MALABAR

Maxwell Underground Mine
Environmental Monitoring Data
Quarter 4 2024

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 October to 31 December 2024. 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 reporting period Quarter 4 2024

Gauge	Insoluble Solids Result (g/m^2/month)			Annual Mean Limit (g/m^2/month)	Rolling Annual Average to end of reporting period (g/m^2/month)
	Oct	Nov	Dec		
2175	1.2	1.4	1.5	4	1.2
2230	1.5	1.2	0.9	4	1.3
2235	0.9	1.8	1.8	4	1.4
2247	1.2	1.5	1.5	4	1.4

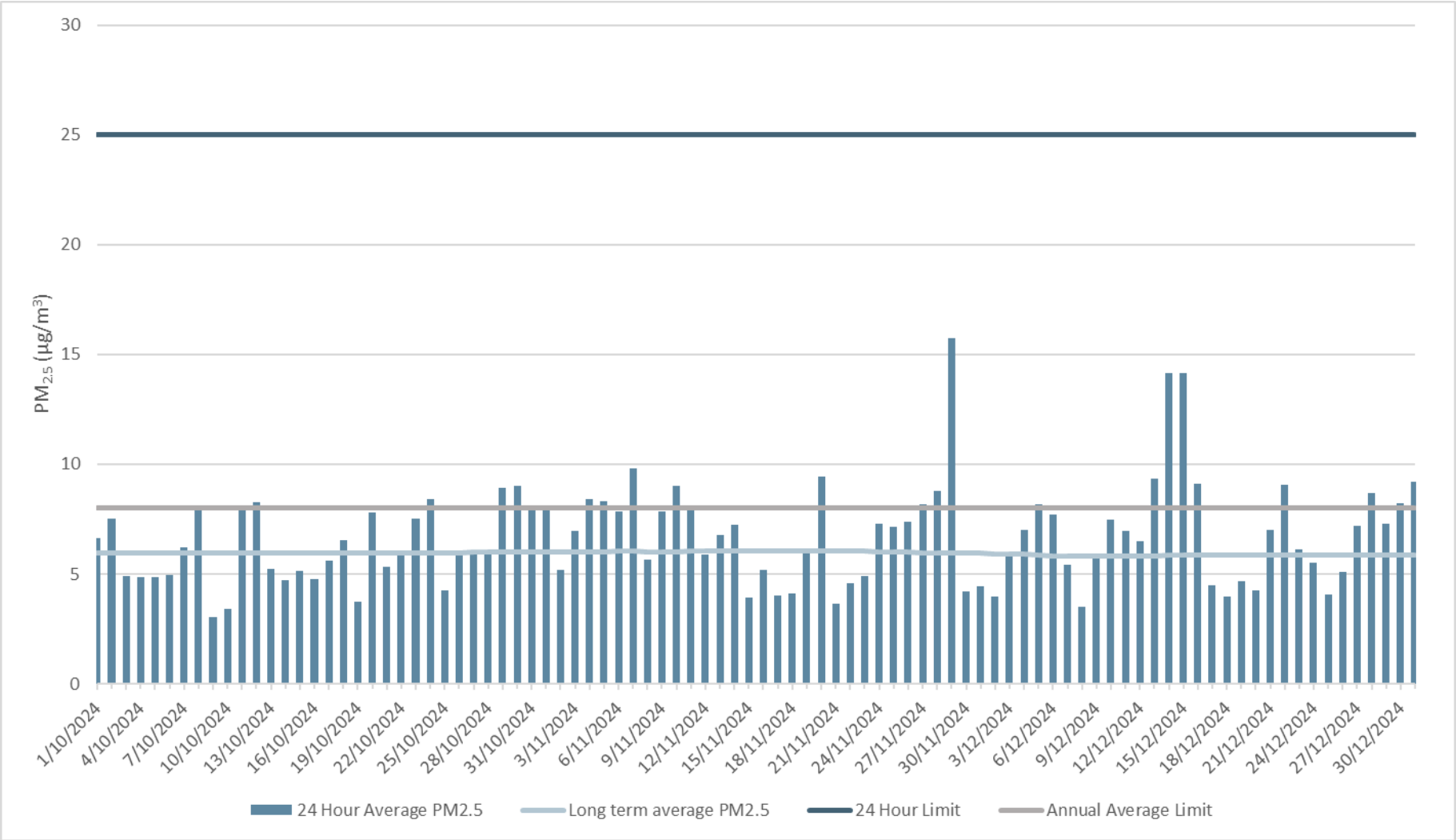

Figure 1. TEOM-1 PM_{10} monitoring results for the reporting period. Refer to notes for explanation of data gaps if shown by orange bars.

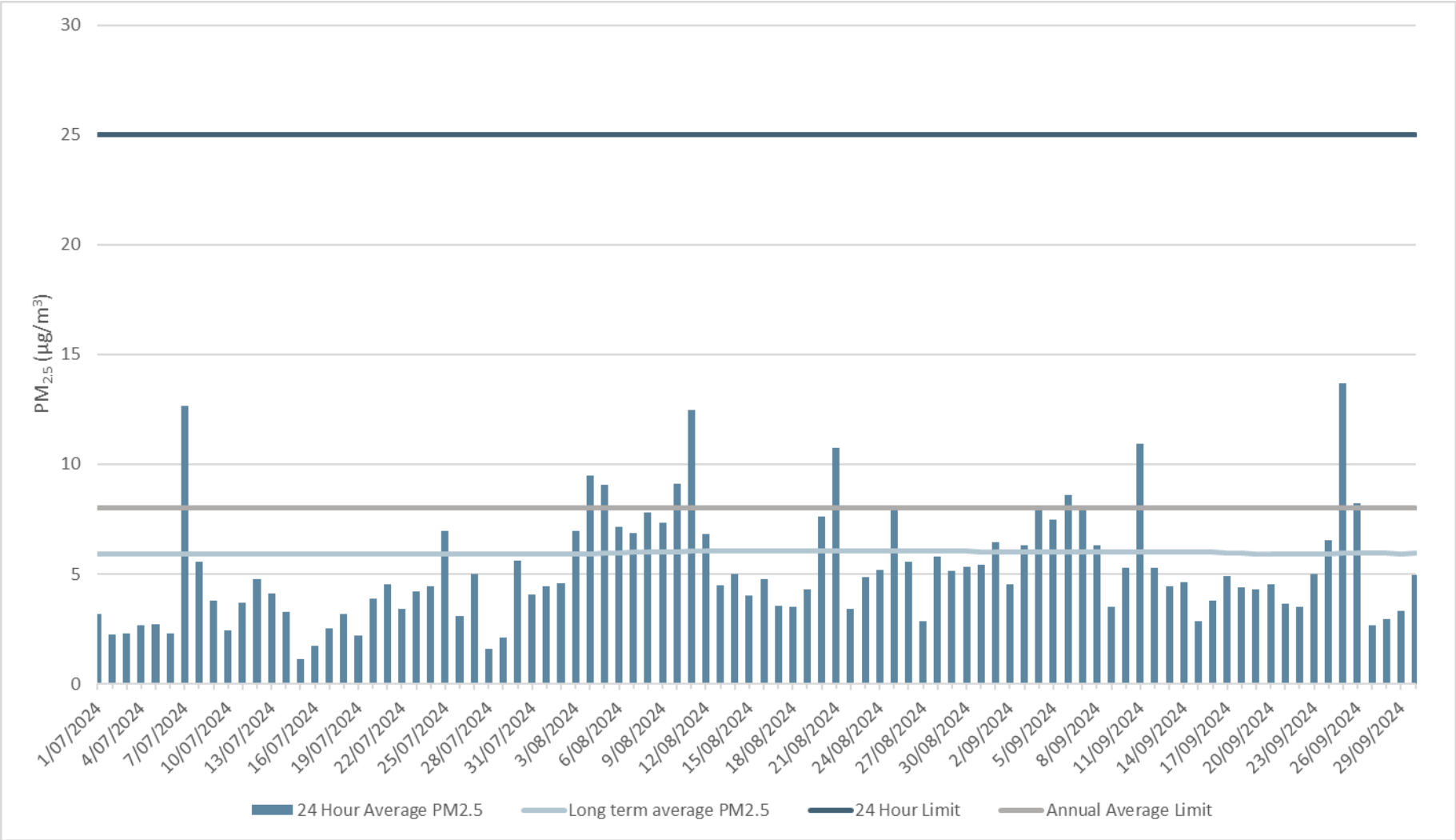

Figure 2. TEOM-1 $PM_{2.5}$ monitoring results for the reporting period. Refer to notes for explanation of data gaps if shown by orange bars.

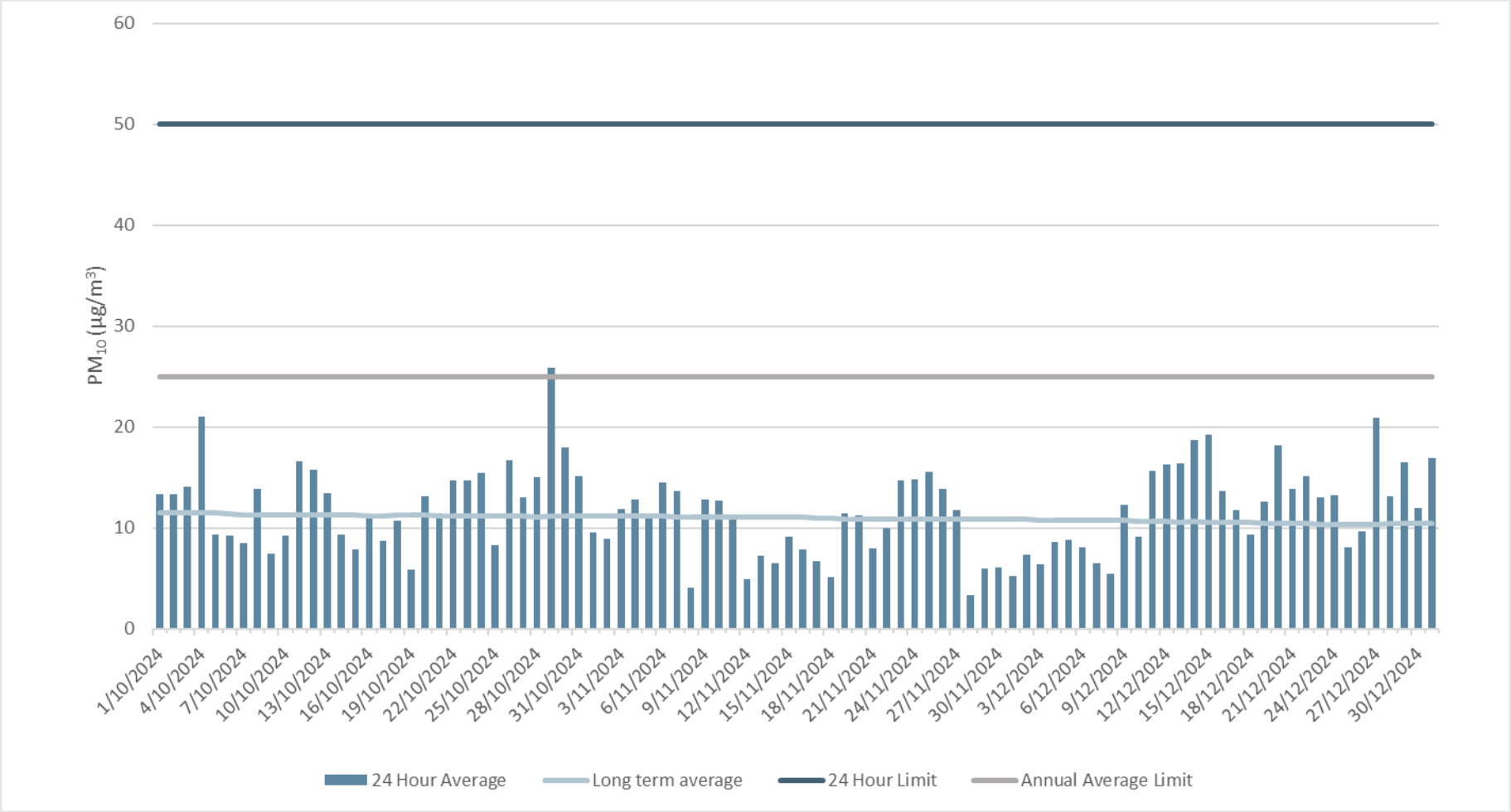

Figure 3. TEOM-2 PM_{10} monitoring results for the reporting period. Refer to notes for explanation of data gaps if shown by orange bars.

