	pH	Potassium (mg/L)	Sodium (mg/L)	Sulphate (SO_4) (mg/L)	TSS (mg/L)	TDS (mg/L)
Access Rd Dam (2081)	Sep	118	520	967	8870	722	8.4	89.0	896	4130	5.0	9310
	Average	**101**	**500**	**930**	**8223**	**634**	**8.2**	**80**	**796**	**3710**	**5.3**	**8283**
DC2 Dam (2109)	Sep	41	66	425	2820	103	7.1	7.0	438	674	5.0	2040
	Average	**45**	**58**	**363**	**2230**	**78**	**6.8**	**6.0**	**315**	**516**	**20**	**1589**
Rail Loop Dam (2114)	Sep	152	125	215	2070	106	8.0	8.0	225	600	5.0	1570
	Average	**111**	**98**	**157**	**1593**	**76**	**7.7**	**6.8**	**157**	**499**	**10**	**1104**
Industrial Dam (1969)	Sep	110	282	462	4400	309	8.3	37	430	1770	5.0	3960
	Average	**102**	**248**	**470**	**4228**	**275**	**8.2**	**36**	**385**	**1735**	**10**	**3760**
OPC Dam	Sep	64	50	57	739	35	9.6	4.0	50	159	5.0	484
	Average	**109**	**64**	**59**	**887**	**43**	**8.8**	**4.8**	**60**	**261**	**8.5**	**623**
V Notch	Sep	399	467	1610	11700	547	7.8	16	2050	4250	7.0	10100
	Average	**370**	**444**	**1420**	**10087**	**431**	**7.8**	**13**	**1602**	**3363**	**7.0**	**8155**
ES Void	Sep	282	557	794	7780	607	7.7	83	676	3600	5.0	6280
	Average	**253**	**545**	**785**	**7433**	**567**	**7.9**	**76**	**630**	**3453**	**7.0**	**6990**

Notes:

The year-to-date value consists of the quarterly sample for the current quarter plus the three previous quarters, as per the Water Management Plan. The exception is for the V Notch dam, where samples are taken monthly as is required by the EPL.

Table 2 excludes mine water storages yet to be constructed (MEA dam, Mine Water Dam, Treated Water Dam, MEA Sedimentation Dam).

Table 3. All downstream surface water monitoring locations: laboratory surface water quality monitoring results for Quarter 3 compared to year-to-date averages. See notes for further details.

Site	Month	Antimony	Arsenic	Bicarbonate ($CaCO_3$)	Calcium	Chloride	EC	Magnesium	Molybdenum	Potassium	Selenium	Sodium	Sulphate (SO_4)	TSS	TDS	Turbidity
Saddlers U/S	Jul	0.0010	0.0010	395	258	455	3010	184	0.0010	19	0.010	216	723	5.0	2370	2.8
	Average	**0.0010**	**0.0023**	**228**	**155**	**195**	**1810**	**105**	**0.0010**	**19**	**0.010**	**118**	**565**	**19**	**1502**	**28**
W3	Jul	0.0010	0.0010	838	145	2130	7590	368	0.0010	4.0	0.010	1190	573	33	5300	9.0
	Average	**0.0010**	**0.0013**	**666**	**112**	**1777**	**6747**	**288**	**0.0010**	**7.0**	**0.010**	**945**	**524**	**32**	**4260**	**11**
SW1/ Saddlers	Jul	0.0010	0.0010	955	253	4080	12400	366	0.0010	5.0	0.010	2330	601	17	8770	44
	Average	**0.0010**	**0.0013**	**713**	**247**	**3786**	**12882**	**369**	**0.0017**	**7.8**	**0.010**	**2094**	**716**	**30**	**8502**	**49**
Saddlers D/S (W4-Bowfield)	Jul	0.0010	0.0010	785	93	2150	7350	220	0.0010	10	0.010	1310	313	5.0	4640	1.7
	Average	**0.0010**	**0.0012**	**437**	**60**	**1038**	**4274**	**121**	**0.0010**	**10.0**	**0.010**	**661**	**222**	**12**	**2471**	**26**
MEA D/S	Jul	0.0010	0.0010	53	9.0	11	126	4.0	0.0010	7.0	0.010	9.0	1.0	58	112	67
	Average	**0.0012**	**0.0010**	**64**	**11**	**11**	**154**	**5.2**	**0.0010**	**8.3**	**0.010**	**10**	**3.0**	**33**	**161**	**60**
Saltwater D/S	Jul	Dry														
	Average	**0.0010**	**0.0010**	**46**	**9.0**	**6.0**	**114**	**3.0**	**0.0010**	**16**	**0.010**	**4.0**	**1.0**	**33**	**175**	**50**
SW3	Jul	Dry														
	Average	**0.0010**	**0.0010**	**48**	**11**	**7.0**	**122**	**3.3**	**0.0010**	**11**	**0.010**	**4.3**	**10**	**25**	**172**	**85**
Transport and Services Corridor sediment dams	See notes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes:

The average for the Saltwater Creek monitoring site consists of one sample only (6 January 2021), the average for the SW3 monitoring site consists of three samples (6 January, 16 March, 26 March 2021) as those locations were dry for all other sampling dates during the past 12 months.

The year-to-date value consists of the quarterly sample plus scheduled sampling and post-rainfall sampling during the past three previous quarters.

In addition to quarterly sampling, the MUG Project Water Management Plan requires sampling and analysis following 25mm of rain over a 24-hour period (defined as midnight to midnight and as recorded at the Drayton South meteorological recording station (AWS-2)). The results from any such rainfall events have been included in the year-to-date averages.

The quarterly field measurements of pH, EC, redox potential and temperature are recorded to enable subsequent evaluation in case of need and are not included in the quarterly reporting.

The location of the Transport and Services Corridor sediment dams (eg SW2) are to be confirmed as they are yet to be constructed hence monitoring has not yet commenced.

All results are in mg/L except Conductivity (µS/cm), pH (in pH units) and turbidity (nephelometric turbidity units).

The following will be reported in the AEMR:

- Comparison of water quality results from Saddlers Creek against Water Quality Trigger Values
- Results from the automatic weather stations (AWS-1 and AWS-2)
- Results of the stream health monitoring.

Table 4. Surface water field measurements at sites along Saddlers Creek during Q3 and comparison against trigger levels. If an exceedance of the trigger level occurs for three consecutive readings, this is highlighted in red.

Site		Field result		
		pH	EC	Turbidity
	Units	pH	µS/cm	NTU
	Trigger	6.5–8.5	7600	64
	Sample date			
W3	8/7/21	7.7	11236	9.0
Saddlers D/S (W4 – Bowfield)	8/7/21	8.0	10655	1.7
MEA D/S	8/7/21	6.4	163	67
Saddlers U/S	8/7/21	6.9	4218	2.8
Saltwater D/S	8/7/21	Dry		
SW1/ Saddlers	8/7/21	7.2	18836	44
SW2	Location to be established – see notes			
SW3	8/7/21	Dry		

Notes. Surface water sampling first occurred under the MUG Project Surface Water MP on 8/7/21 (prior to its approval on 25/11/21). There was no >25mm rainfall event during Q3, hence only one sample was taken during the quarter under the plan.
Turbidity results presented are laboratory results; from Q1 2022, a field meter will be used to determine turbidity; this will enable direct comparison against the field trigger values for turbidity. Trigger for turbidity calculated by WRM Water based on the 80th percentile of the entire laboratory NTU dataset to end of 2021.

Table 5. Surface water laboratory results at sites along Saddlers Creek during Q3 and comparison against trigger levels. If an exceedance of the trigger level occurs for three consecutive readings, this is highlighted in red.

