MALABAR

Maxwell Underground Mine
Environmental Monitoring Data
Quarter 1 2023

1 INTRODUCTION

This report has been compiled to present environmental monitoring data for the Maxwell Underground Mine (the project) in accordance with:

- Schedule 2, Condition E17 (a) (vii) of SSD-9526; and
- Condition 5 of EPBC 2018/8287. Specifically this requires the inclusion of hydrographs for all monitoring bores and an explanation of what the data means in relation to the groundwater performance measures specified in the State development consent (SSD 9526).

This report covers the reporting period 1 January to 31 March 2023. Summaries of historic environmental monitoring data (prior to this report) can be found 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**.

Groundwater quality monthly field measurements for Maxwell Infrastructure bore DS1 are provided in **Table 7**.

Groundwater quality results for Maxwell Underground bores are provided in **Table 8**.

Groundwater level results are provided in **Table 9**.

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

The consultant hydrogeologist report providing the requirements of Condition 5 of EPBC 2018/8287, inclusive of hydrographs for all monitoring bores, and an explanation of the data relative to the groundwater performance measures in SSD 9526, is provided in **Appendix 4**.

Noise and blast monitoring results are not presented in this report as they are contained within the monthly reports required by the Environment Protection Licence and can be downloaded from the Malabar Resources website.

Table 1. Deposited dust monitoring results for Quarter 1 2023.

Gauge	Insoluble Solids Result (g/m^2/month)			Annual Mean Limit (g/m^2/month)	Rolling Annual Average to end of March 2023 (g/m^2/month)
	January	February	March		
2175	2.3	3.2	1.2	4	1.7
2230	2.5	2.9	1.3	4	1.6
2235	2.9	2.6	2.1	4	1.7
2247	2.6	2.0	0.6	4	1.4

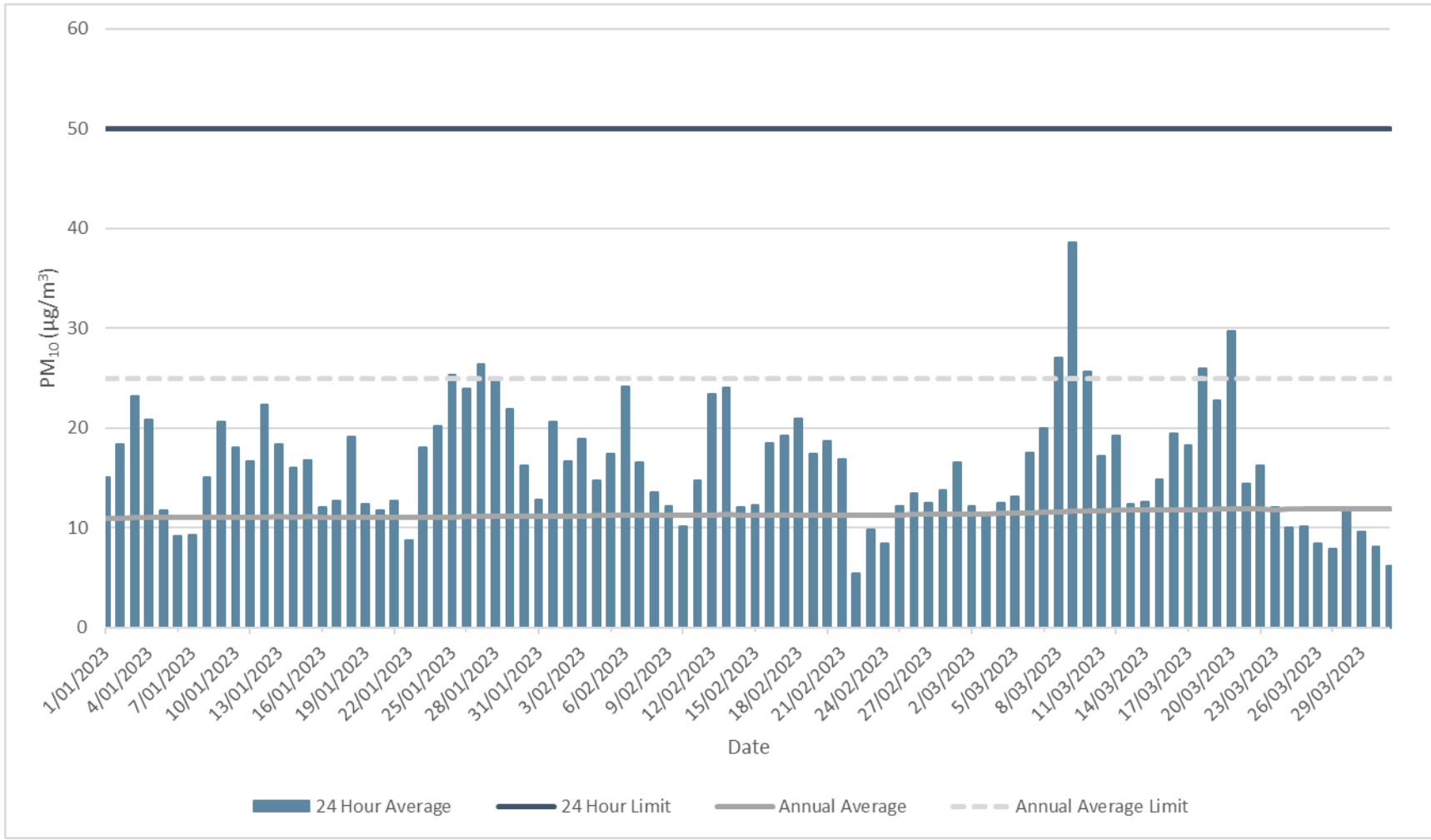


Figure 1. TEOM-1 PM_{10} monitoring results for Quarter 1 2023.

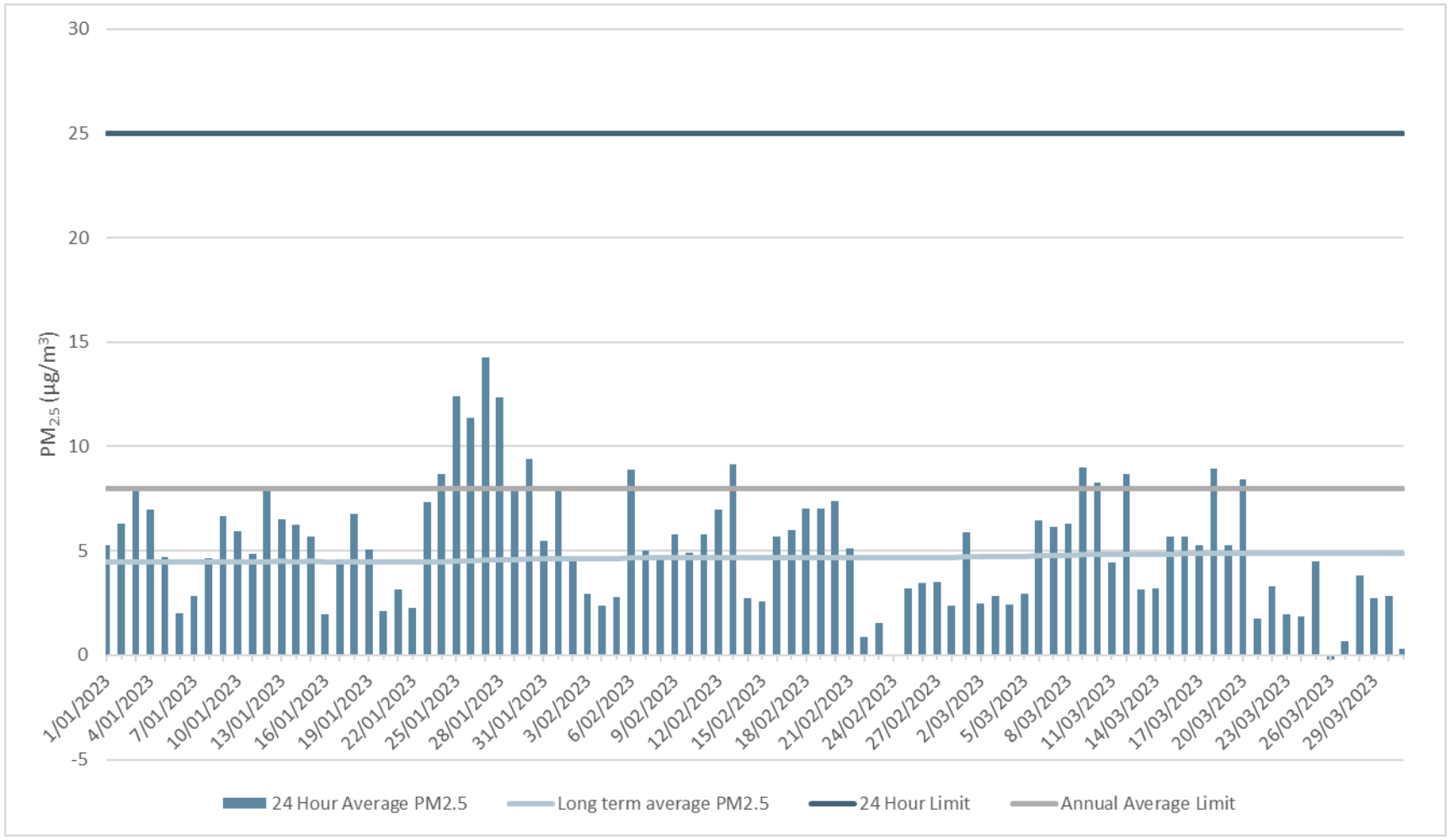


Figure 2. TEOM-1 $PM_{2.5}$ monitoring results for Quarter 1 2023.

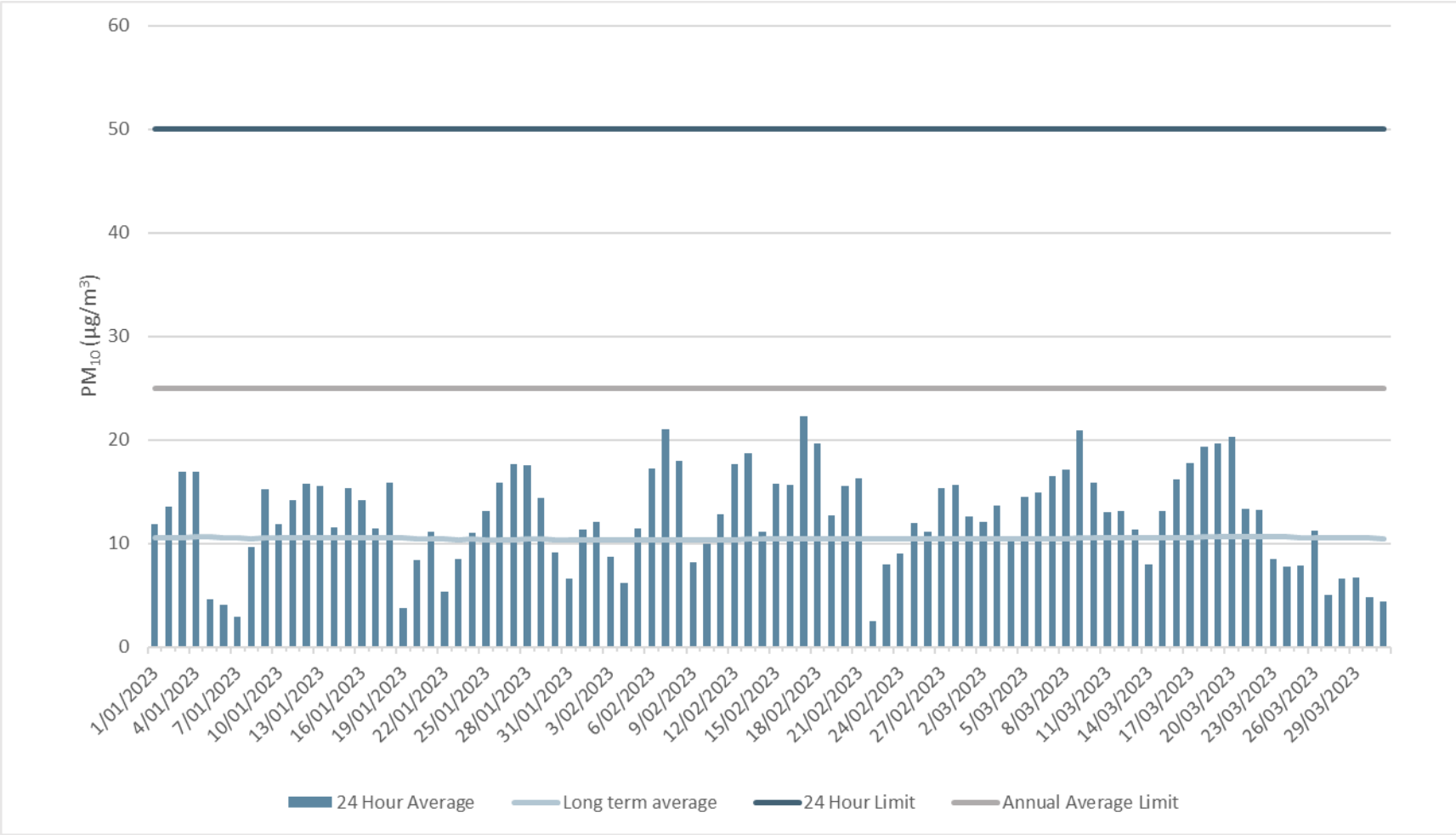


Figure 3. TEOM-2 PM_{10} monitoring results for Quarter 1 2023.

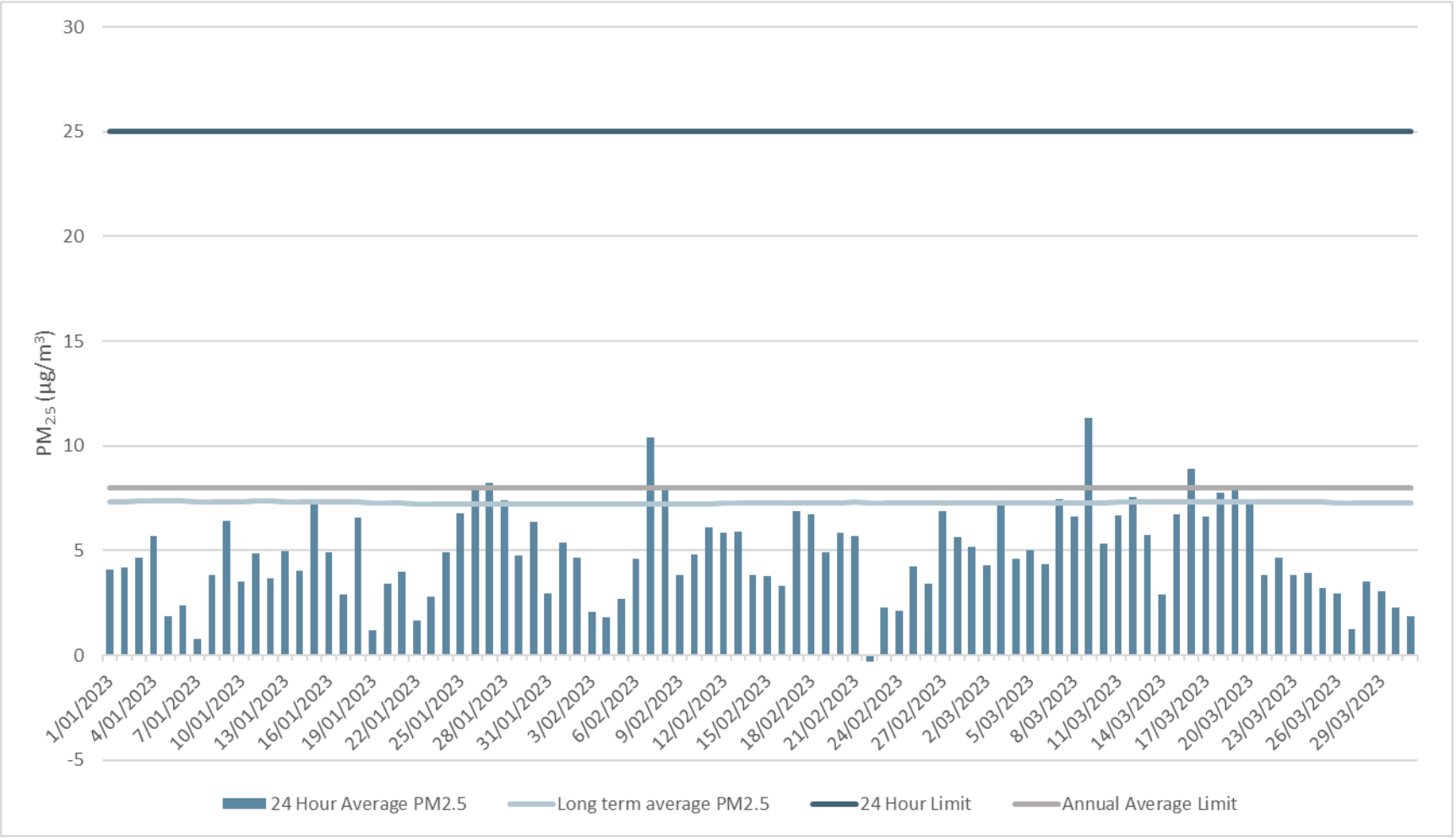


Figure 4. TEOM-2 $PM_{2.5}$ monitoring results for Quarter 1 2023.

Notes:

- Monitoring of PM_{10} and $PM_{2.5}$ commenced at TEOM-2 on 12 December 2021.
- All 24-hour averages during the reporting period were below the 24-hour criteria for both PM_{10} and $PM_{2.5}$ at both TEOM-1 and TEOM-2. The results of the investigations into any exceedances of the criteria (if required) are provided in the Annual Review.
- Gaps in data are due to maintenance and scheduled calibration by monitoring contractor, plus occasionally power cuts and equipment failure. Note that values close to zero may appear as gaps in data in the graphs.
- Where there is no TEOM-generated rolling 24-hour average value reported by the TEOM, in accordance with Malabar's data validation process, where such events result in >75% valid 1-hour data during that 24-hour period (midnight to midnight), the 1-hour data is used to calculate the 24-hour average. This process has been applied from Q1 2022. Prior to this the raw data from the TEOM has been presented, ie if not valid 24-hour value is generated by the TEOM, no data is presented for that day.
- Specific significant data gaps for the reporting period are noted as follows:
  - None.

Table 2. All mine water storage monitoring locations: laboratory water quality monitoring results for Quarter 1 2023 compared to year-to-date averages. 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)	Mar	43	283	613	5140	345	9.6	41	479	2490	5.0	5100
	Avg	**77**	**270**	**591**	**4950**	**331**	**8.8**	**43**	**448**	**2338**	**5.0**	**4448**
DC2 Dam (2109)	Mar	394	126	1230	7080	255	7.8	10	1050	2000	8.0	5580
	Avg	**221**	**94**	**759**	**4696**	**180**	**7.3**	**8.0**	**720**	**1401**	**17.2**	**3543**
Rail Loop Dam (2114)	Mar	181	135	300	2290	122	7.7	10	264	770	6.0	2020
	Avg	**185**	**139**	**307**	**2564**	**136**	**7.8**	**9.4**	**264**	**940**	**7.6**	**2026**
Industrial Dam (1969)	Mar	111	190	343	3050	195	8.5	24	272	1400	10	3160
	Avg	**107**	**163**	**315**	**2792**	**173**	**8.3**	**22**	**252**	**1152**	**8.4**	**2450**
OPC Dam	Mar	110	93	113	1340	66	8.7	8.0	94	468	5.0	1160
	Avg	**124**	**72**	**82**	**1067**	**55**	**8.5**	**6.2**	**79**	**354**	**13**	**789**
V Notch	Mar	441	498	1970	12900	557	7.8	20	1960	5280	5.0	12800
	Avg	**410**	**462**	**1532**	**10231**	**453**	**7.8**	**13**	**1604**	**4475**	**7.8**	**9048**
ES Void	Mar	231	543	794	7260	578	8.0	80	628	3900	5.0	7640
	Avg	**253**	**540**	**795**	**7350**	**558**	**7.9**	**74**	**594**	**3759**	**7.4**	**7069**

Notes:

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

where monthly samples where samples were additionally taken from October 2021 to December 2022 to inform the design of the water treatment plant for the underground mine and hence are included here for completeness.

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 scheduled monitoring results for Quarter 1 2023 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	Jan	0.0010	0.0010	488	218	2440	8860	389	0.0010	9.0	0.010	1190	1320	5.0	6400	4.0
	Avg	**0.0010**	**0.0010**	**396**	**174**	**1359**	**5828**	**244**	**0.0010**	**7.8**	**0.010**	**724**	**936**	**6.8**	**4046**	**7.1**
W3	Feb	Dry														
	Avg	**0.0010**	**0.0010**	**53**	**7.0**	**48**	**286**	**9.0**	**0.0010**	**5.3**	**0.010**	**34**	**14**	**12**	**219**	**41**
SW1/ Saddlers	Jan	0.0010	0.0010	798	122	3580	11000	219	0.0010	6.0	0.010	1900	325	5.0	6460	1.3
	Avg	**0.0010**	**0.0010**	**551**	**87**	**2202**	**7580**	**167**	**0.0010**	**6.8**	**0.010**	**1234**	**227**	**11**	**4414**	**20**
Saddlers D/S (W4-Bowfield)	Jan	0.0010	0.0010	899	80	2420	8170	210	0.0010	9.0	0.010	1360	287	5.0	4680	1.9
	Avg	**0.0010**	**0.0010**	**473**	**51**	**1134**	**4246**	**115**	**0.0010**	**7.3**	**0.010**	**696**	**182**	**10**	**2475**	**27**
MEA D/S	Jan	0.0010	0.0010	57	10	29	214	6.0	0.0010	9.0	0.010	24	4.0	17	191	26
	Avg	**0.0010**	**0.0010**	**45**	**7.4**	**19**	**154**	**3.8**	**0.0010**	**7.4**	**0.010**	**16**	**6.2**	**31**	**182**	**68**
Saltwater D/S	Feb	Dry														
	Avg	**0.0010**	**0.0013**	**71**	**15**	**17**	**191**	**5.7**	**0.0010**	**17**	**0.010**	**9.0**	**10**	**85**	**206**	**56**
SW3	Jan	Dry														
	Avg	**0.0010**	**0.0010**	**90**	**23**	**28**	**282**	**9.0**	**0.0010**	**8.7**	**0.010**	**16**	**7.0**	**18**	**224**	**63**
Transport and Services Corridor sediment dams	See notes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes

In addition to quarterly scheduled sampling, the Maxwell Underground Mine Water Management Plan requires sampling and analysis following 25mm or more 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 post-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/commissioned 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 Annual Review:

- 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 scheduled field measurements at sites along Saddlers Creek for Q2 2022 to Q1 2023 and comparison against trigger levels. If an exceedance of the trigger level occurs for three consecutive readings, this is highlighted in red. TLTS = too low to sample.

Site		Field result											
		pH				EC				Turbidity			
	Units	pH				µS/cm				NTU			
	Trigger	6.5–8.5				7,600				64			
		Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2022	Q3 2022	Q4 2022	Q1 2023
W3		TLTS	TLTS	TLTS	Dry	TLTS	TLTS	TLTS	Dry	TLTS	TLTS	TLTS	Dry
Saddlers D/S (W4 – Bowfield)		8.3	8.2	7.9	8.3	2,025	4,370	1,184	8,160	15	6.5	24	2.7
MEA D/S		7.9	8.2	8.5	9.1	118	119	258	232	62	135	100	29.3
Saddlers U/S		8.0	8.0	7.8	7.8	1,706	6,009	2,950	8,820	6.1	3.0	13	5.5
Saltwater D/S		7.9	7.3	6.9	Dry	231	206	158	Dry	39	50	82	Dry
SW1/ Saddlers		8.0	7.8	7.8	8.0	5,160	6,001	1,013	1,080	19	6.4	68	2.0
SW2	Not yet operational	-	-	-	-	-	-	-	-	-	-	-	-
SW3		TLTS	8.1	6.9	Dry	TLTS	355	355	Dry	TLTS	88	59	Dry

Notes

- Any exceedances of trigger values will only be investigated if they occur after construction commences.

- Turbidity results presented are laboratory results; from Q2 2022, a field meter has been used to determine turbidity; this enables 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 (scheduled and post-rainfall sampling) from Q2 2022 to Q1 2023 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	Sampling type	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	5/4/22	Scheduled	Too low to sample													
	4/7/22	Rainfall	0.0010	0.0010	0.0010	41	5.0	32	6.0	0.0010	6.0	0.010	22	8.0	16	143
	6/7/22	Rainfall	0.0010	0.0010	0.0010	67	10	71	12	0.0010	5.0	0.010	47	26	5.0	319
	13/7/22	Scheduled	Too low to sample													
	10/10/22	Rainfall	Too low to sample													
	27/10/22	Scheduled	Too low to sample													
	14/11/22	Rainfall	0.0010	0.0010	0.0010	50	6.0	42	9.0	0.0010	5.0	0.010	32	9.0	15	195
	27/1/23	Scheduled	Dry													
	23/2/23	Rainfall	Dry													
Saddlers D/S (W4 – Bowfield)	5/4/22	Scheduled	0.0010	0.0010	0.0010	344	42	591	68	0.0010	8.0	0.010	368	138	5.0	1440
	4/7/22	Rainfall	No access, too wet													
	6/7/22	Rainfall	No access, too wet													

Site	Sample date	Sampling type	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
	25/7/22	Scheduled	0.0010	0.0010	0.0010	500	75	1170	146	0.0010	8.0	0.010	755	254	5.0	2590
	10/10/22	Rainfall	0.0010	0.0010	0.0010	72	14	79	15	0.0010	5.0	0.010	60	53	28	474
	28/10/22	Scheduled	0.0010	0.0010	0.0010	189	28	301	38	0.0010	6.0	0.010	181	89	12	806
	14/11/22	Rainfall	No access, too wet													
	27/1/23	Scheduled	0.0010	0.0010	0.0010	899	80	2420	210	0.0010	9.0	0.010	1360	287	5.0	4680
	23/2/23	Rainfall	0.0010	0.0010	0.0010	834	66	2240	213	0.0010	8.0	0.010	1450	272	5.0	4860
MEA D/S	5/4/22	Scheduled	0.0010	0.0010	0.0010	41	6.0	11	3.0	0.0010	8.0	0.010	10	10	66	172
	4/7/22	Rainfall	No access, too wet													
	6/7/22	Rainfall	No access, too wet													
	27/7/22	Scheduled	0.0010	0.0010	0.0010	34	6.0	10	3.0	0.0010	7.0	0.010	10	10	12	204
	10/10/22	Rainfall	No access, too wet													
	27/10/22	Scheduled	0.0010	0.0010	0.0010	28	5.0	14	3.0	0.0010	5.0	0.010	11	1.0	34	185
	14/11/22	Rainfall	No access, too wet													
	27/1/23	Scheduled	0.0010	0.0010	0.0010	57	10	29	6.0	0.0010	9.0	0.010	24	4.0	17	191
	23/2/23	Rainfall	0.0010	0.0010	0.0010	67	10	30	4.0	0.0010	8.0	0.010	23	6.0	26	159
Saddlers U/S	5/4/22	Scheduled	0.0010	0.0010	0.0010	233	100	336	76	0.0010	9.0	0.010	203	389	5.0	1470
	4/7/22	Rainfall	No access, too wet													

Site	Sample date	Sampling type	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
	6/7/22	Rainfall	No access, too wet													
	27/7/22	Scheduled	0.0010	0.0010	0.0010	490	289	1090	262	0.0010	9.0	0.010	752	1360	5.0	4160
	10/10/22	Rainfall	No access, too wet													
	27/10/22	Scheduled	0.0010	0.0010	0.0010	355	131	679	126	0.0010	6.0	0.010	396	622	14	2200
	14/11/22	Rainfall	No access, too wet													
	27/1/23	Scheduled	0.0010	0.0010	0.0010	488	218	2440	389	0.0010	9.0	0.010	1190	1320	5.0	6400
	23/2/23	Rainfall	0.0010	0.0010	0.0010	415	132	2250	369	0.0010	6.0	0.010	1080	988	5.0	6000
Saltwater D/S	5/4/22	Scheduled	0.0010	0.0010	0.0010	83	18	19	6.0	0.0010	22	0.010	10	10	22	213
	4/7/22	Rainfall	No access, too wet													
	6/7/22	Rainfall	No access, too wet													
	1/8/22	Scheduled	0.0010	0.0010	0.0010	60	13	25	6.0	0.0010	19	0.010	10	10	58	189
	10/10/22	Rainfall	No access, too wet													
	27/10/22	Scheduled	0.0010	0.0020	0.0010	70	13	7.0	5.0	0.0010	9.0	0.010	7.0	10	174	215
	14/11/22	Rainfall	No access, too wet													
	27/1/23	Scheduled	Dry													
	23/2/23	Rainfall	Dry													
	5/4/22	Scheduled	0.0010	0.0010	0.0010	582	106	1670	158	0.0010	7.0	0.010	976	203	12	3590

Site	Sample date	Sampling type	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
SW1/ Saddlers	4/7/22	Rainfall	No access, too wet													
	6/7/22	Rainfall	No access, too wet													
	1/8/22	Scheduled	0.0010	0.0010	0.0010	606	98	1600	145	0.0010	7.0	0.010	1030	203	11	3340
	10/10/22	Rainfall	No access, too wet													
	28/10/22	Scheduled	0.0010	0.0010	0.0010	174	23	270	23	0.0010	6.0	0.010	162	22	8.0	708
	14/11/22	Rainfall	No access, too wet													
	27/1/23	Scheduled	0.0010	0.0010	0.0010	798	122	3580	219	0.0010	6.0	0.010	1900	325	5.0	6460
	23/2/23	Rainfall	0.0010	0.0010	0.0010	594	86	3890	292	0.0010	8.0	0.010	2100	384	19	7970
SW2	-	-	Location to be established – see notes													
SW3	5/4/22	Scheduled	Too low to sample													
	4/7/22	Rainfall	No access, too wet													
	6/7/22	Rainfall	No access, too wet													
	13/7/22	Scheduled	0.0010	0.0010	0.0010	115	32	24	11	0.0010	10	0.0010	11	1.0	9.0	258
	10/10/22	Rainfall	No access, too wet													
	27/10/22	Scheduled	0.0010	0.0010	0.0010	103	26	43	11	0.0010	8.0	0.010	25	10	11	260
	14/11/22	Rainfall	0.0010	0.0010	0.0010	53	12	17	5.0	0.0010	8.0	0.010	12	10	34	155
	27/1/23	Scheduled	Dry													

Site	Sample date	Sampling type	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
	23/2/23	Rainfall	Dry													

Notes.
(a) No trigger; for interpretation purposes only. (b) Result is a combination of As (V) and As (III) (c) Trigger set as a preliminary guideline value.
In accordance with the Surface Water Management Plan, results from Saddlers Creek (median over three consecutive samples) will be compared to the relevant trigger levels. Trigger values are values that trigger further investigation or management action.

Table 6. Maxwell Infrastructure Groundwater quality biennial monitoring results for Quarter 3 2022 (year to date average shown). See notes for further details. NS = Not sampled (next scheduled sampling is Q4 2022).