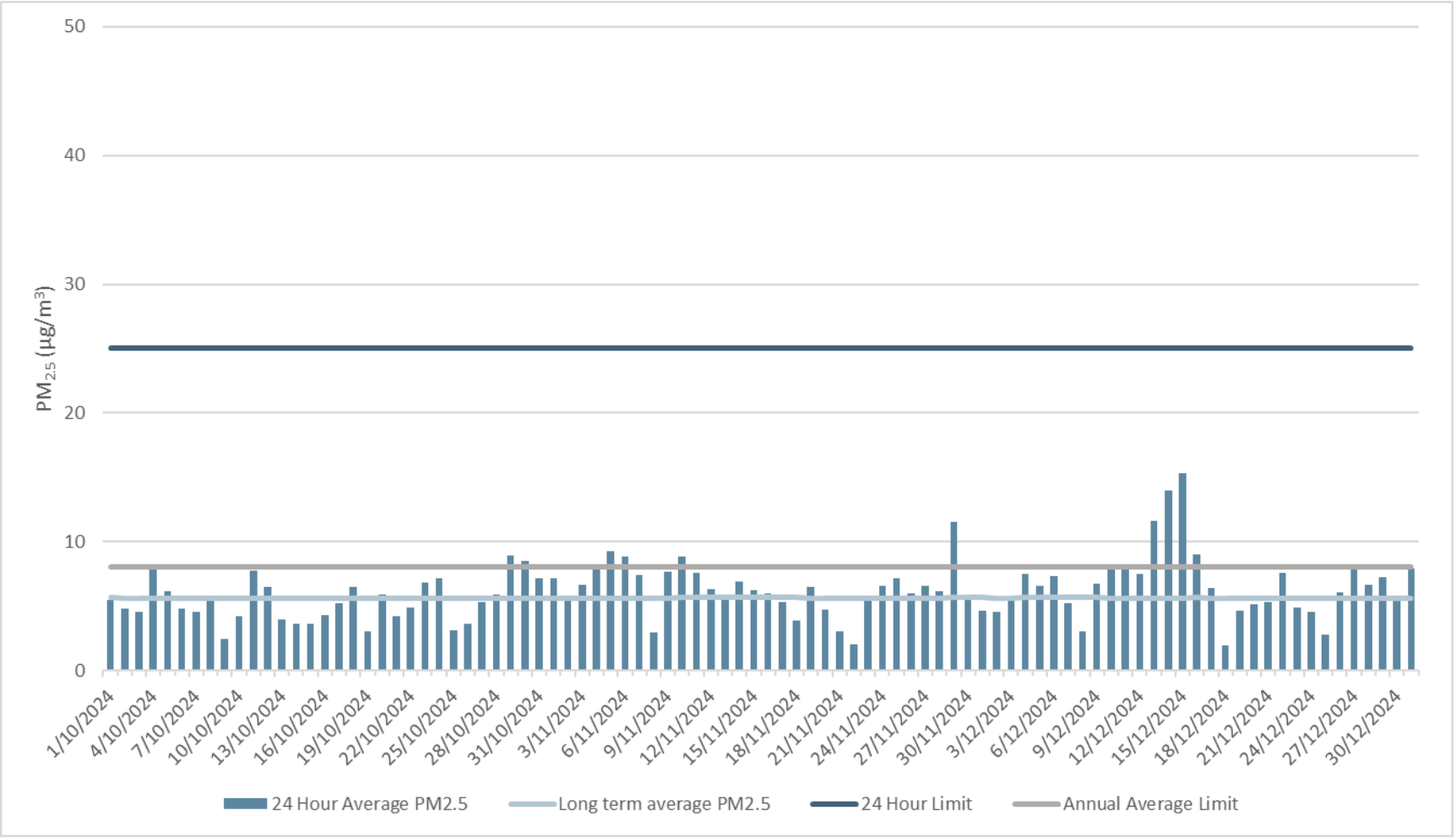

Figure 4. TEOM-2 $PM_{2.5}$ monitoring results for the reporting period. Refer to notes for explanation of data gaps if shown by orange bars.

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 issues such as 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 the monitoring contractor's data validation process, where such events result in 75% or less of 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 is presented, ie if no 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:

  TEOM-1

  When required, for TEOM-1, extended data gaps for PM_{10} are replaced with data from the BHP TEOM (DC07) on Balmoral Road, 2km to the northwest. Noting that $PM_{2.5}$ is not recorded at DC07 and where data is replaced, the long-term ratio of PM_{10} to $PM_{2.5}$ as recorded at TEOM-1 is applied to PM_{10} concentrations at DC07.

- There were no significant data gaps for the reporting period.

  TEOM-2

  When required, for TEOM-2, extended data gaps for PM_{10} are replaced with data from the Upper Hunter Air Quality Monitoring Network station named Jerrys Plains, which is located 2km to the south-east of TEOM-2. Noting that $PM_{2.5}$ is not recorded at the Jerrys Plains station, and where data is replaced, the long-term ratio of PM_{10} to $PM_{2.5}$ at TEOM-2 is applied to PM_{10} concentrations at Jerrys Plains.

- There were no significant data gaps for the reporting period.

Table 2. All mine water storage monitoring locations: quarterly laboratory water quality monitoring results for the reporting period 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)	Dec	88	514	866	8390	589	8.7	75	688	4510	5.0	7500
	Avg	131	520	845	7903	596	8.4	79	692	3975	6.8	7325
DC2 Dam (2109)	Dec	310	300	2610	14300	578	7.8	14	2310	4320	5.0	11800
	Avg	180	207	1491	8926	375	7.4	13	1474	2921	10.5	7454
Rail Loop Dam (2114)	Dec	217	498	859	8190	555	7.7	62	760	3830	5.0	7410
	Avg	172	349	602	5641	387	7.5	44	538	2604	20	5064
Industrial Dam (1969)	Dec	140	418	651	6500	446	8.6	58	520	2900	5.0	5710
	Avg	154	395	614	5965	423	8.4	57	497	2720	9.3	5238
OPC Dam	Dec	112	179	344	3300	207	8.8	26	288	1460	11	2930
	Avg	133	135	212	2228	129	8.5	17	181	842	24	1762
V Notch	Dec	384	511	1210	10900	470	7.9	20	1480	4300	5.0	9340
	Avg	329	441	1218	9239	436	7.9	24	1395	3630	5.2	8045
ES Void	Dec	220	576	793	8140	582	8.0	78	642	3640	5.0	7370
	Avg	236	570	800	7838	594	8.0	82	647	3768	6.3	7330
MEA Dam (MEA)	Oct	92	148	578	3860	144	8.6	10	507	914	5.0	2440
	Avg*	82	123	443	3097	110	8.7	10	383	854	5.0	1990
Mine Water Dam (MWD)	Oct	367	151	846	5550	181	8.3	26	925	1480	15	3620
	Avg	224	157	611	4290	169	8.4	23	605	1209	9.0	3090
Treated Water Dam (TWD)	Oct	58	565	803	8290	682	8.8	92	739	4000	5.0	7380
	Avg	87	539	845	8183	634	8.6	86	696	3993	5.0	7783

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)
MEA Sedimentation Dam (SED)	Oct	386	120	884	5840	151	8.5	29	947	1190	3580	3750
	Avg	264	169	695	4890	183	8.4	26	682	1331	731	3137

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.

The MEA Dam, Mine Water Dam, Treated Water Dam and MEA Sedimentation Dam were progressively constructed and commissioned during 2023. Samples were taken when water was available and safe access permitted.

Whilst the requirement is for sampling within 24 hours of commencement of an overflow from a sedimentation dam (SW2 – see Table 5 below) or mine water dam, sampling has also occurred from each water body on a quarterly basis, to aid the understanding of water quality outside of overflow events.

Locations are as per Table 7 of the Surface Water Management Plan dated 13/12/2023.

Table 3. All downstream surface water quality monitoring locations: scheduled (quarterly) laboratory monitoring results for the reporting period compared to rolling year-to-date averages (inclusive of any post rainfall sampling). See notes for further details. Where creeks were not flowing during scheduled sampling no results are presented in this Table. In most cases, no creeks were flowing during sampling in the rolling year to date, hence the rolling annual average is not presented for this table. If there is no flow during the sampling visit the rolling average is not presented.

Site	Month	Antimony	Arsenic	Bicarbonate ($CaCO_3$)	Calcium	Chloride	EC	Magnesium	Molybdenum	Potassium	Selenium	Sodium	Sulphate (SO_4)	TSS	TDS	Turbidity
W3	Oct *	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Avg*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SW1/ Saddlers U/S	Oct *	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Avg*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Saddlers D/S (W4-Bowfield)	Oct *	0.0010	0.0010	887	102	1950	8800	269	0.0010	9.0	0.010	1510	323	5.0	7720	2.5
	Avg*	**0.0010**	**0.0010**	**615**	**69**	**1621**	**6450**	**189**	**0.0012**	**9.6**	**0.010**	**1098**	**212**	**15**	**4223**	**23**
MEA D/S	Oct *	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Avg*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Saltwater D/S	Oct *	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Avg*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SW3	Oct *	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Avg*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SW2	Oct *	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Avg*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
H3	Oct *	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Avg*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

***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 defined 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 2024 Q2 report presented results from post-rainfall event sampling in June (the next scheduled sampling was in July, as presented in Table 3 above). The absence of any value indicates that there was no flow during the sampling visit.

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 Transport and Services Corridor sediment dams (Access Road Dam 1, 2, 3 and 4) were progressively constructed and commissioned during 2023. The requirement for the sampling and analysis for these variables is required within 24 hours of commencement of an overflow from a sedimentation dam or mine water dam (taken to be defined as an uncontrolled release from those dams). During the reporting period there were no overflows from such dams and hence there are no results in Table 3.

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.

Following an investigation into the high EC readings at site Saddlers Upstream (U/S) in Q3 2023 it was found that due to a change in sampling personnel, the requirement (Section 5.3 of the Water Management Plan) to only sample waterways that are flowing was not occurring (ie samples were of stagnant (ie non-flowing) water). This was reflective of the regional drought conditions. It was determined that all samples taken in 2023 were of stagnant water; and hence should not be used for comparison against trigger values and hence are not presented in this report. Going forward, samples are only taken if water is flowing.

Locations are as per the Surface Water Management Plan, Downstream Surface Water Monitoring Locations.

SW2 was added in 2024 to be representative of any offsite releases of water from the Transport and Services Corridor. It is immediately downstream of Sediment Dam 2. Samples are taken to enable an interpretation of any offsite impacts if an offsite release was to occur.