Site	Sample date	Laboratory result													
		Sb	As (V)	As (III)	CaCO3	Ca	Cl	Mg	Mb	K	Se	Na	SO4	TSS	TDS
Units		mg/L	mg/L mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Trigger		9[c]	13[c]	24 [b] [c]	[a]	[a]	[a]	[a]	34[c]	[a]	11[c]	[a]	[a]	50	4900
W3	8/7/21	0.0010	0.0010	0.0010	838	145	2130	368	0.0010	4.0	0.010	1190	573	33	5300
Saddlers D/S (W4 – Bowfield)	8/7/21	0.0010	0.0010	0.0010	785	93	2150	220	0.0010	10.0	0.010	1310	313	5.0	4640
MEA D/S	8/7/21	0.0010	0.0010	0.0010	53	9.0	11	4.0	0.0010	7.0	0.010	9.0	1.0	58	112
Saddlers U/S	8/7/21	0.0010	0.0010	0.0010	395	258	455	184	0.0010	19.0	0.010	216	723	5.0	2370
Saltwater D/S	8/7/21	Dry													
SW1/ Saddlers	8/7/21	0.0010	0.0010	0.0010	955	253	4080	366	0.0010	5.0	0.010	2330	601	17	8770
SW2	8/7/21	Location to be established – see notes													
SW3	8/7/21	Dry													

Table 6: Maxwell Infrastructure Groundwater quality monitoring results for Quarter 3 (year to date average shown). See notes for further details (under the new Maxwell Underground Project, sampling changed from quarterly to biennial and hence no sampling occurred for these bores in Q3 2021). NS = Not sampled.

Site	Arsenic	Barium	Beryllium	Bicarbonate Alkalinity as CaCO3	Boron	Cadmium	Calcium	Chloride	Chromium	Cobalt	Copper	Electrical conductivity	Lead	Magnesium	Manganese	Nickel	pH value
DS1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7433	NS	NS	NS	NS	6.55
Average	***0.001***	***0.011***	***0.001***	***307***	***0.07***	***0.0002***	***511***	***829***	***0.001***	***0.006***	***0.001***	***7543***	***0.001***	***332***	***1.47***	***0.020***	***6.54***
R4241	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	***0.002***	***0.056***	***0.001***	***627***	***0.17***	***0.0001***	***212***	***879***	***0.002***	***0.006***	***0.006***	***5143***	***0.010***	***302***	***0.296***	***0.015***	***7.10***
F1162	Too low to sample (Q2)																
F1164	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	***0.003***	***0.065***	***0.001***	***677***	***0.10***	***0.0001***	***138***	***707***	***0.002***	***0.003***	***0.003***	***4320***	***0.033***	***185***	***0.64***	***0.006***	***6.90***
GW01D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	***0.001***	***0.06***	***0.001***	***561***	***0.32***	***0.0001***	***420***	***1178***	***0.001***	***0.006***	***0.002***	***5503***	***0.001***	***173***	***0.267***	***0.015***	***6.92***
GW01S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	***0.01***	***0.604***	***0.005***	***307***	***0.15***	***0.0005***	***210***	***2220***	***0.075***	***0.063***	***0.078***	***7720***	***0.041***	***211***	***0.338***	***0.231***	***6.98***
GW02D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	***0.014***	***0.224***	***0.002***	***1808***	***0.25***	***0.0002***	***68***	***912***	***0.014***	***0.016***	***0.030***	***10425***	***0.020***	***16***	***1.07***	***0.033***	***7.43***
GW02S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	***0.002***	***0.037***	***0.001***	***914***	***0.12***	***0.0001***	***381***	***889***	***0.003***	***0.002***	***0.005***	***7698***	***0.003***	***415***	***0.97***	***0.014***	***6.78***

Table 6 continued

Site	Potassium	Selenium	Sodium	Sulfate as SO4 - Turbidimetric	Suspended Solids (SS)	Total Dissolved Solids @180°C	Vanadium	Zinc	Nitrite as N	Nitrate as N	Mercury	Ammonia as N	Total Kjeldahl Nitrogen as N	Total Nitrogen as N	Total Phosphorus as P	Reactive Phosphorus as P
DS1	NS	NS	NS	NS	NS	6220	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	***23***	***0.01***	***1003***	***3125***	***34***	***6417***	***0.01***	***0.03***	***0.01***	***0.03***	***0.0001***	***0.06***	***0.1***	***0.1***	***0.03***	***0.01***
R4241	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	***14***	***0.01***	***551***	***1011***	***71***	***3613***	***0.01***	***0.07***	***0.03***	***0.03***	***0.0001***	***0.96***	***1.13***	***1.2***	***0.09***	***0.01***
F1162	Too low to sample (Q2)															
F1164	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	***24***	***0.01***	***612***	***685***	***90***	***2900***	***0.01***	***0.03***	***0.01***	***0.1***	***0.0001***	***33.4***	***37.2***	***37.3***	***1.5***	***0.01***
GW01D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	***29***	***0.01***	***585***	***596***	***27***	***3718***	***0.01***	***0.03***	***0.01***	***0.52***	***0.0001***	***0.56***	***0.58***	***1.1***	***0.04***	***0.01***
GW01S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	***25***	***0.3***	***1225***	***520***	***8100***	***5415***	***0.1***	***0.45***	***0.01***	***2.14***	***0.0006***	***0.21***	***16.4***	***18.55***	***3.68***	***0.01***
GW02D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	***21***	***0.01***	***2668***	***2730***	***1610***	***7948***	***0.03***	***0.11***	***0.03***	***0.06***	***0.0001***	***3.99***	***7.38***	***7.48***	***2.19***	***0.01***
GW02S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	***22***	***0.01***	***1027***	***2645***	***170***	***6335***	***0.01***	***0.04***	***0.01***	***0.01***	***0.0001***	***0.22***	***0.78***	***0.78***	***0.19***	***0.01***

Table 7: Maxwell Underground Groundwater quality monitoring results for Quarter 3 (year to date average shown). See notes for further details (under the new Maxwell Underground Project, sampling changed from quarterly to biennial and hence no sampling occurred for these bores in Q3 2021). NS = Not sampled.

Site	Arsenic	Barium	Beryllium	Bicarbonate Alkalinity as CaCO3	Boron	Cadmium	Calcium	Chloride	Chromium	Cobalt	Copper	Electrical conductivity	Lead	Magnesium	Manganese	Nickel	pH value
DD1005	0.001	NS	NS	1000	0.2	NS	142	1830	0.007	NS	0.013	6680	0.002	206	0.005	0.012	7.42
Average	***0.001***	NS	NS	***993***	***0.20***	NS	***140***	***1753***	***0.006***	NS	***0.027***	***7110***	***0.008***	***216***	***0.03***	***0.016***	***7.42***
DD1014	0.001	NS	NS	820	0.37	NS	71	2960	0.002	NS	0.071	9460	0.005	41	0.155	0.003	7.3
Average	***0.001***	NS	NS	***847***	***0.35***	NS	***75***	***2947***	***0.002***	NS	***0.044***	***10187***	***0.006***	***43***	***0.17***	***0.004***	***7.38***
DD1015	0.001	NS	NS	1030	0.21	NS	104	1360	0.001	NS	0.002	5940	0.008	169	0.343	0.004	7.22
Average	***0.001***	NS	NS	***1110***	***0.19***	NS	***113***	***1287***	***0.001***	NS	***0.004***	***6000***	***0.007***	***181***	***0.22***	***0.004***	***7.10***
DD1016	0.001	NS	NS	1140	0.28	NS	172	1460	0.001	NS	0.003	5840	0.002	293	0.171	0.001	6.93
Average	***0.001***	NS	NS	***1180***	***0.26***	NS	***161***	***1503***	***0.001***	NS	***0.002***	***6197***	***0.002***	***305***	***0.16***	***0.001***	***6.95***
DD1025	0.001	NS	NS	1250	0.18	NS	238	3970	0.001	NS	1.75	12000	0.001	451	0.263	0.016	7.19
Average	***0.001***	NS	NS	***1237***	***0.17***	NS	***242***	***3870***	***0.001***	NS	***1.119***	***13167***	***0.002***	***451***	***0.25***	***0.014***	***6.99***
DD1025	0.001	NS	NS	1260	0.27	NS	11	1480	0.001	NS	0.003	6380	0.001	4	0.008	0.001	8
Average	***0.001***	NS	NS	***1200***	***0.26***	NS	***11***	***1440***	***0.001***	NS	***0.002***	***6603***	***0.001***	***4***	***0.01***	***0.001***	***7.93***
DD1032	0.001	NS	NS	2440	0.44	NS	47	1280	0.001	NS	0.001	7610	0.001	26	0.023	0.001	7.08
Average	***0.001***	NS	NS	***2347***	***0.37***	NS	***43***	***1333***	***0.001***	NS	***0.001***	***7913***	***0.001***	***26***	***0.03***	***0.001***	***7.04***
DD1043	0.001	NS	NS	1000	0.2	NS	142	1830	0.007	NS	0.013	6680	0.002	206	0.005	0.012	7.42
Average	***0.001***	NS	NS	***993***	***0.20***	NS	***140***	***1753***	***0.006***	NS	***0.027***	***7110***	***0.008***	***216***	***0.03***	***0.016***	***7.42***