Site	Aluminium	Arsenic	Bicarbonate Alkalinity as CaCO3	Boron	Calcium	Chloride	Chromium	Copper	Electrical conductivity	EC trigger value	Iron	Lead
R4241	NS	NS	NS	NS	NS	NS	NS	NS	NS	6253	NS	NS
Average	***0.010***	***0.0010***	***584***	***0.21***	***172***	***857***	***0.0010***	***0.0010***	***4910***	***-***	***0.82***	***0.0010***
F1162	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***522***	***0.22***	***101***	***738***	***0.0020***	***0.0010***	***3720***	***-***	***8.6***	***0.0010***
F1164	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0020***	***511***	***0.07***	***89***	***646***	***0.0020***	***0.0010***	***3340***	***-***	***23.9***	***0.0010***
GW01D	NS	NS	NS	NS	NS	NS	NS	NS	NS	5680	NS	NS
Average	***0.010***	***0.0010***	***479***	***0.31***	***378***	***1250***	***0.0010***	***0.0020***	***5365***	***-***	***0.070***	***0.0010***
GW01S	NS	NS	NS	NS	NS	NS	NS	NS	NS	9260	NS	NS
Average	***0.010***	***0.0010***	***504***	***0.14***	***228***	***2260***	***0.0010***	***0.026***	***7840***	***-***	***0.050***	***0.0010***
GW02D	NS	NS	NS	NS	NS	NS	NS	NS	NS	10500	NS	NS
Average	***0.010***	***0.0010***	***1750***	***0.27***	***50***	***1240***	***0.0010***	***0.0050***	***11750***	***-***	***0.05***	***0.0010***
GW02S	NS	NS	NS	NS	NS	NS	NS	NS	NS	9480	NS	NS
Average	***0.010***	***0.0010***	***723***	***0.12***	***294***	***924***	***0.0010***	***0.0010***	***6785***	***-***	***1.92***	***0.0010***

Table 6 continued

Site	Magnesium	Manganese	Molybdenum	Nickel	pH value	pH trigger value	Selenium	Silver	Sodium	Sulfate as SO4 – Turbidimetric	Suspended Solids (SS)	Total Dissolved Solids @180°C	Zinc
R4241	NS	NS	NS	NS	NS	Min: 6.0, Max: 8.5	NS	NS	NS	NS	NS	NS	NS
Average	***244***	***0.293***	***0.0010***	***0.012***	***7.0***	***-***	***0.010***	***0.0010***	***450***	***1090***	***34***	***3555***	***0.010***
F1162	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***146***	***0.56***	***0.0010***	***0.004***	***7.0***	***-***	***0.010***	***0.0010***	***506***	***360***	***110***	***2260***	***0.010***
F1164	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***111***	***0.71***	***0.0030***	***0.009***	***6.9***	***-***	***0.010***	***0.0010***	***403***	***340***	***167***	***1970***	***NS***
GW01D	NS	NS	NS	NS	NS	Min: 6.0, Max: 8.5	NS	NS	NS	NS	NS	NS	NS
Average	***157***	***0.257***	***0.0070***	***0.340***	***7.0***	***-***	***0.010***	***0.0010***	***525***	***610***	***51***	***3810***	***0.080***
GW01S	NS	NS	NS	NS	NS	Min: 6.0, Max: 8.5	NS	NS	NS	NS	NS	NS	NS
Average	***228***	***0.076***	***0.0020***	***0.024***	***7.0***	***-***	***0.360***	***0.0010***	***1170***	***552***	***2115***	***5255***	***0.080***
GW02D	NS	NS	NS	NS	NS	Min: 6.0, Max: 8.5	NS	NS	NS	NS	NS	NS	NS
Average	***15***	***0.51***	***0.0080***	***0.022***	***7.***	*******	***0.010***	***0.0010***	***2950***	***3115***	***2905***	***8625***	***0.010***
GW02S	NS	NS	NS	NS	NS	Min: 6.0, Max: 8.5	NS	NS	NS	NS	NS	NS	NS
Average	***302***	***1.47***	***0.0020***	***0.018***	***6.9***	***-***	***0.010***	***0.0010***	***890***	***2285***	***36***	***5250***	***0.020***

Table 7. DS1 monitoring bore: Laboratory groundwater quality monthly monitoring results for Quarter 1 2023 (year to date average shown). See notes for further details. NS = Not sampled.

Date of sample	pH value	Electrical conductivity	Total Dissolved Solids @180°C	Salinity (g/kg)
20/01/2023	6.2	8390	7240	4.7
17/02/2023	6.4	8460	7140	4.7
20/03/2023	6.3	8320	6860	4.6
Average (year to date)	***6.3***	***8390***	***7080***	***4.7***

Table 8. Maxwell Underground Groundwater quality biennial monitoring results for Quarter 1 2023 (rolling year to date average shown). See notes for further details (under the new Maxwell Underground Mine Water Management Plan, sampling changed from quarterly to biennial). NS = Not sampled.

Site	Aluminium	Arsenic	Bicarbonate Alkalinity as CaCO3	Boron	Calcium	Chloride	Chromium	Copper	Electrical conductivity	EC trigger value	Iron	Lead
DD1005	0.01	0.001	894	0.17	90	1300	0.001	0.018	6010	-	0.05	0.001
Average	***0.01***	***0.001***	***894***	***0.17***	***90***	***1300***	***0.001***	***0.018***	***5925***	***-***	***0.05***	***0.001***
DD1014	0.010	0.0010	1000	0.33	56	2500	0.0010	0.0010	9080	-	0.53	0.001
Average	***0.01***	***0.001***	***1000***	***0.33***	***56***	***2500***	***0.001***	***0.001***	***9160***	***-***	***0.53***	***0.001***
DD1015	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
DD1016	0.01	0.001	1080	0.22	155	1450	0.001	0.001	6390	-	1.88	0.001
Average	***0.01***	***0.001***	***1080***	***0.22***	***155***	***1450***	***0.001***	***0.001***	***6385***	***-***	***1.88***	***0.001***
DD1025	NS	NS	NS	NS	NS	NS	NS	NS	NS	14,200	NS	NS
Average	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
DD1027	0.03	0.001	363	0.14	19	141	0.001	0.001	1120	-	0.9	0.001
Average	***0.03***	***0.001***	***363***	***0.14***	***19***	***141***	***0.001***	***0.001***	***1163***	***-***	***0.9***	***0.001***
DD1032	0.01	0.001	1090	0.22	12	1470	0.001	0.001	6560	7,170	0.26	0.001
Average	***0.01***	***0.001***	***1090***	***0.22***	***12***	***1470***	***0.001***	***0.001***	***6570***	***-***	***0.26***	***0.001***
DD1043	0.01	0.001	2140	0.4	37	1380	0.001	0.001	7320	-	0.05	0.001
Average	***0.01***	***0.001***	***2140***	***0.4***	***37***	***1380***	***0.001***	***0.001***	***7550***	***-***	***0.05***	***0.001***
DD1052	0.09	0.001	835	0.25	5	1880	0.002	0.001	7350	-	0.05	0.001

Site	Aluminium	Arsenic	Bicarbonate Alkalinity as CaCO3	Boron	Calcium	Chloride	Chromium	Copper	Electrical conductivity	EC trigger value	Iron	Lead
Average	***0.09***	***0.001***	***835***	***0.25***	***5***	***1880***	***0.002***	***0.001***	***7320***	***-***	***0.05***	***0.001***
DD1057	0.01	0.001	3640	0.05	10	1520	0.002	0.001	9410	-	0.93	0.001
Average	***0.01***	***0.001***	***3640***	***0.05***	***10***	***1520***	***0.002***	***0.001***	***9705***	***-***	***0.93***	***0.001***
MB03	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
MB1A	0.01	0.001	579	0.07	83	450	0.001	0.002	2360	-	0.05	0.001
Average	***0.01***	***0.001***	***579***	***0.07***	***83***	***450***	***0.001***	***0.002***	***2431***	***-***	***0.05***	***0.001***
MB1R	0.01	0.001	1200	0.15	58	1240	0.001	0.001	6010	-	0.05	0.001
Average	***0.01***	***0.001***	***1200***	***0.15***	***58***	***1240***	***0.001***	***0.001***	***6060***	***-***	***0.05***	***0.001***
MB1W	0.01	0.001	1230	0.16	55	1150	0.001	0.001	5830	-	0.05	0.001
Average	***0.01***	***0.001***	***1230***	***0.16***	***55***	***1150***	***0.001***	***0.001***	***5875***	***-***	***0.05***	***0.001***
MB2A	0.01	0.001	579	0.2	84	1880	0.001	0.001	6980	-	0.05	0.001
Average	***0.01***	***0.001***	***579***	***0.2***	***84***	***1880***	***0.001***	***0.001***	***5685***	***-***	***0.05***	***0.001***
MB2R	0.01	0.001	1140	0.22	31	1400	0.001	0.001	6270	-	0.05	0.001
Average	***0.01***	***0.001***	***1140***	***0.22***	***31***	***1400***	***0.001***	***0.001***	***6350***	***-***	***0.05***	***0.001***
MB3A	0.01	0.001	806	0.24	42	2160	0.001	0.001	8390	9,009	0.05	0.001
Average	***0.01***	***0.001***	***806***	***0.24***	***42***	***2160***	***0.001***	***0.001***	***8405***	***-***	***0.05***	***0.001***
MB3R	0.01	0.001	728	0.17	153	1380	0.002	0.006	6270	6,327	0.05	0.001
Average	***0.01***	***0.001***	***728***	***0.17***	***153***	***1380***	***0.002***	***0.006***	***6270***	***-***	***0.05***	***0.001***

Site	Aluminium	Arsenic	Bicarbonate Alkalinity as CaCO3	Boron	Calcium	Chloride	Chromium	Copper	Electrical conductivity	EC trigger value	Iron	Lead
MB4A	0.01	0.001	348	0.05	68	114	0.001	0.001	961	-	0.05	0.001
Average	***0.01***	***0.001***	***348***	***0.05***	***68***	***114***	***0.001***	***0.001***	***993***	***-***	***0.05***	***0.001***
MB4C	0.01	0.001	582	0.12	14	528	0.001	0.001	2470	-	0.05	0.001
Average	***0.01***	***0.001***	***582***	***0.12***	***14***	***528***	***0.001***	***0.001***	***2513***	***-***	***0.05***	***0.001***
MW1	0.01	0.001	577	0.21	44	1180	0.004	0.001	4940	-	0.05	0.001
Average	0.01	***0.001***	***577***	***0.21***	***44***	***1180***	***0.004***	***0.001***	***5750***	***-***	0.05	***0.001***
MW2	0.01	0.001	603	0.2	43	1000	0.002	0.004	3780	-	0.05	0.001
Average	***0.01***	***0.001***	***603***	***0.2***	***43***	***1000***	***0.002***	***0.004***	***3750***	***-***	***0.05***	***0.001***
MW3	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	-	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	-	***-***

Table 8. continued

Site	Magnesium	Manganese	Molybdenum	Nickel	pH value	pH trigger value	Selenium	Silver	Sodium	Sulfate as SO4 - Turbidimetric	Suspended Solids (SS)	Total Dissolved Solids @180°C	Zinc
DD1005	186	0.001	0.008	0.012	7.1	-	0.01	0.001	968	218	19	3380	0.005
Average	***186***	***0.001***	***0.008***	***0.012***	***7.0***	**-**	**0.01**	***0.001***	**968**	**218**	**19**	**3380**	**0.005**
DD1014	34	0.022	0.0010	0.0010	7.5	-	0.01	0.001	2030	215	20	5420	0.005
Average	***34***	***0.022***	***0.001***	***0.001***	***7.3***	**-**	**0.01**	***0.001***	**2030**	**215**	**20**	**5420**	**0.005**
DD1015	NS	NS	NS	NS	NS	-	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Average	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
DD1016	290	0.148	0.001	0.001	7.0	-	**0.01**	0.001	**820**	**95**	**12**	**3950**	**0.005**
Average	***290***	***0.148***	***0.001***	***0.001***	***6.9***	**-**	**0.01**	***0.001***	**820**	**95**	**12**	**3950**	**0.005**
DD1025	NS	NS	NS	NS	NS	Min: 6.0, Max: 8.5	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**
Average	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
DD1027	38	0.027	0.001	0.003	6.7	-	**0.01**	0.001	**186**	**47**	**8**	**704**	**0.005**
Average	***38***	***0.027***	***0.001***	***0.003***	***6.5***	**-**	**0.01**	***0.001***	**186**	**47**	**8**	**704**	**0.005**
DD1032	4	0.015	0.001	0.001	7.5	Min: 6.0, Max: 8.5	**0.01**	0.001	**1480**	**43**	**5**	**3950**	**0.005**
Average	***4***	***0.015***	***0.001***	***0.001***	***7.4***	**-**	**0.01**	***0.001***	**1480**	**43**	**5**	**3950**	**0.005**
DD1043	26	0.021	0.001	0.001	7.0	-	**0.01**	0.001	**1890**	**132**	**25**	**4810**	**0.01**
Average	**-**	***0.021***	***0.001***	***0.001***	***6.9***	**-**	**0.01**	***0.001***	**1890**	**132**	**25**	**4810**	**0.01**

Table 8. continued

Site	Magnesium	Manganese	Molybdenum	Nickel	pH value	pH trigger value	Selenium	Silver	Sodium	Sulfate as SO4 - Turbidimetric	Suspended Solids (SS)	Total Dissolved Solids @180°C	Zinc
DD1052	3	0.031	0.001	0.006	8.7	-	**0.01**	0.001	**1520**	**48**	**5**	**3990**	**0.005**
Average	***3***	***0.031***	***0.001***	***0.006***	***8.6***	**-**	**0.01**	***0.001***	**1520**	**48**	**5**	**3990**	**0.005**
DD1057	5	0.028	0.004	0.003	7.6	-	**0.01**	0.001	**2590**	**1**	**42**	**6750**	**0.005**
Average	***5***	***0.028***	***0.004***	***0.003***	***7.6***	**-**	**0.01**	0.001	**2590**	**1**	**42**	**6750**	**0.005**
MB03	NS	NS	NS	NS	NS	-	**NS**	NS	**NS**	**NS**	**NS**	**NS**	**NS**
Average	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
MB1A	68	0.001	0.002	0.003	7.6	-	**0.01**	0.001	**363**	**59**	**135**	**1480**	**0.005**
Average	***68***	***0.001***	***0.002***	***0.003***	***7.5***	**-**	**0.01**	***0.001***	**363**	**59**	**135**	**1480**	**0.005**
MB1R	55	0.014	0.001	0.001	7.2	-	**0.01**	0.001	**1260**	**88**	**15**	**3590**	**0.005**
Average	***55***	***0.014***	***0.001***	***0.001***	***7.2***	**-**	**0.01**	***0.001***	**1260**	**88**	**15**	**3590**	**0.005**
MB1W	52	0.001	0.001	0.001	7.5	-	**0.01**	0.001	**1240**	**68**	**12**	**3510**	**0.006**
Average	***52***	***0.001***	***0.001***	***0.001***	***7.5***	**-**	**0.01**	***0.001***	**1240**	**68**	**12**	**3510**	**0.006**
MB2A	198	0.5	0.002	0.003	7.5	-	**0.01**	0.001	**1230**	**320**	**21**	**4220**	**0.005**
Average	***198***	***0.5***	***0.002***	***0.003***	***7.5***	**-**	**0.01**	***0.001***	**1230**	**320**	**21**	**4220**	**0.005**
MB2R	51	0.002	0.001	0.001	7.8	-	**0.01**	0.001	**1350**	**1**	**37**	**3820**	**0.005**
Average	***51***	***0.002***	***0.001***	***0.001***	***7.8***	**-**	**0.01**	***0.001***	**1350**	**1**	**37**	**3820**	**0.005**

Table 8. continued

Site	Magnesium	Manganese	Molybdenum	Nickel	pH value	pH trigger value	Selenium	Silver	Sodium	Sulfate as SO4 - Turbidimetric	Suspended Solids (SS)	Total Dissolved Solids @180°C	Zinc
MB3A	222	0.001	0.002	0.001	7.6	Min: 6.0, Max: 8.5	**0.01**	0.001	**1530**	**605**	**5**	**5010**	**0.005**
Average	***222***	***0.001***	***0.002***	***0.001***	***7.6***	**-**	**0.01**	0.001	**1530**	**605**	**5**	**5010**	**0.005**
MB3R	309	0.274	0.001	0.04	7.6	Min: 6.0, Max: 8.5	**0.01**	0.001	**767**	**522**	**14**	**4160**	**0.024**
Average	***309***	***0.274***	***0.001***	***0.04***	***7.5***	**-**	**0.01**	***0.001***	**767**	**522**	**14**	**4160**	**0.024**
MB4A	44	0.001	0.001	0.001	7.2	-	**0.01**	0.001	**74**	**39**	**32**	**581**	**0.005**
Average	***44***	***0.001***	***0.001***	***0.001***	***7.2***	**-**	**0.01**	***0.001***	**74**	**39**	**32**	**581**	**0.005**
MB4C	26	0.002	0.001	0.001	8.1	-	**0.01**	0.001	**489**	**18**	**13**	**1410**	**0.005**
Average	***26***	***0.002***	***0.001***	***0.001***	***8.0***	**-**	**0.01**	***0.001***	**489**	**18**	**13**	**1410**	**0.005**
MW1	161	0.001	0.001	0.001	7.7	-	**0.01**	0.001	**627**	**235**	**730**	**3040**	**0.005**
Average	***161***	***0.001***	0.001	***0.001***	***7.5***	**-**	**0.01**	0.001	**627**	**235**	**730**	**3040**	**0.005**
MW2	96	0.001	0.002	0.003	7.8	-	**0.01**	0.001	**813**	**72**	**1120**	**2360**	**0.005**
Average	***96***	***0.001***	***0.002***	***0.003***	***7.7***	**-**	**0.01**	***0.001***	**813**	**72**	**1120**	**2360**	**0.005**
MW3	NS	NS	NS	NS	NS	-	**NS**	NS	**NS**	**NS**	**NS**	**NS**	**NS**
Average	**-**	**-**	-	**-**	**-**	**-**	**-**	-	**-**	**-**	**-**	**-**	**-**

Notes

The Maxwell Underground Mine Water Management Plan (WMP) was implemented for Q3 2021 and supercedes the requirements of the Maxwell Infrastructure WMP. The 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 the requirement to record barium (Ba), beryllium (Be), cadmium (Cd), cobalt (Co), potassium (K), vanadium (V), nitrite as N, nitrate as N, mercury (Hg), ammonia as N, total Kjeldahl nitrogen as N, total phosphorus (P) and reactive phosphorus as P.
- removal of bores DD1030, DD1034-A and B, DD1041 A and B.

Sampling for the MI bores under the previous Maxwell Infrastructure WMP transitioned to the new Maxwell Underground Mine WMP.

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

All results are in mg/L except Conductivity (µS/cm), pH (in pH units) and salinity (g/kg). Dissolved metal concentration (mg/L) are presented in Table 6**, Table 7, Table 8.** Plots of total and dissolved metal concentrations are shown in **Appendix 5**. Dissolved concentrations are the most applicable to groundwater quality and indications to change in trends.

Trigger levels

As presented in SLR (2023, 2023a) Q1 – 2023 and Q2 – 2023 quarterly reports, observed groundwater levels, EC and pH at monitoring bores part of the TARP remain within “Normal Condition” during the reporting period.

Table 9. All groundwater bores: Reduced standing groundwater levels (mAHD) during Quarter 1 2023 compared to the year-to-date average.

Site (with seam names for VWPs)	Jan	Feb	Mar	Year to date average	Type of bore	Type of measurement as of March 2023
DS1	223.94	223.94	223.94	223.94	Standpipe	Manual
R4241	177.63	177.29	177.04	177.22	Standpipe	Logger
F1162	143.05	143.16	143.33	143.18	Standpipe	Manual
F1164	141.89	142.03	142.21	142.04	Standpipe	Manual
GW01D	204.18	203.48	202.88	203.52	Standpipe	Logger
GW01S	201.84	201.17	200.65	201.22	Standpipe	Logger
GW02D	136.08	136.14	136.11	136.11	Standpipe	Logger
GW02S	192.28	191.98	191.78	192.01	Standpipe	Logger
GW04	148.56	148.96	148.97	148.96	Standpipe	Logger
BLK6R12 – VW1 (WB)	162.95	162.80	162.67	162.80	VWP	Logger
BLK6R12 – VW2 (RB)	147.92	147.98	148.04	147.98	VWP	Logger
BLK6R12 – VW3 (WN)	123.60	123.07	123.02	123.11	VWP	Logger
BLK6R12 – VW4 (BK)	123.80	123.95	124.04	123.93	VWP	Logger
DD1005	143.97	143.94	143.95	143.95	Standpipe	Manual
DD1014	135.85	135.94	135.97	135.92	Standpipe	Manual
DD1015	(6)	(6)	(6)	(6)	Standpipe	Manual
DD1016	142.1	141.85	141.89	141.88	Standpipe	Logger
DD1025	(7)	(7)	(7)	(7)	Standpipe	Manual
DD1027	135.3	135.53	135.73	135.65	Standpipe	Logger
DD1032	128.58	128.54	128.51	128.54	Standpipe	Manual
DD1043	NS	129.38	129.26	129.31	Standpipe	Logger
DD1052	119.95	118.99	120.55	119.83	Standpipe	Manual

DD1057	124.24	124.06	124.19	124.16	Standpipe	Logger
MB03	115.03	114.80	114.78	114.87	Standpipe	Logger
MB1-Alluvial	73.87	73.63	73.50	73.67	Standpipe	Logger
MB1-Redbank	76.11	75.95	75.89	75.98	Standpipe	Manual
MB1-Whybrow	75.33	75.22	75.11	75.22	Standpipe	Manual
MB2-Alluvial	113.63	113.62	113.59	113.62	Standpipe	Logger
MB2-Regolith	115.80	115.44	115.44	115.56	Standpipe	Logger
MB3-Alluvial	130.15	130.17	130.03	130.11	Standpipe	Logger
MB3-Regolith	129.63	129.39	129.32	129.45	Standpipe	Logger (2)
MB4-Alluvial	71.64	71.27	71.02	71.31	Standpipe	Logger
MB4-Coal	71.06	71.04	70.84	71.06	Standpipe	Manual
MW1	129.87	129.36	129.26	129.50	Standpipe	Logger
MW2	111.48	113.34	113.24	112.69	Standpipe	Logger
MW3	(8)	(8)	(8)	-	Standpipe	Manual
RBD1 – VW1 (WB)	149.47	149.40	149.36	149.41	VWP	Logger
RBD1 – VW2 (RB)	146.32	146.31	146.24	146.29	VWP	Logger
RBD1 – VW3 (WN)	129.09	128.94	128.85	128.96	VWP	Logger
RBD1 – VW4 (BK)	89.24	89.33	89.39	89.32	VWP	Logger
RD1189 – VWP1 (WH)	184.80	185.16	185.20	185.14	VWP	Logger
RD1189 – VWP2 (AZZBF)	(9)	(9)	(9)	(9)	VWP	Logger
RD1189 – VWP3 (WW12)	145.14	145.70	146.07	145.81	VWP	Logger
RD1189 – VWP4 (Mt Arthur seam)	141.04	141.14	141.20	141.16	VWP	Logger
RD1189 – VWP5 (PF2)	(9)	(9)	(9)	(9)	VWP	Logger
RD1189 – VWP6 (BY)	135.69	135.82	135.96	135.87	VWP	Logger

RD1189 – VWP7 (WY)	(9)	(9)	(9)	(9)	VWP	Logger
RD1192- VWP1 (WB)	NS	153.38	152.91	153.10	VWP	Logger
RD1192- VWP2 (RB)	135.29	135.48	135.58	135.50	VWP	Logger
RD1192-VWP3 (BK)	151.68	151.78	151.96	151.86	VWP	Logger
MB1VWP (VWP1) (INT)	(10)	(10)	(10)	(10)	VWP	Logger
MB1VWP (VWP2) (INT)	(10)	(10)	(10)	(10)	VWP	Logger
MB1VWP (VWP3) (INT)	(10)	(10)	(10)	(10)	VWP	Logger
MB1VWP (VWP4) (WB)	(10)	(10)	(10)	(10)	VWP	Logger
MB1VWP (VWP5) (WN)	(10)	(10)	(10)	(10)	VWP	Logger
WND16 (VWP1) (WB)	113.69	113.47	113.19	113.45	VWP	Logger
WND16 (VWP2) (WN)	(10)	(10)	(10)	(10)	VWP	Logger
WND16 (VWP4) (BK)	(10)	(10)	(10)	(10)	VWP	Logger
WND26 (VWP1) (WB)	136.65	136.76	136.87	136.76	VWP	Logger
WND26 (VWP2) (RB)	132.87	133.17	133.42	133.16	VWP	Logger
WND26 (VWP3) (WA)	139.78	140.07	140.30	140.05	VWP	Logger

Notes

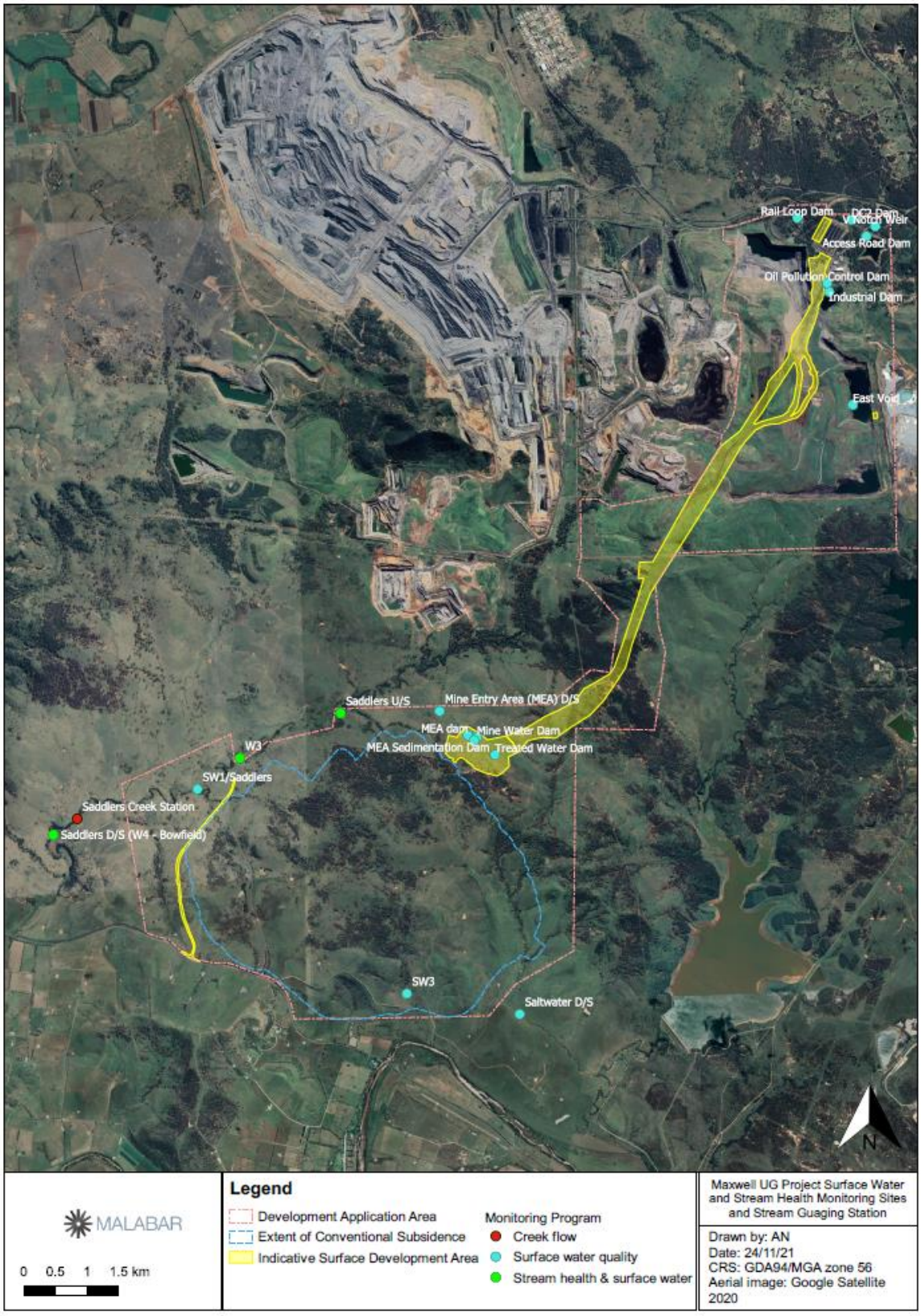
1. In addition to a water level logger, a barologger was installed at MB3-Regolith on 23 August 2021 (a barologger enables the correction of water level for barometric pressure for all bores for this project). Prior to August, it was installed at DD1032.
2. In August 2021, loggers in DD1043, DD1057, DD1014, DD1025 and DD1032 were removed and placed into other bores that the Environmental Statement committed to containing loggers.
3. 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.
4. 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.
5. 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 2021. 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 to provide confidence in the loggers. Data reported for this period 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.
6. DD1015 is reported blocked during the reporting period; DD1027 is deemed to bring no significant value to future groundwater assessments as it monitors the Edderton Seam which is not targeted by the Maxwell UG Mine. As per the recommendations in the 2022 Annual Review, these monitoring locations will be removed from the reporting, once the next version of the Management Plan is approved.
7. DD1025 was decommissioned in December 2022 for safety reasons (to prevent inrush to the upcoming underground mining operations). As per the recommendations in the 2022 Annual Review, it is proposed that this site will be replaced by [insert name of bore] for the purposes of the TARP assessment in Appendix A.
8. MB03 and MW3 are recorded dry during the reporting period. As per the recommendations in the 2022 Annual Review, it is proposed that MW3 will be removed from the reporting, once the next version of the Management Plan is approved.
9. Groundwater levels at RD1189 VWP2, VWP7 & VWP9 appear unstable hence are not reported. As per the recommendations in the 2022 Annual Review, these monitoring datasets will be removed from the reporting, once the next version of the Management Plan is approved.
10. The following VWPs wires are considered disabled: RD1192-VWP1 (no data past August 2011), MB1 (VWP5 only – unstable), WND16-VWP3 and WND16-VWP4 (unstable and disabled respectively). As per the recommendations in the 2022 Annual Review, these monitoring datasets will be removed from the reporting, once the next version of the Management Plan is approved.

    * GWLs for the Maxwell Underground VWPs are the values taken on the 15th of each month. If there are multiple values on the same day, the average of the daily values is presented. If no data is recorded on the 15th of the month, then the closest recorded value to the 15th of the month is presented (see*).

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.

APPENDIX 1 – AIR QUALITY MONITORING LOCATIONS

APPENDIX 2 – SURFACE WATER MONITORING LOCATIONS



APPENDIX 3 – GROUNDWATER MONITORING LOCATIONS

APPENDIX 4 – CONSULTANT HYDROGEOLOGIST REPORT PROVIDING HYDROGRAPHS AND DATA ANALYSIS

Maxwell Underground Mine

Groundwater Monitoring Report – Quarter 1 – 2023

Malabar Resources Pty Ltd

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18 October 2023

Revision: 1

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1	18 October 2023	Raymond Minnaar	Shaun Troon	Shaun Troon

Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Malabar Resources Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

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Appendices

Appendix A **Trigger Action Response Plan & Groundwater Level Triggers**

Appendix B **Groundwater and Trigger Levels**

Appendix C **Groundwater Quality and Trigger Levels (only sites within the TARP)**

Acronyms and Abbreviations

Cbased	Cbased Environmental Pty Ltd
EC	Electrical Conductivity
GWMP	Groundwater Management Plan
mAHD	Metres *above* Australian Height Datum
Malabar	Malabar Resources Pty Ltd
mbgl	Metres below ground level
mbTOC	Metres below top of casing
MI	Maxwell Infrastructure
MU	Maxwell Underground
SLR	SLR Consulting Australia Pty Ltd
TARP	Trigger Action Response Plan
VWP	Vibrating Wire Piezometer

1.0 Introduction

SLR Consulting Australia Pty Ltd (SLR) was engaged by Malabar Resources Pty Ltd (Malabar) to perform a quarterly groundwater review of data collected by Cbased Environmental Pty Ltd (CBased) for the Maxwell Underground (MUG) and Maxwell Infrastructure (MI) referred to as the Maxwell Project. The quarterly groundwater assessment will support the annual review compliance reporting conducted by Malabar Resources for the site and acts as an early warning procedure for any performance trigger exceedances.

This quarterly report provides an overview of the groundwater data collected at the relevant monitoring bores for the period January – March 2023 and assesses this data against the Trigger Action Response Plan (TARP) presented in the Groundwater Management Plan (GWMP) which is contained within the Maxwell Water Management Plan (November 2021) and updated TARP Trigger Criteria from the MUG Annual Review 2022. The Maxwell Project and groundwater monitoring network is illustrated in **Figure 1**.

1.1 Groundwater Data Gaps

The following outlines any data gaps in groundwater levels or quality identified for the review period:

- Groundwater levels and quality results for private bores are reviewed annually, no groundwater data were available for private bores and therefore not presented for this review period.

1.2 Groundwater Monitoring Parameters and Frequency

The groundwater monitoring parameters and the frequency of monitoring as per the GWMP is presented below:

- Standpipes
  - Reduced standing water level (for bores with no data logger) – monthly manual measurements.
  - pH, electrical conductivity, redox potential, temperature – quarterly.
  - Total dissolved solids, total suspended solids, major cations/anions, total alkalinity, dissolved and total metals – bi-annual (twice yearly).
- DS1 (in accordance with EPL 1323 Condition U1.1)
  - Reduced standing water level, pH, electrical conductivity, total dissolved solids, salinity – monthly.
- Data loggers and VWPs
  - Reduced standing water level – downloaded quarterly.

1.3 Additional Groundwater Monitoring Bores

Five additional monitoring bores were drilled between December 2022 and February 2023. Bores MB04, MB05, MB06-S, MB06-D, and MB07 have been included in the monitoring activities for 2023. Changes to the monitoring network to include the inclusion of these new monitoring bores and removal of damaged/ dry bores will be discussed in the site's 2023 annual review.