As per the updated Surface Water Management Plan submitted for approval with the Woodlands Hill Extraction Plan, Maxwell will resume surface water sampling at H3 (in 2025).

Table 4. Surface water scheduled field measurements at sites along Saddlers Creek for the reporting period and the previous three quarters and comparison against trigger levels. If an exceedance of the trigger level occurs (median over three consecutive samples), this is highlighted in red. TLTS = too low to sample. If sites were not flowing during scheduled or post-rainfall sampling no results are presented for those periods.

Site		Field result											
		pH				EC				Turbidity			
	Units	pH				µS/cm				NTU			
	Trigger	6.5–8.5				7,600				64			
		Q1 2024	Q2 2024	Q3 2024	Q4 2024	Q1 2024	Q2 2024	Q3 2024	Q4 2024	Q1 2024	Q2 2024	Q3 2024	Q4 2024
W3*		*	*	*	*	*	*	*	*	*	*	*	*
Saddlers D/S (W4 – Bowfield)*		*	8.1	8.2	8.2	*	1350	6220	8700	*	103	6.4	2.5
MEA D/S*		*	*	7.6	*	*	*	1497	*	*	*	59.1	*
Saddlers U/S*		*	7.5	*	*	*	1349	*	*	*	74	*	*
Saltwater D/S*		*	*	*	*	*	*	*	*	*	*	*	*
SW1/ Saddlers*		*	7.6	*	*	*	466	*	*	*	213	*	*
SW3*		*	*	*	*	*	*	*	*	*	*	*	*

* As is explained in the Notes to Table 3, surface water samples are not taken in stagnant water (where there is no flow).

Table 5. Surface water laboratory results at sites along Saddlers Creek (scheduled quarterly and post-rainfall sampling) for the reporting period and the previous three quarters and comparison against trigger levels. If an exceedance of the trigger level occurs (median over three consecutive samples), this is highlighted in red. Refer also to Notes at end of the Table. The absence of data (*) indicates that the site was not flowing and hence no sample was taken.

Site	Scheduled or post-rainfall 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	18/10/23	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	21/12/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	06/04/24	Rainfall event*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	19/04/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	03/06/24	Rainfall event*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	24/07/2024	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	30/10/2024	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Saddlers D/S	19/10/23	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	21/12/23	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	06/04/24	Rainfall Event*	0.0010	0.0010	0.0010	650	59	1960	218	0.0010	11	0.01	1370	163	14.0	4180
	19/04/24	Scheduled*	0.0010	0.0010	0.0010	779	78	2220	223	0.0020	12	0.01	1370	218	5.0	4690
	03/06/24	Rainfall event*	0.0010	0.0010	0.0010	148	21	375	36.0	0.0010	8.0	0.010	198	71	36	843
	24/07/2024	Scheduled*	0.0010	0.0010	0.0010	611	86	1600	200	0.0010	8.0	0.010	1040	284	14	3680

Site	Scheduled or post-rainfall 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
	29/10/2024	Scheduled*	0.0010	0.0010	0.0010	887	102	1950	269	0.0010	9.0	0.010	1510	323	5.0	7720
MEA D/S	20/10/23	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	15/1/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	06/04/24	Rainfall event*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	18/04/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	03/06/24	Rainfall event*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	23/07/2024	Scheduled*	0.0010	0.0010	0.0010	34	8.0	14	4.0	0.0010	9.0	0.010	11	15	6.0	223
	30/10/2024	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Saddlers U/S	18/10/23	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	12/1/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	06/04/24	Rainfall event*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	19/04/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	03/06/24	Rainfall event*	0.0010	0.0010	0.0010	81	50	254	46.0	0.0010	8.0	0.010	148	328	36	902
	23/07/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	30/10/2024	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Site	Scheduled or post-rainfall 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
Saltwater D/S	18/10/23	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	10/1/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	19/04/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	03/06/24	Rainfall event*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	25/07/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	28/10/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SW1/ Saddlers	19/10/23	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	11/1/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	06/04/24	Rainfall event*	0.0010	0.0010	0.0010	21	10	105	10	0.0010	8	0.01	55	10	41	334
	19/04/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	03/06/24	Rainfall event*	0.0010	0.0010	0.0010	51	10	130	9.0	0.0010	9.0	0.010	63	10	50	446
	24/07/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	29/10/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SW2**	3/06/24	Rainfall event*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	23/07/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Site	Scheduled or post-rainfall 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
SW3	18/10/23	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	11/1/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	06/04/24	Rainfall event*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	19/04/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	03/06/24	Rainfall event*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	25/07/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	28/10/24	Scheduled*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
H3***	See Notes	-	*	*	*	*	*	*	*	*	*	*	*	*	*	*

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.

* As is explained in the Notes to Table 3, all surface water samples taken in 2023 were of stagnant water and there were no samples taken during the reporting period due to no flow. Hence there are no results in Table 3 for 2023. Going forward, samples will only be taken in creeks when they are flowing; hence the absence of results in this Table are due to no flow/stagnant water/dry sampling location.
** Transport and Services Corridor sediment dams – Permanent Sediment Basin 2 – SW2. Sampling commenced 3/6/24 (a post-rainfall event however no flow at SW2). This site is judged to be the only one of the four Transport and Services Corridor sediment dams with a potential to release water offsite downstream to the Plashett reservoir.

Table 6. Maxwell Infrastructure Groundwater quality biennial monitoring results for Quarter 4 2024 (rolling year to date average shown Jan – Dec 24). See notes for further details. NS = Not sampled - (as sampling is twice a year, next is due Q2 2025). EC and pH recording from field measurements where available.

Site	Aluminium	Arsenic	Bicarbonate Alkalinity as CaCO3	Total Alkalinity	Carbonate Alkalinity as CO3	Boron	Calcium	Chloride	Chromium	Copper	Electrical conductivity	EC trigger value	Iron	Lead
R4241	0.010	0.0010	564	564	1.0	0.27	226	1,100	0.0010	0.0010	5,490	6,253	0.76	0.0010
Average	***0.010***	***0.0010***	***564***	***564***	***1.0***	***0.26***	***224***	***1,046***	***0.0010***	***0.0010***	***5,530***	***-***	***0.95***	***0.0010***
F1162	0.010	0.0010	1,080	1,080	1.0	0.12	77	260	0.0040	0.0010	2,670	-	0.18	0.0010
Average	***0.010***	**0.0010**	**1,038**	***1,038***	***1.0***	**0.24**	**129**	**397**	**0.0030**	**0.0010**	**3,165**	***-***	***0.12***	***0.0010***
F1164	0.0010	0.0010	700	700	1.0	0.18	132	720	0.0060	0.0010	3,980	-	0.41	0.0010
Average	***0.0010***	**0.0010**	**708**	***708***	**1.0**	**0.23**	**170**	**831**	**0.0040**	**0.0010**	**4,830**	***-***	***2.3***	**0.0085**
GW01D	0.0010	0.0010	594	594	1.0	0.34	477	1,200	0.0010	0.0060	5,460	5,680	3.1	0.0010
Average	***0.0010***	***0.0010***	***592***	***592***	***1.0***	***0.35***	***464***	***1,290***	***0.0010***	***0.0035***	***5,685***	***-***	***1.6***	***0.0010***
GW01S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	9,260	NS	NS
Average	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
GW02D	0.010	0.0010	2,120	2,120	1.0	0.30	75	2,210	0.0010	0.013	14,400	10,500	0.050	0.0010
Average	***0.015***	***0.0010***	***2,115***	***2,115***	***1.0***	***0.29***	***69***	***2,135***	***0.0010***	***0.0090***	***14,450***	***-***	***0.050***	***0.0010***
GW02S	0.010	0.0010	868	868	1.0	0.12	407	928	0.0010	0.0010	8,260	9,480	0.060	0.0010
Average	***0.010***	***0.0010***	***866***	***866***	***1.0***	***0.13***	***413***	***969***	***0.0010***	***0.0010***	***8,180***	***-***	***0.055***	***0.0010***
GW04	0.010	0.0010	840	840	1.0	0.86	142	180	0.0010	0.0010	1,820	-	2.4	0.0010
Average	***1.2***	***0.0010***	***833***	***833***	***1.0***	***0.82***	***141***	***182***	***0.0050***	***0.0045***	***1,850***	***-***	***4.9***	***0.0045***

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	306	0.14	0.0040	0.010	7.1	Min: 6.0, Max: 8.5	0.010	0.0010	569	1,240	32	4,270	0.0080
Average	***322***	***0.13***	***0.0040***	***0.0080***	***7.1***	***-***	***0.010***	***0.0010***	***576***	***1,285***	***33***	***4,185***	***0.0065***
F1162	50	0.38	0.0030	0.014	7.0	-	0.010	0.0010	165	25	90	1,120	0.0050
Average	***122***	***0.30***	***0.0020***	***0.0090***	***7.0***	***-***	***0.010***	***0.0010***	***366***	***140***	***77***	***1,505***	***0.0050***
F1164	151	0.54	0.0040	0.026	6.8	-	0.010	0.0010	518	406	45	2,860	0.0050
Average	***203***	***0.39***	***0.0035***	***0.017***	***6.9***	***-***	***0.010***	***0.0010***	***630***	***828***	***53***	***3,435***	***0.017***
GW01D	173	0.27	0.0010	0.0020	6.6	Min: 6.0, Max: 8.5	0.010	0.0010	573	642	28	4,490	0.010
Average	***180***	***0.25***	***0.0010***	***0.0070***	***6.6***	***-***	***0.010***	***0.0010***	***578***	***709***	***19***	***4,415***	***0.023***
GW01S	NS	NS	NS	NS	NS	Min: 6.0, Max: 8.5	NS	NS	NS	NS	NS	NS	NS
Average	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
GW02D	20	0.50	0.0040	0.020	7.1	Min: 6.0, Max: 8.5	0.010	0.0010	3,650	3,440	2,930	10,400	0.0060
Average	***19***	***0.47***	***0.0045***	***0.019***	***7.1***	***-***	***0.010***	***0.0010***	***3,650***	***3,580***	***2,390***	***10,700***	***0.0070***
GW02S	387	1.7	0.0010	0.012	6.7	Min: 6.0, Max: 8.5	0.010	0.0010	990	3,130	567	6,950	0.0010
Average	***409***	***1.8***	***0.0010***	***0.013***	***6.7***	***-***	***0.010***	***0.0010***	***1,010***	***3,030***	***479***	***6,890***	***0.0030***
GW04	68	0.27	0.0010	0.0010	6.7	-	0.010	0.0010	190	67	72	1,230	0.0050
Average	***67***	***0.28***	***0.0010***	***0.0045***	***6.7***	***-***	***0.010***	***0.0010***	***188***	***67***	***380***	***1,145***	***0.052***

Table 7. DS1 monitoring bore: Laboratory groundwater quality monthly monitoring results for Quarter 4 2024 (rolling year to date average shown Jan - Dec 24). See notes for further details. Field measurements used where available.

Date of sample	pH value	Electrical conductivity	Total Dissolved Solids @180°C	Salinity (g/kg)
10/10/2024	6.2	8,490	6,880	4.7
11/11/2024	6.2	8,550	6,660	7.8
13/12/2024	6.0	8,550	7,390	4.7
Average	***6.2***	***8,498***	***7,148***	***4.7***

Table 8. Maxwell Underground Groundwater quality biennial monitoring results for Quarter 4 2024 (rolling year to date average shown Jan–Dec 2024). See notes for further details (under the new Maxwell Underground Mine Water Management Plan, sampling changed from quarterly to biannual). NS = Not sampled (as sampling is twice a year, next is due Q1 2025).