Site	Arsenic	Barium	Beryllium	Bicarbonate Alkalinity as CaCO3	Boron	Cadmium	Calcium	Chloride	Chromium	Cobalt	Copper	Electrical conductivity	Lead	Magnesium	Manganese	Nickel	pH value
DD1052	0.002	NS	NS	652	0.26	NS	4	1900	0.002	NS	0.053	7030	0.004	3	0.036	0.008	9.17
Average	***0.005***	NS	NS	***665***	***0.26***	NS	***6***	***1805***	***0.002***	NS	***0.556***	***6685***	***0.003***	***4***	***0.05***	***0.015***	***8.75***
DD1057	0.003	NS	NS	3760	0.38	NS	12	1360	0.001	NS	0.046	9700	0.001	6	0.04	0.002	7.58
Average	***0.003***	NS	NS	***3523***	***0.36***	NS	***11***	***1407***	***0.001***	NS	***0.035***	***9967***	***0.001***	***6***	***0.04***	***0.002***	***7.59***
MB03	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MB1A	0.004	NS	NS	630	0.1	NS	93	510	0.021	NS	0.053	2560	0.008	65	0.611	0.032	7.54
Average	***0.003***	NS	NS	***647***	***0.09***	NS	***104***	***623***	***0.011***	NS	***0.034***	***2957***	***0.005***	***83***	***0.38***	***0.021***	***7.59***
MB1R	0.001	NS	NS	1310	0.2	NS	64	1230	0.001	NS	0.001	5980	0.001	56	0.015	0.001	7.26
Average	***0.001***	NS	NS	***1320***	***0.18***	NS	***60***	***1293***	***0.001***	NS	***0.002***	***6157***	***0.001***	***59***	***0.02***	***0.001***	***7.23***
MB1W	0.001	NS	NS	1340	0.21	NS	62	1140	0.001	NS	0.002	5560	0.001	52	0.008	0.001	7.42
Average	***0.001***	NS	NS	***1373***	***0.19***	NS	***57***	***1183***	***0.001***	NS	***0.002***	***5790***	***0.001***	***54***	***0.01***	***0.001***	***7.53***
MB2A	0.001	NS	NS	965	0.26	NS	127	2420	0.001	NS	0.001	8500	0.001	290	0.134	0.004	7.49
Average	***0.001***	NS	NS	***978***	***0.26***	NS	***151***	***2830***	***0.001***	NS	***0.001***	***10033***	***0.001***	***357***	***0.50***	***0.006***	***7.39***
MB2R	0.001	NS	NS	1080	0.26	NS	37	1310	0.001	NS	0.001	5940	0.001	48	0.009	0.001	8.25
Average	***0.001***	NS	NS	***995***	***0.23***	NS	***36***	***1213***	***0.001***	NS	***0.001***	***5407***	***0.001***	***47***	***0.02***	***0.001***	***8.06***
MB3A	0.001	NS	NS	864	0.32	NS	45	2220	0.001	NS	0.001	8230	0.001	211	0.001	0.001	7.71
Average	***0.001***	NS	NS	***826***	***0.30***	NS	***48***	***2190***	***0.001***	NS	***0.001***	***8637***	***0.001***	***230***	***0.01***	***0.001***	***7.59***

Site	Arsenic	Barium	Beryllium	Bicarbonate Alkalinity as CaCO3	Boron	Cadmium	Calcium	Chloride	Chromium	Cobalt	Copper	Electrical conductivity	Lead	Magnesium	Manganese	Nickel	pH value
MB3R	0.001	NS	NS	744	0.22	NS	164	1370	0.001	NS	0.001	5780	0.001	305	0.261	0.002	7.33
Average	***0.001***	NS	NS	***720***	***0.20***	NS	***171***	***1373***	***0.001***	NS	***0.001***	***6117***	***0.001***	***322***	***0.29***	***0.002***	***7.29***
MB4A	0.001	NS	NS	613	0.16	NS	19	517	0.001	NS	0.001	2630	0.001	31	0.043	0.001	8.08
Average	***0.001***	NS	NS	***637***	***0.14***	NS	***17***	***553***	***0.001***	NS	***0.001***	***2733***	***0.001***	***33***	***0.02***	***0.001***	***8.14***
MB4C	0.001	NS	NS	279	0.05	NS	55	110	0.002	NS	0.002	841	0.001	38	0.344	0.003	7.19
Average	***0.001***	NS	NS	***292***	***0.05***	NS	***57***	***111***	***0.001***	NS	***0.001***	***860***	***0.001***	***42***	***0.27***	***0.002***	***7.24***
MW1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW2	0.004	NS	NS	711	0.27	NS	43	1150	0.02	NS	0.01	4800	0.008	88	0.676	0.016	7.82
Average	***0.004***	NS	NS	***714***	***0.25***	NS	***49***	***1490***	***0.035***	NS	***0.011***	***5850***	***0.008***	***116***	***0.74***	***0.016***	***7.76***
MW3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table 7 continued

Site	Potassium	Selenium	Sodium	Sulfate as SO4 - Turbidimetric	Suspended Solids (SS)	Total Dissolved Solids @180°C	Vanadium	Zinc	Nitrite as N	Nitrate as N	Mercury	Ammonia as N	Total Kjeldahl Nitrogen as N	Total Nitrogen as N	Total Phosphorus as P	Reactive Phosphorus as P
DD1005	16	0.01	NS	217	12	4160	NS	0.02	NS	NS	NS	NS	NS	NS	NS	NS
Average	***17***	***0.01***	***1200***	***214***	***42***	***4113***	NS	***0.03***	NS	NS	NS	NS	NS	NS	NS	NS
DD1014	11	0.01	NS	205	9	5810	NS	0.02	NS	NS	NS	NS	NS	NS	NS	NS
Average	***12***	***0.01***	***2260***	***206***	***23***	***5937***	NS	***0.02***	NS	NS	NS	NS	NS	NS	NS	NS
DD1015	18	0.01	NS	165	38	3460	NS	0.02	NS	NS	NS	NS	NS	NS	NS	NS
Average	***18***	***0.01***	***977***	***165***	***41***	***3413***	NS	***0.02***	NS	NS	NS	NS	NS	NS	NS	NS
DD1016	15	0.01	NS	101	23	3610	NS	0.01	NS	NS	NS	NS	NS	NS	NS	NS
Average	***15***	***0.01***	***852***	***93***	***22***	***3710***	NS	***0.01***	NS	NS	NS	NS	NS	NS	NS	NS
DD1025	16	0.01	NS	437	5	8070	NS	0.1	NS	NS	NS	NS	NS	NS	NS	NS
Average	***17***	***0.01***	***2297***	***428***	***6***	***8290***	NS	***0.09***	NS	NS	NS	NS	NS	NS	NS	NS
DD1025	5	0.01	NS	1	7	3900	NS	0.01	NS	NS	NS	NS	NS	NS	NS	NS
Average	***5***	***0.01***	***1540***	***1***	***8***	***3900***	NS	***0.01***	NS	NS	NS	NS	NS	NS	NS	NS
DD1032	20	0.01	NS	142	10	5040	NS	0.01	NS	NS	NS	NS	NS	NS	NS	NS
Average	***20***	***0.01***	***1857***	***133***	***7***	***4997***	NS	***0.01***	NS	NS	NS	NS	NS	NS	NS	NS
DD1043	21	0.01	NS	31	94	4200	NS	0.04	NS	NS	NS	NS	NS	NS	NS	NS
Average	***20***	***0.01***	***1445***	***67***	***63***	***3965***	NS	***0.09***	NS	NS	NS	NS	NS	NS	NS	NS