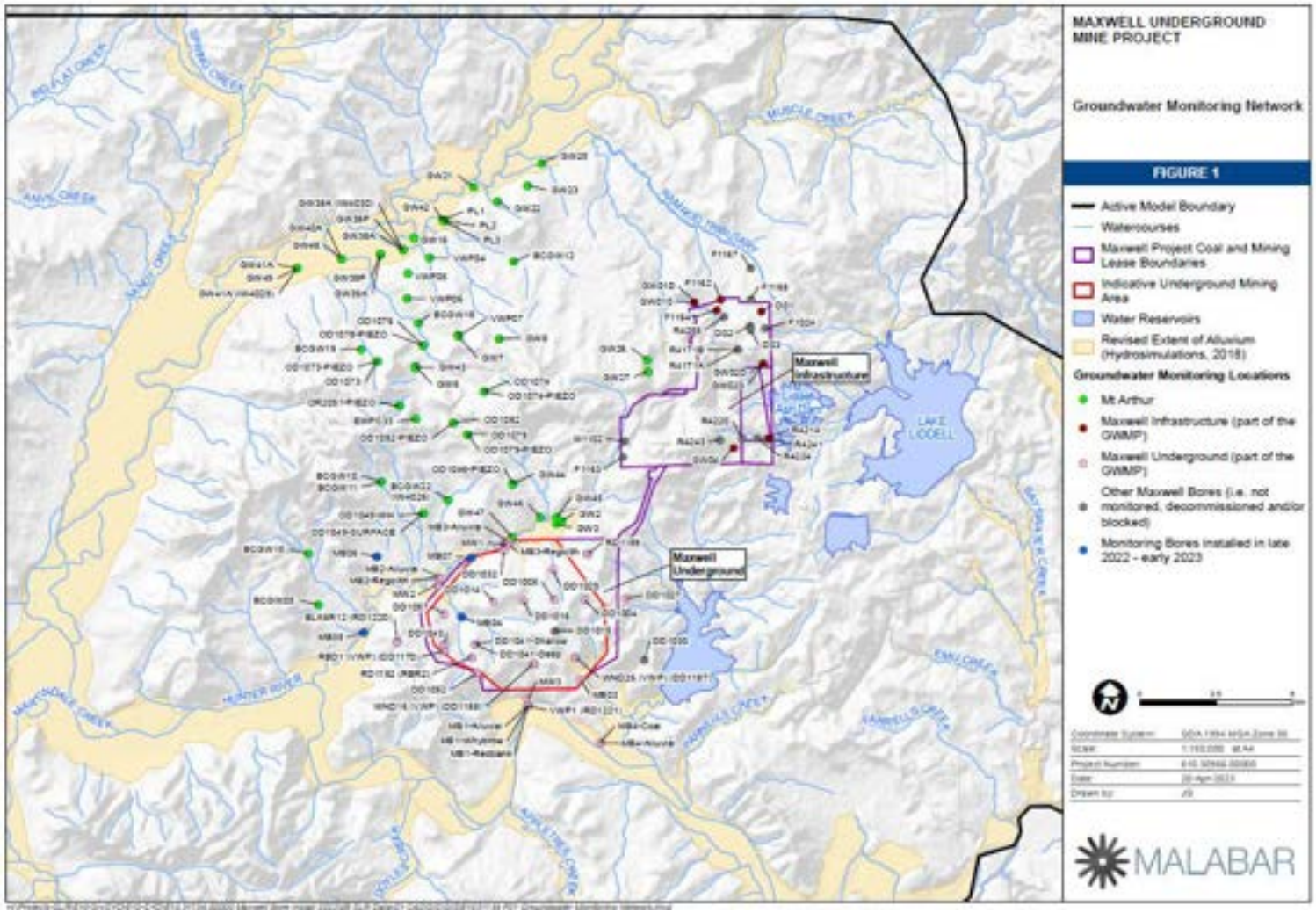


Figure 1: Malabar Project and groundwater monitoring network

2.0 Groundwater Level Trigger Review

This section addresses the compliance of groundwater levels at MUG and MI during the reporting period in relation to a trigger analysis.

All groundwater level monitoring bores and VWPs in the vicinity of the Maxwell Project, and their available completion details, are listed in **Table 1** below.

Table 2 outlines groundwater level trigger exceedances during the review period at each of the monitored bore locations as per the approved trigger criteria presented in **Appendix A**. Hydrographs for all groundwater monitoring locations including those with approved groundwater level trigger levels are presented in **Appendix B**.

Section 2.0 briefly discusses any groundwater level exceedances observed during the reporting period only, as identified in **Table 2**.

Table 1: Groundwater Monitoring Bore Network – Maxwell Project

Monitoring bore or VWP ID	Easting[1] (GDA94)	Northing[1] (GDA94)	Geology	Bore screen or VWP sensor depth (mBGL)	Status
Maxwell Infrastructure - MI (standpipe)					
DS1	305592	6420380	Shallow bedrock aquifer	15	Open
F1162	301045	6420755	Greta Coal Measures	274	Open
F1164	304223	6420406	Greta Coal Measures	190.5	Open
R4241	305793	6416224	Jurassic Volcanics	150	Open
GW01S	303386	6420691	Base Regolith	12–15	Open
GW01D	303391	6420683	Greta Coal Measures	29–32	Open
GW02S	305592	6420380	Base Regolith	8–14	Open
GW02D	301045	6420755	Greta Coal Measures	69–72	Open
GW04	304223	6420406	Permian Sequence	101–104	Open
Maxwell Underground (MUG) – standpipes					
MB1 - Redbank	297930	6407453	Redbank Seam	51–57	Open
MB1 - Whybrow	297928	6407448	Whybrow Seam	25–28	Open
MB1A	297933	6407459	Hunter River Alluvium	8–11	Open
MB2R	295004	6411675	Regolith	20–29	Open
MB2A	294998	6411669	Saddlers Creek Alluvium	5–7	Open
MB3R	297328	6412729	Regolith	27–30	Open
MB3A	297269	6412850	Saddlers Creek Alluvium (upslope)	8.5–14.5	Open
MB4 - Coal	300302	6406234	JPS-Coal	42–47	Open

Monitoring bore or VWP ID	Easting[1] (GDA94)	Northing[1] (GDA94)	Geology	Bore screen or VWP sensor depth (mBGL)	Status
MB4A	300307	6406231	Hunter River Alluvium	10–18	Open
MB03	299649	6408297	Saltwater Creek Alluvium	5–8	Open
MW1	297254	6412760	Saddlers Creek Alluvium (upslope)	6–9	Open
MW2	294977	6411419	Saddlers Creek Alluvium	4–9.5	Open
MW3	297904	6407652	Hunter River Alluvium	2.9–6.9	Closed
MB04	295755	6410371	Unnamed Creek Regolith	10-13	Open
MB05	292546.7	6409857	Saddlers Creek alluvium	1.8-3.8	Open
MB06_S	292980.2	6412335	Woodland Hill Overburden	29-32	Open
MB06_D	292980.2	6412335	Bowfield Seam	95-101	Open
MB07	296070.3	6412297	Saddlers Creek Alluvium	3-5.5	Open
DD1005	298799	6410901	Blakefield Overburden	138.6	Open
DD1014	296799	6410864	Blakefield Overburden	90.5	Open
DD1015	298815	6409900	Blakefield Overburden	162.5	Closed
DD1016	297801	6410882	Blakefield Overburden	126.4	Open
DD1025	298764	6411901	Blakefield Overburden	44.6	Closed
DD1027	301133	6410960	Edderton Seam	252.8	Closed
DD1032	297143	6412495	Piercefield Overburden	276.5	Open
DD1043	295200	6409458	Woodlands Hill Overburden	182–203	Open
DD1052	296274	6408513	Whynot Seam Overburden	105–127	Open
DD1057	295181	6410458	Arrowfield Overburden	164–188	Open
Maxwell Underground (MUG) – Vibrating Wire Piezometers (VWPs)					
RD1189 (SD1_DD001)	299896	6412419	Woodlands Hill Seam	78.9	Open
			Warkworth Seam	186.2	Closed
			Mt Arthur Seam	230	Open
			BY2 Seam	315	Open
RD1192 (RBR2)	296092	6409038	Wambo Seam	61.2	Closed
			Redbank Seam	80	Open
			Blakefield Seam	148.5	Open
BLK6R12 (RD1220)	293653	6409558	WB2 Seam	25	Open
			Redbank Seam	40.5	Open
			Whynot Seam	86.5	Open

Monitoring bore or VWP ID	Easting[1] (GDA94)	Northing[1] (GDA94)	Geology	Bore screen or VWP sensor depth (mBGL)	Status
			Blakefield Seam	148.5	Open
VWP1 (RD1221) (RDW006A)	297926	6407444	Interburden	21	Closed
			Interburden	40	Closed
			Interburden	73	Closed
			Whybrow Seam	87	Closed
			Whynot Seam	109.2	Closed
			Blakefield Seam	138	Closed
RBD1 (DD1170)	295178	6409246	Whybrow Seam	24.65	Open
			Redbank Seam	33.55	Open
			Whynot Seam	79.5	Open
			Blakefield Seam	103.3	Open
WND16 (DD1188)	298122	6408842	Wambo Seam	33.75	Open
			Whynot Seam	59.25	Closed
			Blakefield Seam	90.15	Closed
			Blakefield Seam	110.5	Closed
WND26 (DD1187)	299487	6409044	Whybrow Seam	77.3	Open
			Redbank Seam	84.6	Open
			Wambo Seam	123.45	Open
			Whynot Seam	144.25	Open

1 Coordinates in metres (GDA 1994 MGA Zone 56).

VWP – vibrating wire piezometer *mBGL – metres below ground level* *EX – Existing*

A – Alluvium *R – Regolith* *JPS – Jerry's Plain Subgroup*

Open – Functional for pressure/water level measurements and/or quality sampling

Closed –Decommissioned/ To be removed

Problem – Blocked/Dry/Issue detected during monitoring period

Table 2: Groundwater Level Trigger Exceedances – shallow and deep open standpipe bores

Bore	TARP Level	Year to date Average	Previous Monitoring Period Q4-2022			Current Monitoring Period Q1-2023		
			Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23
Maxwell Infrastructure			**Water Management Plan (Nov 2021)**					
R4241	173.6	177.21	N	N	N	N	N	N
GWD01D	198.2	203.5	N	N	N	N	N	N
GWD01S	197.0	201.2	N	N	N	N	N	N
GWD02D	135.7	136.1	N	N	N	N	N	N
GWD02S	187.7	192.0	N	N	N	N	N	N
Maxwell Underground			**Water Management Plan (Nov 2021) & Annual Review 2022**					
DD1025	155.1	N/A	N	N	N	*Decommissioned*		
DD1032	128.3	128.5	N	N	N	N	N	N
MB3-Alluvial	127.7	130.0	N	N	N	N	N	N
MB3-Regolith	127.3	129.5	N	N	N	N	N	N

LX: maximum trigger level exceedances recorded *#: not applicable*

N:Normal Level TARP Level 1 TARP Level 2

"" no groundwater level data available for this period*

2.1 Normal Level

Groundwater levels at the Maxwell Infrastructure groundwater monitoring sites R4241, GW01D, GW01S, GW02D, GW02S (**Appendix B**) and at the Maxwell Underground sites DD1032, MB3-Alluvial and MB3-Regolith (**Appendix B**) are observed above the groundwater trigger level over the reporting period hence are within the Normal Level of the TARP criteria (**Appendix A**).

2.2 TARP Level 1

There were no TARP Level 1 groundwater level trigger exceedances over the reporting period.

2.3 TARP Level 2

There were no TARP Level 2 groundwater level trigger exceedances over the reporting period.

2.4 General Monitoring Observations

- Mud noticed on GW02D logger in January 2023.
- MB03 and MW3 were reported as dry during January 2023.

- DD1025 was decommissioned in December 2022 for safety reasons (i.e. to prevent inrush to the upcoming underground mining operations) and no measurements were made during Q1-2023.
- No data logger data was received from DD1005.
- MB04, MB05, MB06-S, MB06-D and MB07 have been incorporated into monitoring activities during Q1-2023.

3.0 Groundwater Quality Trigger Review

Approved Trigger Action Response Plan (TARP) levels are defined for five sites for the Maxwell Infrastructure area and four sites for the Maxwell Underground area (Malabar Resources, Nov 2021) and presented in **Appendix A**.

An assessment of groundwater quality (EC and pH) at each monitored bore locations against the TARP levels have been completed. EC and pH plots for groundwater monitoring locations with approved groundwater quality trigger levels are presented in **Appendix C**. During the reporting period, EC and pH recorded at the groundwater monitoring sites were within the TARP *Normal Level* threshold.

A summary of the groundwater quality (electrical conductivity and pH) trigger levels during the reporting period at the monitored bores are presented in **Table 3**.

No groundwater quality results were available for the private bores for this reporting period. Results for the private bores are reviewed annually (Annual Review).

Table 3: Trigger Exceedances for pH and EC for the period January - March 2023

Bore	Period [month sampled]	Q4 2022			Q1 2023		
		EC (µS/cm)	pH lower	pH upper	EC (µS/cm)	pH lower	pH upper
R4241	Q1-2023 [Mar 23 – field]	N	N	N	N	N	N
GW01S	Q1-2023 [Mar 23 – field]	N	N	N	N	N	N
GW01D	Q1-2023 [Mar 23 – field]	N	N	N	N	N	N
GW02S	Q1-2023 [Mar 23 – field]	Y	N	N	N	N	N
GW02D	Q1-2023 [Mar 23 – field]	N	N	N	Y	N	N
DD1025	*Decommissioned*	N	N	N	-	-	-
DD1032	Q1-2023 [Jan 23 – Lab & field]	N	N	N	N	N	N
MB3-Alluvial	Q1-2023 [Jan 23 – Lab & field]	N	N	N	N	N	N
MB3-Regolith	Q1-2023 [Jan 23 – Lab & field]	N	N	N	N	N	N

N: Normal Level TARP Level 1 TARP Level 2

Y: "Yes", short-term exceedance, less than 3 consecutive exceedances.

3.1 Normal Level

Groundwater quality at the Maxwell Infrastructure groundwater monitoring sites R4241, GW01D, GW01S, GW02S, GW02D (**Appendix C**) and at the Maxwell Underground sites DD1032, MB3-Alluvial and MB3-Regolith (**Appendix C**) are observed below the trigger level

over the reporting period hence are within the Normal Level of the TARP criteria (**Appendix A**).

3.2 TARP Level 1

There were no TARP Level 1 groundwater quality trigger exceedances over the reporting period.

3.3 TARP Level 2

There were no TARP Level 2 groundwater quality trigger exceedances over the reporting period.

3.4 General Observations

- GW02S – Laboratory groundwater EC increased at GW02S from 6,540 µS/cm in June 2022 to 13,000 µS/cm in December 2022, exceeding the EC trigger level. However, the field EC measurement in December 2022 was recorded at 5,460 µS/cm. Field EC measurement in March 2023 was recorded at 6,780 µS/cm, indicating that the December 2022 laboratory result may have been an isolated exceedance.
- GW02D – Mud noticed on GW02D logger in January 2023 and field observations noticed sample water was brown in colour and turbid. Groundwater levels ranged between 66.78 mbgl and 67.04 mbgl between January and March 2023, with depth of borehole at 69.48 mbTOC. Groundwater levels close to the bottom of the bore (within the sump and potential drilling waters), mud observed on the logger, and turbidity observations during Q1-2023 may have resulted in increased EC observations and may not be attributed to site activities.

4.0 Recommendations

Based on the trigger exceedances assessed in **Section 2.0** and **Section 3.0** and the TARP criteria presented in **Appendix A**, the following actions are recommended:

4.1 Actions – Trigger Assessment

- Continue the monitoring programme, reporting groundwater level and quality data in the next groundwater quarterly review report in July 2023.
- For all sites with a Normal Level in place for groundwater levels, continue monitoring groundwater trends against TARP trigger levels.
- For all sites with a Normal Level in place for groundwater quality, continue monitoring pH and EC against TARP trigger levels.

4.2 Actions – Reporting

- Reference levels for future reviews to calculate groundwater drawdown at all monitoring bores should be established.
- Following the decommission of DD1025 in December 2022, it is planned to incorporate an existing groundwater monitoring bore in the TARP assessment as a replacement to DD1025.

4.3 Actions – Monitoring and Sampling

- Incorporate any mine dewatering volume into the quarterly groundwater monitoring database and reporting as this data will be useful when interpreting groundwater level responses due to mining activities.

5.0 Closing

SLR was engaged by Malabar to perform a quarterly groundwater review of data collected by Cbased for the Maxwell Project. This quarterly report provides an overview of the groundwater data collected at the relevant monitoring bores for the period January – March 2023 and assesses this data against the Trigger Action Response Plan (TARP) Trigger Criteria presented in the Groundwater Management Plan (GWMP) contained within the Water Management Plan (November 2021) for the Maxwell Underground Project and updated TARP Trigger Criteria from the MUG Annual Review 2022.

There were no TARP Level 1 or Level 2 groundwater level and quality trigger exceedances over the reporting period for all TARP sites.

Sincerely,

SLR Consulting Australia

DRAFT

Raymond Minnaar
Associate Consultant - Hydrology & Hydrogeology

DRAFT

Shaun Troon
Principal Hydrogeologist - South East Australia Lead

6.0 References

Malabar Resources, 2021. Water Management Plan. MXP_MP_EC_08 (25th November 2021), Version 1, Review 2.

Malabar Resources, 2021b. Maxwell Underground Project Environmental Monitoring Data Quarter 4 2021. December 2021.

Malabar Resources, 2022. Maxwell Underground Coal Mine Project. Annual Review 2022. March 2022.

SLR, 2022. Maxwell Project – Quarterly Groundwater Monitoring Report April – June 2022. Prepared for Malabar Resources, Report No: 610.30966.00000-M01-v2.0

SLR, 2022a. Maxwell Project – Quarterly Groundwater Monitoring Report July – September 2022. Prepared for Malabar Resources, Report No: 610.30966.00000-M02-v1.0

SLR, 2022b. Maxwell Project – Quarterly Groundwater Monitoring Report October - December 2022. Prepared for Malabar Resources, Report No: 610.30966.00000-M02-v1.0

7.0 Feedback

At SLR, we are committed to delivering professional quality service to our clients. We are constantly looking for ways to improve the quality of our deliverables and our service to our clients. Client feedback is a valuable tool in helping us prioritise services and resources according to our client needs.

To achieve this, your feedback on the team's performance, deliverables and service are valuable and SLR welcome all feedback via https://www.slrconsulting.com/en/feedback. We recognise the value of your time and we will make a $10 donation to our 2023 Charity Partner - Lifeline, for every completed form.

Appendix A Trigger Action Response Plan & Groundwater Level Triggers

Maxwell Underground Mine

Groundwater Monitoring Report – Quarter 1 – 2023

Malabar Resources Pty Ltd

SLR Project No.: 630.030945.00001

18 October 2023

Table A-1: Trigger Action Response Plan for the Maxwell Project monitoring bores – Groundwater Levels and Quality

Status	Trigger	Action	Response
Maxwell Infrastructure			
Normal	Groundwater level and quality below Maxwell Infrastructure Stage 1 groundwater triggers (*Table A3*).	Continue to minimise the long-term catchment areas of the mine voids and transfer water to and from voids. Continue water balance monitoring, groundwater monitoring, and assessment.	None
Level 1	Three consecutive groundwater level, pH or EC results exceed Maxwell Infrastructure Stage 1 groundwater triggers (*Table A3*).	A suitably qualified hydrogeologist reviews groundwater level or quality data to determine if trigger exceedances are caused by site activities and whether this has resulted in an exceedance of a Water Management Performance Measure in Table 4 of Development Consent SSD 9526.	If trigger exceedances are not caused by site activities and have not resulted in an exceedance of a Water Management Performance Measure in Table 4 of Development Consent SSD 9526, then review monitoring frequency. If trigger exceedances are caused by site activities and resulted in an exceedance of a Water Management Performance Measure in Table 4 of Development Consent SSD 9526, then undertake Level 2 Actions.
Level 2	Investigation following Level 1 trigger review indicates trigger exceedances are caused by site activities and this has resulted in an exceedance of a Water Management Performance Measure in Table 4 of Development Consent SSD 9526.	Undertake actions recommended by suitably qualified hydrogeologist which may include update to the groundwater model and/or review of monitoring program.	Report non-compliance. Undertake adaptive management strategies.
Maxwell Underground			
Normal	Groundwater level and quality below Maxwell Underground Stage 1 groundwater level triggers (*Table A3*).	Continue groundwater monitoring, and assessment.	None
Level 1	Three consecutive groundwater level, pH or EC results exceed Maxwell Underground Stage 1 groundwater level triggers (*Table A3*).	A suitably qualified hydrogeologist reviews groundwater level or quality data to determine if trigger exceedances are as a result of activities at the site and whether this has resulted in an exceedance of a Water Management Performance Measure in Table 4 of Development Consent SSD 9526.	If trigger exceedances are not caused by site activities and have not resulted in an exceedance of a Water Management Performance Measure in Table 4 of Development Consent SSD 9526, then review monitoring frequency.

Status	Trigger	Action	Response
			If trigger exceedances are caused by site activities and resulted in an exceedance of a Water Management Performance Measure in Table 4 of Development Consent SSD 9526, then undertake Level 2 Actions.
Level 2	Investigation following Level 1 trigger review indicates trigger exceedances are caused by activities at the Project and this has resulted in an exceedance of a Water Management Performance Measure in Table 4 of Development Consent SSD 9526.	Undertake actions recommended by suitably qualified hydrogeologist which may include update to the groundwater model and/or review of monitoring program.	Report non-compliance. Undertake adaptive management strategies. In consultation with suitably qualified hydrogeologist and other relevant specialists, undertake repair, mitigate and/or offset any adverse groundwater impacts of the development.

Table A-2: Trigger Action Response Plan for Privately-owned bores - Groundwater Levels and Quality

Status	Trigger	Action	Response
Groundwater levels			
Normal	Drawdown at privately-owned bores less than 2 m. No complaints about potential impacts of the site on privately- owned bores.	Continue regular monitoring and review of potentially impacted private bores (*refer to Section 5.2.2 of the GWMP*).	None
Level 1	Drawdown at privately-owned bores more than 2 m and/or complaint about potential impacts of the site on private bores.	A suitably qualified hydrogeologist reviews groundwater data to determine if 2 m drawdown is as a result of activities at the site (and/or MAC). Collect relevant data on privately-owned bores that are the subject of the complaint. Suitably qualified hydrogeologist to determine if privately-owned bore the subject of the complaint has been adversely and directly impacted as a result of the development (other than an impact that is minor or negligible).	If drawdown is not as a result of activities at the Project (and/or MAC) then review monitoring frequency. If privately-owned bore the subject of the complaint has not been adversely and directly impacted as a result of the development (other than an impact that is minor or negligible) then review monitoring frequency. If drawdown, or impacts the subject of the complaint, are due to site activities then undertake Level 2 actions.
Level 2	Investigation following Level 1 trigger review indicates drawdown is as a result of activities at the site.	Notify relevant bore owner and implement compensatory water supply actions. Undertake any other actions recommended by suitably qualified hydrogeologist which may include update to the groundwater model and/or review of monitoring program.	Review groundwater monitoring program.
Groundwater quality			
Normal	No change in beneficial use category	Continue regular monitoring and review of potentially impacted private bores (refer to *Section 5.2.2 of the GWMP*).	None
Level 1	Two consecutive monitoring results indicate a change in beneficial use category.	A suitably qualified hydrogeologist reviews groundwater data to determine if change in water quality is caused by activities at the site.	If a privately-owned bore has not been adversely and directly impacted as a result of the activities at the site, then review monitoring frequency. If change in water quality is changed by activities at the site, then undertake Level 2 actions.

Status	Trigger	Action	Response
Level 2	Investigation following Level 1 trigger review indicates change in water quality is caused by activities at the site.	Implement compensatory water supply actions. Undertake any other actions recommended by suitably qualified hydrogeologist which may include update to the groundwater model and/or review of monitoring program.	Review groundwater monitoring program.

Table A-3: Summary of groundwater level and quality triggers for alluvium and hard rock aquifers (Maxwell Project) – (GWMP – Malabar Resources, Nov 2021) and Annual Review 2022

Bore	Groundwater level, trigger level (mAHD)	pH trigger level - minimum	pH trigger level - maximum	EC trigger level (µS/cm)
Maxwell Infrastructure				
R4241	173.6	6.0	8.5	6,253
GW01D	198.2	6.0	8.5	5,680
GW01S	197.0	6.0	8.5	9,260
GW02D	135.7	6.0	8.5	10,500
GW02S	187.7	6.0	8.5	9,480
Maxwell Underground				
DD1025	155.1 #	6.0	8.5	14,200
DD1032	128.3 #	6.0	8.5	7,170
MB3-A	127.7	6.0	8.5	9,009
MB3-R	127.3	6.0	8.5	6,327

 # Changed in 2022 Annual Review

Table A-4: Groundwater Quality Categories: Electrical Conductivity - (GWMP – Malabar Resources, Nov 2021)

Beneficial use	Quality Range	Description
Marginal Potable	800 – 2,350 µS/cm (500 - 1,500 mg/L TDS)*	At the upper level this water is at the limit of potable water, but is suitable for watering of livestock, irrigation and other general uses
Irrigation	2,350 – 7,800 µS/cm (1,500 - 5,000 mg/L TDS)*	At the upper level, this water requires shandying for use as irrigation water or to be suitable for selective irrigation and watering of livestock
Saline	7,800 – 22,000 µS/cm (5,000 - 14,000 mg/L TDS)*	Generally unsuitable for most uses. It may be suitable for a diminishing range of salt-tolerant livestock up to about 6,500mg/L [~10,150 µS/cm] and some industrial uses
Highly Saline	>22,000 µS/cm (14,000 mg/L TDS)*	Suitable for coarse industrial processes up to about 20,000 mg/L [~31,000 µS/cm].

** Approximate EC ranges derived from TDS ranges, with conversion factor of 1.5625 applied. Source: National Land and Water Resources Audit (Murray Darling Basin Commission, 2005).*

Appendix B Groundwater and Trigger Levels

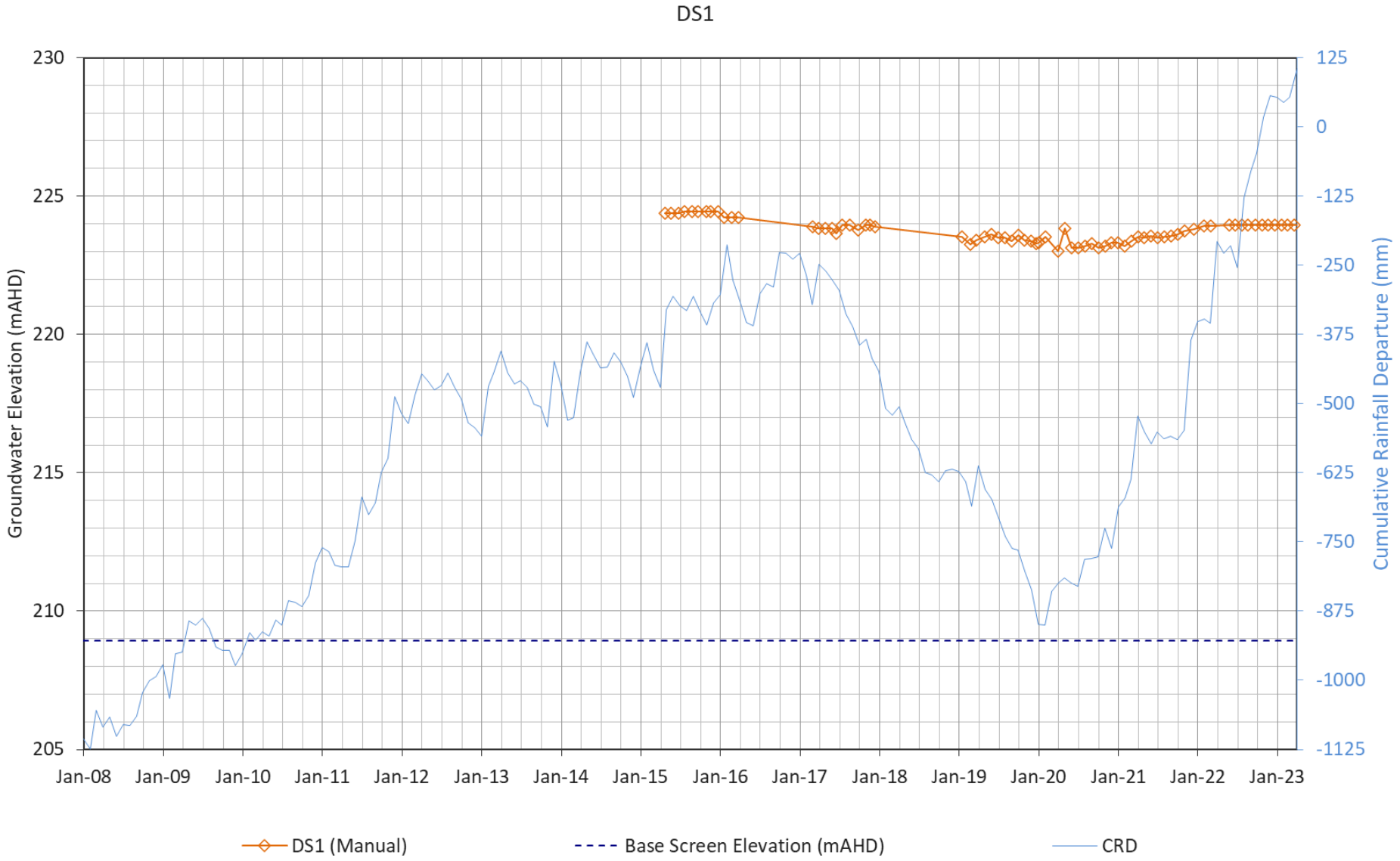
Maxwell Underground Mine

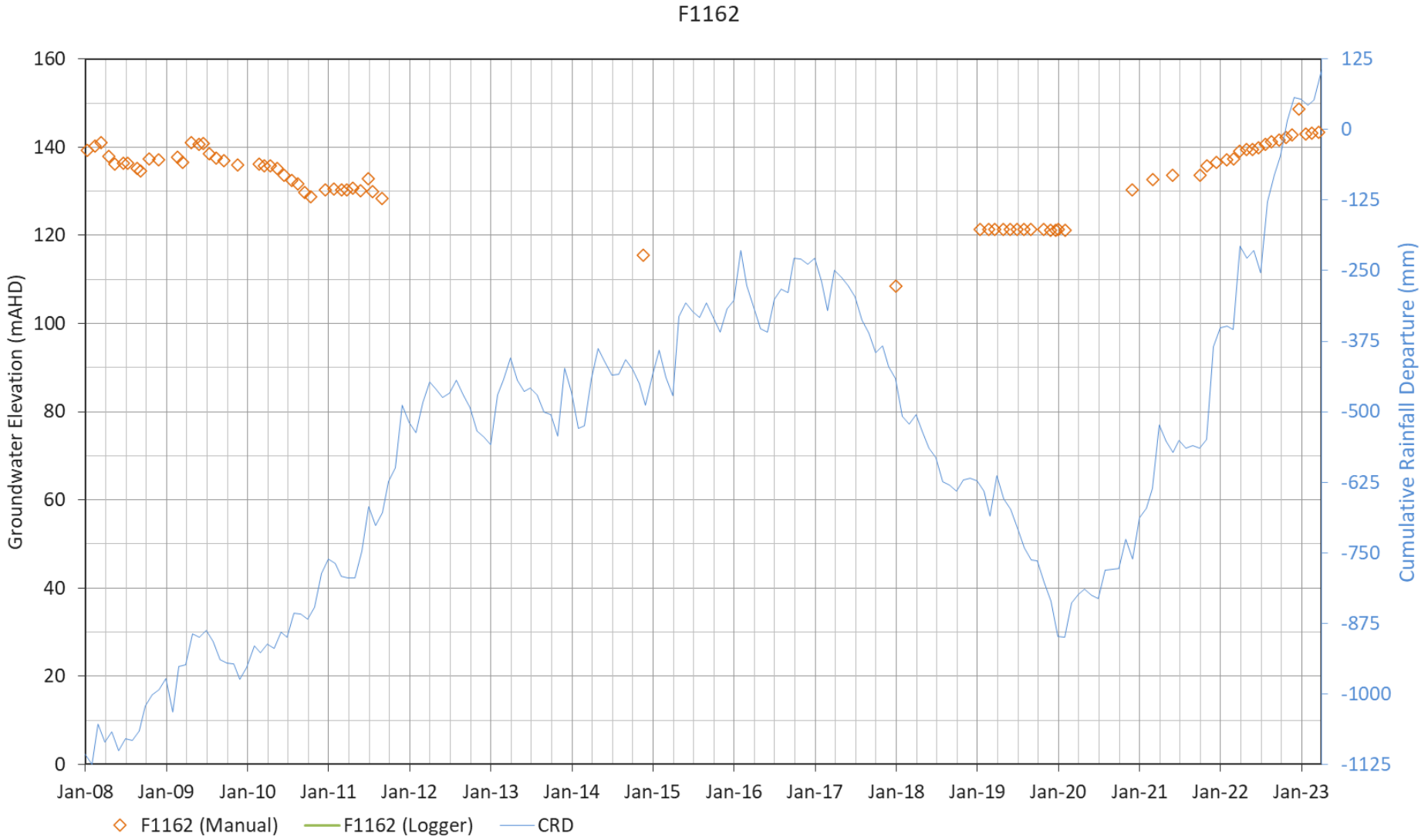
Groundwater Monitoring Report – Quarter 1 – 2023