Site	Aluminium	Arsenic	Bicarbonate Alkalinity as CaCO3	Total Alkalinity	Carbonate Alkalinity as CO3	Boron	Calcium	Chloride	Chromium	Copper	Electrical conductivity	EC trigger value	Iron	Lead
DD1005	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***1,010***	***1,010***	***1.0***	***0.20***	***134***	***1,785***	***0.0010***	***0.0070***	***7,275***	***-***	***0.050***	***0.0010***
DD1014	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***1,024***	***1,024***	***1.0***	***0.38***	***65***	***2,370***	***0.0010***	***0.0045***	***9,405***	***-***	***0.15***	***0.0010***
DD1015	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
DD1016	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***1,155***	***1,155***	***1.0***	***0.26***	***167***	***1,540***	***0.0010***	***0.0010***	***6,555***	***-***	***1.7***	***0.0010***
DD1025	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	14,200	NS	NS
Average	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
DD1027	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
DD1032	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7,170	NS	NS
Average	***0.010***	***0.0010***	***1,060***	***1,060***	***1.0***	***0.27***	***14***	***1,525***	***0.0010***	***0.0010***	***6,338***	***-***	***0.050***	***0.0010***
DD1043	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***2,315***	***2,315***	***1.0***	***0.44***	***46***	***1,370***	***0.0010***	***0.0010***	***7,842***	***-***	***0.095***	***0.0010***
DD1052	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS

Site	Aluminium	Arsenic	Bicarbonate Alkalinity as CaCO3	Total Alkalinity	Carbonate Alkalinity as CO3	Boron	Calcium	Chloride	Chromium	Copper	Electrical conductivity	EC trigger value	Iron	Lead
Average	***0.030***	***0.0015***	***944***	***961***	***17***	***0.27***	***5.0***	***1,915***	***0.0050***	***0.0020***	***7,352***	***-***	***0.12***	***0.0010***
DD1057	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0025***	***3,725***	***3,725***	***1.0***	***0.37***	***11***	***1,400***	***0.0030***	***0.0010***	***9,986***	***-***	***1.2***	***0.0010***
MB03	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
MB1A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***756***	***756***	***1.0***	***0.10***	***223***	***1,180***	***0.0015***	***0.016***	***4,852***	***-***	***0.050***	***0.0010***
MB1R	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***1,285***	***1,285***	***1.0***	***0.17***	***66***	***1,250***	***0.0010***	***0.0010***	***6,084***	***-***	***0.26***	***0.0010***
MB1W	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***1,300***	***1,300***	***1.0***	***0.18***	***62***	***1,220***	***0.0010***	***0.0015***	***6,040***	***-***	***0.17***	***0.0010***
MB2A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***767***	***767***	***1.0***	***0.29***	***87***	***1,655***	***0.0010***	***0.0020***	***6,900***	***-***	***0.050***	***0.0010***
MB2R	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***1,140***	***1,140***	***1.0***	***0.28***	***34***	***1,435***	***0.0010***	***0.0010***	***6,354***	***-***	***0.050***	***0.0010***
MB3A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	9,009	NS	NS
Average	***0.010***	***0.0010***	***828***	***828***	***1.0***	***0.29***	***48***	***2,005***	***0.0010***	***0.0080***	***8,172***	***-***	***0.050***	***0.0010***
MB3R	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	6,327	NS	NS
Average	***0.010***	***0.0010***	***725***	***725***	***1.0***	***0.20***	***165***	***1,450***	***0.0010***	***1.8***	***6,268***	***-***	***0.050***	***0.0020***

Site	Aluminium	Arsenic	Bicarbonate Alkalinity as CaCO3	Total Alkalinity	Carbonate Alkalinity as CO3	Boron	Calcium	Chloride	Chromium	Copper	Electrical conductivity	EC trigger value	Iron	Lead
MB4A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***322***	***322***	***1.0***	***0.050***	***65***	***106***	***0.0010***	***0.0025***	***932***	***-***	***0.050***	***0.0010***
MB4C	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***556***	***556***	***1.0***	***0.13***	***17***	***485***	***0.0010***	***0.0010***	***2,470***	***-***	***0.050***	***0.0010***
MW1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***681***	***681***	***1.0***	***0.24***	***116***	***1,515***	***0.0020***	***0.040***	***6,092***	***-***	***0.050***	***0.0010***
MW2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***838***	***838***	***1.0***	***0.25***	***67***	***1,660***	***0.0015***	***0.0065***	***6,546***	***-***	***0.050***	***0.0010***
MW3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
MB04	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***1,360***	***1,360***	***1.0***	***0.22***	***169***	***2,850***	***0.0010***	***0.0015***	***10,800***	***-***	***0.050***	***0.0010***
MB05	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***673***	***673***	***1.0***	***0.18***	***92***	***1,495***	***0.0010***	***0.0015***	***5,974***	***-***	***0.050***	***0.0010***
MB06D	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0035***	***3,920***	***3,920***	***1.0***	***0.28***	***17***	***721***	***0.0010***	***0.0010***	***8,130***	***-***	***0.050***	***0.0010***
MB06S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.030***	***2,120***	***2,120***	***1.0***	***0.28***	***23***	***562***	***0.0010***	***0.0010***	***5,228***	***-***	***0.44***	***0.0010***
MB07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Average	***0.010***	***0.0010***	***584***	***584***	***1.0***	***0.23***	***132***	***1,535***	***0.0010***	***0.0035***	***6,903***	***-***	***0.050***	***0.0010***

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	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***226***	***0.013***	***0.0045***	***0.012***	***7.1***	***-***	***0.010***	***0.0010***	***1,190***	***217***	***23***	***4,180***	***0.0050***
DD1014	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***36***	***0.031***	***0.0010***	***0.0020***	***7.4***	***-***	***0.010***	***0.0010***	***1,985***	***220***	***5.0***	***5,660***	***0.0050***
DD1015	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
DD1016	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***273***	***0.16***	***0.0010***	***0.0010***	***7.0***	***-***	***0.010***	***0.0010***	***824***	***93***	***13***	***3,965***	***0.0070***
DD1025	NS	NS	NS	NS	NS	Min: 6.0, Max: 8.5	NS	NS	NS	NS	NS	NS	NS
Average	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
DD1027	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
DD1032	NS	NS	NS	NS	NS	Min: 6.0, Max: 8.5	NS	NS	NS	NS	NS	NS	NS
Average	***5.0***	***0.022***	***0.0010***	***0.0010***	***7.4***	***-***	***0.010***	***0.0010***	***1,460***	***60***	***22***	***3,770***	***0.0050***
DD1043	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***27***	***0.023***	***0.0010***	***0.0010***	***6.9***	***-***	***0.010***	***0.0010***	***1.805***	***149***	***5.0***	***5,025***	***0.0050***

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	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***3.5***	***0.036***	***0.023***	***0.016***	***8.0***	***-***	***0.010***	***0.0010***	***1,620***	***90***	***12***	***4,415***	***0.0075***
DD1057	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***5.5***	***0.030***	***0.0080***	***0.0020***	***7.6***	***-***	***0.010***	***0.0010***	***2,525***	***5.5***	***5.0***	***6,600***	***0.0050***
MB03	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
MB1A	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***204***	***0.0025***	***0.0020***	***0.017***	***7.4***	***-***	***0.010***	***0.0010***	***634***	***137***	***289***	***2,930***	***0.032***
MB1R	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***58***	***0.017***	***0.0010***	***0.0010***	***7.2***	***-***	***0.010***	***0.0010***	***1,250***	***92***	***5.0***	***3,450***	***0.0050***
MB1W	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***61***	***0.041***	***0.0010***	***0.0020***	***7.2***	***-***	***0.010***	***0.0010***	***1,265***	***85***	***19***	***3,550***	***0.0050***
MB2A	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***196***	***0.39***	***0.0040***	***0.0020***	***7.5***	***-***	***0.010***	***0.0010***	***1,215***	***492***	***13***	***4,105***	***0.0050***
MB2R	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***52***	***0.0040***	***0.0010***	***0.0010***	***7.8***	***-***	***0.010***	***0.0010***	***1,315***	***2.0***	***18***	***3,610***	***0.0050***

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	NS	NS	NS	NS	NS	Min: 6.0, Max: 8.5	NS	NS	NS	NS	NS	NS	NS
Average	***233***	***0.0015***	***0.0030***	***0.0015***	***7.5***	***-***	***0.010***	***0.0010***	***1,520***	***592***	***9.5***	***4,890***	***0.0050***
MB3R	NS	NS	NS	NS	NS	Min: 6.0, Max: 8.5	NS	NS	NS	NS	NS	NS	NS
Average	***330***	***0.27***	***0.0015***	***0.069***	***7.6***	***-***	***0.010***	***0.0010***	***774***	***587***	***5.0***	***4,060***	***0.027***
MB4A	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***45***	***0.0015***	***0.0010***	***0.0010***	***7.2***	***-***	***0.010***	***0.0010***	***72***	***31***	***187***	***534***	***0.0050***
MB4C	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***30***	***0.0010***	***0.0020***	***0.0010***	***8.1***	***-***	***0.010***	***0.0010***	***515***	***17***	***5.0***	***1,410***	***0.0050***
MW1	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***375***	***0.0010***	***0.0010***	***0.0015***	***7.4***	***-***	***0.010***	***0.0010***	***849***	***716***	***6,644***	***4,340***	***0.0050***
MW2	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***145***	***0.046***	***0.0015***	***0.0020***	***7.4***	***-***	***0.010***	***0.0010***	***1,195***	***137***	***1,423***	***3,830***	***0.0050***
MW3	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***	***-***
MB04	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***384***	***0.19***	***0.0010***	***0.011***	***6.9***	***-***	***0.010***	***0.0010***	***1,800***	***401***	***56***	***6,515***	***0.0070***

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
MB05	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***157***	***0.0015***	***0.0015***	***0.0025***	***7.4***	***-***	***0.010***	***0.0010***	***1,002***	***260***	***10,955***	***3,635***	***0.0050***
MB06D	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***21***	***0.0035***	***0.015***	***0.0050***	***7.8***	***-***	***0.010***	***0.0010***	***2,190***	***88***	***7.5***	***5,195***	***0.0050***
MB06S	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***26***	***0.050***	***0.0090***	***0.0050***	***7.7***	***-***	***0.010***	***0.0010***	***1,290***	***144***	***36***	***3,385***	***0.0050***
MB07	NS	NS	NS	NS	NS	-	NS	NS	NS	NS	NS	NS	NS
Average	***329***	***0.014***	***0.0010***	***0.0010***	***7.2***	***-***	***0.010***	***0.0010***	***990***	***568***	***295***	***3,970***	***0.0050***

Notes

The Maxwell Underground Mine Water Management Plan (WMP) was implemented from Q3 2021 and supersedes 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 WMP:

- monthly rather than quarterly recording of reduced standing water levels where there are no loggers (however as of 2024 loggers have been installed 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 were 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 included 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 evaluation and indications to change in trend and are presented here.

Trigger levels

As presented in SLR (2024a) Annual Review DD1032 exceeded TARP Level 1 for groundwater level and GW02D TARP Level 1 for EC and continued to exceed during the reporting period. Mitigation measures are reported in SLR (2024a). As presented in SLR (2024b) Q4-2024 quarterly report, observed groundwater levels, EC and pH at the remaining 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 4 2024 compared to the rolling year-to-date average (Jan–Dec 2024).