Table 7 continued

Site	Potassium	Selenium	Sodium	Sulfate as SO4 - Turbidimetric	Suspended Solids (SS)	Total Dissolved Solids @180°C	Vanadium	Zinc	Nitrite as N	Nitrate as N	Mercury	Ammonia as N	Total Kjeldahl Nitrogen as N	Total Nitrogen as N	Total Phosphorus as P	Reactive Phosphorus as P
DD1052	16	0.01	NS	1	42	6530	NS	0.01	NS	NS	NS	NS	NS	NS	NS	NS
Average	***17***	***0.01***	***2707***	***1***	***26***	***6527***	NS	***0.01***	NS	NS	NS	NS	NS	NS	NS	NS
DD1057	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MB03	3	0.01	NS	75	572	1550	NS	0.1	NS	NS	NS	NS	NS	NS	NS	NS
Average	***3***	***0.01***	***452***	***79***	***326***	***1747***	NS	***0.07***	NS	NS	NS	NS	NS	NS	NS	NS
MB1A	14	0.01	NS	92	24	3670	NS	0.01	NS	NS	NS	NS	NS	NS	NS	NS
Average	***15***	***0.01***	***1373***	***83***	***32***	***3663***	NS	***0.01***	NS	NS	NS	NS	NS	NS	NS	NS
MB1R	14	0.01	NS	68	8	3460	NS	0.01	NS	NS	NS	NS	NS	NS	NS	NS
Average	***14***	***0.01***	***1287***	***76***	***10***	***3480***	NS	***0.01***	NS	NS	NS	NS	NS	NS	NS	NS
MB1W	6	0.01	NS	657	5	5640	NS	0.01	NS	NS	NS	NS	NS	NS	NS	NS
Average	***8***	***0.01***	***1733***	***700***	***37***	***6353***	NS	***0.01***	NS	NS	NS	NS	NS	NS	NS	NS
MB2A	9	0.01	NS	2	6	3430	NS	0.01	NS	NS	NS	NS	NS	NS	NS	NS
Average	***9***	***0.01***	***1237***	***2***	***9***	***3033***	NS	***0.02***	NS	NS	NS	NS	NS	NS	NS	NS
MB2R	2	0.01	NS	593	5	5200	NS	0.01	NS	NS	NS	NS	NS	NS	NS	NS
Average	***2***	***0.01***	***1587***	***550***	***10***	***5080***	NS	***0.01***	NS	NS	NS	NS	NS	NS	NS	NS

Table 7 continued

Site	Potassium	Selenium	Sodium	Sulfate as SO4 - Turbidimetric	Suspended Solids (SS)	Total Dissolved Solids @180°C	Vanadium	Zinc	Nitrite as N	Nitrate as N	Mercury	Ammonia as N	Total Kjeldahl Nitrogen as N	Total Nitrogen as N	Total Phosphorus as P	Reactive Phosphorus as P
MB3R	7	0.01	NS	531	12	3940	NS	0.01	NS	NS	NS	NS	NS	NS	NS	NS
Average	***8***	***0.01***	***778***	***505***	***11***	***3977***	NS	***0.01***	NS	NS	NS	NS	NS	NS	NS	NS
MB4A	6	0.01	NS	20	9	1590	NS	0.01	NS	NS	NS	NS	NS	NS	NS	NS
Average	***6***	***0.01***	***583***	***22***	***6***	***1593***	NS	***0.01***	NS	NS	NS	NS	NS	NS	NS	NS
MB4C	2	0.01	NS	24	196	515	NS	0.01	NS	NS	NS	NS	NS	NS	NS	NS
Average	***2***	***0.01***	***69***	***23***	***84***	***500***	NS	***0.01***	NS	NS	NS	NS	NS	NS	NS	NS
MW1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW2	7	0.01	NS	129	1930	2940	NS	0.03	NS	NS	NS	NS	NS	NS	NS	NS
Average	***8***	***0.03***	***1096***	***122***	***1550***	***3333***	NS	***0.03***	NS	NS	NS	NS	NS	NS	NS	NS
MW3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:

The Maxwell UG (MUG) Project Water Management Plan (WMP) was implemented for Q3 2021 and supercedes the requirements of the Maxwell Infrastructure WMP. The MUG Project WMP requires:

- the monthly recording of reduced standing water levels in all bores (standpipes either manually or using loggers and VWPs)
- quarterly recording (field measurement) of all standpipes for pH, EC, redox potential and temperature; and
- biennial sampling and analysis of all standpipes for TDS, TSS, major cations (Ca, Mg, Na), major anions (chloride, sulfate, carbonate, bicarbonate), total alkalinity, and total and dissolved metals (Al, As, B, Cr, Cu, Fe, Mn, Mo, Ni, Pb, Se, Ag & Zn).

Of these, the following are new or amended variables required by the new MUG WMP:

- monthly rather than quarterly recording of reduced standing water levels where there are no loggers (however the long-term plan is to install loggers in all bores); for those with loggers and for the VWPs the data is downloaded quarterly;
- quarterly recording (field measurement) of redox potential and temperature (previously not required);
- biennial sampling and analysis for carbonate and total alkalinity (previously not required); these will be added to the table for Q4 2021 given the first sampling under the new plan occurred in Dec 2021;
- removal of bores DD1030, DD1034-A and B, DD1041 A and B.

Sampling under the previous Maxwell Infrastructure WMP occurred in June 2021 and was reported in the Q2 2021 report. Thereafter sampling transitioned to the new MUG Project WMP. The first biennial sampling under the new plan occurred on 14/12/21 and hence the quarterly reporting for Q4 2021 will include these new or amended results for the first time. Given the new plan superceded the old, there was no requirement for quarterly reporting in Q3, and hence the above Table contains no data.

The year-to-date averages includes samples taken on a quarterly basis until the implementation of the new MUG Project WMP, which requires biennial sampling. The exception is for DS1 for which monthly samples are taken as per the EPL for EC, pH and TDS, and hence the average presented is the average of all samples taken during each of the past 12 months for those variables.

Note for the year-to-date average: Due to electrical storms in December 2020 and heavy rain in January 2021, both of which presented a safety risk, the sampling scheduled for December was postponed and conducted in early February.

March 2021 was the scheduled month for Q1 2021 sampling, however the values presented are for samples taken on 1 April 2021, due to delays in sampling as a result of the heavy rainfall in March 2021 which resulted in safety restrictions to sampling sites.

F1164 was too low to sample until the Q2 2021 sampling date (24 June 2021) hence the year-to-date average is an average of one sample.

GW01S was too low to sample until the Q1 2021 sampling date (1 April 2021) hence the year-to-date average to Q2 2021 is an average of two samples.

All results are in mg/L except Conductivity (µS/cm) and pH (in pH units).

Table 8. All groundwater bores: Reduced standing groundwater levels (mAHD) during Quarter 3 compared to the year-to-date average

Site (with seam names for VWPs)	Jul	Aug	Sept	Year to date average	Type of bore	Type of measurement as of Sept 2021
DS1	223.50	223.54	223.55	223.39	Standpipe	Manual
R4241	NS	NS	174.89	175.44	Standpipe	Manual
F1162	NS	NS	133.59	132.17	Standpipe	Manual
F1164	NS	NS	131.88	130.57	Standpipe	Manual
GW01D	NS	200.40	200.11	199.88	Standpipe	Logger
GW01S	NS	198.74	198.65	198.17	Standpipe	Logger
GW02D	NS	136.65	136.84	136.50	Standpipe	Logger
GW02S	NS	190.64	190.54	190.42	Standpipe	Logger
GW04(1)	-	-	-	-	Standpipe	Manual
BLK6R12 – VW1 (WB)	159.84	159.99	159.95	160.02	VWP	Logger
BLK6R12 – VW2 (RB)	147.79	147.94	147.92	147.89	VWP	Logger
BLK6R12 – VW3 (WN)	122.12	122.21	122.15	122.51	VWP	Logger
BLK6R12 – VW4 (BK)	121.40	121.54	121.51	121.42	VWP	Logger
DD1005	144.24	NS	NS	144.11	Standpipe	Manual
DD1014	134.01	NS	NS	134.20	Standpipe	Manual
DD1015	124.68	NS	NS	124.73	Standpipe	Manual
DD1016	141.36	NS	NS	141.43	Standpipe	Manual
DD1025	155.24	NS	NS	155.29	Standpipe	Manual
DD1027	133.97	NS	NS	133.93	Standpipe	Manual
DD1032	128.41	NS	NS	128.46	Standpipe	Manual