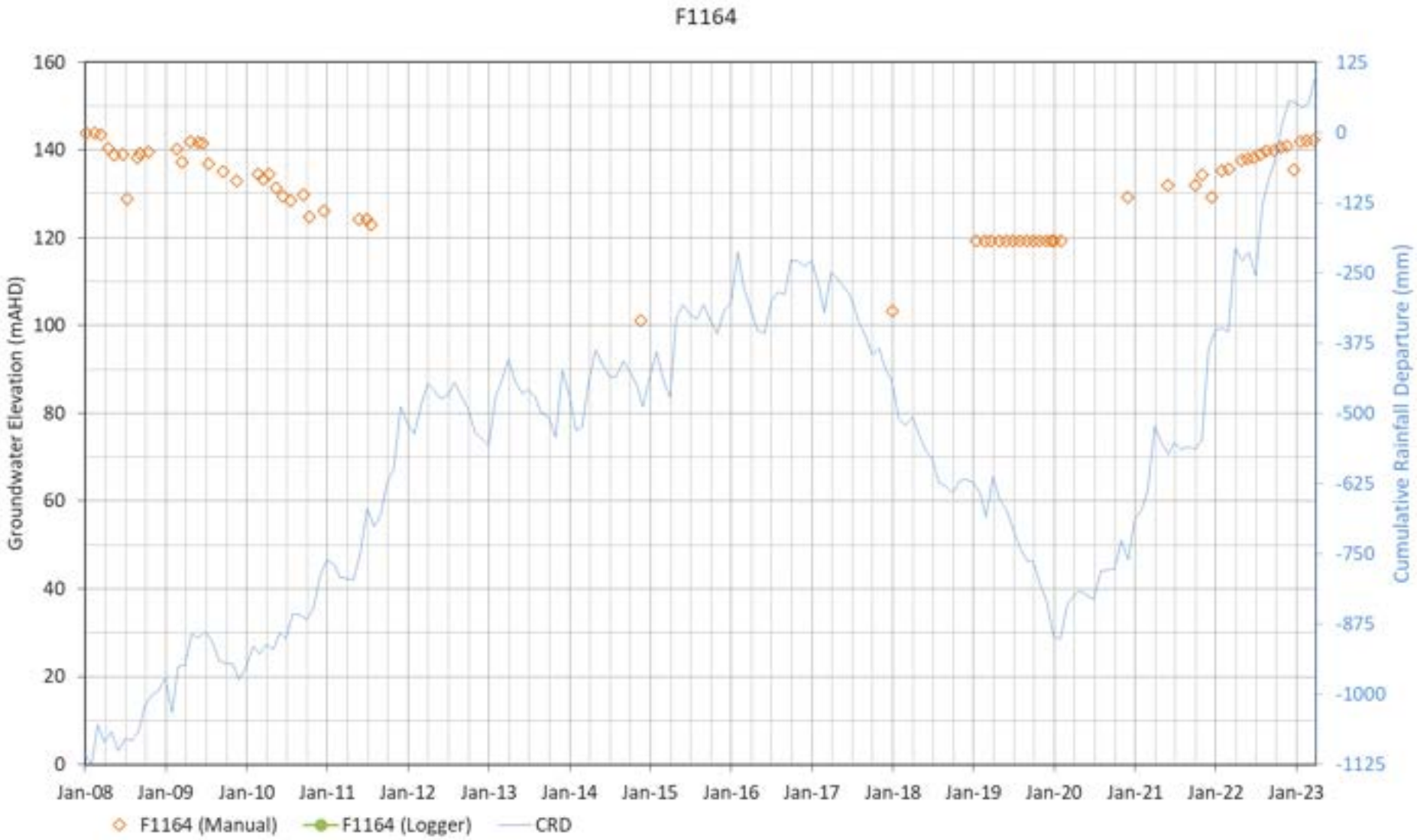
Malabar Resources Pty Ltd

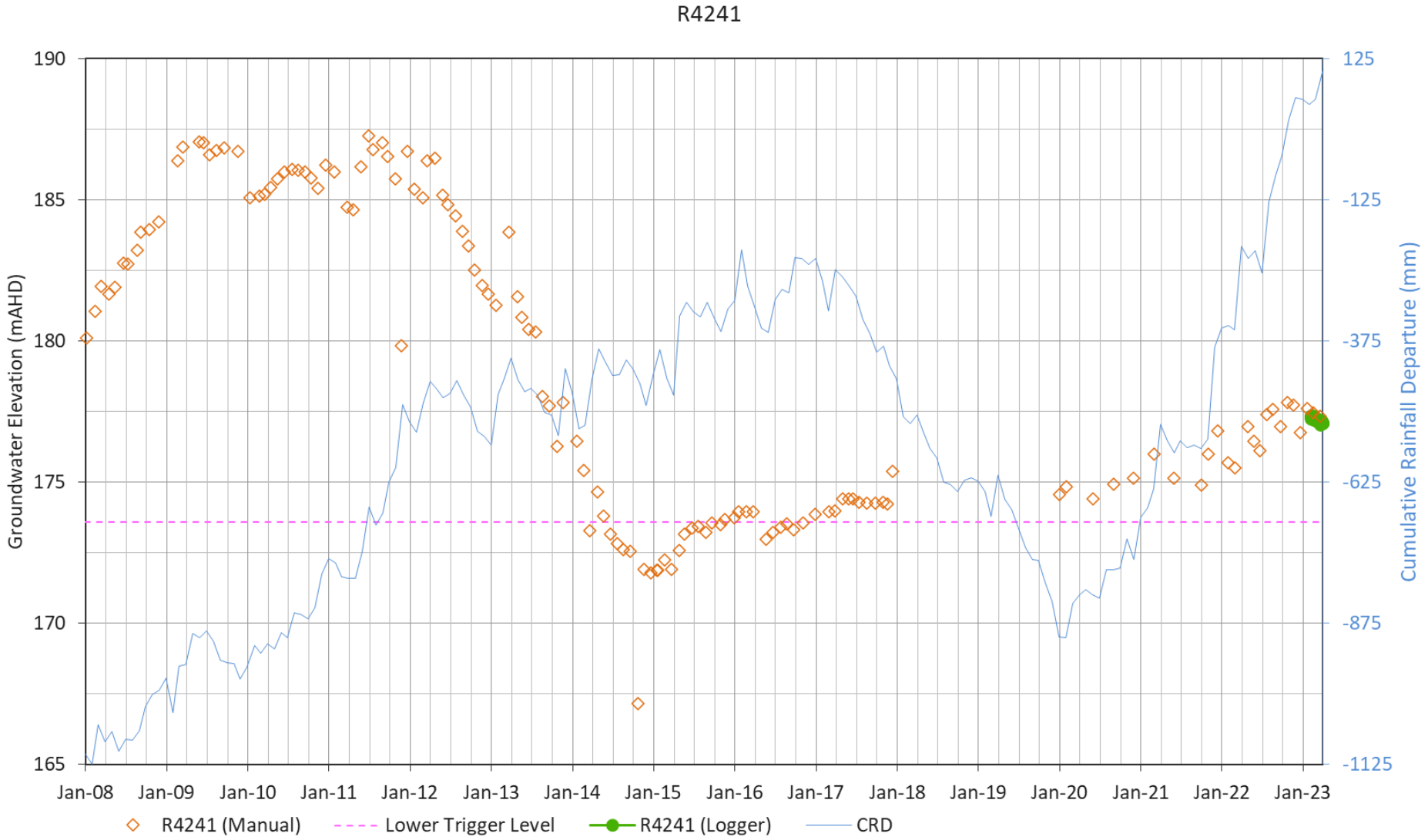
SLR Project No.: 630.030945.00001

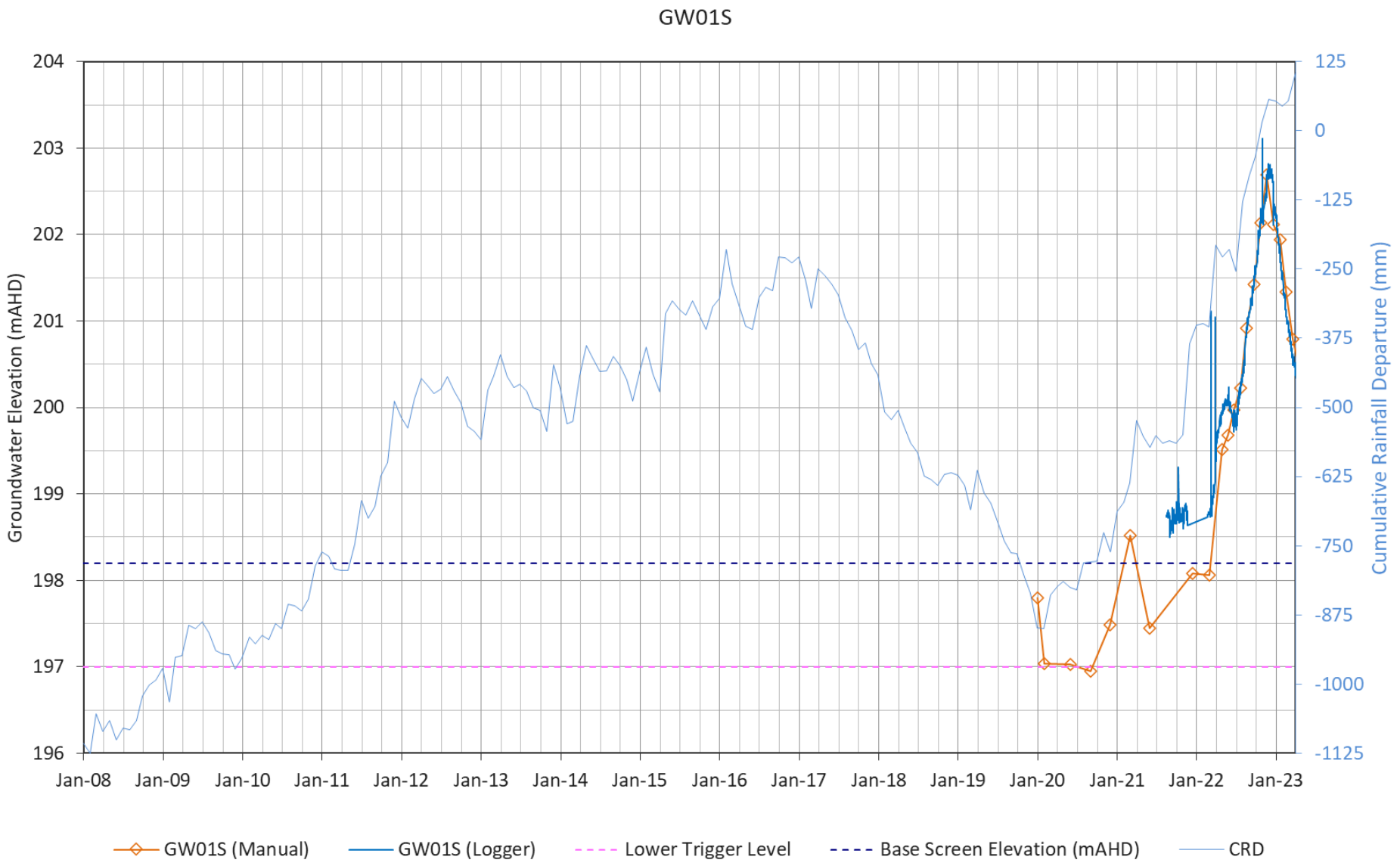
18 October 2023


DS1
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
230
225
220
215
210
205
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
DS1 (Manual)
Base Screen Elevation (mAHD)
CRD


F1162
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
160
140
120
100
80
60
40
20
0
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
F1162 (Manual)
F1162 (Logger)
CRD

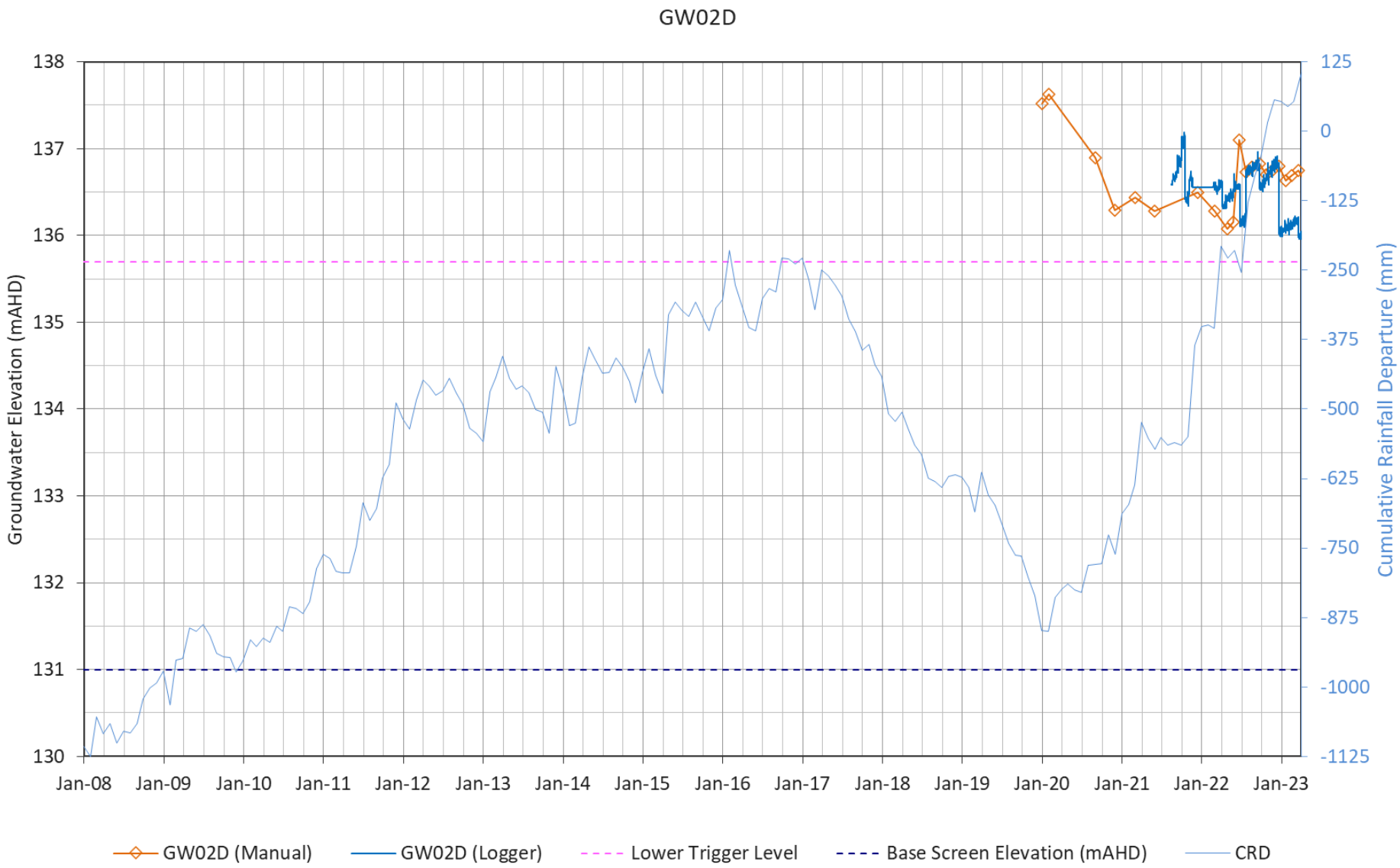

F1164
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
160
140
120
100
80
60
40
20
0
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
F1164 (Manual)
F1164 (Logger)
CRD

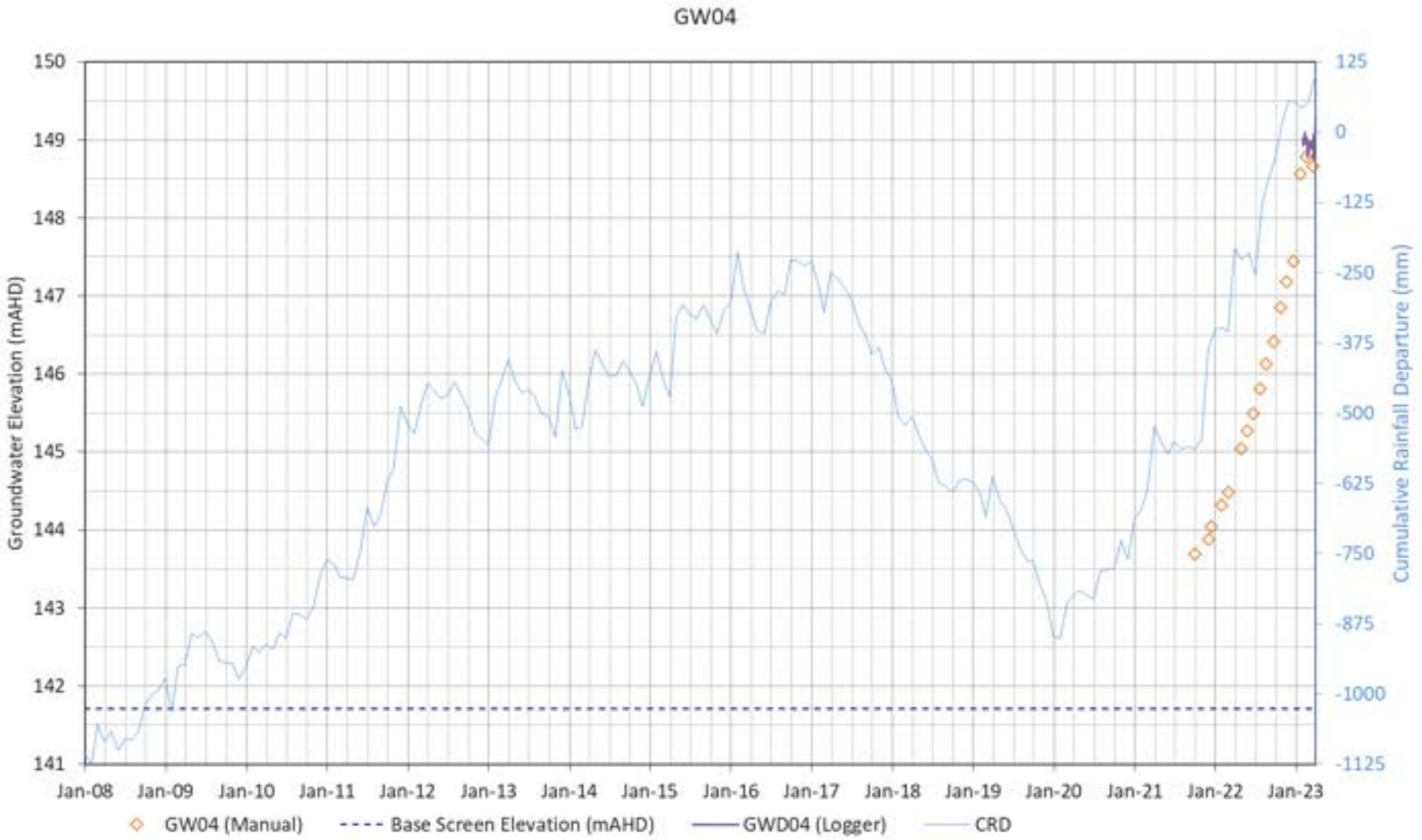

R4241
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
190
185
180
175
170
165
125
-125
-375
-625
-875
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
R4241 (Manual)
Lower Trigger Level
R4241 (Logger)
CRD


GW01S
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
204
203
202
201
200
199
198
197
196
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
GW01S (Manual)
GW01S (Logger)
Lower Trigger Level
Base Screen Elevation (mAHD)
CRD


GW01D
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
210
205
200
195
190
185
180
175
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
GW01D (Manual)
GW01D (Logger)
Lower Trigger Level
Base Screen Elevation (mAHD)
CRD


GW02S
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
195
194
193
192
191
190
189
188
187
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
GW02S (Manual)
GW02S (Logger)
Lower Trigger Level
Base Screen Elevation (mAHD)
CRD


GW02D
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
138
137
136
135
134
133
132
131
130
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
GW02D (Manual)
GW02D (Logger)
Lower Trigger Level
Base Screen Elevation (mAHD)
CRD


GW04
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
150
149
148
147
146
145
144
143
142
141
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
GW04 (Manual)
Base Screen Elevation (mAHD)
GWD04 (Logger)
CRD


DD1005
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
150
149
148
147
146
145
144
143
142
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
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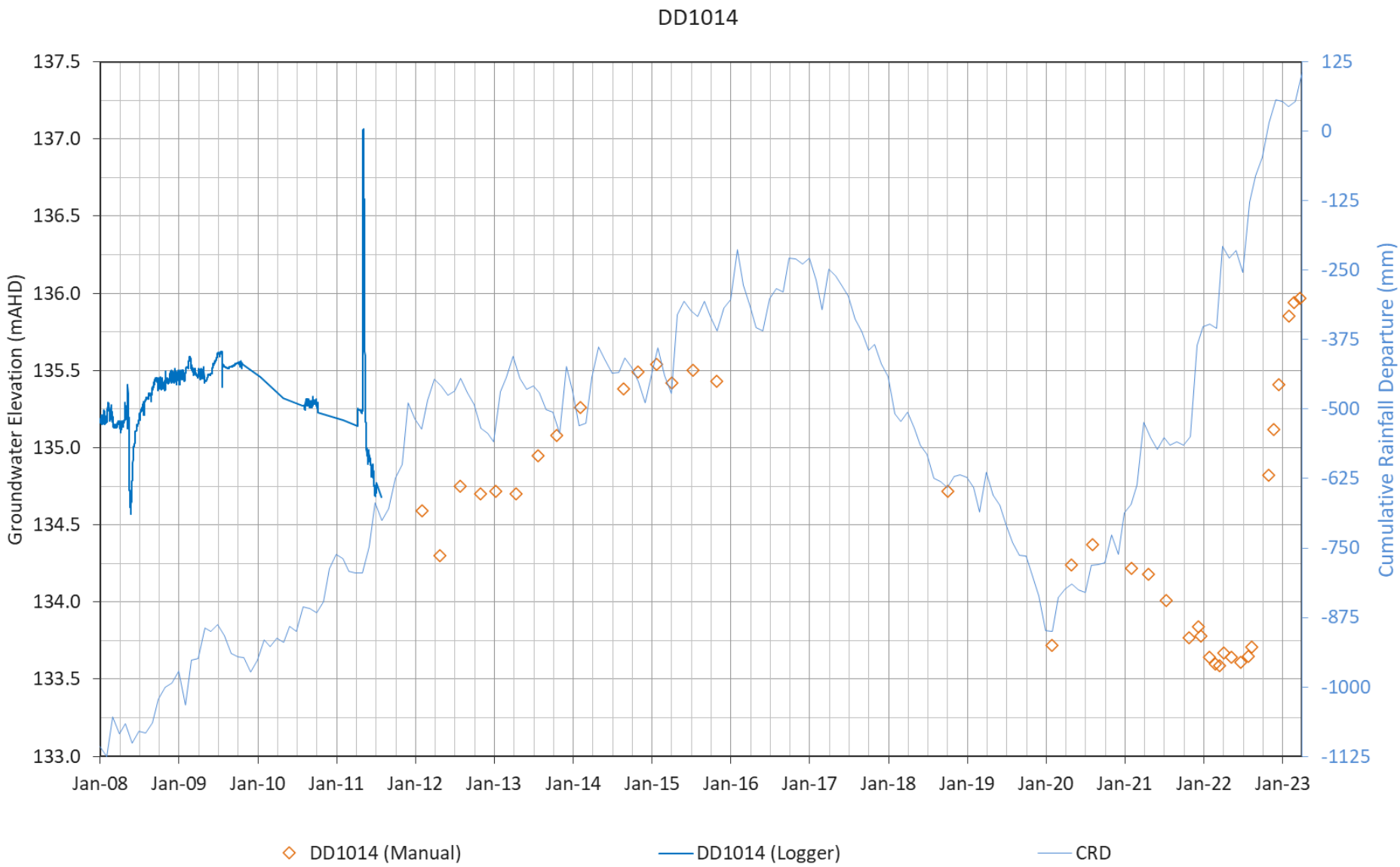
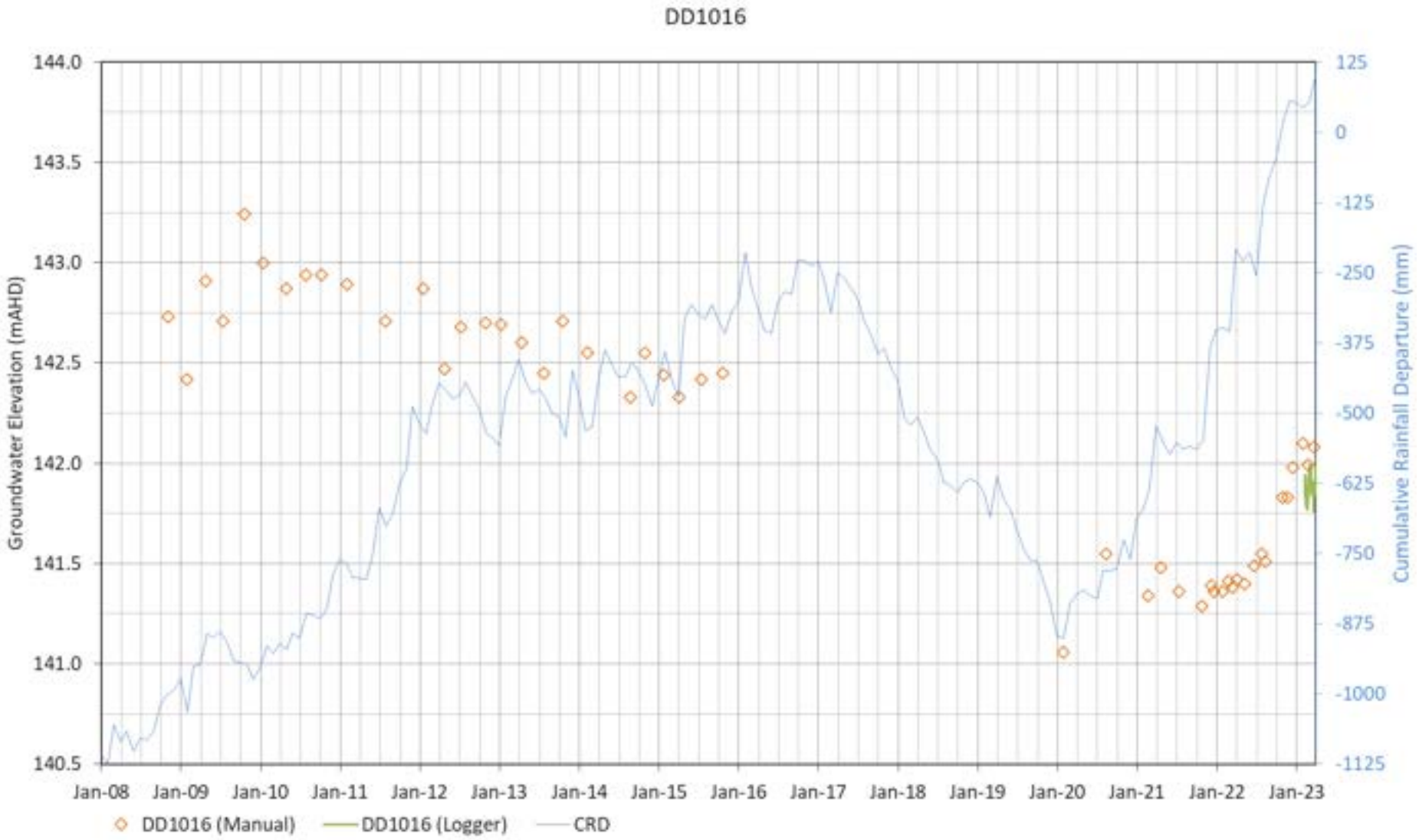
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
DD1005 (Manual)
CRD


DD1014
Groundwater Elevation (mAHD)
137.5
137.0
136.5
136.0
135.5
135.0
134.5
134.0
133.5
133.0
Cumulative Rainfall Departure (mm)
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
DD1014 (Manual)
DD1014 (Logger)
CRD