Site (with seam names for VWPs)	Oct	Nov	Dec	Rolling average	Type of bore	Type of measurement as of Dec 24
DS1	223.94	223.94	223.94	223.94	Standpipe	Manual
R4241	175.83	175.86	175.85	176.66	Standpipe	Logger
F1162	145.33	145.38	145.39	144.77	Standpipe	Logger
F1164	145.32	145.39	145.42	144.57	Standpipe	Logger
GW01D	201.26	200.56	200.25	200.49	Standpipe	Logger
GW01S	198.76	198.77	198.76	198.79	Standpipe	Logger
GW02D	135.40	135.48	135.53	135.59	Standpipe	Logger
GW02S	191.07	190.83	190.60	190.69	Standpipe	Logger
GW04	151.56	151.87	152.07	150.63	Standpipe	Logger
BLK6R12 – VW1 (WB)	161.76	161.70	161.63	161.81	VWP	Logger
BLK6R12 – VW2 (RB)	148.85	148.84	148.81	148.70	VWP	Logger
BLK6R12 – VW3 (WN)	122.23	122.20	122.14	122.23	VWP	Logger
BLK6R12 – VW4 (BK)	123.29	123.16	122.98	123.41	VWP	Logger
DD1005	137.49	134.68	132.49	140.46	Standpipe	Logger
DD1014	135.88	135.88	135.89	136.00	Standpipe	Logger
DD1015	(1)	(1)	(1)	(1)	Standpipe	Logger
DD1016	142.07	142.06	142.06	142.10	Standpipe	Logger
DD1025	(2)	(2)	(2)	(2)	Standpipe	Logger
DD1027	(1)	(1)	(1)	(1)	Standpipe	Logger
DD1032	126.08	125.39	124.19	127.35	Standpipe	Logger
DD1043	127.90	127.83	127.76	128.12	Standpipe	Logger
DD1052	118.15			119.30	Standpipe	Logger

Site (with seam names for VWPs)	Oct	Nov	Dec	Rolling average	Type of bore	Type of measurement as of Dec 24
DD1057	123.38	123.37	123.40	123.33	Standpipe	Logger
MB03	114.82	114.80	114.75	114.83	Standpipe	Logger
MB04	129.13	128.95	128.74	128.80	Standpipe	Logger
MB05	93.82	93.75	93.60	93.58	Standpipe	Logger
MB06D	121.46	121.41	121.39	121.47	Standpipe	Logger
MB06S	119.16	119.04	119.06	119.15	Standpipe	Logger
MB07	123.77	123.69	123.63	123.56	Standpipe	Logger
MB1-Alluvial	72.86	72.76	72.72	72.90	Standpipe	Logger
MB1-Redbank	74.68	74.55	74.69	74.97	Standpipe	Logger
MB1-Whybrow	73.99	73.95	73.97	74.33	Standpipe	Logger
MB2-Alluvial	113.61	113.56	113.50	113.52	Standpipe	Logger
MB2-Regolith	115.91	115.86	115.74	115.83	Standpipe	Logger
MB3-Alluvial	129.71	129.59	129.48	129.52	Standpipe	Logger
MB3-Regolith	129.33	129.22	129.07	129.06	Standpipe	Logger
MB4-Alluvial	70.70	70.62	70.55	70.61	Standpipe	Logger
MB4-Coal	70.60	70.51	70.45	70.51	Standpipe	Logger
MW1	129.48	129.38	129.29	129.27	Standpipe	Logger
MW2	112.67	112.62	112.57	112.56	Standpipe	Logger
MW3	(3)	(3)	(3)	(3)	Standpipe	Manual
RBD1 – VW1 (WB)	148.54	148.48	148.41	148.61	VWP	Logger
RBD1 – VW2 (RB)	144.83	144.78	144.71	144.96	VWP	Logger
RBD1 – VW3 (WN)	127.98	127.85	127.71	128.05	VWP	Logger
RBD1 – VW4 (BK)	88.20	88.09	87.96	88.93	VWP	Logger
RD1189 – VWP1 (WH)	(4)	(4)	(4)	(4)	VWP	Logger

Site (with seam names for VWPs)	Oct	Nov	Dec	Rolling average	Type of bore	Type of measurement as of Dec 24
RD1189 – VWP2 (AZZBF)	(4)	(4)	(4)	(4)	VWP	Logger
RD1189 – VWP3 (WW12)	(4)	(4)	(4)	(4)	VWP	Logger
RD1189 – VWP4 (Mt Arthur seam)	(4)	(4)	(4)	(4)	VWP	Logger
RD1189 – VWP5 (PF2)	(4)	(4)	(4)	(4)	VWP	Logger
RD1189 – VWP6 (BY)	(4)	(4)	(4)	(4)	VWP	Logger
RD1189 – VWP7 (WY)	(4)	(4)	(4)	(4)	VWP	Logger
RD1192- VWP1 (WB)	(4)	(4)	(4)	(4)	VWP	Logger
RD1192- VWP2 (RB)	(4)	(4)	(4)	(4)	VWP	Logger
RD1192-VWP3 (BK)	(4)	(4)	(4)	(4)	VWP	Logger
MB1VWP (VWP1) (INT)	74.75	74.72	74.67	75.05	VWP	Logger
MB1VWP (VWP2) (INT)	87.20	87.22	87.25	86.95	VWP	Logger
MB1VWP (VWP3) (INT)	95.58	95.62	95.60	95.42	VWP	Logger
MB1VWP (VWP4) (WB)	96.41	96.32	96.25	96.35	VWP	Logger
MB1VWP (VWP5) (WN)	100.32	100.23	100.07	100.00	VWP	Logger
WND16 (VWP1) (WB)	111.54	111.37	111.24	111.97	VWP	Logger
WND16 (VWP2) (WN)	(5)	(5)	(5)	(5)	VWP	Logger

Site (with seam names for VWPs)	Oct	Nov	Dec	Rolling average	Type of bore	Type of measurement as of Dec 24
WND16 (VWP3) (BK)	(5)	(5)	(5)	(5)	VWP	Logger
WND16 (VWP4) (BK)	110.11	110.07	109.94	109.86	VWP	Logger
WND26 (VWP1) (WY)	136.35	136.35	136.36	136.60	VWP	Logger
WND26 (VWP2) (RB)	135.08	135.15	135.17	134.65	VWP	Logger
WND26 (VWP3) (WB)	141.06	141.12	141.12	140.96	VWP	Logger
WND26 (VWP4) (WN)	(5)	(5)	(5)	(5)	VWP	Logger

Notes

1. 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.
2. 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 and 2023 Annual Reviews, it is proposed that this site will be replaced by a replacement bore] for the purposes of the TARP assessment in Appendix A, once a revised GWMP has been approved.
3. MW3 are recorded dry during the reporting period. As per the recommendations in the 2022 and 2023 Annual Reviews, it is proposed that MW3 will be removed from the reporting, once the next version of the Management Plan is approved.
4. Groundwater levels at RD1189 VWP2, VWP7 & VWP8 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. Additionally, sensors stopped recording in RD1189 and RD111192 since 13 June 2024 and site will conduct a VWP inspection study to determine if loggers can be repaired/replaced.
5. The following VWPs wires are considered disabled: WND16-VWP2 and WND16-VWP3 (unstable and disabled respectively), WND26-VWP4 (disabled).

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 4 – 2024

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26 February 2025

Revision: 1

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1	26 February 2025	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 (MXU) mine and Maxwell Infrastructure (MI). The quarterly groundwater assessment supports the annual review compliance reporting conducted by Malabar Resources 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 October – December 2024 and assesses this data against the Trigger Action Response Plan (TARP) threshold levels presented in the Groundwater Management Plan (GWMP) contained within the Maxwell Water Management Plan (August 2024). The groundwater monitoring network is illustrated in **Figure 1**.

1.1 Groundwater Data Limitations

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

- Groundwater levels and quality results for private bores were not available and therefore not presented.

1.2 Groundwater Monitoring Parameters and Frequency

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

- Standpipes – *Bores without automatic dataloggers*
  - Groundwater level – monthly manual measurements.
    - Automatic dataloggers have been installed in all monitoring standpipes/ bores (except bore DS1). Data recording frequency varies between 1 to 4 times per day depending on the individual bore. Manual groundwater level measurements are also taken to supplement the automatic dataloggers biannually (depending on the site).
  - pH, electrical conductivity, redox potential, temperature – quarterly.
  - Total dissolved solids, total suspended solids, major cations/anions, total alkalinity, dissolved and total metals – biannually (twice per year).
- Bore 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 – *Bores installed with automatic dataloggers or VWPs*
  - Reduced standing water level from VWP data loggers – downloaded quarterly.

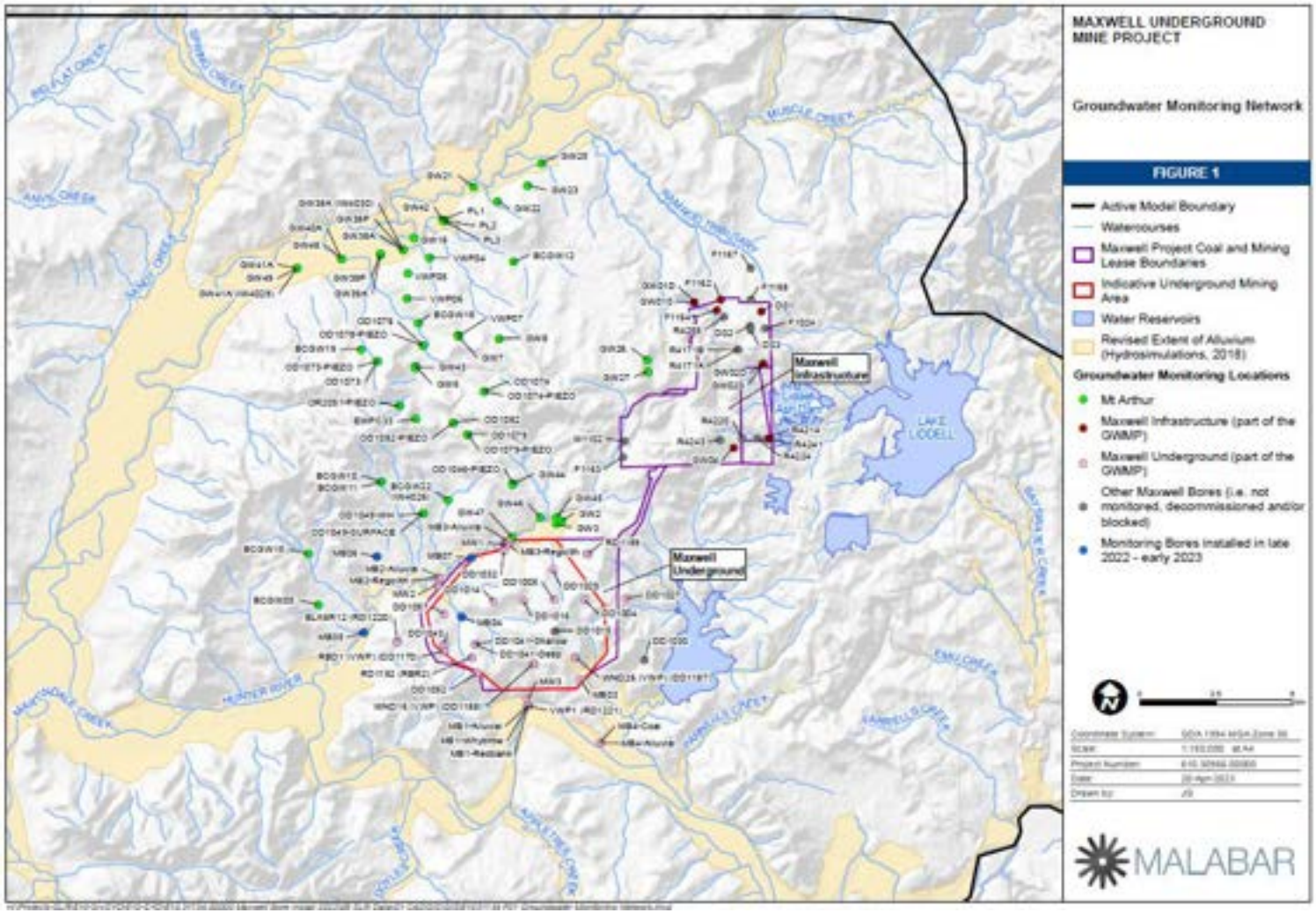


Figure 1 Maxwell Underground Project and Groundwater Monitoring Network

2.0 Groundwater Level Trigger Review

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

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 1 Groundwater Monitoring Bore Network – Maxwell Underground (MXU) and Maxwell Infrastructure (MI)