DD1043	127.85	NS	NS	127.37	Standpipe	Manual
DD1052	114.91	NS	NS	114.60	Standpipe	Manual
DD1057	124.50	NS	NS	124.66	Standpipe	Manual
MB03[(1)]	-	114.81 (Dry)	115.14	114.98	Standpipe	Logger
MB1-Alluvial	73.06	72.83	72.69	72.95	Standpipe	Logger
MB1-Redbank	75.20	NS	NS	75.16	Standpipe	Manual
MB1-Whybrow	74.30	NS	NS	74.15	Standpipe	Manual
MB2-Alluvial	113.35	113.57	113.61	113.28	Standpipe	Logger
MB2-Regolith	115.30	115.31	115.47	115.21	Standpipe	Logger
MB3-Alluvial	129.03	129.10	129.01	128.90	Standpipe	Logger
MB3-Regolith	128.63	128.83	128.82	128.61	Standpipe	Logger [(2)]
MB4-Alluvial	71.05	70.83	70.76	70.98	Standpipe	Logger
MB4-Coal	70.91	NS	NS	70.81	Standpipe	Manual
MW1	128.17	NS	NS	127.97	Standpipe	Logger
MW2	112.42	NS	NS	112.20	Standpipe	Logger
MW3	74.05	NS	NS	74.05	Standpipe	Manual
RBD1 – VW1 (WB)	147.75	147.73	147.74	147.57	VWP	Logger
RBD1 – VW2 (RB)	143.07	143.22	143.19	143.21	VWP	Logger
RBD1 – VW3 (WN)	127.93	127.98	127.96	127.79	VWP	Logger
RBD1 – VW4 (BK)	87.90	87.98	88.06	87.80	VWP	Logger
RD1189 – VWP1 (WH)	184.93	184.65	184.68	184.88	VWP	Logger
RD1189 – VWP2 (AZZBF)	58.33	58.51	59.02	59.05	VWP	Logger
RD1189 – VWP3 (WW12)	142.11	142.19	142.17	142.13	VWP	Logger

RD1189 – VWP4 (Mt Arthur seam)	140.87	141.11	141.07	141.23	VWP	Logger
RD1189 – VWP5 (PF2)	135.99	136.37	136.16	136.14	VWP	Logger
RD1189 – VWP6 (BY)	135.07	135.56	135.80	136.20	VWP	Logger
RD1189 – VWP7 (WY)	135.02	134.81	134.78	135.54	VWP	Logger
RD1192- VWP1 (WB)	148.36	148.37	148.28	148.36	VWP	Logger
RD1192- VWP2 (RB)	133.33	133.29	133.15	134.07	VWP	Logger
RD1192-VWP3 (BK)	148.48	148.74	148.99	147.97	VWP	Logger
MB1VWP (VWP1) (INT)	74.96	75.11	75.11	74.85	VWP	Logger
MB1VWP (VWP2) (INT)	86.85	86.82	86.80	87.14	VWP	Logger
MB1VWP (VWP3) (INT)	95.27	95.35	95.31	95.27	VWP	Logger
MB1VWP (VWP4) (WB)	96.46	96.55	96.55	96.55	VWP	Logger
MB1VWP (VWP5) (WN)	99.93	100.17	100.21	99.22	VWP	Logger
WND16 (VWP1) (WB)	112.91	112.43	111.97	112.98	VWP	Logger
WND16 (VWP2) (WN)	106.72	106.94	107.02	107.66	VWP	Logger
WND16 (VWP4) (BK)	109.33	109.43	109.40	109.53	VWP	Logger
WND26 (VWP1)	134.34	NS	NS	134.32	VWP	Logger

(WB)						
WND26 (VWP2) (RB)	130.37	NS	NS	130.42	VWP	Logger
WND26 (VWP3) (WA)	136.89	NS	NS	137.92	VWP	Logger

1. GW04 and MB03 were installed in August 2021. The first scheduled depth reading for GW04 was in October and hence will be reported in the Q4 report.
2. In addition to a water level logger, a barologger was installed at MB3-Regolith on 23 August 2021 (a barologger enables the correction of water level for barometric pressure for all bores for this project). Prior to August, it was installed at DD1032.
3. In August 2021, loggers in DD1043, DD1057, DD1014, DD1025 and DD1032 were removed and placed into other bores that the Environmental Statement committed to containing loggers.
4. GWLs for the Maxwell Infrastructure loggers are the values on the same day as the manual measurements taken in the bores without loggers. See notes under Table 7 for an explanation of any NS.
5. GWLs for the Maxwell Underground loggers are the values taken on the 15th of each month (as the manual measurements are taken over a number of days due to the number of loggers). If there are multiple values on the same day, the average of the daily values is presented.
6. Data from MB1VWP (VWP5)(WN) and WND16 (VW3) (BK) was not available during the reporting period; no data is available from WND26 from 11/07/21 to 27/10/21; this is due to data download errors by the monitoring contractor.
7. New Solinst Levelogger 5's were installed in MB03, MB1 – Alluvial, MB4 - Alluvial, MB3 – Alluvial, MB2 – Regolith, GW01D, GW01S, GW02D and GW02S in August 2021. In addition, older loggers from DD1057, DD1014, DD1015, DD1025 and DD1032 were relocated to MB2 – Alluvial, MW2, MW1, MB3 – Regolith. Malabar became aware of an issue with the firmware installed on these new loggers in January 2022; the issue caused the loggers to stop recording in mid-November. Following identification of the issue and in consultation with Solinst, the firmware was upgraded and the loggers were redeployed in February 2022. Manual measurements recommenced monthly at all bores in January 2022 and will continue until confidence in the loggers can be obtained. Data in this table is therefore manual measurements unless not taken; if manual measurements were not taken an average of the monthly logger recordings are included, where available. Hence for those bores, there is a gap in data between mid-November 2021 and when the monthly manual measurements recommenced in January 2022.
8. Manual measurements were not taken in August and September 2021, as the Groundwater Management Plan at that time required only quarterly measurements (July and October). If data is shown for those months they are logger recordings, where loggers were installed. Annual averages are calculated from manual measurements only, to avoid calculating an average from two different measurement techniques.

Acronyms: DD = diamond drill hole. mAHD = meters above Australian Height Datum (the elevation of the water level is calculated by subtracting the Depth to Water from the reference elevation). n/a = not available. NS = not sampled. RH = rotary drill hole. VWP = Vibrating wire piezometer and logger. Seam acronyms: BK = Blakefield seam; BY = Bayswater seam; MA = Mt Arthur seam; PF = Piercefield seam; INT = Interburden; WB = Wambo seam; RB = Redbank Creek seam; WA = tbc; WH = Woodlands Hill seam; WN = Whynot seam; WY = Wynn seam. WW = Warkworth seam; ZZ = indicates that the seam is intruded or heat affected.

Noise monitoring results for Quarter 3

Noise monitoring under the Noise and Blasting Management Plan (NBMP) for the Maxwell Underground Coal Mine Project commenced in September 2021 at monitoring sites NM1 to NM4 as required by the plan. Monitoring under the Environment Protection Licence (EPL) at sites NM1 to NM3 commenced in August and has been presented here for completeness.

Acronyms: MU = Maxwell Underground Project; PSC = Pasquil stability class.

Locations 45, 44, 40 and 35 are from the NBMP; sites 45, 44 and 40 are coincident with locations NM1 to NM3 respectively in the EPL.

To date, the Maxwell Underground Project has been inaudible at all locations and all dates, which is as expected as construction has not yet commenced.