DD1016
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
144.0
143.5
143.0
142.5
142.0
141.5
141.0
140.5
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
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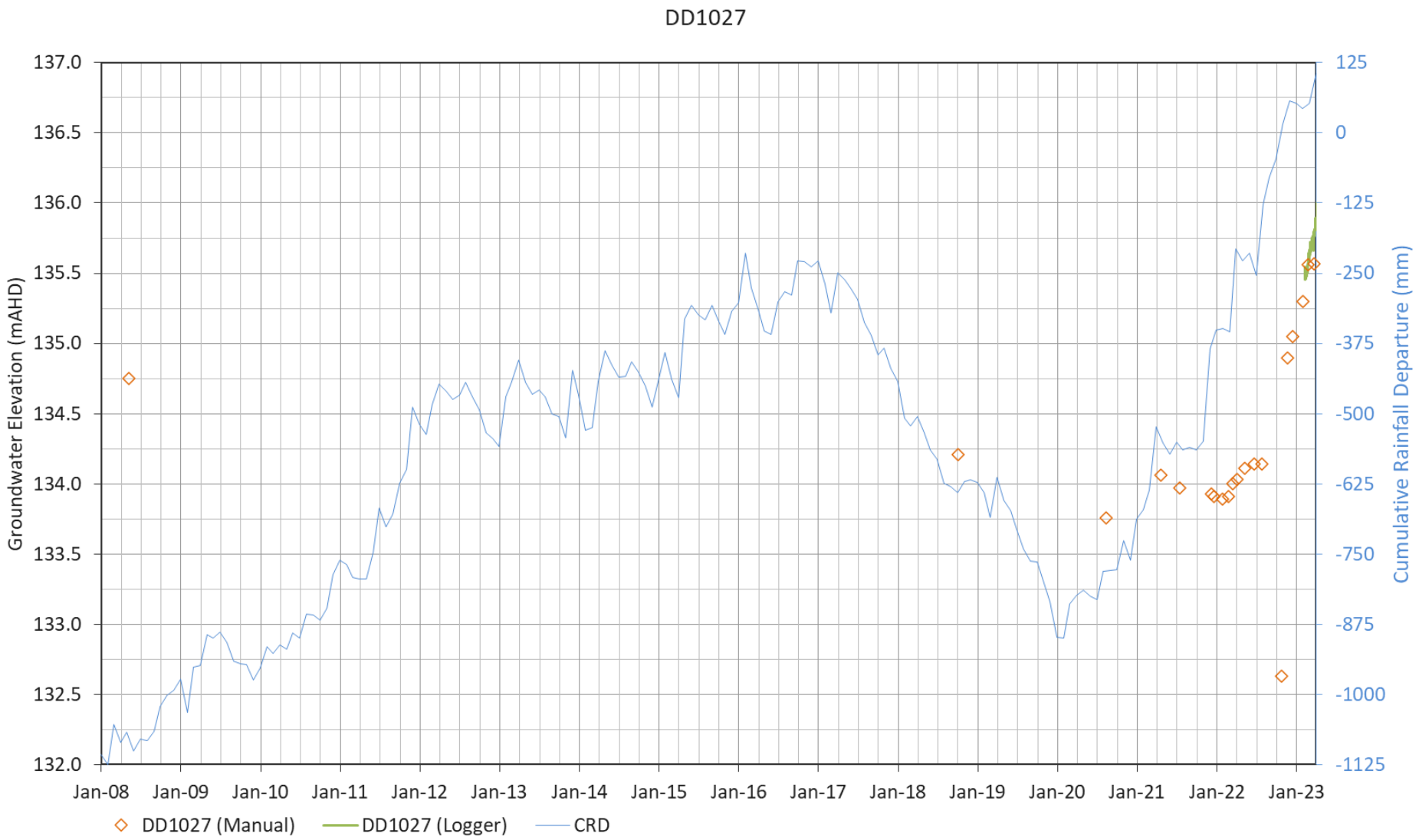
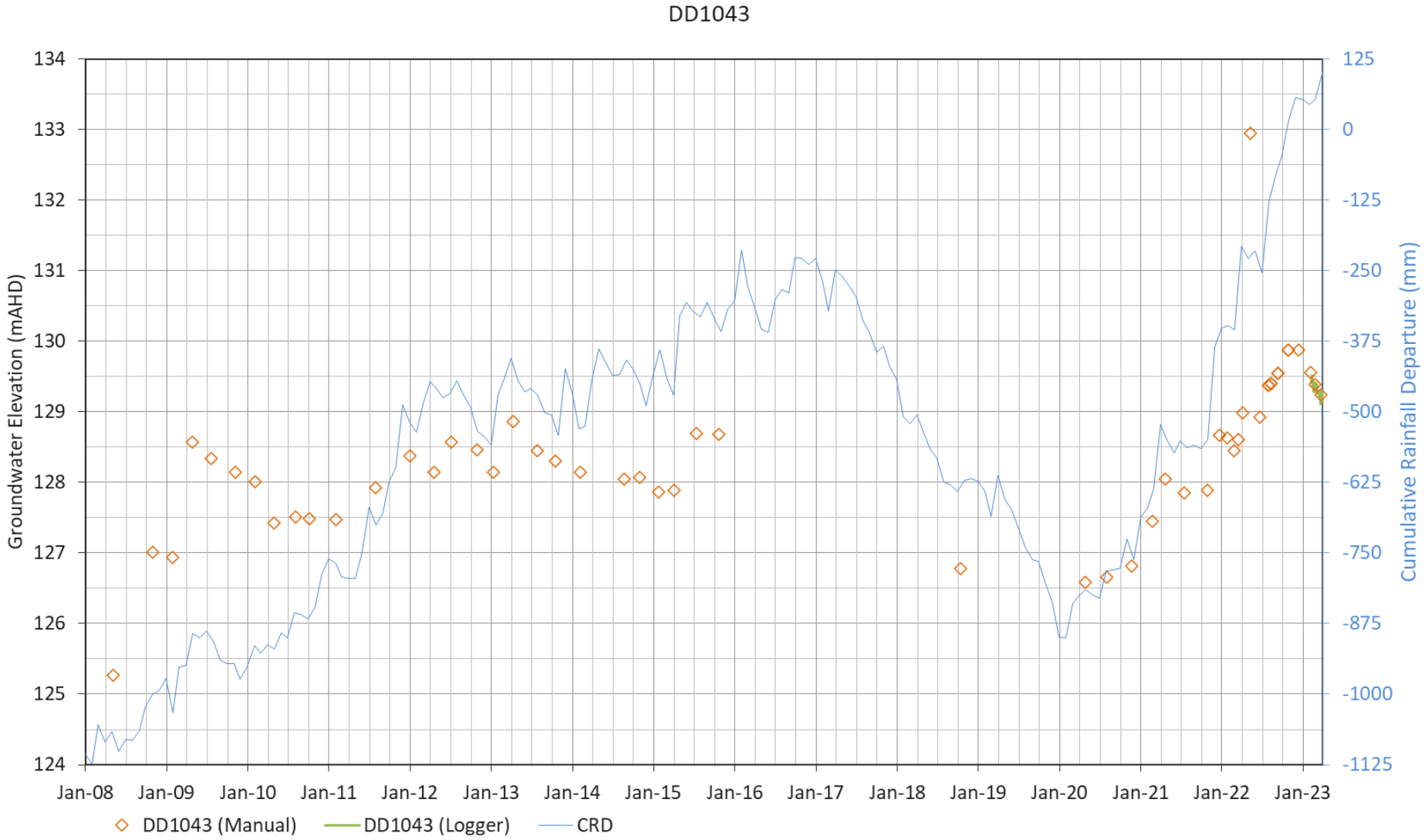
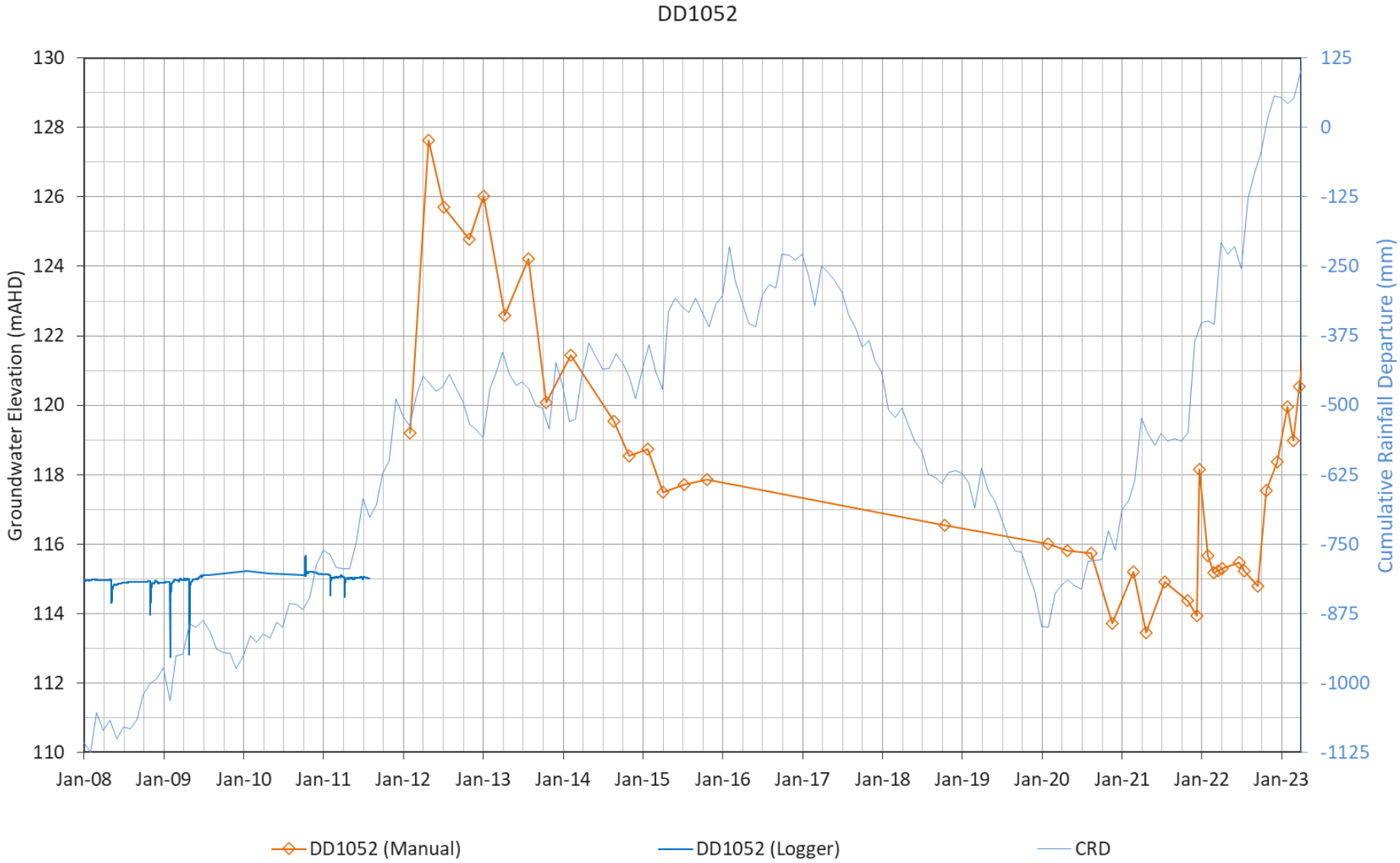
Jan-20
Jan-21
Jan-22
Jan-23
DD1016 (Manual)
DD1016 (Logger)
CRD

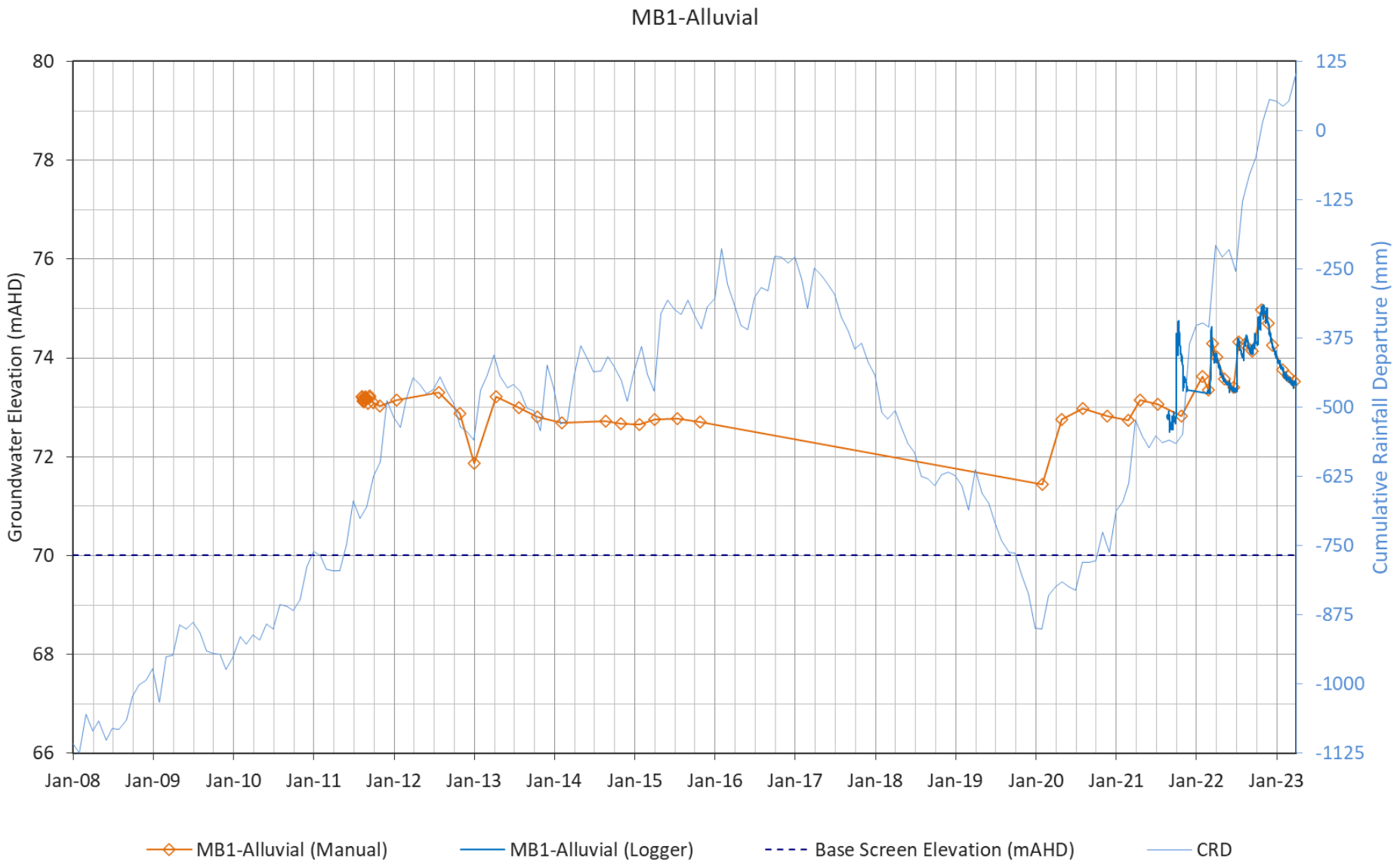

DD1027
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
137.0
136.5
136.0
135.5
135.0
134.5
134.0
133.5
133.0
132.5
132.0
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
DD1027 (Manual)
DD1027 (Logger)
CRD

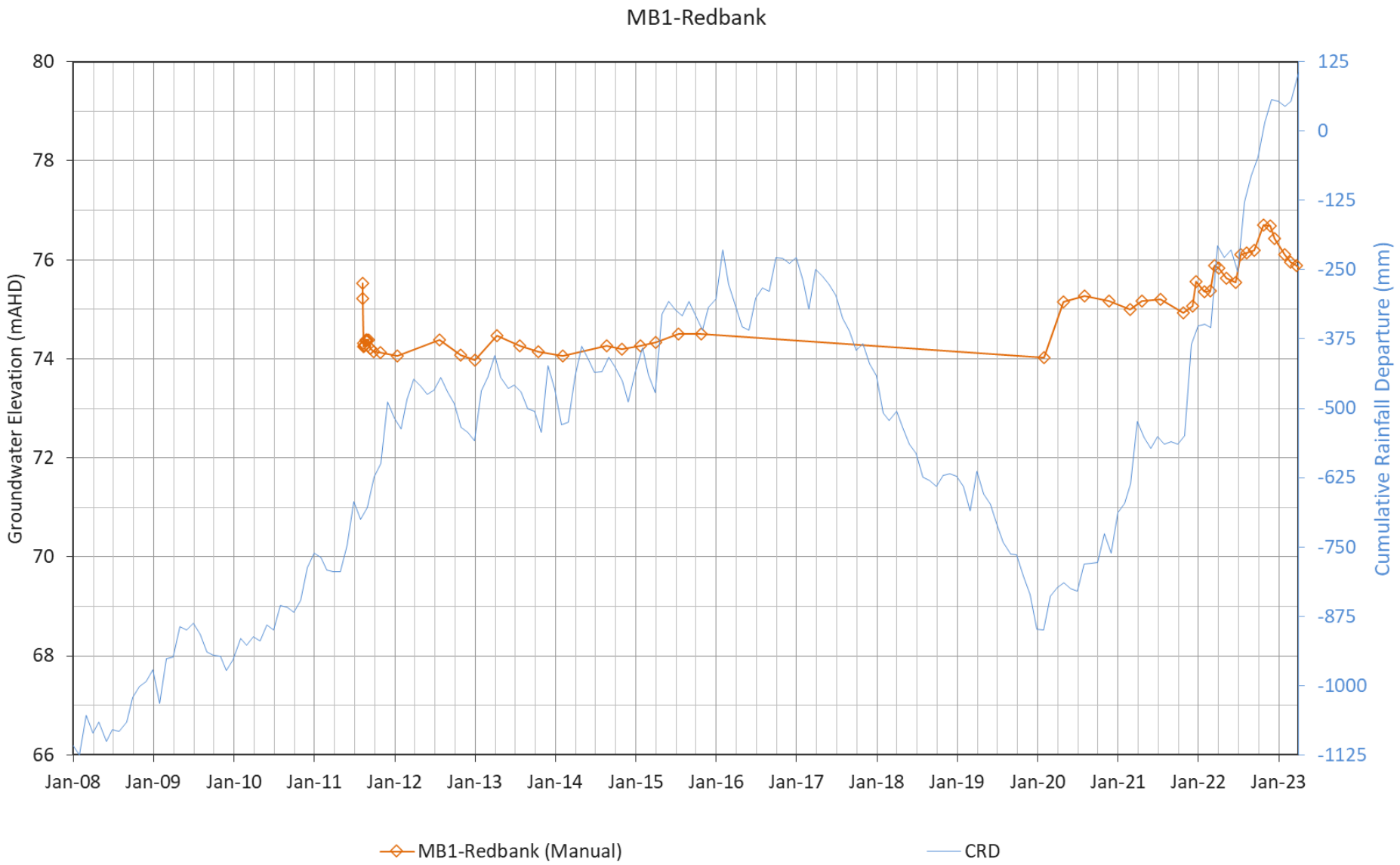

DD1032
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
133.0
132.5
132.0
131.5
131.0
130.5
130.0
129.5
129.0
128.5
128.0
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
DD1032 (Manual)
DD1032 (Logger)
Lower Trigger Level (revised)
CRD

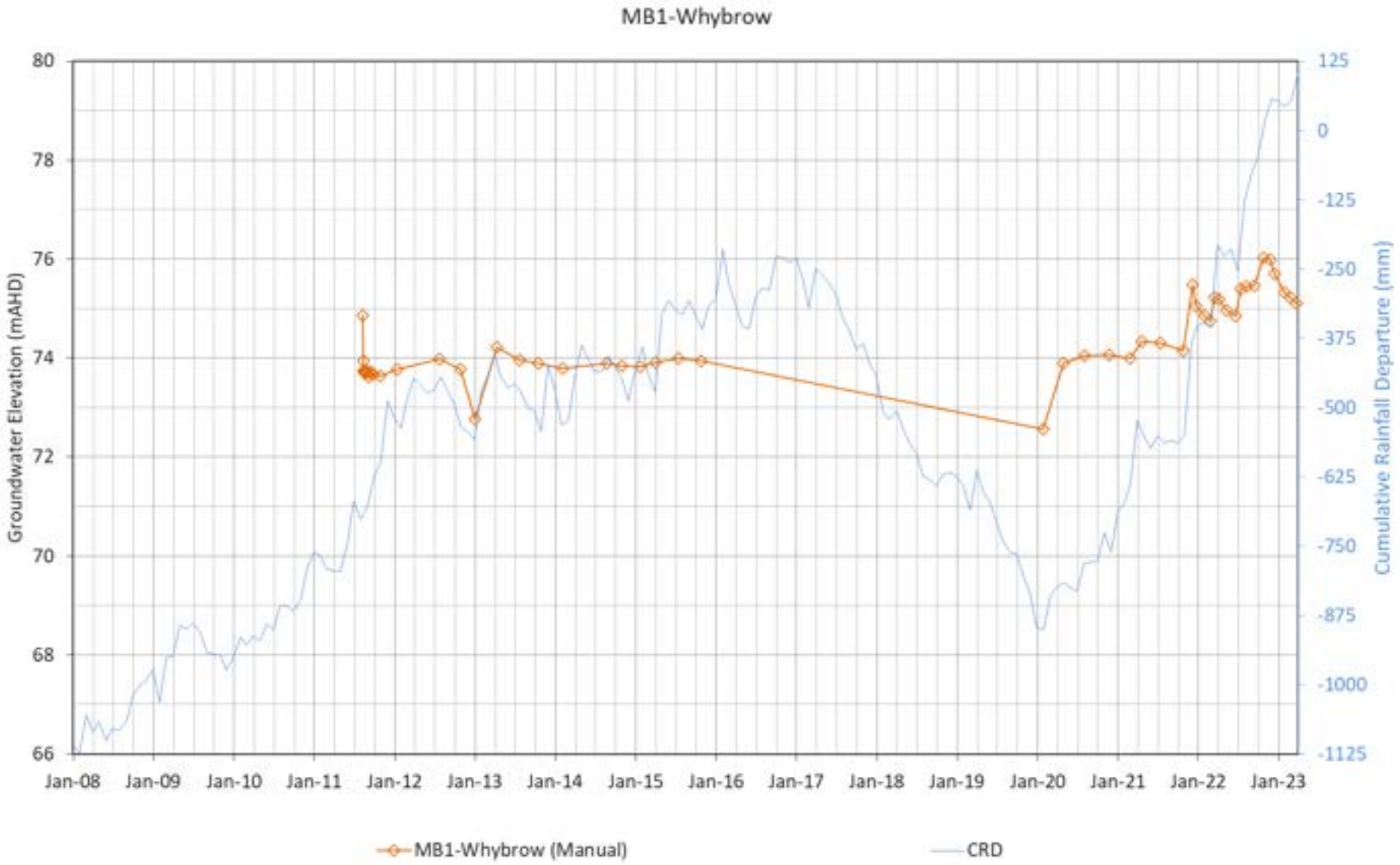

DD1043
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
134
133
132
131
130
129
128
127
126
125
124
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
DD1043 (Manual)
DD1043 (Logger)
CRD


DD1052
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
130
128
126
124
122
120
118
116
114
112
110
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
DD1052 (Manual)
DD1052 (Logger)
CRD

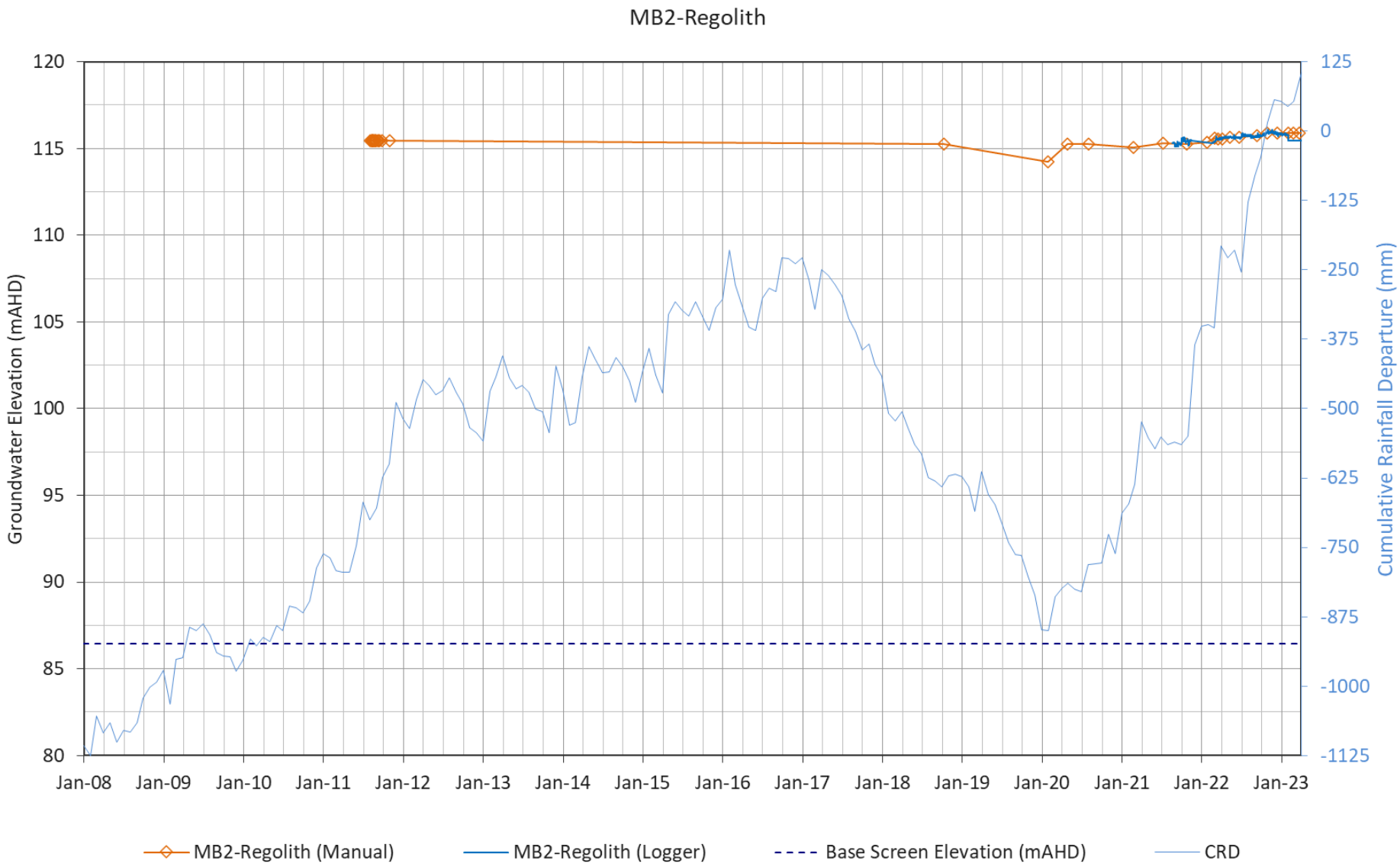

DD1057
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
135
133
131
129
127
125
123
121
119
117
115
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
DD1057 (Manual)
DD1057 (Logger)
CRD

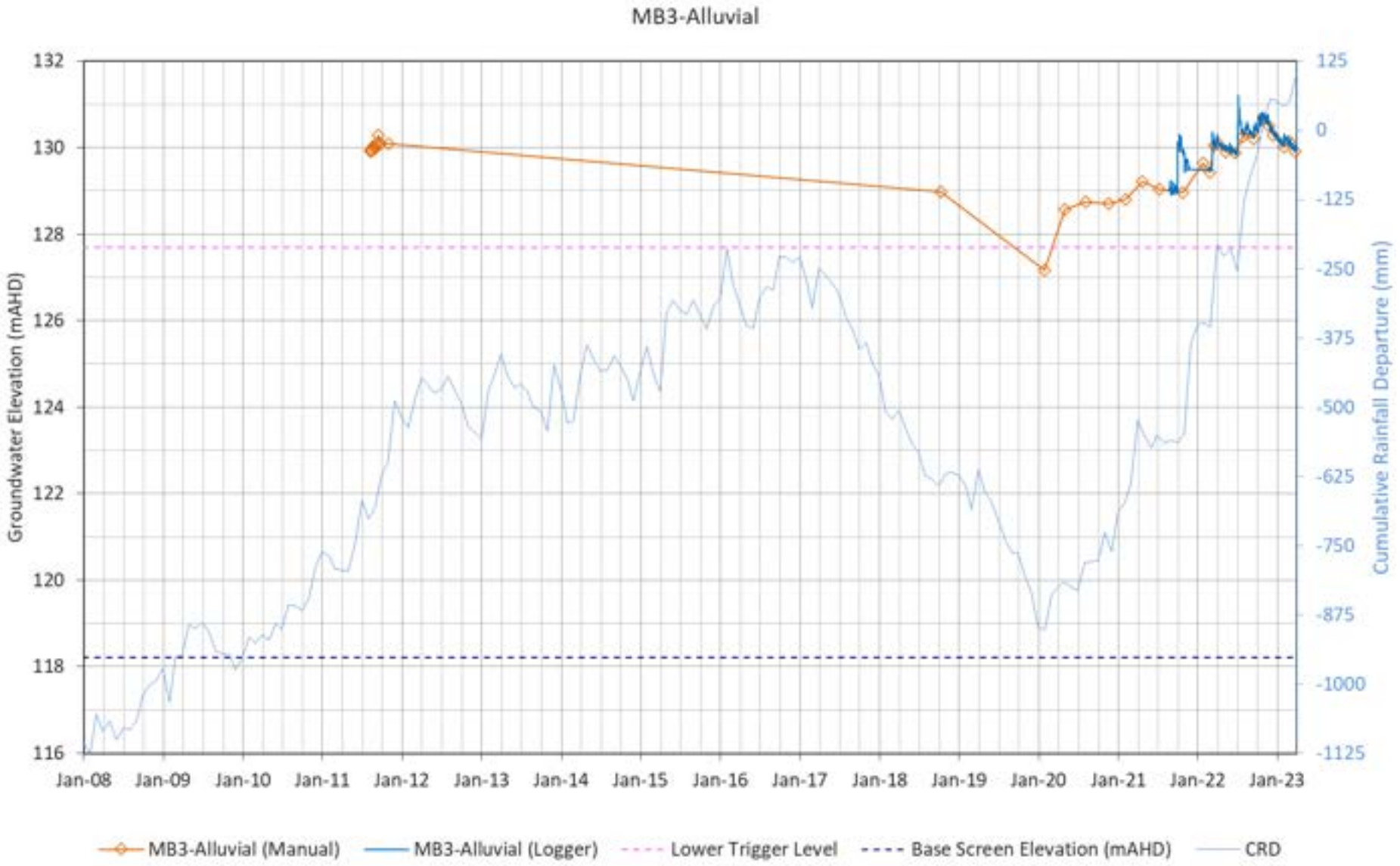

MB1-Alluvial
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
80
78
76
74
72
70
68
66
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
MB1-Alluvial (Manual)
MB1-Alluvial (Logger)
Base Screen Elevation (mAHD)
CRD


MB1-Redbank
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
80
78
76
74
72
70
68
66
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
MB1-Redbank (Manual)
CRD

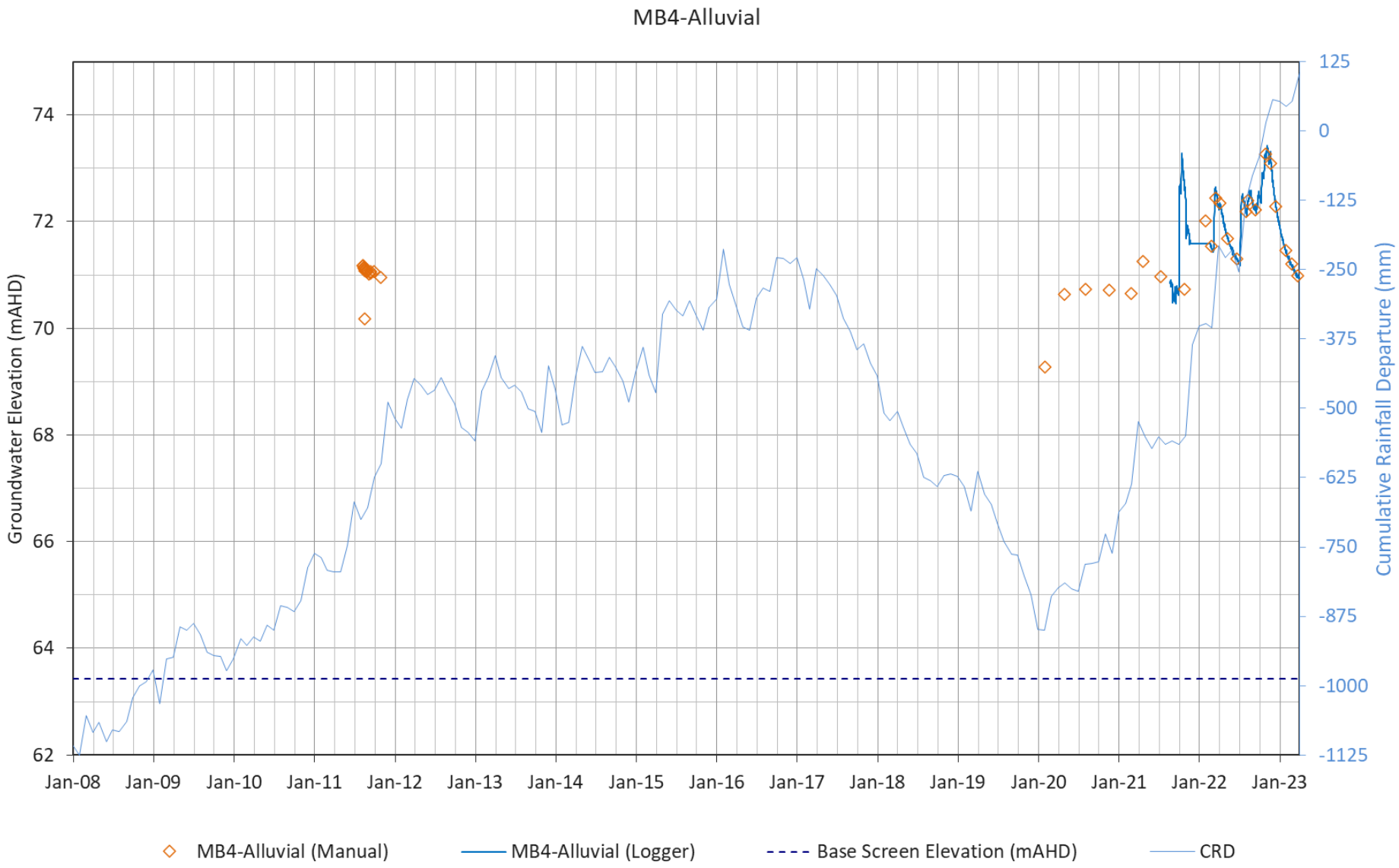

MB1-Whybrow
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
80
78
76
74
72
70
68
66
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
MB1-Whybrow (Manual)
CRD