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	Problem [2]
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
MB4A	300307	6406231	Hunter River Alluvium	10–18	Open
MB03	299649	6408297	Saltwater Creek Alluvium	5–8	Problem [2]
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	Problem [3]
MB04	295755	6410371	Unnamed Creek Regolith	10-13	Open
MB05	292546.7	6409857	Saddlers Creek alluvium	1.8-3.8	Open

Monitoring Bore or VWP ID	Easting [1] (GDA94)	Northing [1] (GDA94)	Geology	Bore Screen or VWP Sensor Depth (mBGL)	Status
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	Problem [4]
DD1016	297801	6410882	Blakefield Overburden	126.4	Open
DD1025	298764	6411901	Blakefield Overburden	44.6	Problem [5]
DD1027	301133	6410960	Edderton Seam	252.8	Problem [6]
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	Problem [7]
			AZZBF	145.5	Problem [7]
			WW12	186.2	Problem [7]
			MAL	230	Problem [7]
			PF2	255.5	Problem [7]
			BY2	315	Problem [7]
			WY2	322	Problem [7]
RD1192 (RBR2)	296092	6409038	Wambo Seam	61.2	Problem [7]
			Redbank Seam	80	Problem [7]
			Blakefield Seam	148.5	Problem [7]
BLK6R12 (RD1220)	293653	6409558	WB2 Seam	25	Normal
			Redbank Seam	40.5	Normal
			Whynot Seam	86.5	Normal
			Blakefield Seam	148.5	Normal
VWP1 (RD1221) (RDW006A) (MB01 VWP)	297926	6407444	Interburden	21	Normal
			Interburden	40	Problem [8]
			Interburden	73	Problem [8]
			Whybrow Seam	87	Problem [8]
			Whynot Seam	109.2	Problem [8]
			Blakefield Seam	138	Problem [8]
RBD1 (DD1170)	295178	6409246	Whybrow Seam	24.65	Normal
			Redbank Seam	33.55	Normal

Monitoring Bore or VWP ID	Easting [1] (GDA94)	Northing [1] (GDA94)	Geology	Bore Screen or VWP Sensor Depth (mBGL)	Status
			Whynot Seam	79.5	Normal
			Blakefield Seam	103.3	Normal
WND16 (DD1188)	298122	6408842	Wambo Seam	33.75	Normal
			Whynot Seam	59.25	Problem [9]
			Blakefield Seam	90.15	Problem [9]
			Blakefield Seam	110.5	Normal
WND26 (DD1187)	299487	6409044	Whybrow Seam	77.3	Normal
			Redbank Seam	84.6	Normal
			Wambo Seam	123.45	Normal
			Whynot Seam	144.25	Problem [9]

Notes:

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

2 GW01S did not have sufficient water present within bore during Q4-2024 to take a water quality sample. MB03 and MW3 was reported as dry during Q4-2024.

3 MW3 was last recorded dry; 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.

4 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 GWMP is approved. The site is reviewing the GWMP, as it requires incorporation of the recommendations made in the 2022 and 2023 Annual Reviews, not currently included in the current GWMP.

5 DD1025 was decommissioned in December 2022 for safety reasons (to prevent inrush to the upcoming underground mining operations). As per the recommendations in the 2023 Annual Review, it is proposed that this site will be replaced by DD1014 for the purposes of the TARP assessment in Appendix A, once a revised GWMP has been approved. The site is reviewing the GWMP, as it requires incorporation of the recommendations made in the 2023 Annual Reviews, not currently included in the current GWMP.

6 DD1027 Access to this bore poses safety concerns for sampling as it is in an isolated location, across a steep gully. The 2023 Annual Review recommended the removal of DD1027 from the Groundwater Monitoring Plan.

7 Historically groundwater levels at RD1189 VWP2, VWP5 & VWP7 appear unstable and 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 GWMP is approved. The site is reviewing the GWMP, as it requires incorporation of the recommendations made in the 2022 and 2023 Annual Reviews, not currently included in the current GWMP. The site is planning a VWP Investigation to determine if the sensors could possible be fixed since loggers have stopped recording readings since 13 June 2024.

8 VWP1 sensor 6 indicates no data and not reported. VWP2-5 indicated erratic spikes in data readings. VWPs inspected during May 2024 and found that logger box was corroded and potentially affecting data readings. A recommendation was made to replace the logger box during a follow up VWP study.

9 The following VWPs wires are considered disabled: WND16-VWP2 and WND16-VWP3 (unstable and disabled respectively), WND26-VWP4 (disabled).

Definitions:

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 outlines the groundwater level trigger exceedance status for each monitored bore during the review period and indicates where TARP level 1 and 2 exceedances have occurred . The approved trigger levels and TARP level criteria are presented in **Appendix A**. Hydrographs for all groundwater monitoring locations including those with approved groundwater level trigger levels are presented in **Appendix B**.

Section 2.1 – Section 2.3 discusses briefly any TARP groundwater level criteria exceedances observed during the reporting period only, as identified in **Table 2**.

Table 2 Groundwater Level TARP Criteria Exceedance Status – Shallow and Deep Open Bores

Bore	TARP Criteria – GW Level [mAHD]	Previous Monitoring Period Q3-2024			Current Monitoring Period Q4-2024		
		Jul 24	Aug 24	Sept 24	Oct 24	Nov 24	Dec 24
Maxwell Infrastructure		**Water Management Plan (Aug 2024)**					
R4241	173.6	N	N	N	N	N	N
GW01D	198.2	N	N	N	N	N	N
GW01S	197.0	N	N	N	N	N	N
GW02D [2]	135.7	Y	Y	Y	Y	Y	Y
GW02S	187.7	N	N	N	N	N	N
Maxwell Underground		**Water Management Plan (Aug 2024)**					
DD1025 [1]	157.3	*Decommissioned*			*Decommissioned*		
DD1032 [2]	130.6	Y	*	*	Y	Y	Y
MB3-Alluvial	127.7	N	*	*	N	N	N
MB3-Regolith	127.3	N	*	*	N	N	N

mAHD – metres above Australian Height Datum

N:Normal Level TARP Level 1 TARP Level 2

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

"" no groundwater level data available for this period – logger data downloaded quarterly – next download scheduled for Q4-2024.*

1 DD1025 - As per the recommendations in the 2023 Annual Review, it is proposed that this site will be replaced by DD1014 for the purposes of the TARP assessment in Appendix A, once a revised GWMP has been approved. The site will undertake a TARP criteria assessment to determine applicable water level TARP criteria for groundwater level.

2 GW02D and DD1032 recommended by SLR (2024) TARP exceedance investigation to be removed from the TARP.

2.1 Normal Level

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

2.2 TARP Level 1

DD1032 continued to exceed the TARP Level 1 groundwater level trigger criteria over the reporting period. This exceedance is discussed in more detail in the SLR (2024) study that evaluated TARP exceedances, including DD1032. SLR (2024) found that the observed decline in groundwater levels at bore DD1032 pre-dates the commencement of mining activities at Maxwell UG, which began in early 2023. Given the extensive and long-term mining activities in the surrounding area, particularly those at Mt Arthur Mine, it was more likely that regional mining operations have influenced the groundwater levels at DD1032 rather than the recent activities at Maxwell UG or changes in climatic conditions. SLR (2024) recommended the removal of DD1032 from the TARP. Additionally, DD1032 is expected to be decommissioned in 2024 due to mining progression and its location within the indicative Maxwell UG mining area. Existing monitoring bores pair MB06S and MB06D was recommended as replacement of DD1032.

GW02D exceeded the TARP Level 1 groundwater level trigger criteria during Q4-2024. GW02D was evaluated by SLR (2024) for exceedance of the TARP EC criteria. Additionally, GW02D groundwater level monitoring data were also evaluated. SLR (2024) noted that groundwater levels in GW02D have gradually decreased over the monitoring period, with limited groundwater responses to rainfall (CRD) being observed. An issue identified in GW02D was the accumulation of sediment at the bottom of the bore. Field sampling throughout 2023 noted that the logger was covered in mud. SLR (2024) concluded that the generally decreasing groundwater levels trends, increasing EC concentration over the monitoring period, sediment and mud observations in the bore, and limited-to-no response to rainfall, that it was expected the groundwater quality and levels may not be representative of actual aquifer conditions in the vicinity of GW02D. SLR (2024) recommended the removal of GW02D from the TARP. Therefore, no additional action is required due to the TARP Level 1 groundwater level exceedance observed during Q3-2024.

Apart from DD1032 and GW02D, there were no other TARP groundwater level criteria or Level 1 exceedances over the reporting period.

2.3 TARP Level 2

A TARP Level 2 exceedance is defined as where a 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. There were no TARP Level 2 groundwater level trigger exceedances over the reporting period.

2.4 General Observations

- MB03 and MW3 were reported as dry during October 2024.
- The static groundwater level in GW01S was close to the bottom of the bore.
- Groundwater levels in DD1005 showed a relatively large decline between Q2-2024 (143.17 mAHD) and Q4-2024 (123.6 mAHD). It is noted that groundwater levels in this bore have shown a steady decline since 2011, no groundwater level response to rainfall was observed, and the bore is located within the Maxwell Underground mining area.

3.0 Groundwater Quality Trigger Review

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, August 2024) and presented in **Appendix A**.

An assessment of groundwater quality (EC and pH) at each of the monitored bore locations against the TARP criteria has been completed. EC and pH plots for groundwater monitoring locations with approved groundwater quality criteria are presented in **Appendix C**. 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 the reporting period. Results for the private bores are reviewed annually.

Table 3 TARP Criteria Exceedances for pH and EC

Bore	Period [Month Sampled - Analysis]	TARP Level		Q3 2024			Q4 2024		
		EC (µS/cm)	pH min/ max	EC (µS/cm)	pH lower	pH upper	EC (µS/cm)	pH lower	pH upper
R4241	Q4-2024 [Dec 24 – Lab]	6,253	6 / 8.5	N	N	N	N	N	N
GW01S	-	9,260		*	*	*	*	*	*
GW01D	Q4-2024 [Dec 24 – Lab]	5,680		Y	N	N	N	N	N
GW02S	Q4-2024 [Dec 24 – Lab]	9,480		N	N	N	N	N	N
GW02D[2]	Q4-2024 [Dec 24 – Lab]	10,500		Y	N	N	Y	N	N
DD1025[1]	*Decommissioned*			-	-	-	-	-	-
DD1032[2]	Q4-2024 [Oct 24 – Field]	7,170	6 / 8.5	N	N	N	N	N	N
MB3-Alluvial	Q4-2024 [Oct 24 – Field]	9,009		N	N	N	N	N	N
MB3-Regolith	Q4-2024 [Oct 24 – Field]	6,327		Y	N	N	N	N	N

N: Normal Level TARP Level 1 TARP Level 2

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

"" no groundwater quality data available for this period – Not enough water present in bore for sampling.*

1 DD1025 - As per the recommendations in the 2023 Annual Review, it is proposed that this site will be replaced by DD1014 for the purposes of the TARP assessment in Appendix A, once a revised GWMP has been approved. The site will undertake a TARP criteria assessment to determine applicable TARP criteria for pH and EC concentration.