Table 9

Maxwell Underground Noise Monitoring Results – 25 August 2021 (Day)

Location (Criterion)	Time	dB(A), $L_{eq(15min)}$	Wind speed / direction / PSC	Identified Noise Sources
NM1 (45)	2:38pm	71	2.6 / 287 / F	Traffic (71), birds (39), **MU inaudible**
NM2 (44)	12:57pm	48	4.2 / 285 / C	Traffic (47), birds (41), **MU inaudible**
NM3 (40)	4:44pm	59	3.6 / 297 / D	Traffic (59), birds (37), **MU inaudible**

Table 10

Maxwell Underground Noise Monitoring Results – 25 August 2021 (Evening)

Location (Criterion)	Time	dB(A), Leq(15min)	Wind speed / direction / PSC	Identified Noise Sources
NM1 (41)	8:53pm	58	2.4 / 306 / D	Traffic (58), frogs (31), mine (22), **MU inaudible**

NM2 (40)	8:15pm	39	2.9 / 302 / D	Frogs (37), traffic (35), mine (24), **MU inaudible**
NM3 (35)	6:01pm	61	3.0 / 303 / D	Traffic (61), birds (50), insects (38), **MU inaudible**

Table 11

Maxwell Underground Noise Monitoring Results – 25 August 2021 (Night)

Location (Criterion)	Time	dB(A), $L_{eq(15min)}$	Wind speed / direction / PSC	Identified Noise Sources
NM1 (41)	11:34pm	57	2.8 / 311 / F	Traffic (57), frogs (40), mine (31), **MU inaudible**
NM2 (40)	12:41am	41	2.0 / 322 / E	Traffic (40), mine (32), frogs (28), **MU inaudible**
NM3 (35)	10:02pm	59	3.1 / 301 / D	Traffic (58), frogs (27), nearby stream (23), **MU inaudible**

Table 12

Maxwell Underground Noise Monitoring Results – 26 August 2021 (Day)

Location (Criterion)	Time	dB(A), $L_{eq(15min)}$	Wind speed / direction / PSC	Identified Noise Sources
NM1 (45)	2:21pm	67	3.0 / 277 / C	Traffic (67), birds (34), mine (26), **MU inaudible**
NM2 (44)	12:43pm	43	3.2 / 290 / E	Birds (42), traffic (35), residential (24), **MU inaudible**
NM3 (40)	4:34pm	61	2.3 / 285 / A	Traffic (61), lawn mower (43), birds (36), cows (24), **MU inaudible**

Table 13 Maxwell Underground Noise Monitoring Results – 26 August 2021 (Evening)				
Location (Criterion)	**Time**	**dB(A), $L_{eq(15min)}$**	**Wind speed / direction / PSC**	**Identified Noise Sources**
NM1 (41)	8:54pm	54	2.2 / 302 / E	Traffic (54), frogs (39), mine (32), **MU inaudible**
NM2 (40)	8:17pm	43	1.7 / 313 / E	Frogs (42), traffic (35), mine (30), **MU inaudible**
NM3 (35)	6:00pm	58	1.7 / 318 / G	Traffic (58), birds (44), **MU inaudible**

Table 14 Maxwell Underground Noise Monitoring Results – 26 August 2021 (Night)				
Location (Criterion)	**Time**	**dB(A), $L_{eq(15min)}$**	**Wind speed / direction / PSC**	**Identified Noise Sources**
NM1 (41)	11:31pm	54	2.4 / 306 / F	Traffic (54), frogs (35), mine (28), **MU inaudible**
NM2 (40)	12:37am	38	2.1 / 297 / F	Frogs (37), mine (32), traffic (21), **MU inaudible**
NM3 (35)	10:01pm	50	1.7 / 276 / G	Traffic (50), insects (36), cows (23), **MU inaudible**

Table 15 Maxwell Underground Noise Monitoring Results – 27 August 2021 (Day)				
Location (Criterion)	**Time**	**dB(A), $L_{eq(15min)}$**	**Wind speed / direction / PSC**	**Identified Noise Sources**
NM1 (45)	2:39pm	71	3.9 / 289 / C	Traffic (71), birds (26), **MU inaudible**
NM2 (44)	1:26pm	44	4.2 / 290 / E	Traffic (44), birds (31), **MU inaudible**
NM3 (40)	4:33pm	58	3.7 / 289 / D	Traffic (58), aeroplanes (39), birds (34), cows (25), **MU inaudible**

Table 16 Maxwell Underground Noise Monitoring Results – 27 August 2021 (Evening)				
Location (Criterion)	**Time**	**dB(A), $L_{eq(15min)}$**	**Wind speed / direction / PSC**	**Identified Noise Sources**
NM1 (41)	9:01pm	55	2.6 / 314 / D	Traffic (55), frogs (40), mine (34), **MU inaudible**
NM2 (40)	8:22pm	40	2.6 / 334 / E	Frogs (39), traffic (33), mine (26), **MU inaudible**
NM3 (35)	6:00pm	56	2.4 / 294 / E	Traffic (56), birds (39), cows (23), **MU inaudible**

Table 17

Maxwell Underground Noise Monitoring Results – 27 August 2021 (Night)				
Location (Criterion)	**Time**	**dB(A), $L_{eq(15min)}$**	**Wind speed / direction / PSC**	**Identified Noise Sources**
NM1 (41)	11:35pm	42	2.3 / 303 / E	Traffic (42), mine (28), birds (22), **MU inaudible**
NM2 (40)	12:41am	41	2.0 / 310 / E	Frogs (39), insects (37), mine (28), traffic (24), **MU inaudible**
NM3 (35)	10:04pm	33	2.1 / 301 / E	Traffic (33), frogs (23), **MU inaudible**

Table 18

Maxwell Underground Noise Monitoring Results – 25 August 2021 (Night)

Location (Criterion)	**Time**	**dB(A), L_{max}**	**Wind speed / direction / PSC**	**L_{A1} source**	**Identified Mine Sources (L_{Amax})**
NM1 (52)	11:34pm	83	2.8 / 311 / F	Truck	Traffic (57), frogs (40), mine (31), **MU inaudible**
NM2 (52)	12:41am	59	2.0 / 322 / E	Truck	Traffic (40), mine (32), frogs (28), **MU inaudible**
NM3 (52)	10:02pm	82	3.1 / 301 / D	Truck	Traffic (58), frogs (27), nearby stream (23), **MU inaudible**

Table 19

Maxwell Underground Noise Monitoring Results – 26 August 2021 (Night)

Location (Criterion)	Time	dB(A), L_{max}	Wind speed / direction / PSC	L_{A1} source	Identified Mine Sources (L_{Amax})
NM1 (52)	11:31pm	74	2.4 / 306 / F	Truck	Traffic (54), frogs (35), mine (28), **MU inaudible**
NM2 (52)	12:37am	44	2.1 / 297 / F	Frogs	Frogs (37), mine (32), traffic (21), **MU inaudible**
NM3 (52)	10:01pm	70	1.7 / 276 / G	Truck	Traffic (50), insects (36), cows (23), **MU inaudible**

Table 20

Maxwell Underground Noise Monitoring Results – 27 August 2021 (Night)

Location (Criterion)	Time	dB(A), L_{max}	Wind speed / direction / PSC	L_{A1} source	Identified Mine Sources (L_{Amax})
NM1 (52)	11:35pm	52	2.3 / 303 / E	Truck	Traffic (42), mine (28), birds (22), **MU inaudible**
NM2 (52)	12:41am	49	2.0 / 310 / E	Frogs	Frogs (39), insects (37), mine (28), traffic (24), **MU inaudible**
NM3 (52)	10:04pm	54	2.1 / 301 / E	Truck	Traffic (33), frogs (23), **MU inaudible**

Table 21

Maxwell Underground Noise Monitoring Results – 20 September 2021 (Day)

Location (Criterion)		dB(A),	Wind speed / direction / PSC	

	Time	$L_{eq(15min)}$		Identified Noise Sources
NM1 (45)	1:55pm	69	5.5 / 291 / C	Traffic (69), birds (32), **MU inaudible**
NM2 (44)	12:17pm	53	5.3 / 299 / E	Traffic (53), birds (36), **MU inaudible**
NM3 (40)	4:24pm	56	5.1 / 286 / A	Traffic (56), birds (34), cows (24), **MU inaudible**
NM4 (40)	3:59pm	61	5.2 / 309 / E	Traffic (61), birds (41), **MU inaudible**