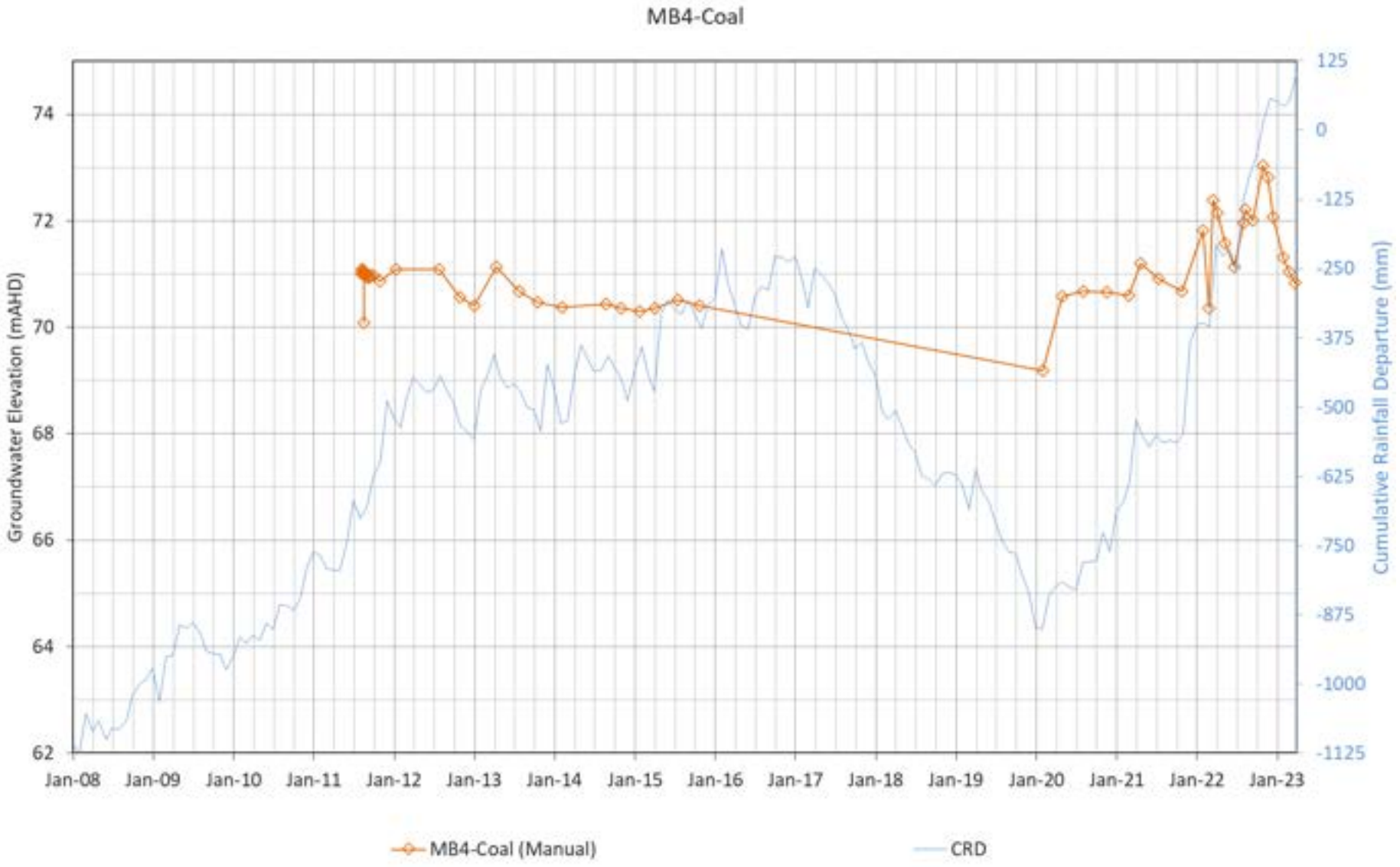

MB2-Alluvial
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
115
114
113
112
111
110
109
108
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
MB2-Alluvial (Manual)
MB2-Alluvial (Logger)
Base Screen Elevation (mAHD)
CRD


MB2-Regolith
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
120
115
110
105
100
95
90
85
80
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
MB2-Regolith (Manual)
MB2-Regolith (Logger)
Base Screen Elevation (mAHD)
CRD

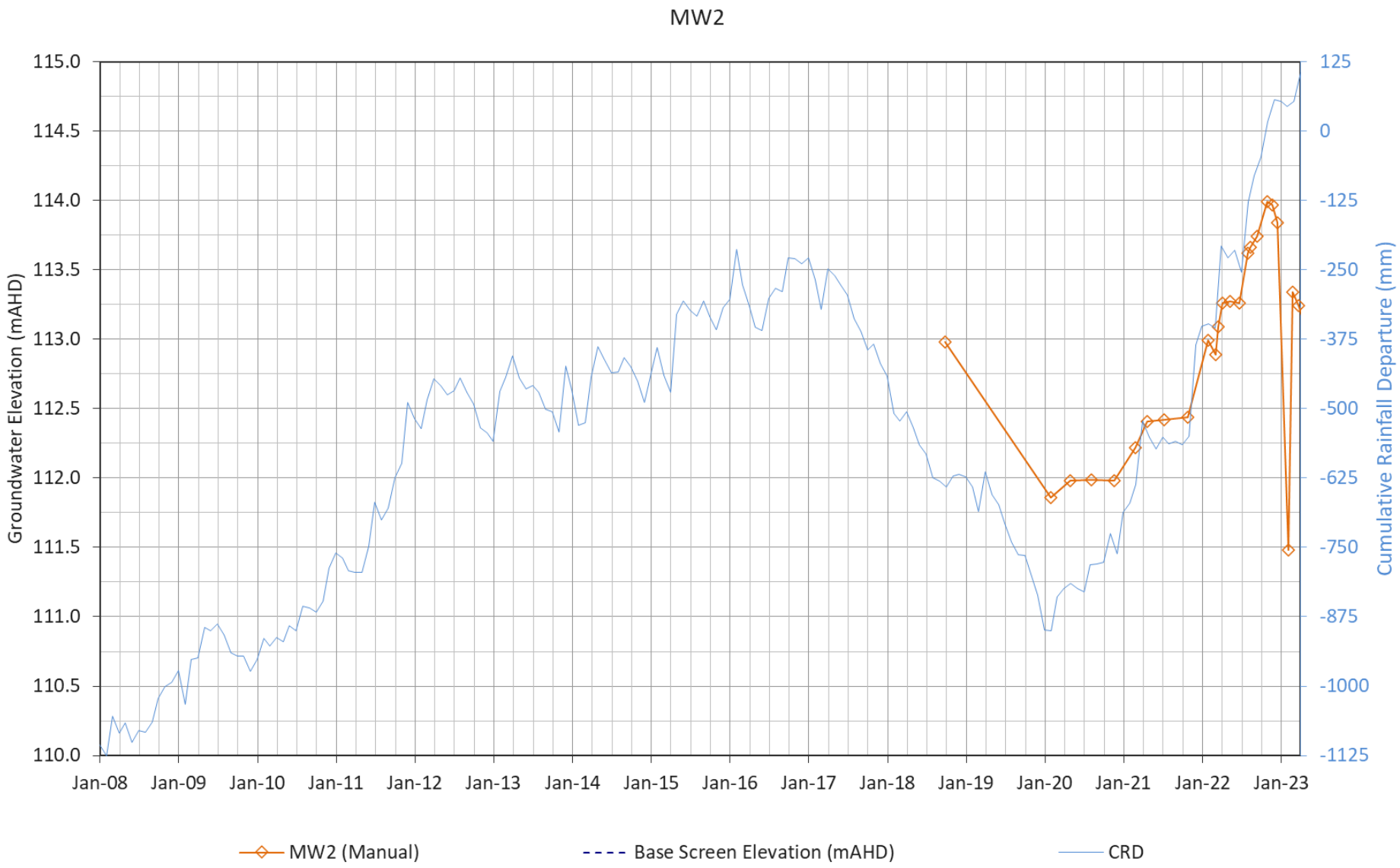

MB3-Alluvial
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
132
130
128
126
124
122
120
118
116
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
MB3-Alluvial (Manual)
MB3-Alluvial (Logger)
Lower Trigger Level
Base Screen Elevation (mAHD)
CRD


MB3-Regolith
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
135
130
125
120
115
110
105
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
MB3-Regolith (Manual)
MB3-Regolith (Logger)
Lower Trigger Level
Base Screen Elevation (mAHD)
CRD

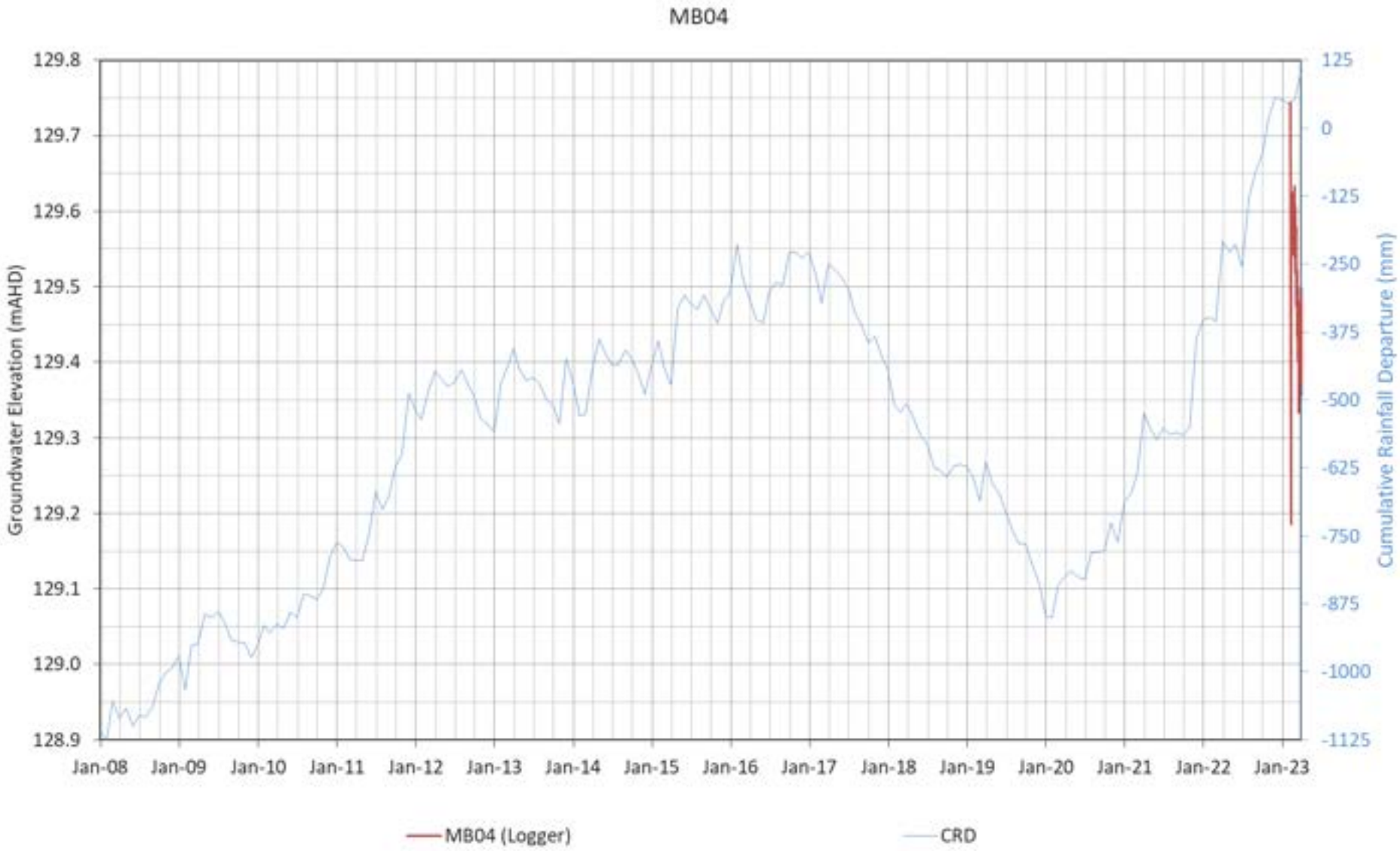

MB4-Alluvial
Groundwater Elevation (mAHD)
74
72
70
68
66
64
62
Cumulative Rainfall Departure (mm)
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
MB4-Alluvial (Manual)
MB4-Alluvial (Logger)
Base Screen Elevation (mAHD)
CRD

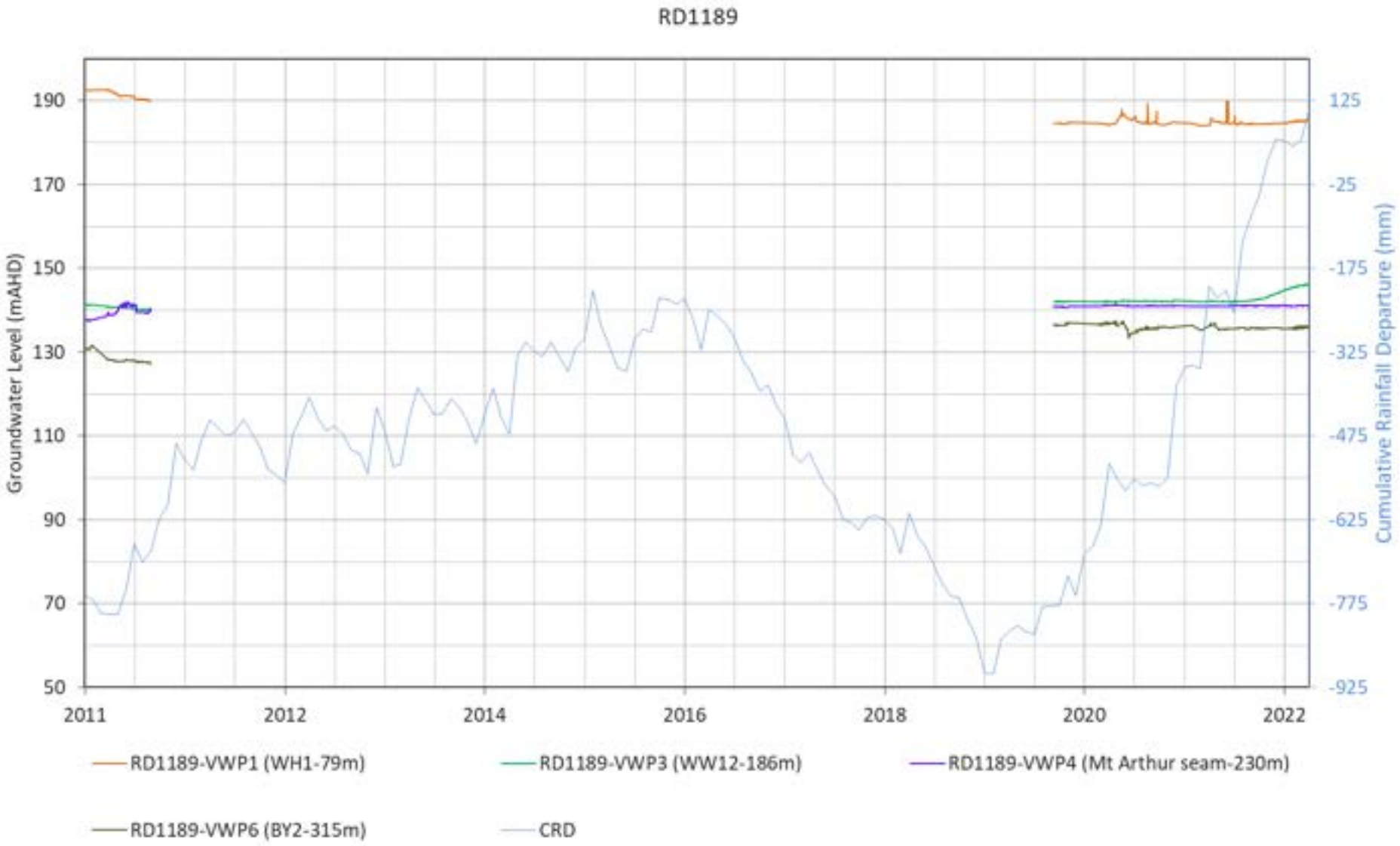

MB4-Coal
Groundwater Elevation (mAHD)
74
72
70
68
66
64
62
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Cumulative Rainfall Departure (mm)
MB4-Coal (Manual)
CRD

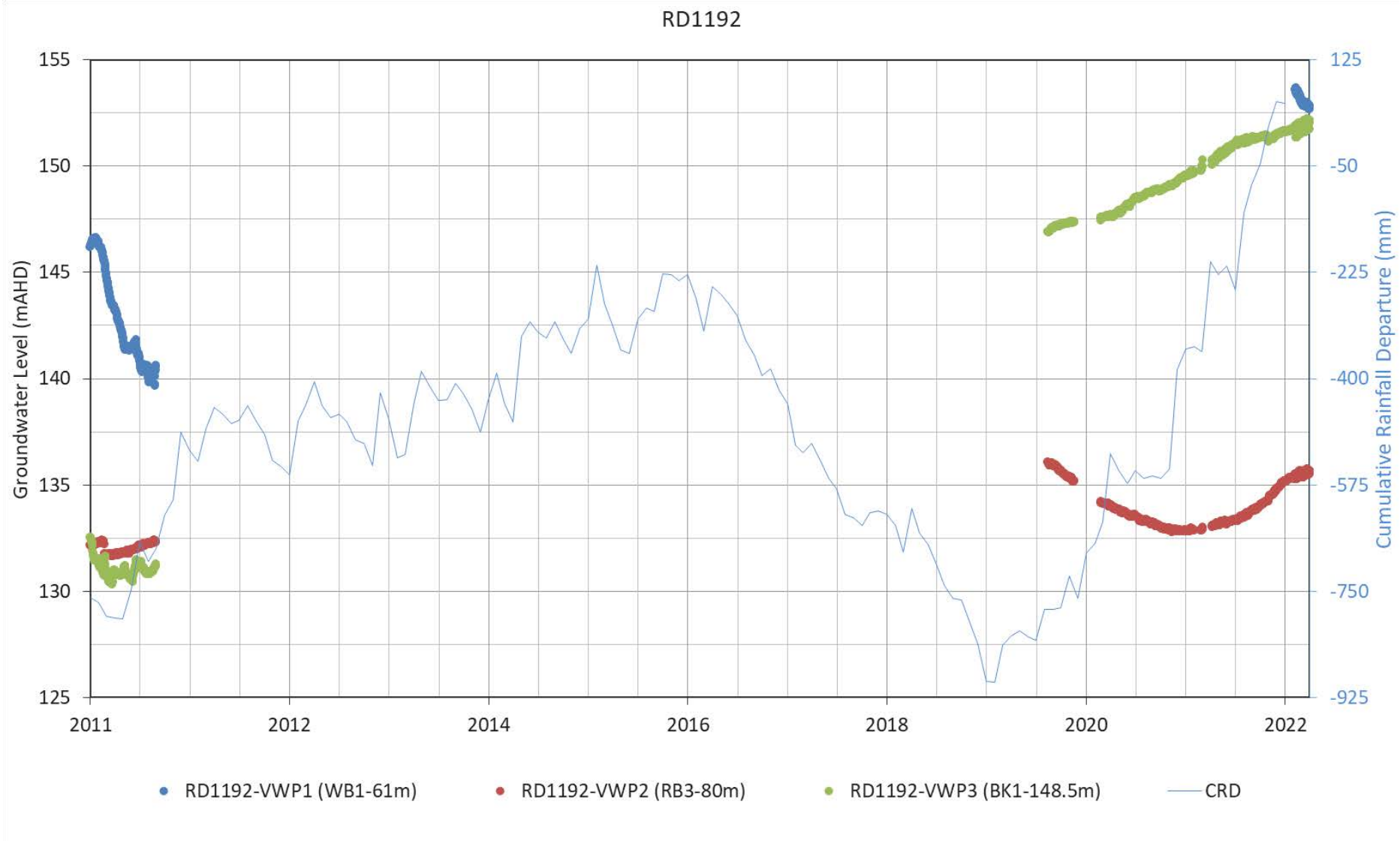

MW1
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
135
134
133
132
131
130
129
128
127
126
125
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
MW1 (Manual)
MW1 (Logger)
Base Screen Elevation (mAHD)
CRD

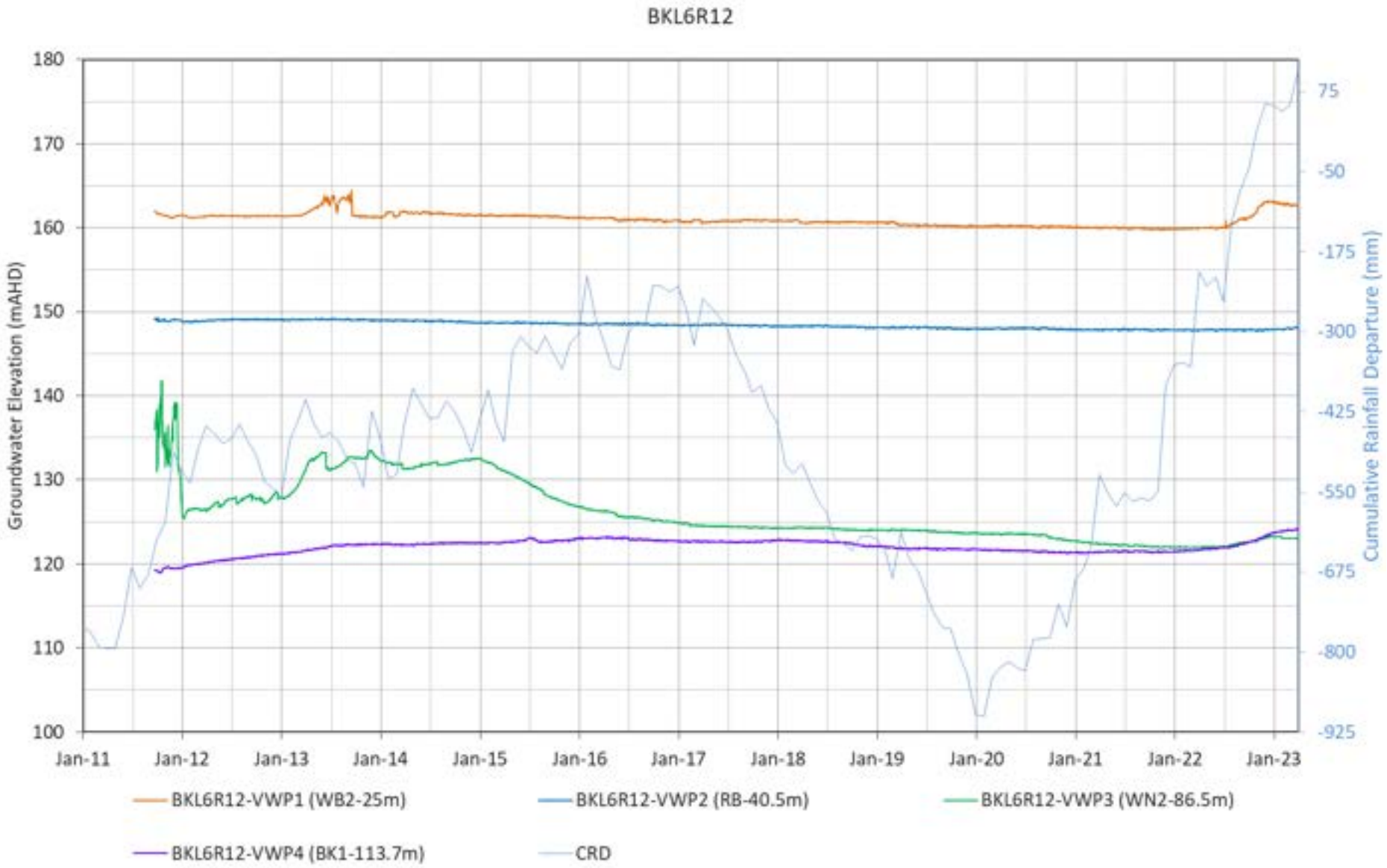

MW2
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
115.0
114.5
114.0
113.5
113.0
112.5
112.0
111.5
111.0
110.5
110.0
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
MW2 (Manual)
Base Screen Elevation (mAHD)
CRD

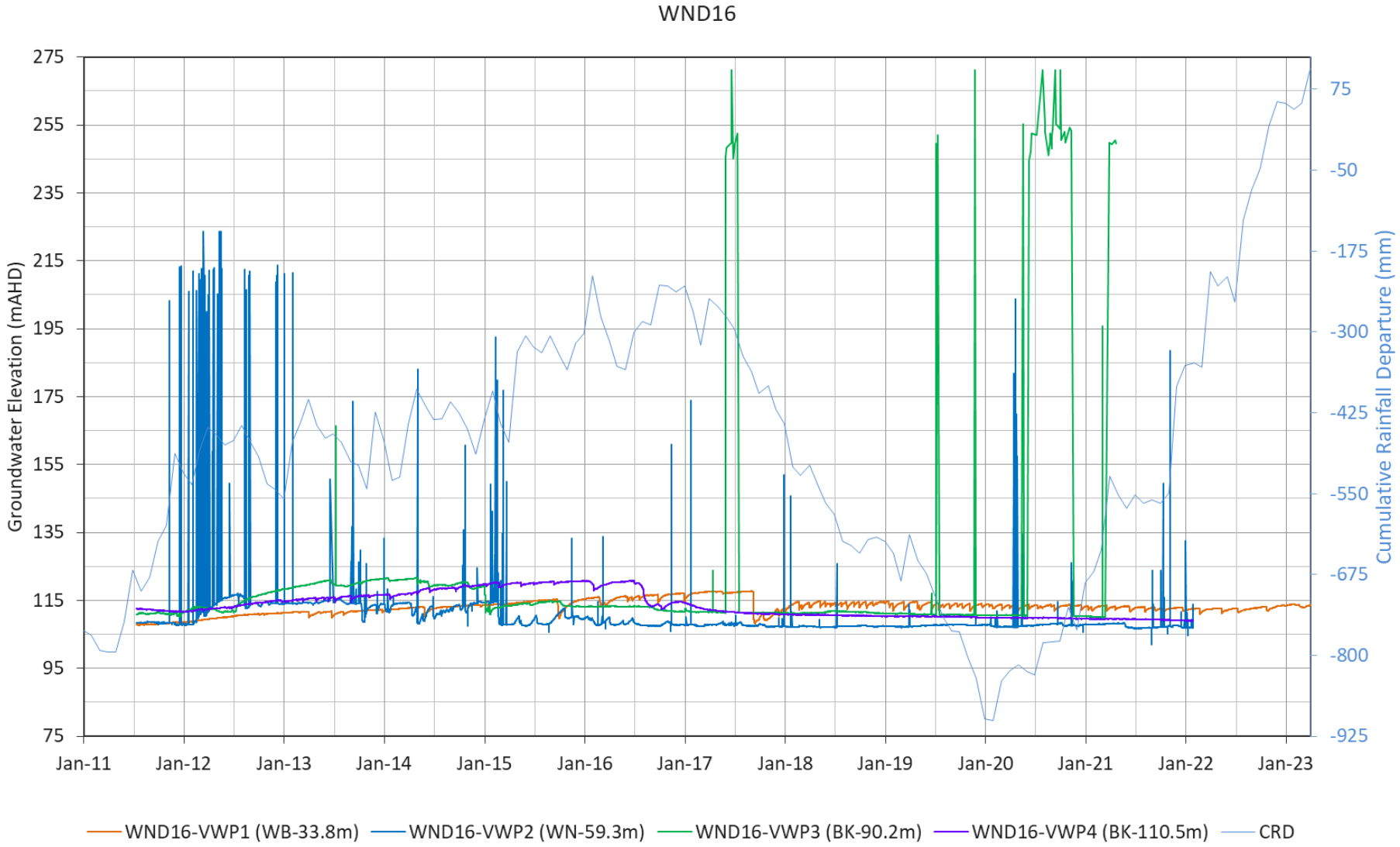

MB03
115.2
115.1
115.0
114.9
114.8
114.7
114.6
114.5
Groundwater Elevation (mAHD)
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Cumulative Rainfall Departure (mm)
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
MB03 (Manual)
MB03 (Logger)
Base Screen Elevation (mAHD)
CRD

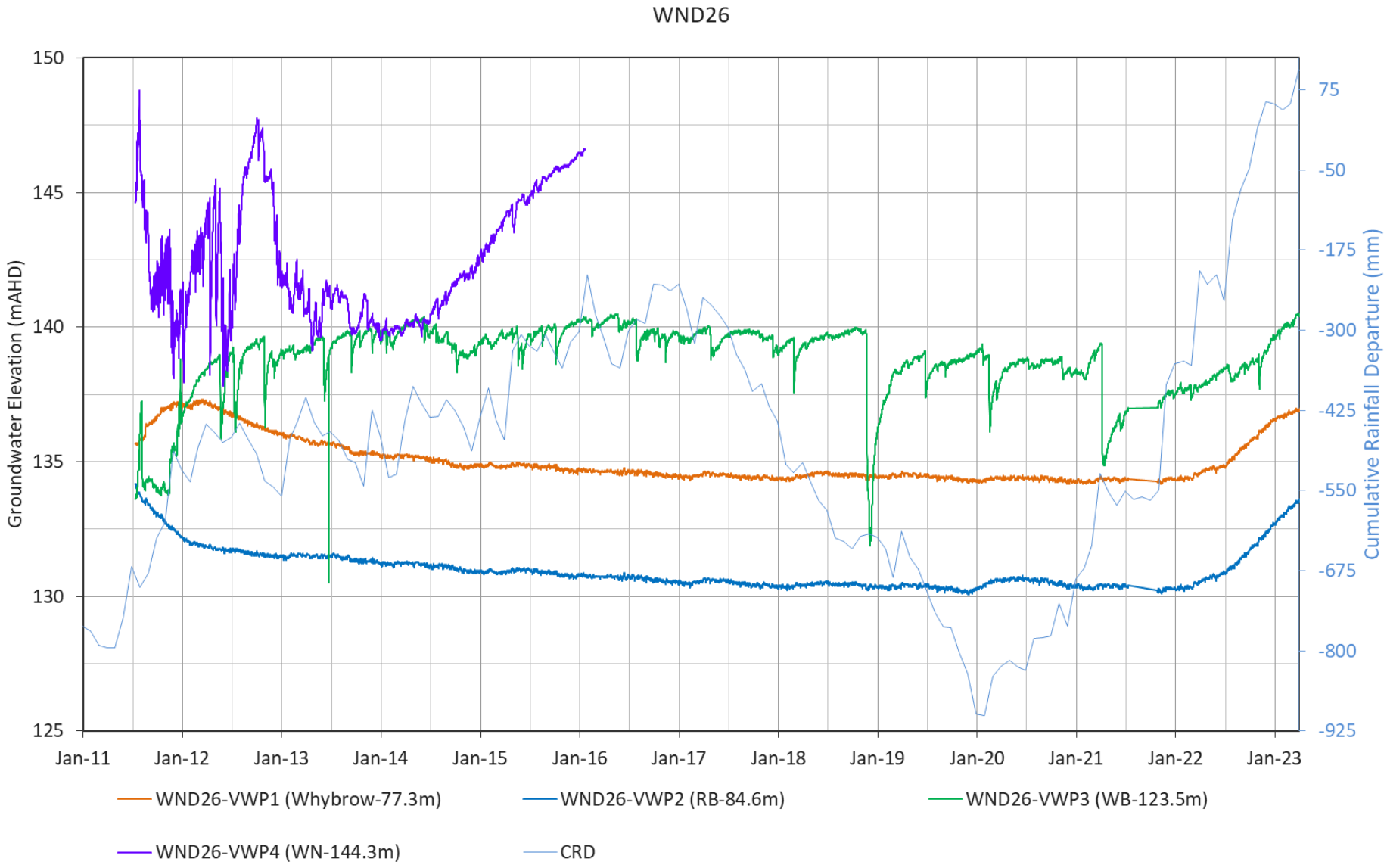

MB04
Groundwater Elevation (mAHD)
129.8
129.7
129.6
129.5
129.4
129.3
129.2
129.1
129.0
128.9
Cumulative Rainfall Departure (mm)
125
0
-125
-250
-375
-500
-625
-750
-875
-1000
-1125
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
MB04 (Logger)
CRD