2 GW02D and DD1032 recommended by SLR (2024) TARP exceedance investigation to be removed from the TARP.

3.1 Normal Level

Groundwater quality at the Maxwell Infrastructure groundwater monitoring sites R4241, GW01D, and GW02S (**Appendix C**) and at the Maxwell Underground sites DD1032, MB3-Alluvial, and MB3-Regolith (**Appendix C**) were observed below the trigger criteria over the reporting period hence are within the Normal Level of the TARP criteria (**Appendix A** - **Table A1**).

3.2 TARP Level 1

During Q3-2024 GW02D continued to exceed the TARP Level 1 EC trigger criteria. SLR (2024) evaluated the TARP Level 1 EC trigger criteria exceedance at GW02D and concluded that when considering the generally decreasing groundwater levels trends over the monitoring period, increasing EC concentration over the monitoring period, sediment and mud observations in the bore, and limited-to-no response to rainfall, it was expected the groundwater quality and groundwater levels may not be representative of actual aquifer conditions in the vicinity of GW02D. Consequently, from the available monitoring data, SLR (2024) concluded that the rising EC levels in GW02D were likely more associated with localised factors rather than external influences such as nearby mining activities. SLR (2024) recommended the removal of GW02D from the TARP. No further action is required.

Apart from GW02D, there were no other TARP Level 1 quality trigger criteria 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

- GW01D had a short-term exceedance (less than 3 consecutive exceedances) of the TARP EC trigger limit criteria during Q3-2024. During Q4-2024 the EC concentration decreased below the trigger limit criteria.
- GW01S could not be sampled during Q4-2024 due to insufficient volume of water present in the bore for sampling. It is noted that no samples could be taken from this bore during 2024.

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 – Reporting

- Update the GWMP to incorporate recommended changes to the monitoring network as described in the site's 2023 Annual Review.
- Update the GWMP to incorporate recommended changes to the monitoring network as described in the 2024 Trigger Exceedance Investigation to remove GW02D and DD1032 from the TARP.

4.2 Actions – Monitoring and Sampling

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

Sincerely,

SLR Consulting Australia

Raymond Minnaar
Associate Hydrogeologist

Shaun Troon
Principal Hydrogeologist

5.0 References

Malabar Resources, 2024. Water Management Plan. MXC_MP_EC_08 (26 August 2024), Version 4, Review 0.

SLR, 2023. Maxwell Underground Coal Mine Project. Annual Review 2023. Prepared for Malabar Resources, Report No: 630.030952.00001. March 2023.

SLR, 2024. Maxwell Groundwater Trigger Investigation 2024. Prepared for Malabar Resources, Report No: 610.031922.00001. July 2024.

6.0 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 4 – 2024

Malabar Resources Pty Ltd

SLR Project No.: 610.031830.00001

26 February 2025

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, Dec 2023) and Annual Review 2023

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	157.3 (155.1 #) [1]	6.0	8.5	14,200
DD1032	130.6 (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

 # Proposed levels in 2022 Annual Review and subject to approval of the GWMP

1 DD1025 to be replaced by DD1014 and TARP criteria for groundwater level, pH and EC concentration will be determined by a TARP criteria assessment

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

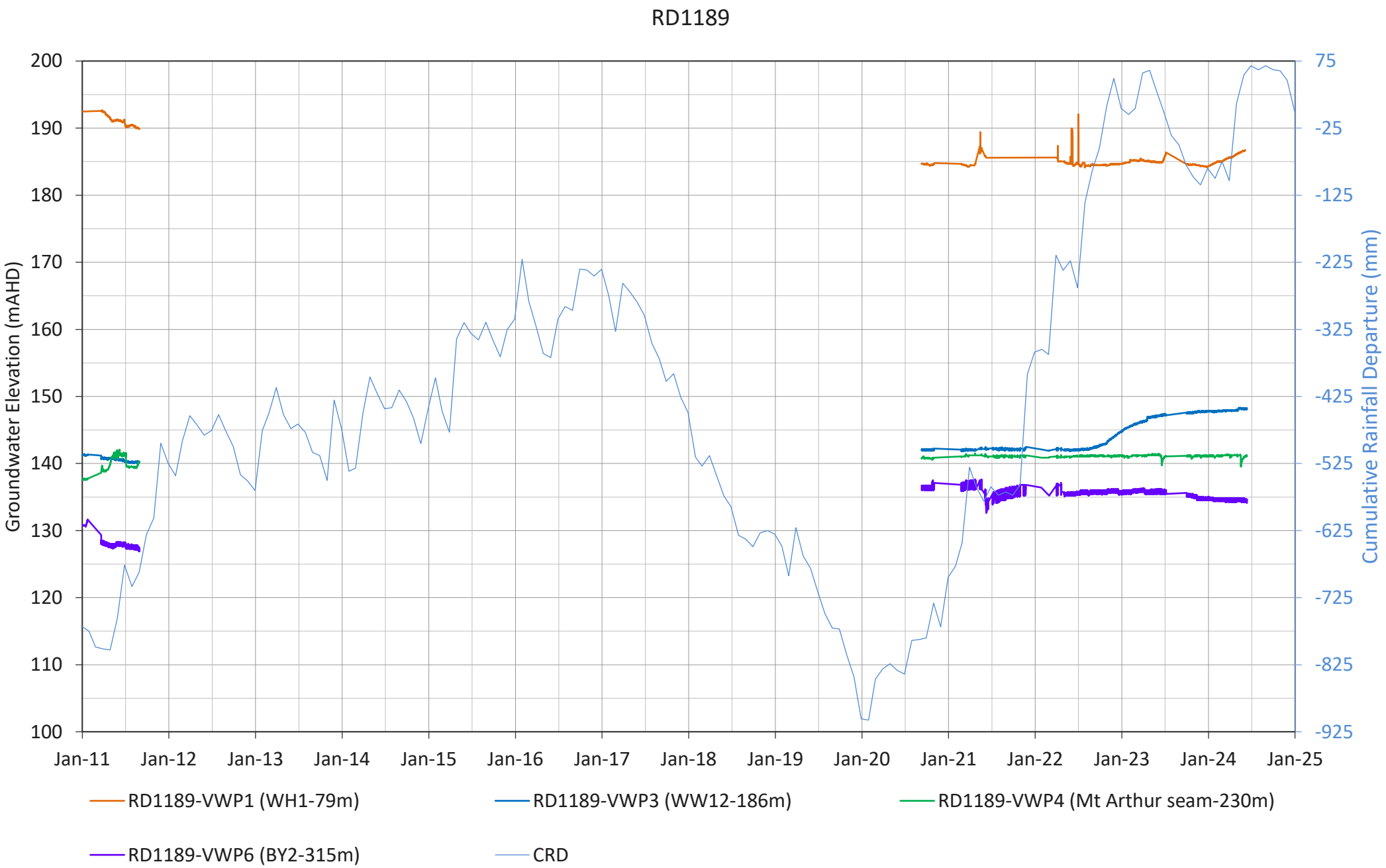
Maxwell Underground Mine

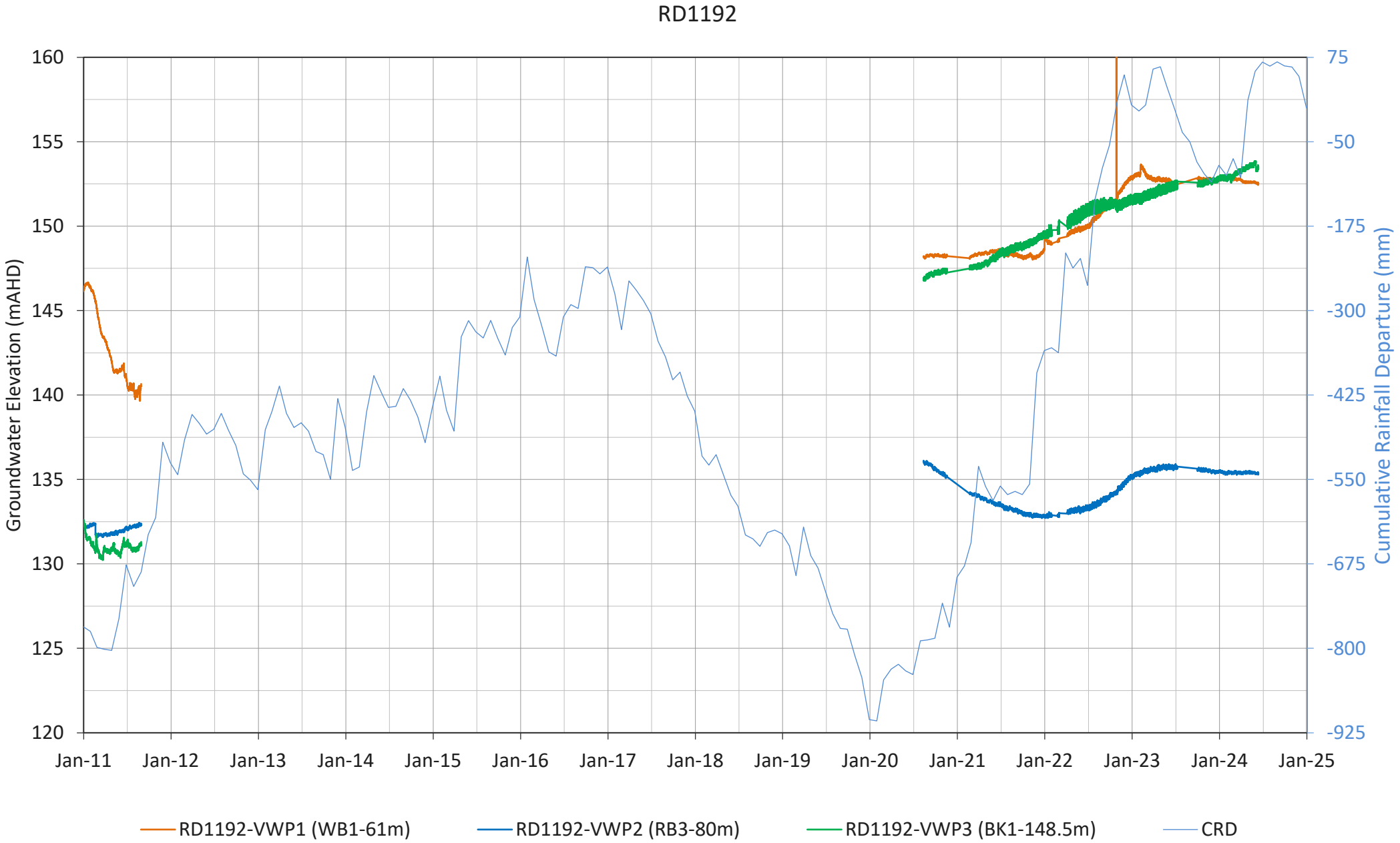
Groundwater Monitoring Report – Quarter 4 – 2024