Table 22

Maxwell Underground Noise Monitoring Results – 20 September 2021 (Evening)

Location (Criterion)	Time	dB(A), $L_{eq(15min)}$	Wind speed / direction / PSC	Identified Noise Sources
NM1 (41)	9:25pm	49	3.2 / 308 / E	Traffic (49), dogs (37), frogs (33), **MU inaudible**
NM2 (40)	8:48pm	42	2.3 / 281 / E	Frogs (40), traffic (38), mine (26), **MU inaudible**
NM3 (35)	6:34pm	54	2.6 / 314 / E	Traffic (54), birds (39), **MU inaudible**
NM4 (35)	6:07pm	62	3.0 / 298 / F	Traffic (62), birds (41), **MU inaudible**

Table 23

Maxwell Underground Noise Monitoring Results – 20 September 2021 (Night)

Location (Criterion)	Time	dB(A), $L_{eq(15min)}$	Wind speed / direction / PSC	Identified Noise Sources
NM1 (41)	11:12pm	55	1.7 / 222 / B	Traffic (55), frogs (34), mine (24), **MU inaudible**
NM2 (40)	10:01pm	40	2.0 / 252 / A	Frogs (39), traffic (30), mine (29), **MU inaudible**
NM3 (35)	12:48am	58	2.0 / 301 / A	Traffic (58), frogs (40), insects (31), **MU inaudible**
NM4 (35)	1:16am	41	2.2 / 318 / E	Frogs (38), insects (38), **MU inaudible**

Table 24

Maxwell Underground Noise Monitoring Results – 21 September 2021 (Day)

Location (Criterion)	Time	dB(A), $L_{eq(15min)}$	Wind speed / direction / PSC	Identified Noise Sources
NM1 (45)	1:53pm	60	2.7 / 179 / E	Traffic (60), birds (43), **MU inaudible**
NM2 (44)	12:11pm	40	1.9 / 239 / D	Birds (39), traffic (33), **MU inaudible**
NM3 (40)	4:22pm	58	1.8 / 123 / E	Traffic (58), birds (41), cows (25), **MU inaudible**
NM4 (40)	3:57pm	57	1.9 / 177 / B	Traffic (57), birds (32), **MU inaudible**

Table 25

Maxwell Underground Noise Monitoring Results – 21 September 2021 (Evening)

Location (Criterion)	Time	dB(A), $L_{eq(15min)}$	Wind speed / direction / PSC	Identified Noise Sources
NM1 (41)	9:27pm	52	1.7 / 254 / D	Traffic (52), frogs (41), mine (25), **MU inaudible**
NM2 (40)	8:49pm	40	1.0 / 182 / F	Traffic (40), birds (28), mine (23), **MU inaudible**
NM3 (35)	6:31pm	52	2.6 / 114 / E	Traffic (52), birds (40), **MU inaudible**
NM4 (35)	6:03pm	54	4.6 / 141 / E	Traffic (54), birds (33), **MU inaudible**

Table 26

Maxwell Underground Noise Monitoring Results – 21 September 2021 (Night)

Location (Criterion)	Time	dB(A), $L_{eq(15min)}$	Wind speed / direction / PSC	Identified Noise Sources
NM1 (41)	11:16pm	57	1.2 / 331 / G	Traffic (57), frogs (38), dogs (24), mine (20), **MU inaudible**
NM2 (40)	10:04pm	38	1.4 / 223 / D	Frogs (37), traffic (31), mine (29), **MU inaudible**
NM3 (35)	12:51am	55	1.4 / 273 / E	Traffic (55), frogs (41), **MU inaudible**
NM4 (35)	1:18am	62	1.9 / 328 / E	Traffic (62), frogs (28), **MU inaudible**

Table 27

Maxwell Underground Noise Monitoring Results – 22 September 2021 (Day)

Location (Criterion)	Time	dB(A), $L_{eq(15min)}$	Wind speed / direction / PSC	Identified Noise Sources
NM1 (45)	1:50pm	59	2.5 / 251 / B	Traffic (59), birds (43), **MU inaudible**
NM2 (44)	12:13pm	46	3.0 / 213 / A	Traffic (45), birds (37), **MU inaudible**
NM3 (40)	4:20pm	51	1.9 / 287 / E	Traffic (51), birds (24), **MU inaudible**
NM4 (40)	3:55pm	56	1.8 / 258 / C	Traffic (56), birds (32), **MU inaudible**

Table 28

Maxwell Underground Noise Monitoring Results – 22 September 2021 (Evening)

Location (Criterion)	Time	dB(A), $L_{eq(15min)}$	Wind speed / direction / PSC	Identified Noise Sources
NM1 (41)	9:27pm	51	2.3 / 300 / F	Traffic (51), frogs (36), mine (31), **MU inaudible**
NM2 (40)	8:43pm	42	2.1 / 303 / E	Traffic (33), mine (29), frogs (25), **MU inaudible**
NM3 (35)	6:38pm	54	1.4 / 333 / C	Traffic (54), birds (38), **MU inaudible**
NM4 (35)	6:04pm	59	0.9 / 029 / G	Traffic (59), birds (37), mine (23), **MU inaudible**

Table 29

Maxwell Underground Noise Monitoring Results – 22 September 2021 (Night)

Location (Criterion)	Time	dB(A), $L_{eq(15min)}$	Wind speed / direction / PSC	Identified Noise Sources
NM1 (41)	11:17pm	41	2.6 / 304 / D	Traffic (40), mine (34), **MU inaudible**
NM2 (40)	10:03pm	39	2.5 / 299 / D	Frogs (39), mine (27), traffic (22), **MU inaudible**
NM3 (35)	12:45am	30	2.6 / 304 / D	Frogs (29), traffic (24), **MU inaudible**
NM4 (35)	1:12am	58	2.6 / 304 / D	Traffic (58), frogs (33), **MU inaudible**

Table 30

Maxwell Underground Noise Monitoring Results – 20 September 2021 (Night)

Location (Criterion)	Time	dB(A), L_{max}	Wind speed / direction / PSC	L_{A1} source	Identified Mine Sources (L_{Amax})
NM1 (52)	11:12pm	76	1.7 / 222 / B	Truck	Traffic (55), frogs (34), mine (24), **MU inaudible**
NM2 (52)	10:01pm	50	2.0 / 252 / A	Frogs	Frogs (39), traffic (30), mine (29), **MU inaudible**
NM3 (52)	12:48am	81	2.0 / 301 / A	Truck	Traffic (58), frogs (40), insects (31), **MU inaudible**
NM4 (52)	1:16am	46	2.2 / 318 / E	Frogs	Frogs (38), insects (38), **MU inaudible**

Table 31

Maxwell Underground Noise Monitoring Results – 21 September 2021 (Night)

Location (Criterion)	Time	dB(A), L_{max}	Wind speed / direction / PSC	L_{A1} source	Identified Mine Sources (L_{Amax})
NM1 (52)	11:16pm	78	1.2 / 331 / G	Truck	Traffic (57), frogs (38), dogs (24), mine (20), **MU inaudible**
NM2 (52)	10:04pm	62	1.4 / 223 / D	Frogs	Frogs (37), traffic (31), mine (29), **MU inaudible**
NM3 (52)	12:51am	80	1.4 / 273 / E	Truck	Traffic (55), frogs (41), **MU inaudible**
NM4 (52)	1:18am	85	1.9 / 328 / E	Truck	Traffic (62), frogs (28), **MU inaudible**

Table 32

Maxwell Underground Noise Monitoring Results – 22 September 2021 (Night)

Location (Criterion)	Time	dB(A), L_{max}	Wind speed / direction / PSC	L_{A1} source	Identified Mine Sources (L_{Amax})
NM1 (52)	11:17pm	50	2.6 / 304 / D	Car	Traffic (40), mine (34), **MU inaudible**
NM2 (52)	10:03pm	46	2.5 / 299 / D	Frogs	Frogs (39), mine (27), traffic (22), **MU inaudible**
NM3 (52)	12:45am	52	2.6 / 304 / D	Frogs	Frogs (29), traffic (24), **MU inaudible**
NM4 (52)	1:12am	76	2.6 / 304 / D	Truck	Traffic (58), frogs (33), **MU inaudible**