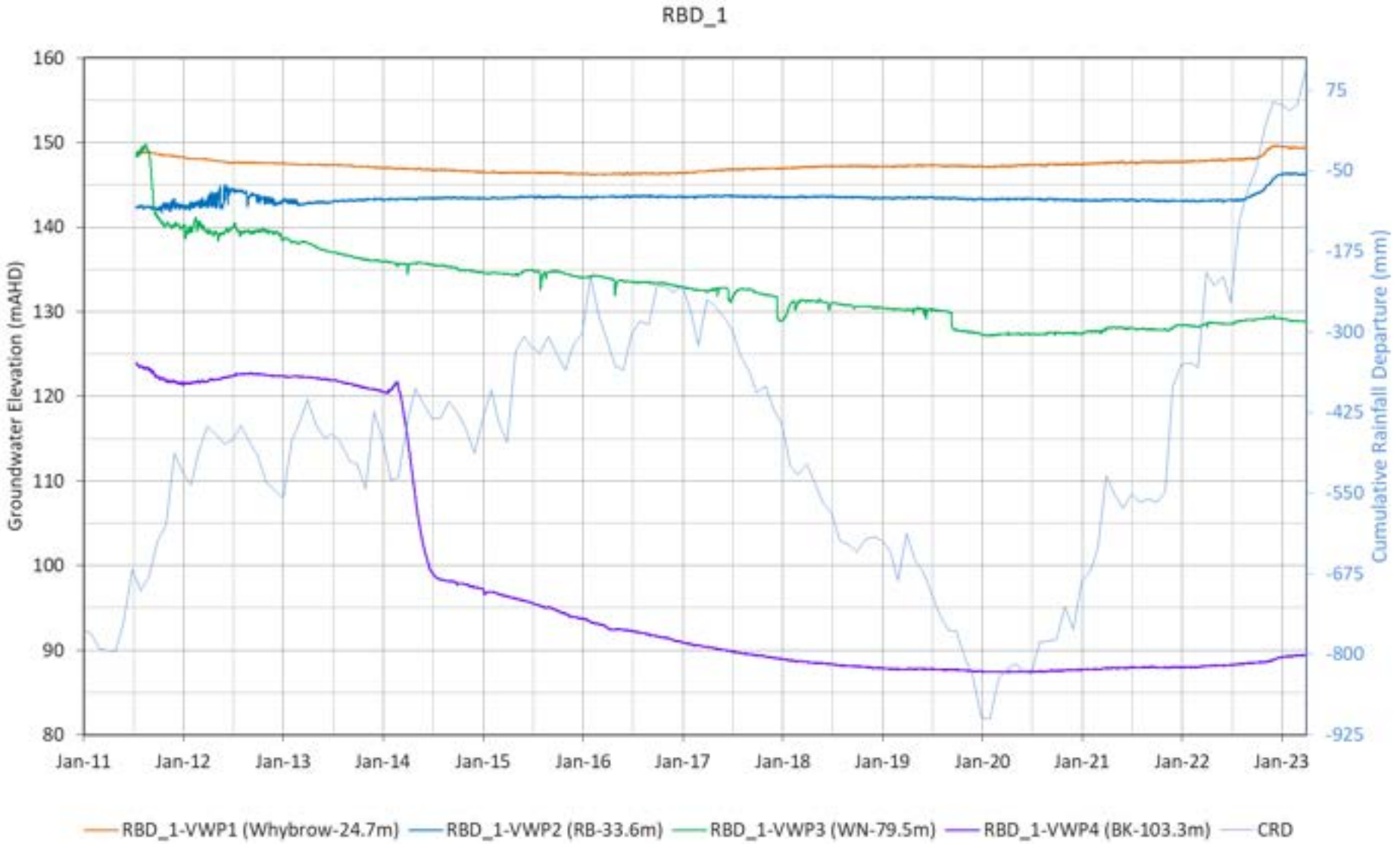

RD1189
Groundwater Level (mAHD)
190
170
150
130
110
90
70
50
Cumulative Rainfall Departure (mm)
125
-25
-175
-325
-475
-625
-775
-925
2011
2012
2014
2016
2018
2020
2022
RD1189-VWP1 (WH1-79m)
RD1189-VWP3 (WW12-186m)
RD1189-VWP4 (Mt Arthur seam-230m)
RD1189-VWP6 (BY2-315m)
CRD


RD1192
Groundwater Level (mAHD)
155
150
145
140
135
130
125
Cumulative Rainfall Departure (mm)
125
-50
-225
-400
-575
-750
-925
2011
2012
2014
2016
2018
2020
2022
RD1192-VWP1 (WB1-61m)
RD1192-VWP2 (RB3-80m)
RD1192-VWP3 (BK1-148.5m)
CRD


BKL6R12
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
180
170
160
150
140
130
120
110
100
75
-50
-175
-300
-425
-550
-675
-800
-925
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
BKL6R12-VWP1 (WB2-25m)
BKL6R12-VWP2 (RB-40.5m)
BKL6R12-VWP3 (WN2-86.5m)
BKL6R12-VWP4 (BK1-113.7m)
CRD


WND16
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
275
255
235
215
195
175
155
135
115
95
75
75
-50
-175
-300
-425
-550
-675
-800
-925
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
WND16-VWP1 (WB-33.8m)
WND16-VWP2 (WN-59.3m)
WND16-VWP3 (BK-90.2m)
WND16-VWP4 (BK-110.5m)
CRD


WND26
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
150
145
140
135
130
125
75
-50
-175
-300
-425
-550
-675
-800
-925
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
WND26-VWP1 (Whybrow-77.3m)
WND26-VWP2 (RB-84.6m)
WND26-VWP3 (WB-123.5m)
WND26-VWP4 (WN-144.3m)
CRD


RBD_1
Groundwater Elevation (mAHD)
160
150
140
130
120
110
100
90
80
Cumulative Rainfall Departure (mm)
75
-50
-175
-300
-425
-550
-675
-800
-925
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
RBD_1-VWP1 (Whybrow-24.7m)
RBD_1-VWP2 (RB-33.6m)
RBD_1-VWP3 (WN-79.5m)
RBD_1-VWP4 (BK-103.3m)
CRD

Appendix C Groundwater Quality and Trigger Levels (only sites within the TARP)

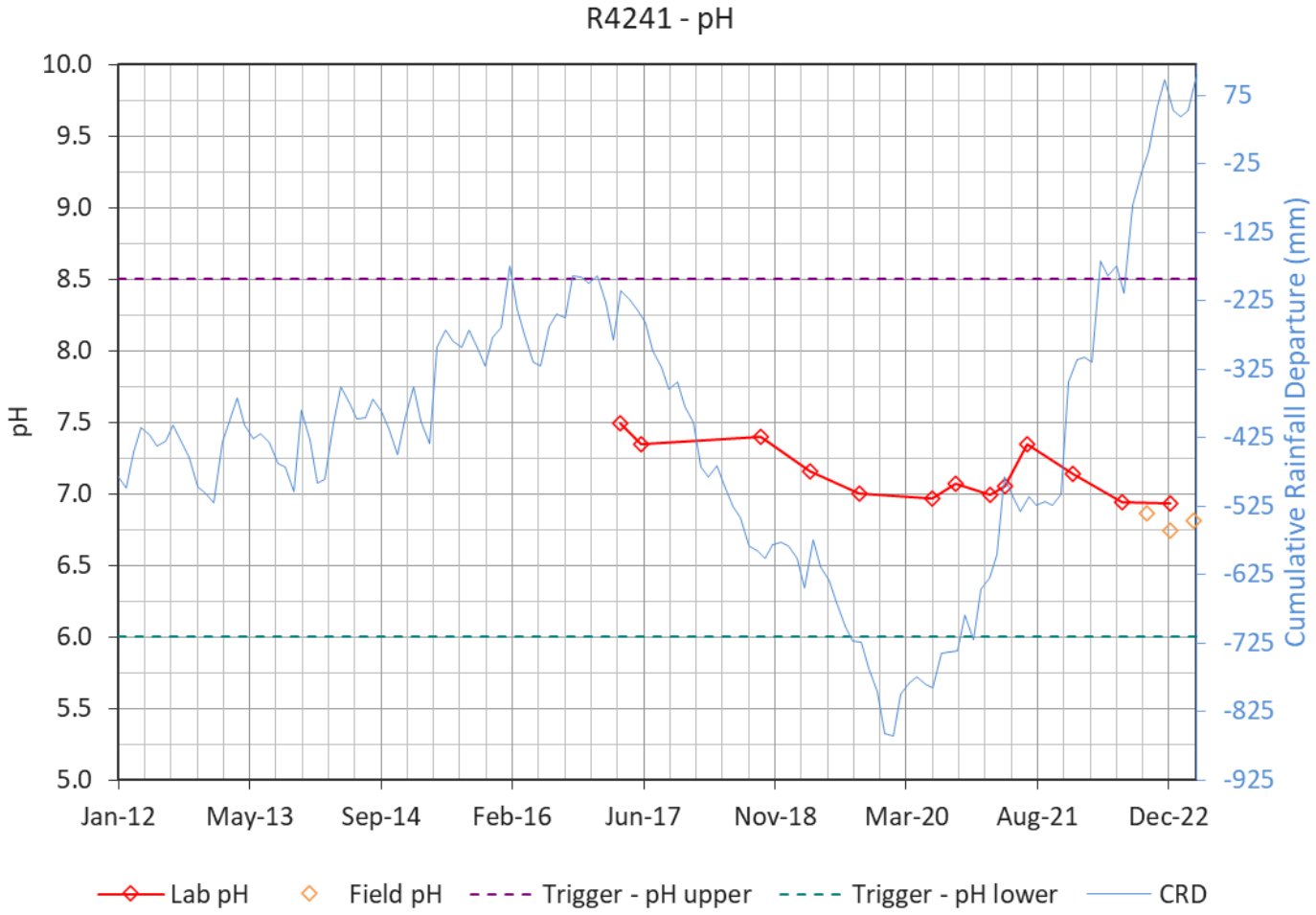
Maxwell Underground Mine

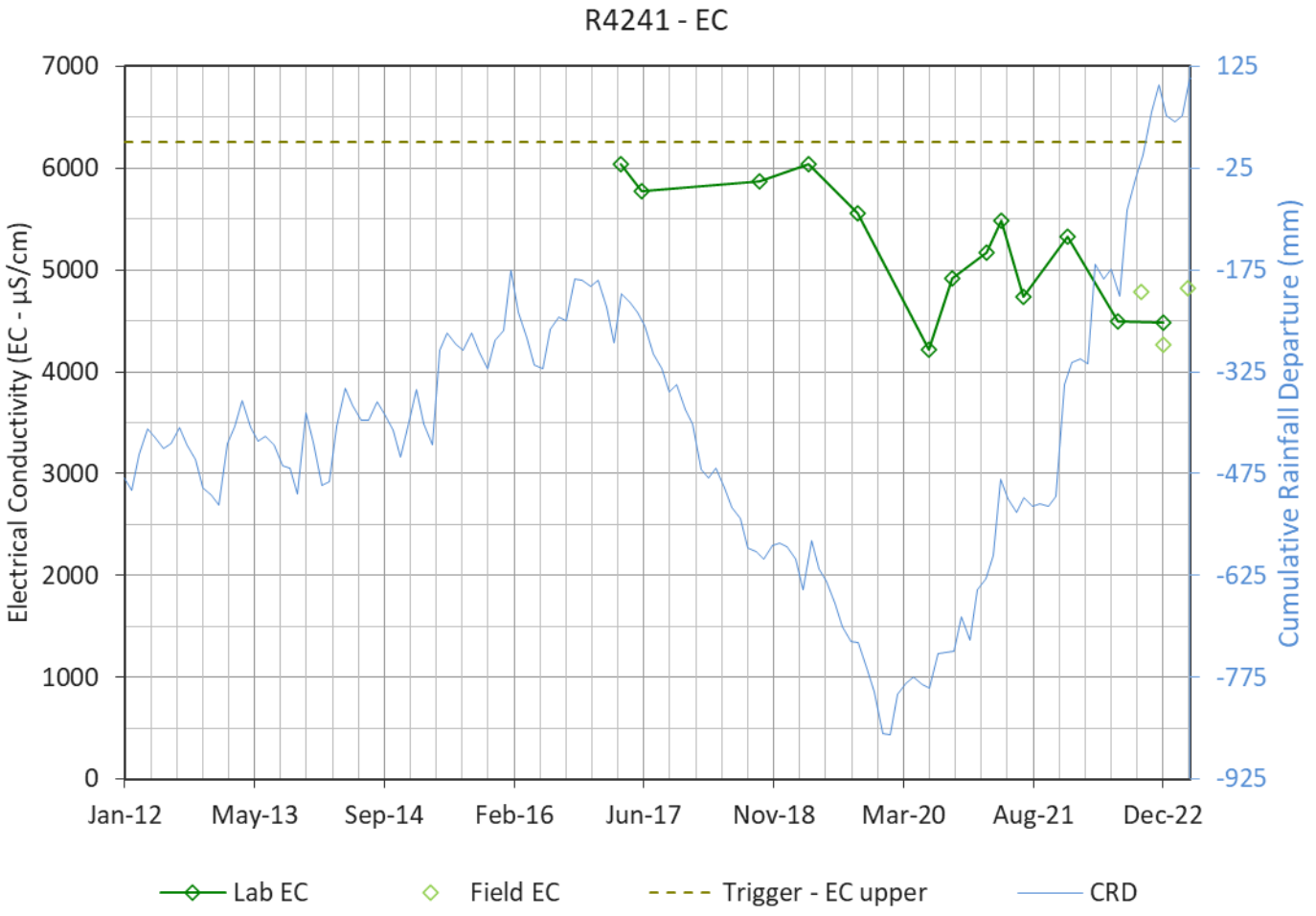
Groundwater Monitoring Report – Quarter 1 – 2023

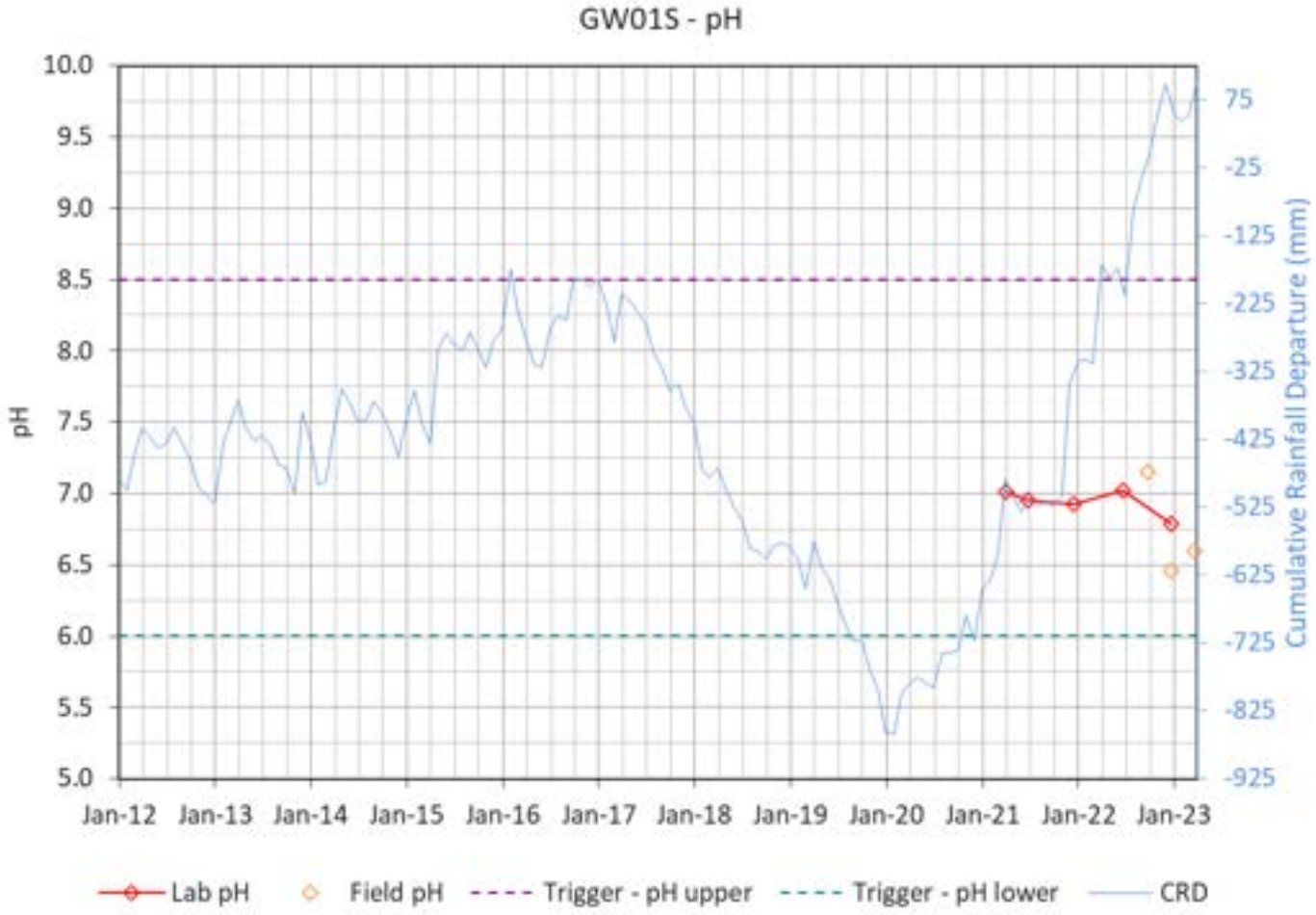
Malabar Resources Pty Ltd

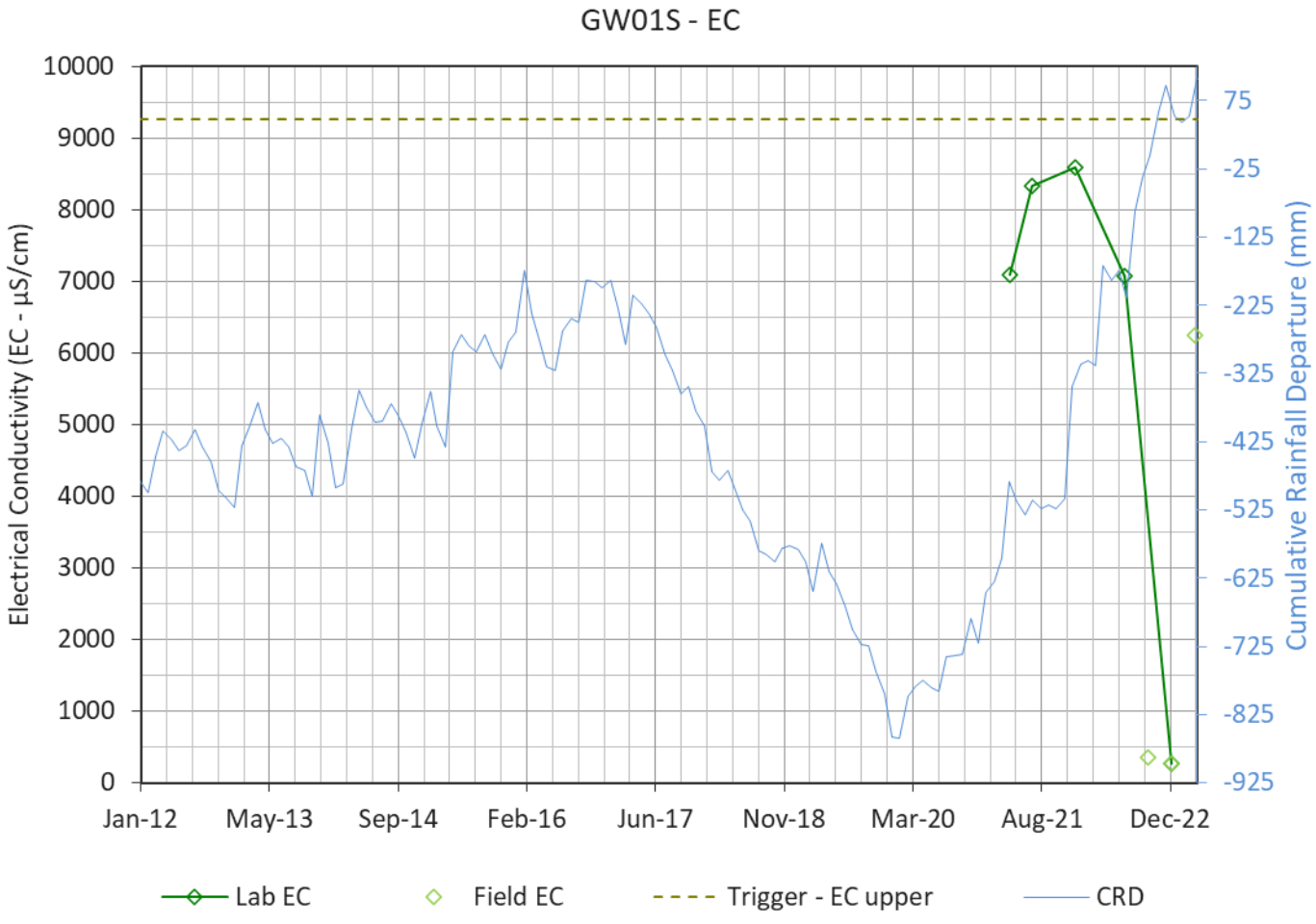
SLR Project No.: 630.030945.00001

18 October 2023

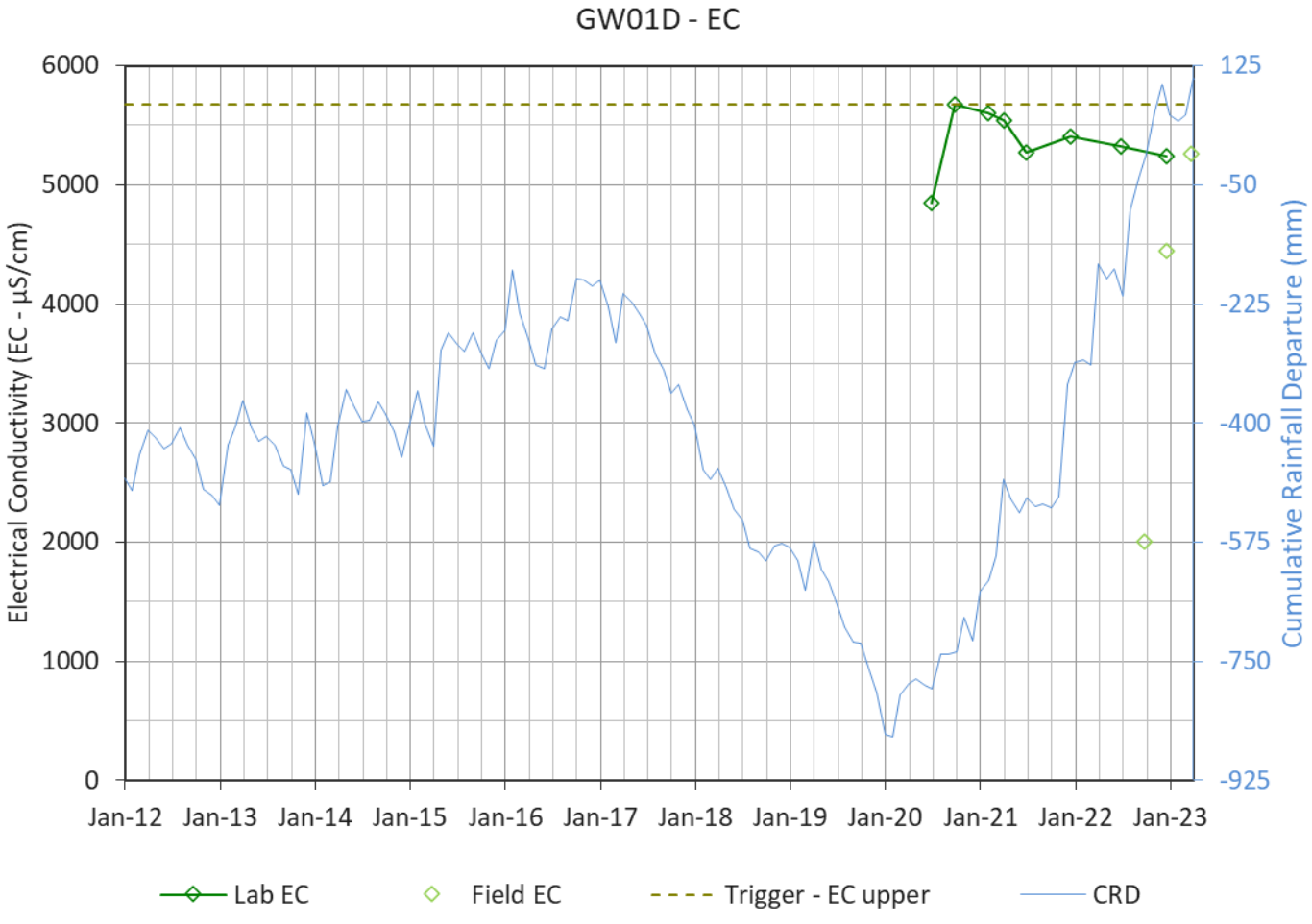

R4241 - pH
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
pH
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Cumulative Rainfall Departure (mm)
Jan-12
May-13
Sep-14
Feb-16
Jun-17
Nov-18
Mar-20
Aug-21
Dec-22
Lab pH
Field pH
Trigger - pH upper
Trigger - pH lower
CRD

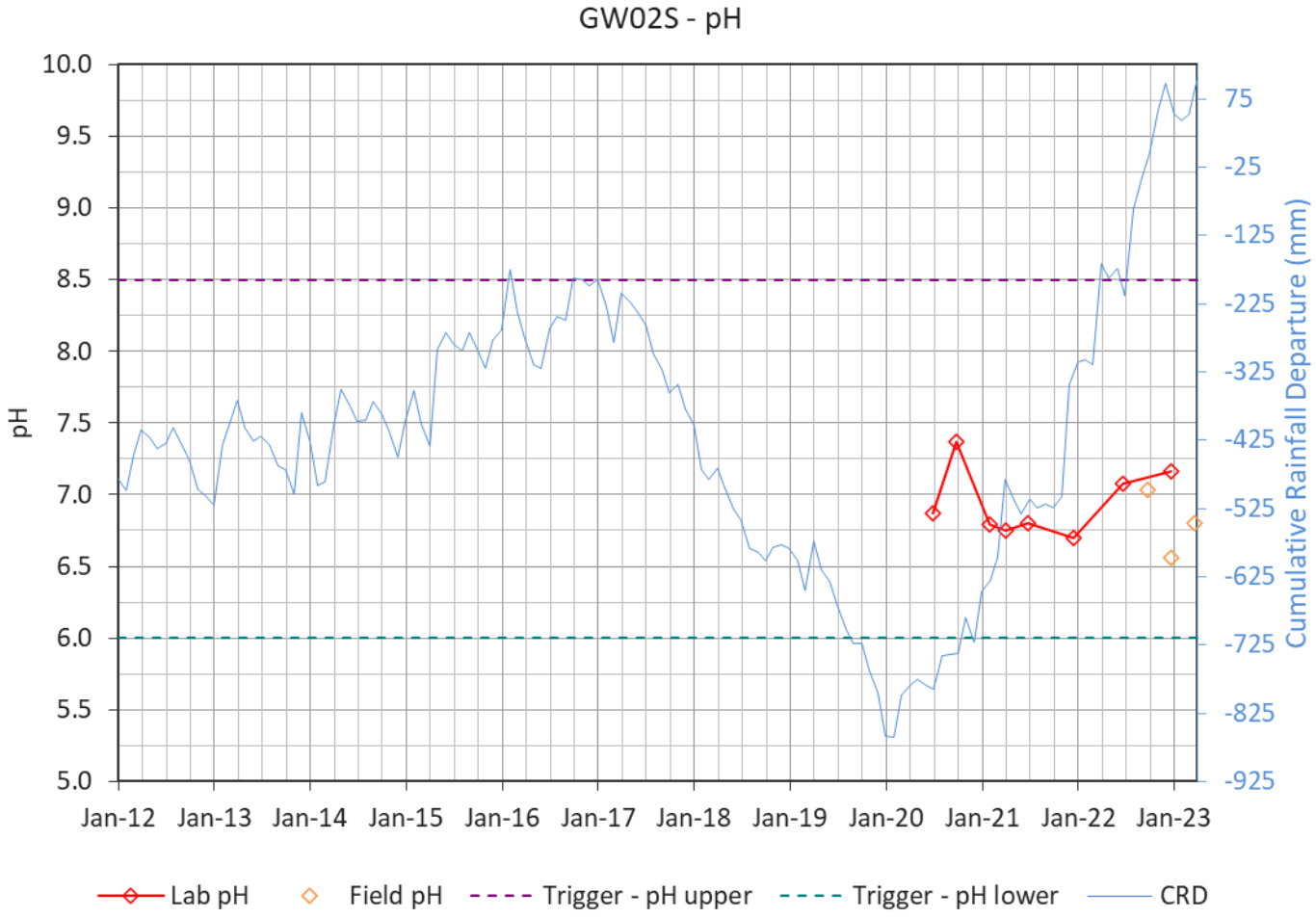

R4241 - EC
7000
6000
5000
4000
3000
2000
1000
0
Electrical Conductivity (EC - µS/cm)
125
-25
-175
-325
-475
-625
-775
-925
Cumulative Rainfall Departure (mm)
Jan-12
May-13
Sep-14
Feb-16
Jun-17
Nov-18
Mar-20
Aug-21
Dec-22
Lab EC
Field EC
Trigger - EC upper
CRD

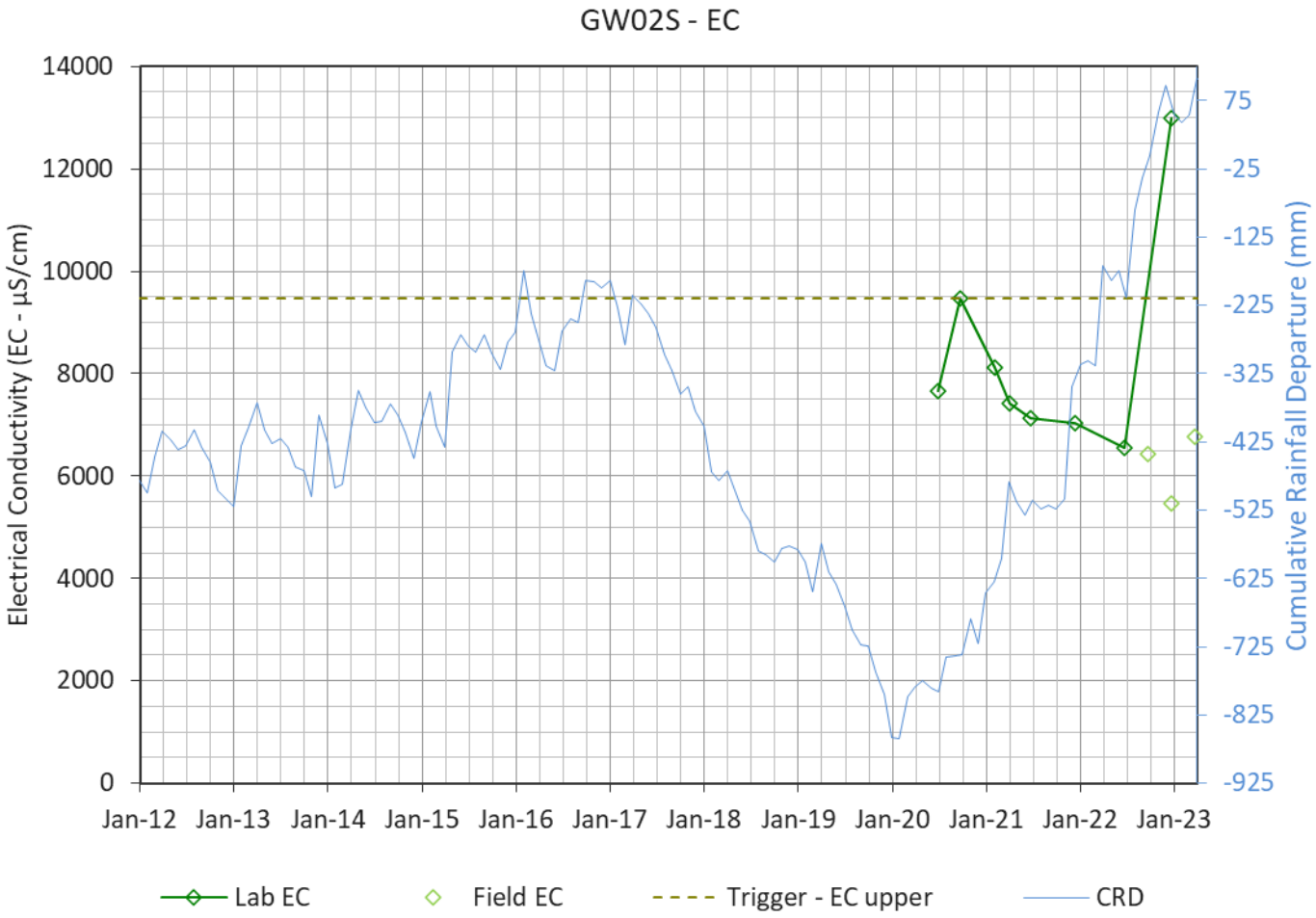

GW01S - pH
pH
Cumulative Rainfall Departure (mm)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Lab pH
Field pH
Trigger - pH upper
Trigger - pH lower
CRD

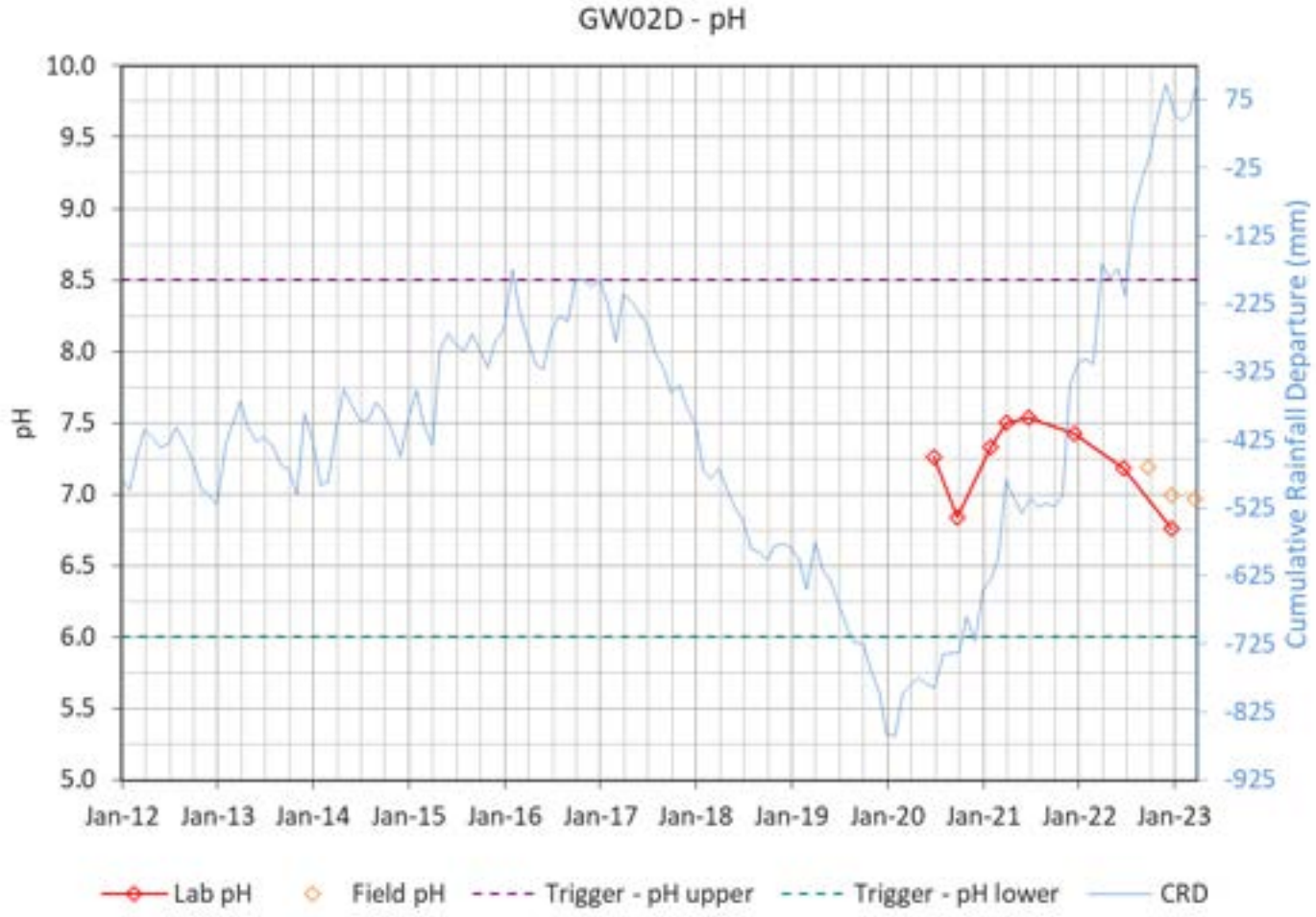

GW01S - EC
Electrical Conductivity (EC - µS/cm)
Cumulative Rainfall Departure (mm)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-12
May-13
Sep-14
Feb-16
Jun-17
Nov-18
Mar-20
Aug-21
Dec-22
Lab EC
Field EC
Trigger - EC upper
CRD

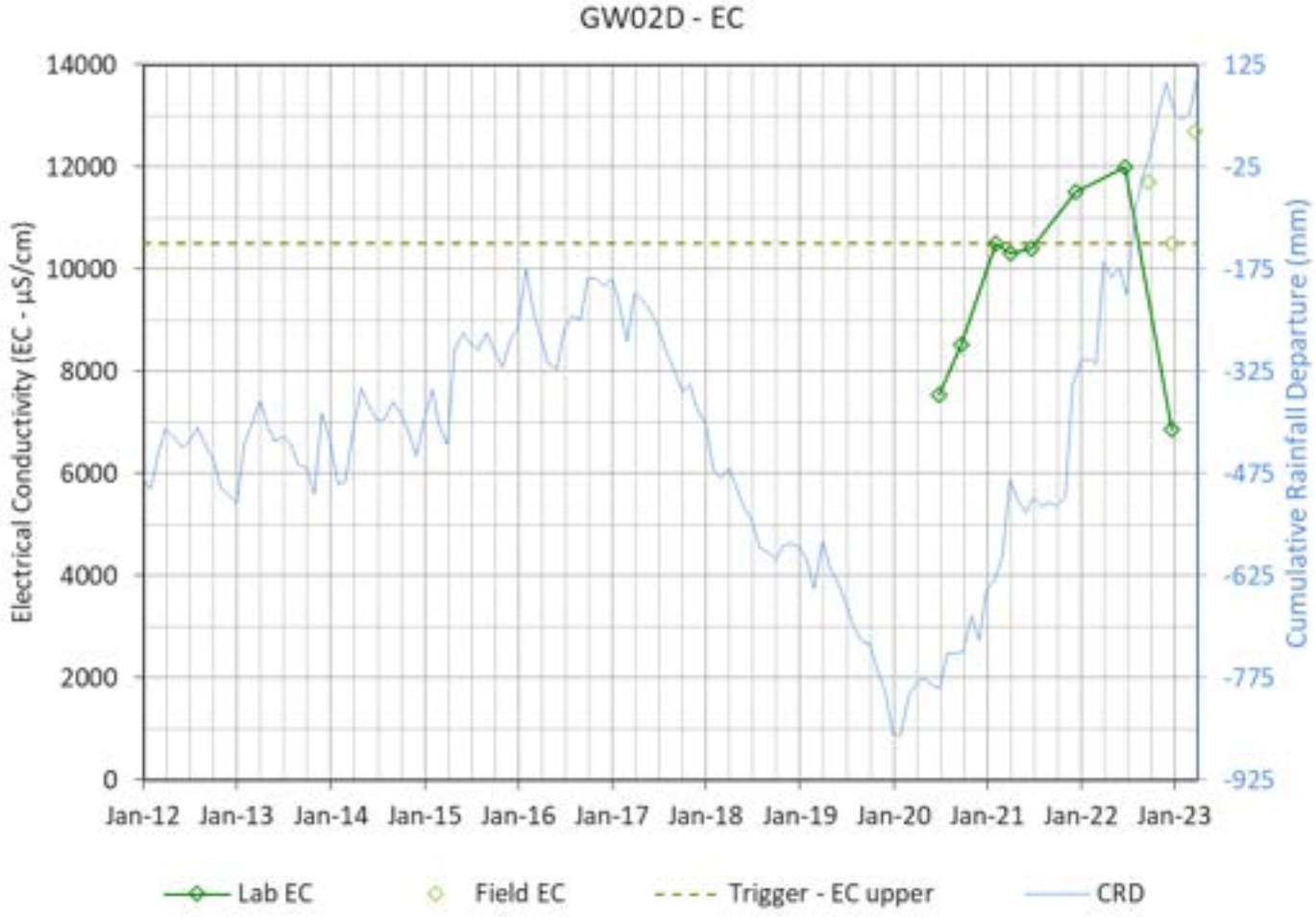

GW01D - pH
pH
Cumulative Rainfall Departure (mm)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-12
May-13
Sep-14
Feb-16
Jun-17
Nov-18
Mar-20
Aug-21
Dec-22
Lab pH
Field pH
Trigger - pH upper
Trigger - pH lower
CRD

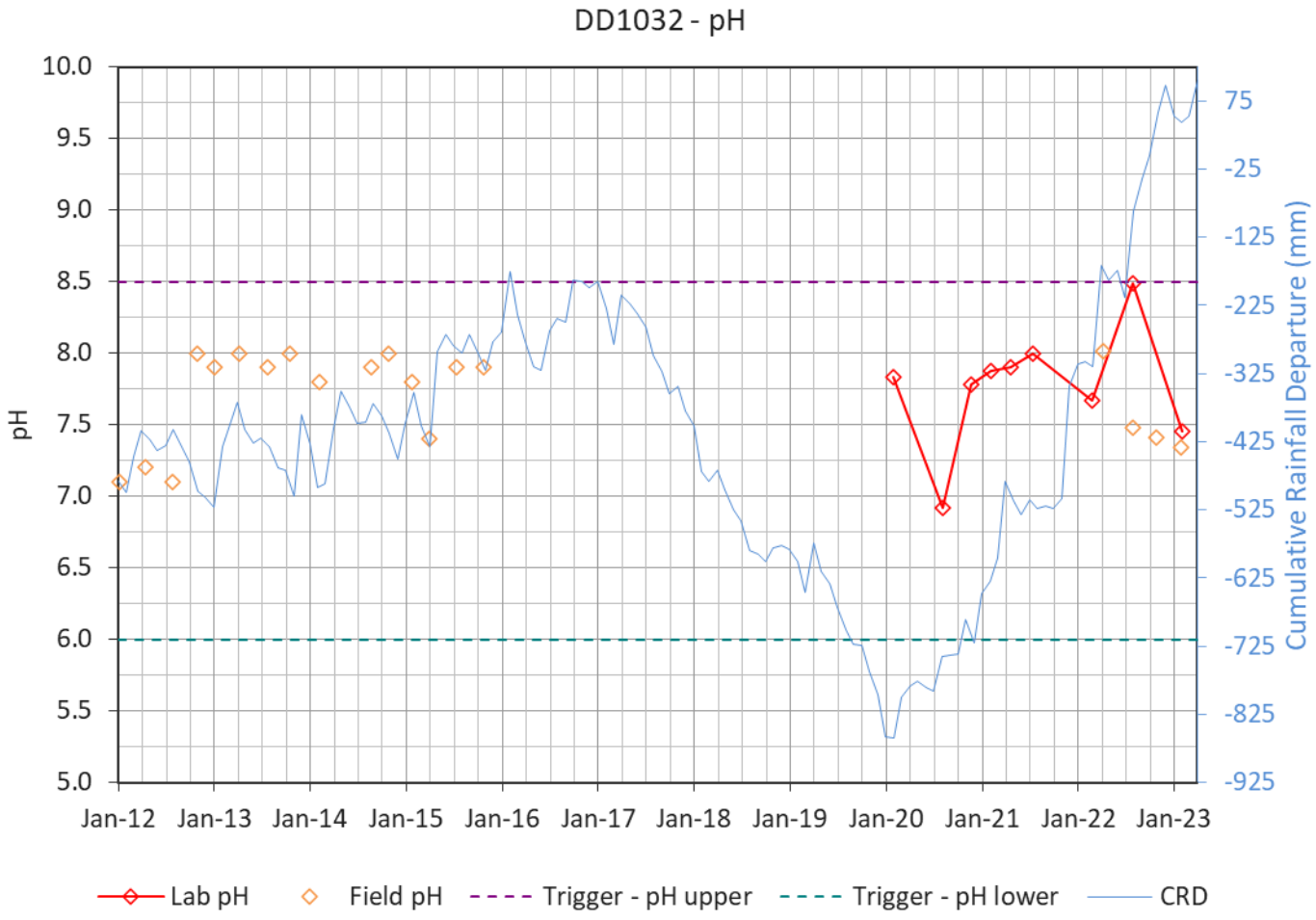

GW01D - EC
Electrical Conductivity (EC - µS/cm)
Cumulative Rainfall Departure (mm)
6000
5000
4000
3000
2000
1000
0
125
-50
-225
-400
-575
-750
-925
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Lab EC
Field EC
Trigger - EC upper
CRD

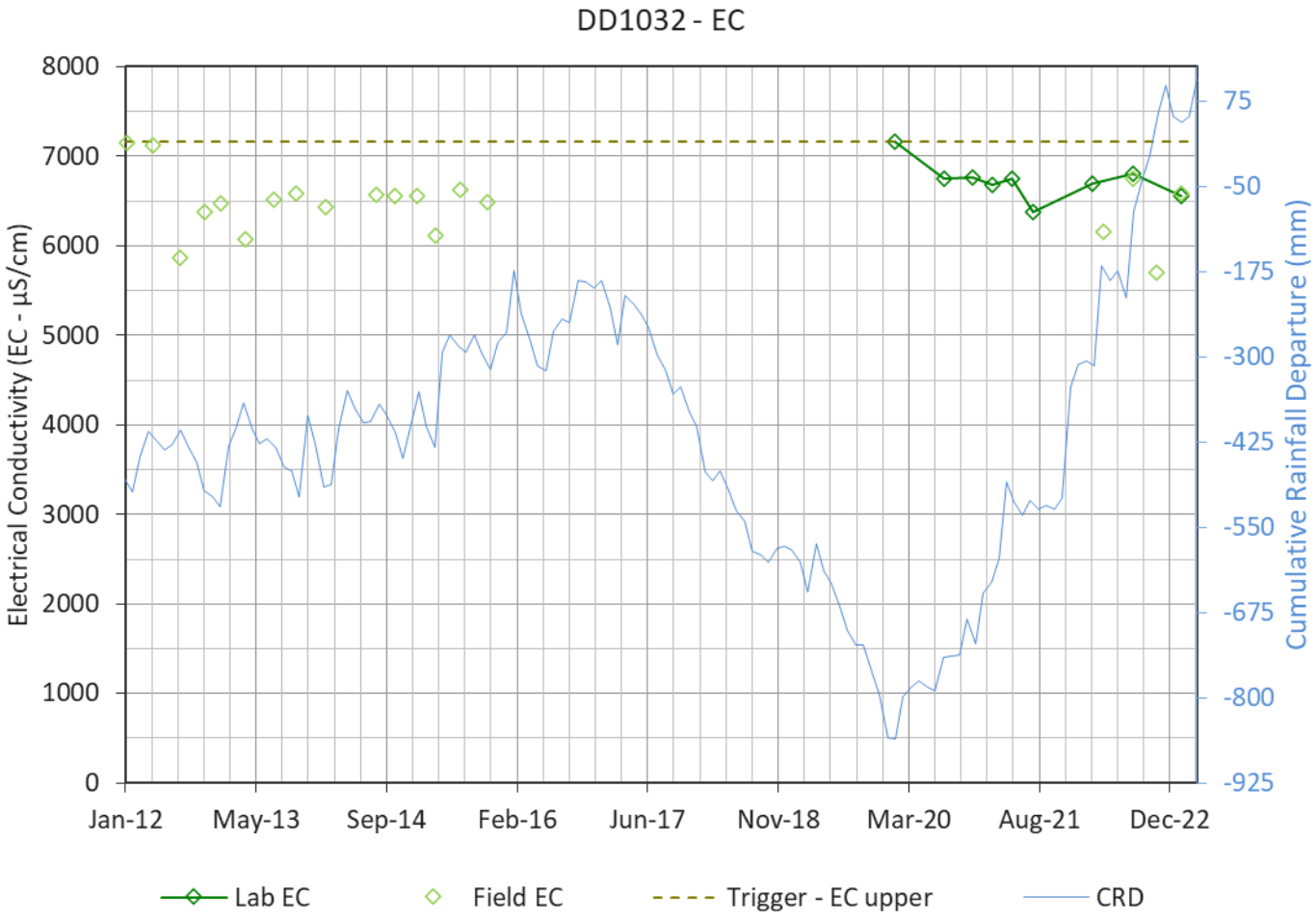

GW02S - pH
pH
Cumulative Rainfall Departure (mm)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Lab pH
Field pH
Trigger - pH upper
Trigger - pH lower
CRD

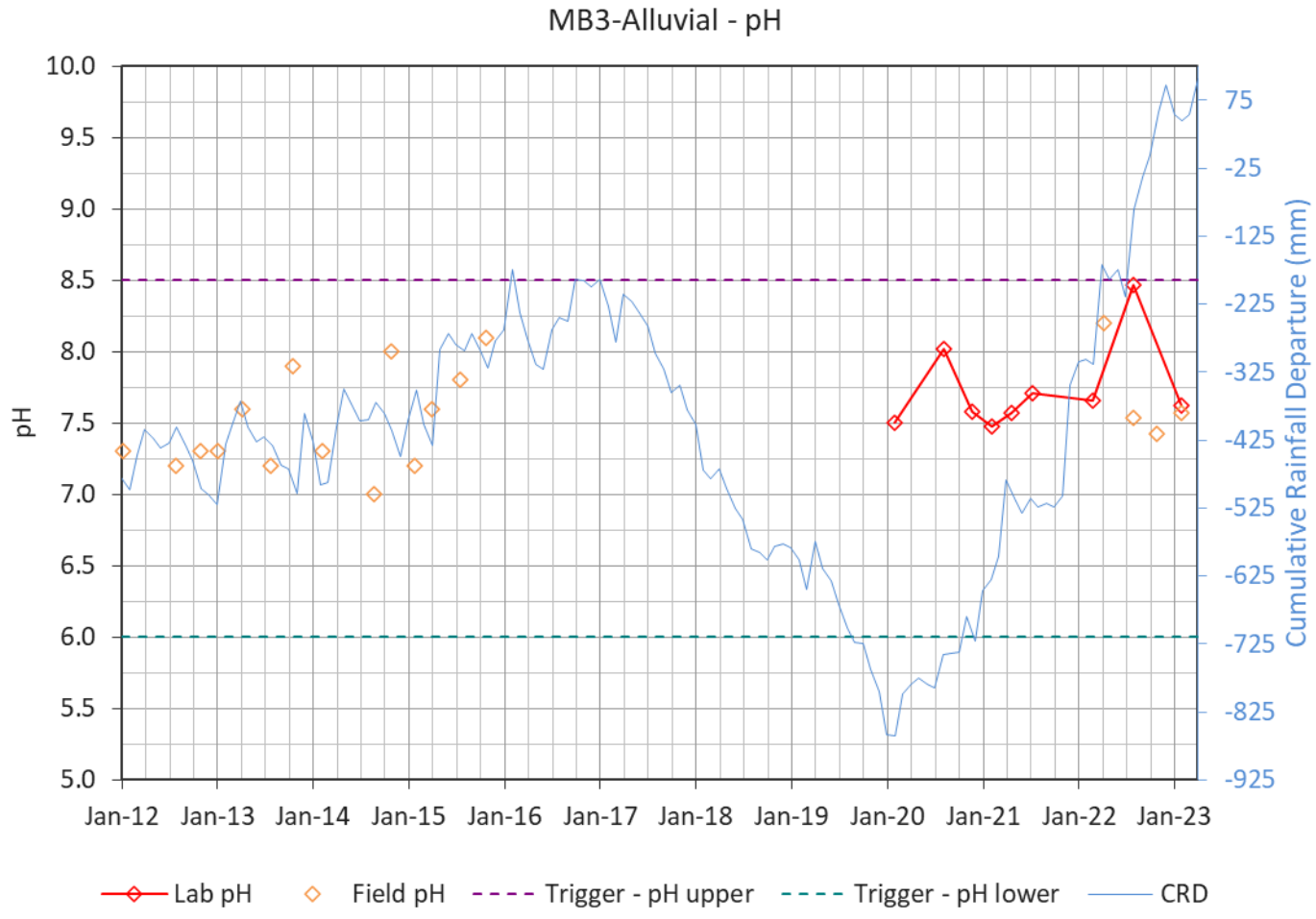

GW02S - EC
Electrical Conductivity (EC - µS/cm)
Cumulative Rainfall Departure (mm)
14000
12000
10000
8000
6000
4000
2000
0
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Lab EC
Field EC
Trigger - EC upper
CRD

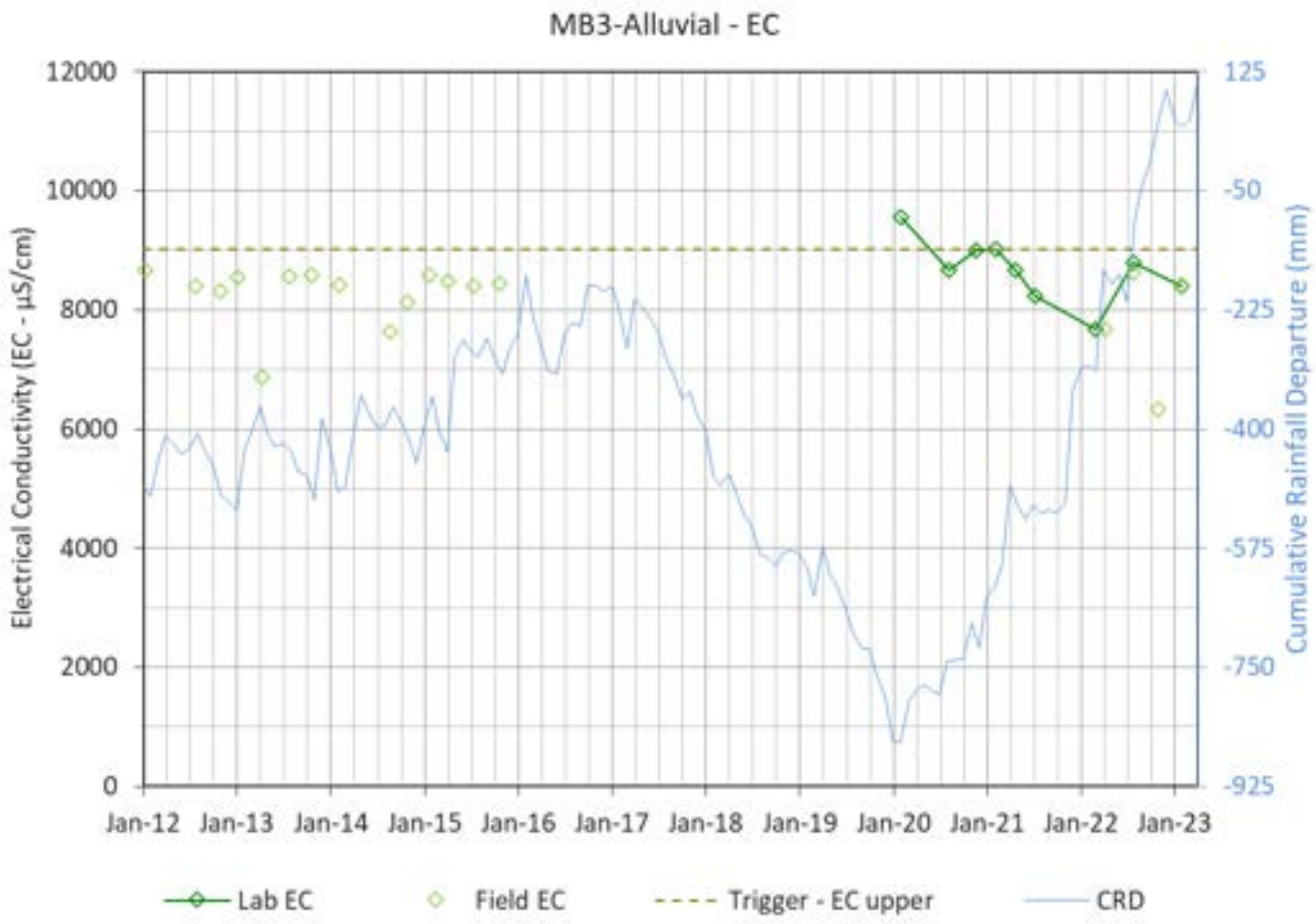

GW02D - pH
pH
Cumulative Rainfall Departure (mm)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Lab pH
Field pH
Trigger - pH upper
Trigger - pH lower
CRD

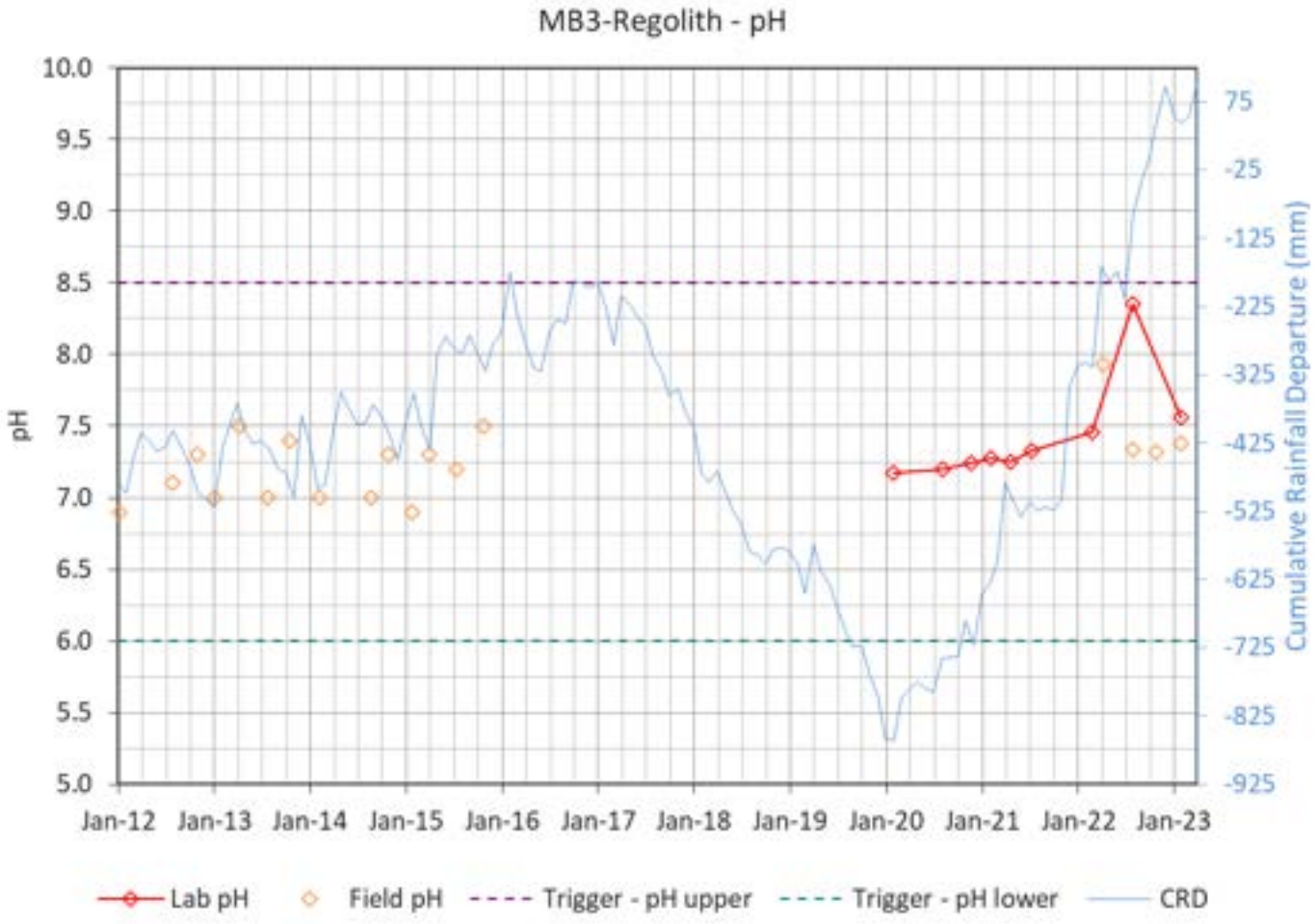

GW02D - EC
Electrical Conductivity (EC - µS/cm)
Cumulative Rainfall Departure (mm)
14000
12000
10000
8000
6000
4000
2000
0
125
-25
-175
-325
-475
-625
-775
-925
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Lab EC
Field EC
Trigger - EC upper
CRD

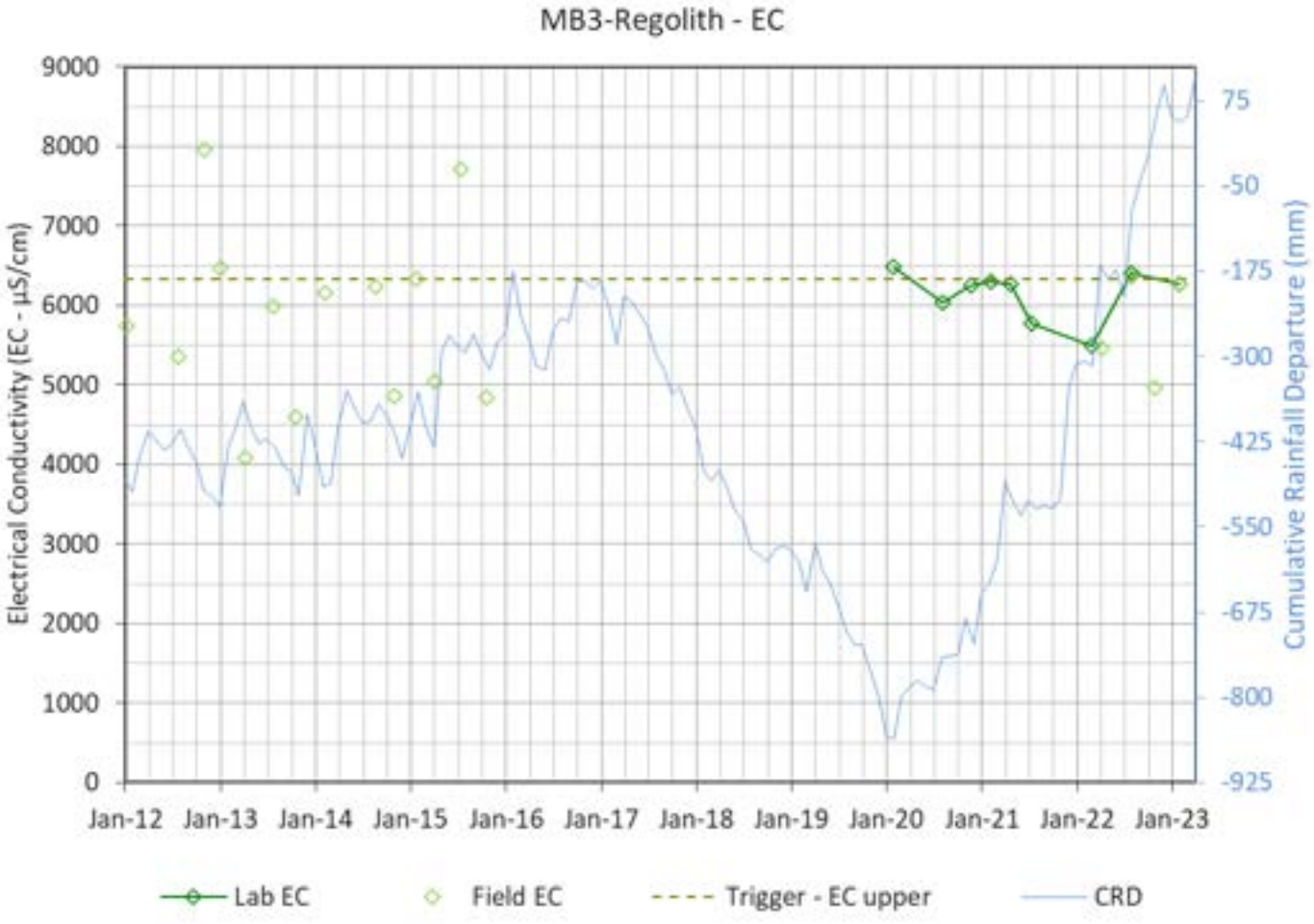

DD1032 - pH
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
pH
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Cumulative Rainfall Departure (mm)
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Lab pH
Field pH
Trigger - pH upper
Trigger - pH lower
CRD


DD1032 - EC
8000
7000
6000
5000
4000
3000
2000
1000
0
Electrical Conductivity (EC - µS/cm)
75
-50
-175
-300
-425
-550
-675
-800
-925
Cumulative Rainfall Departure (mm)
Jan-12
May-13
Sep-14
Feb-16
Jun-17
Nov-18
Mar-20
Aug-21
Dec-22
Lab EC
Field EC
Trigger - EC upper
CRD


MB3-Alluvial - pH
pH
Cumulative Rainfall Departure (mm)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Lab pH
Field pH
Trigger - pH upper
Trigger - pH lower
CRD


MB3-Alluvial - EC
Electrical Conductivity (EC - µS/cm)
Cumulative Rainfall Departure (mm)
12000
10000
8000
6000
4000
2000
0
125
-50
-225
-400
-575
-750
-925
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Lab EC
Field EC
Trigger - EC upper
CRD


MB3-Regolith - pH
pH
Cumulative Rainfall Departure (mm)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Lab pH
Field pH
Trigger - pH upper
Trigger - pH lower
CRD


MB3-Regolith - EC
Electrical Conductivity (EC - µS/cm)
Cumulative Rainfall Departure (mm)
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
75
-50
-175
-300
-425
-550
-675
-800
-925
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Lab EC
Field EC
Trigger - EC upper
CRD

Making Sustainability Happen