APPENDIX 1 – AIR QUALITY MONITORING LOCATIONS

APPENDIX 2 – NOISE AND BLAST MONITORING LOCATIONS

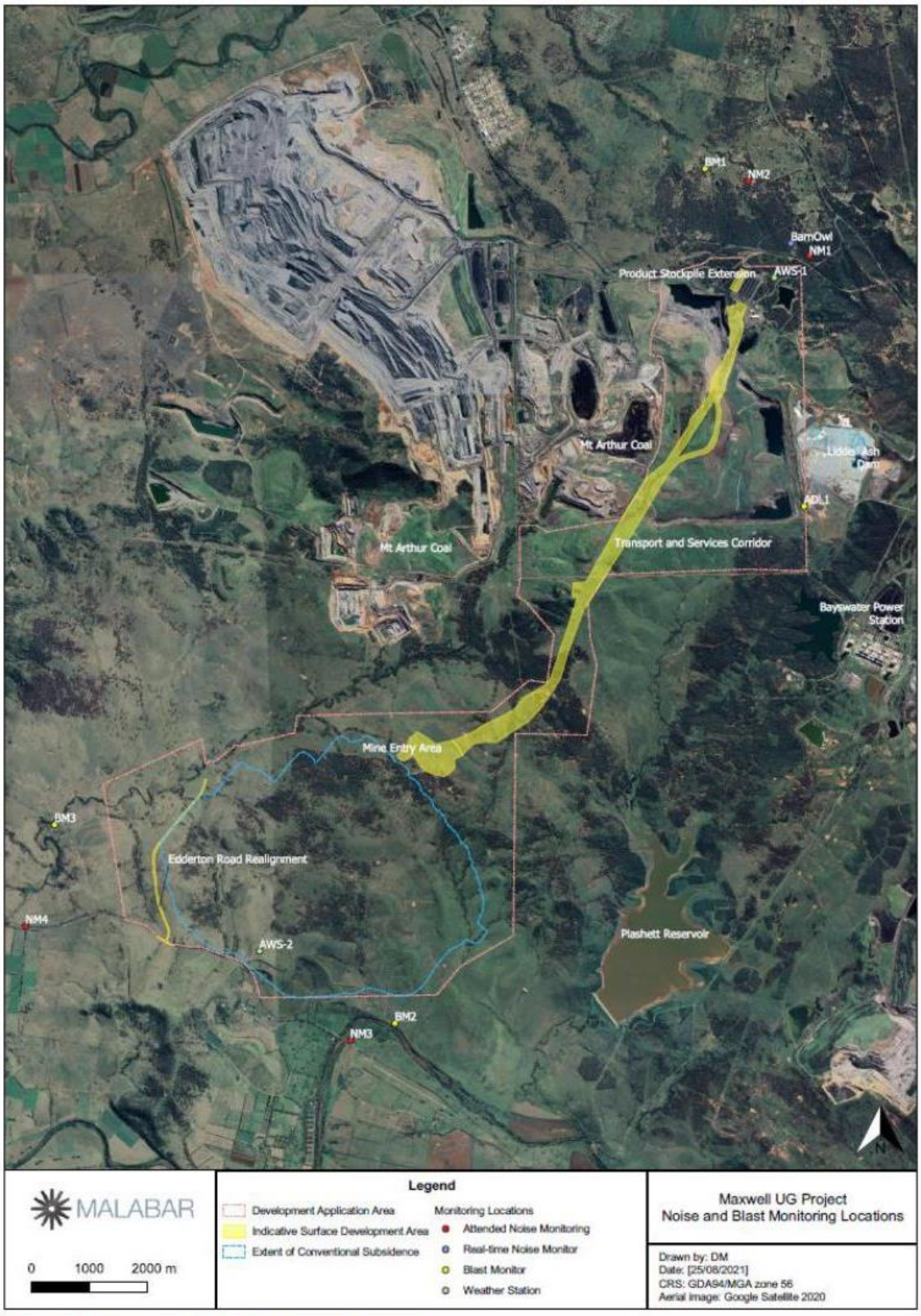
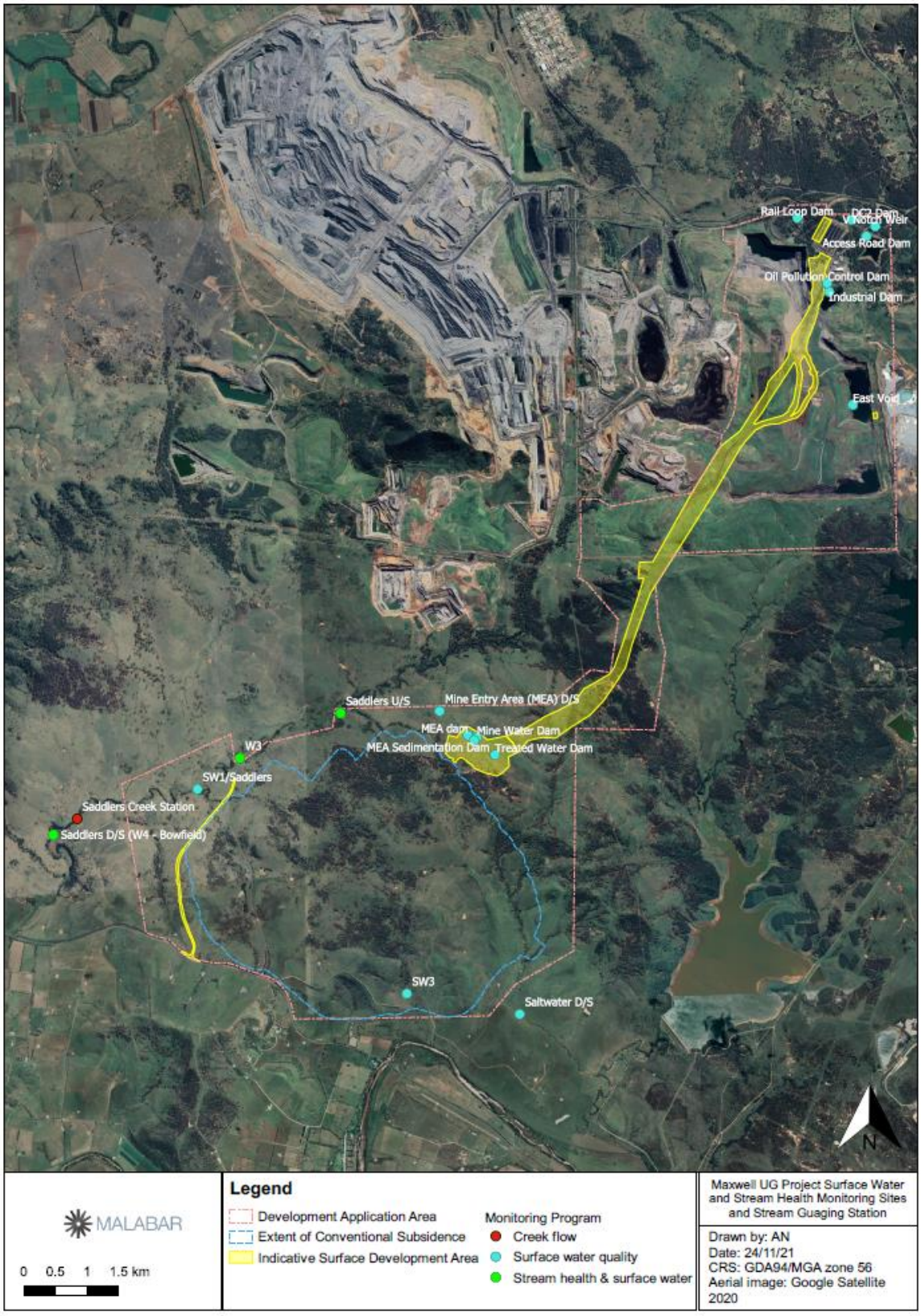


Figure 1. Noise and Blast Monitoring Locations

APPENDIX 3 – SURFACE WATER MONITORING LOCATIONS



APPENDIX 4 – GROUNDWATER MONITORING LOCATIONS