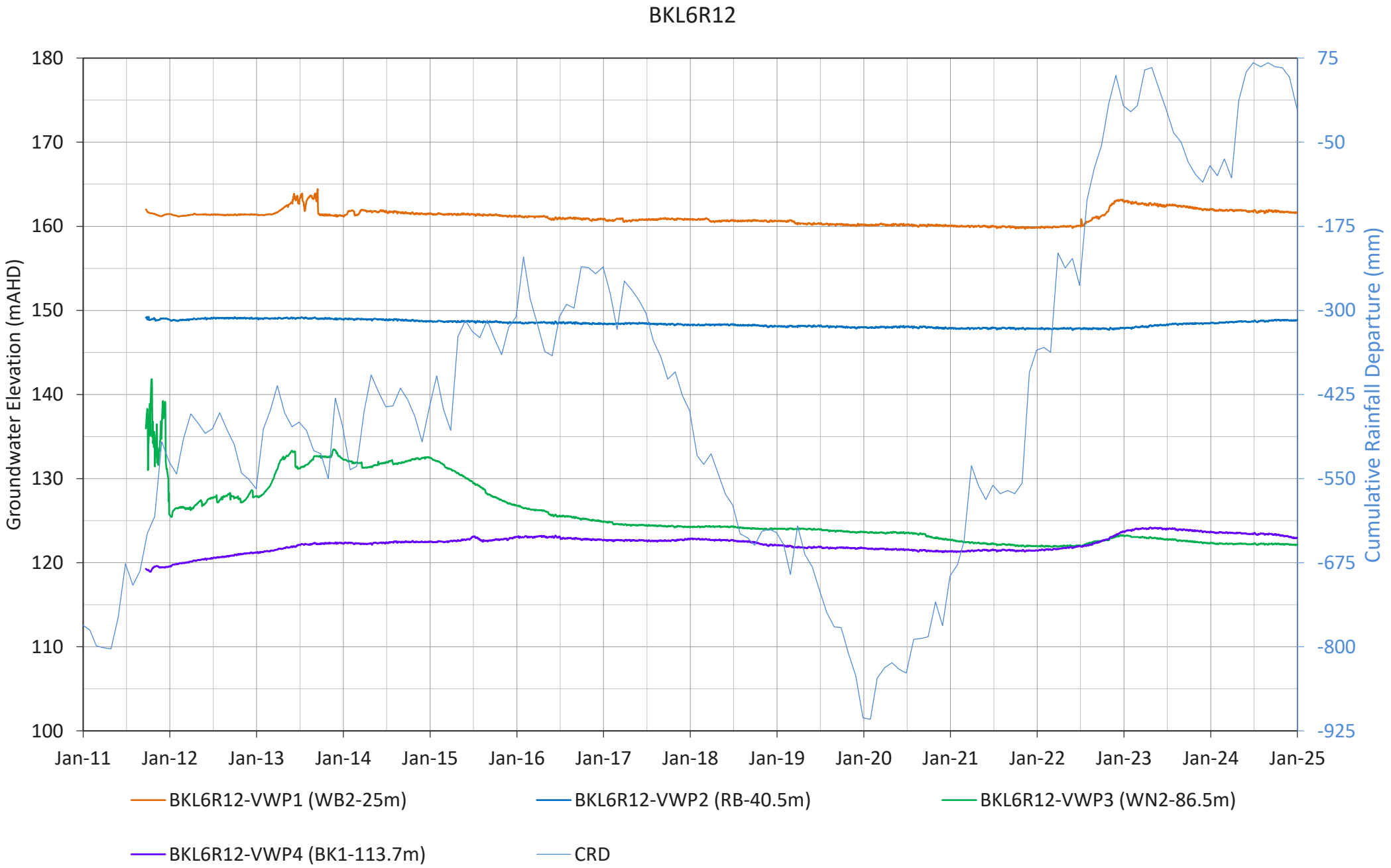
Malabar Resources Pty Ltd

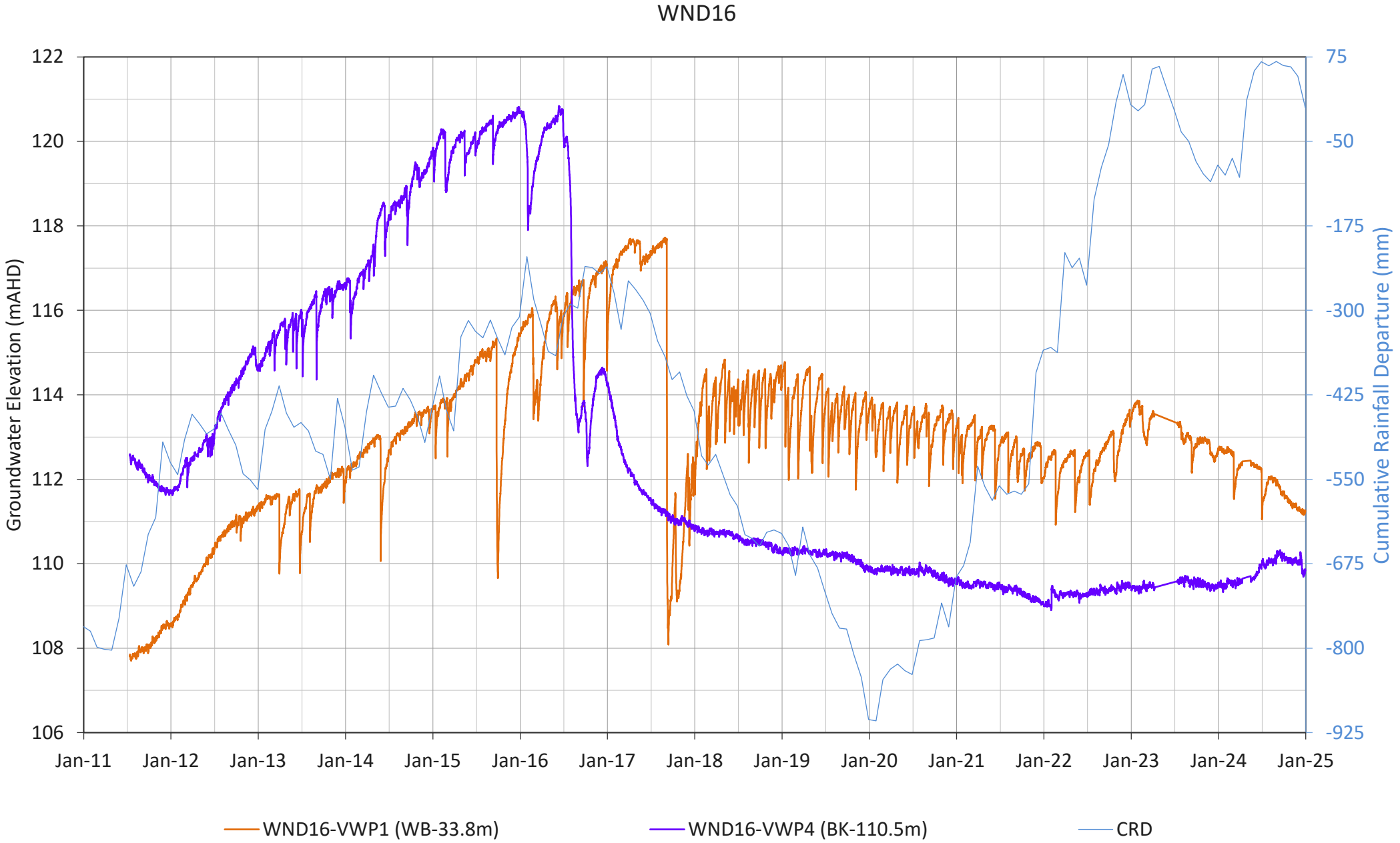
SLR Project No.: 610.031830.00001

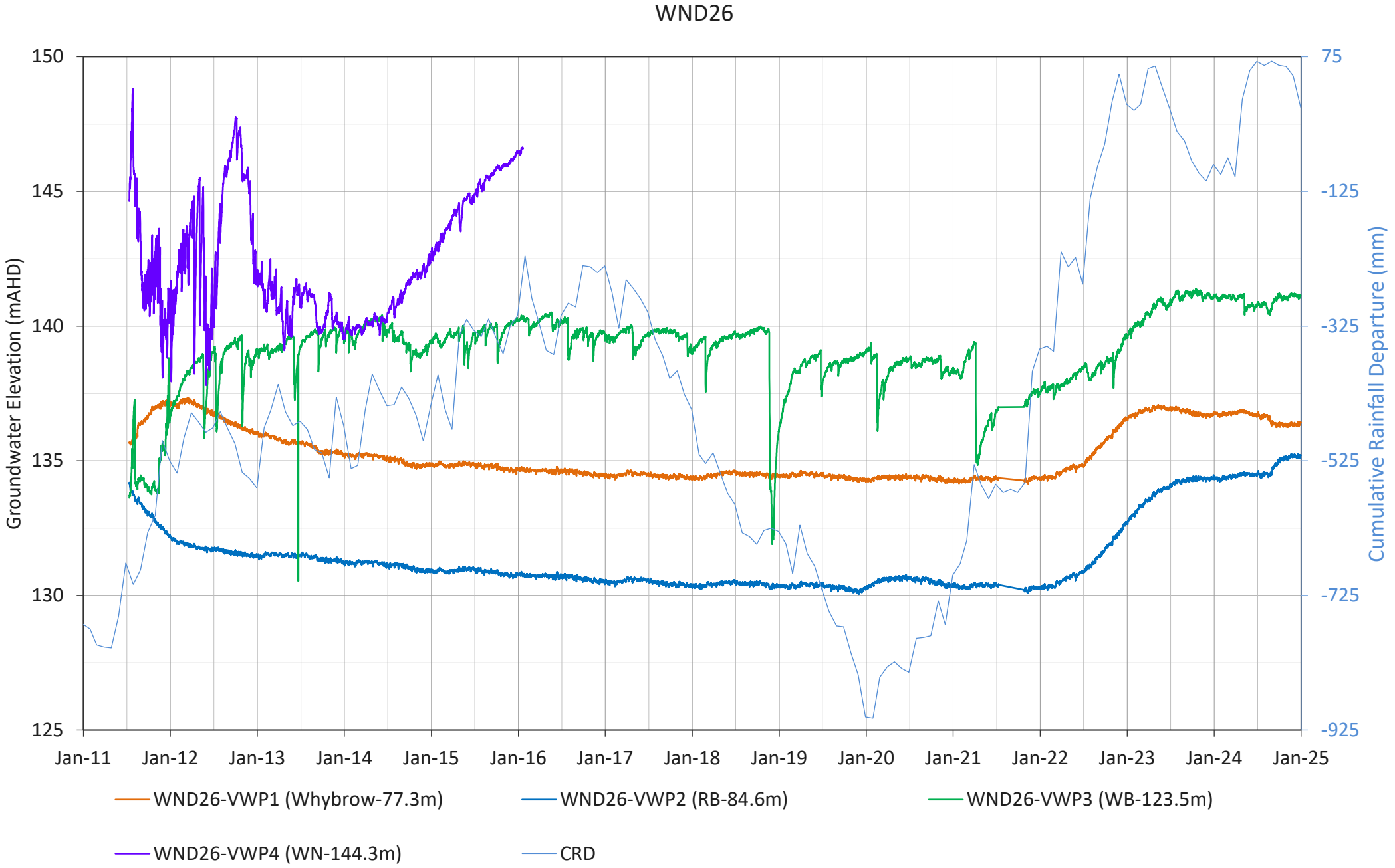
26 February 2025

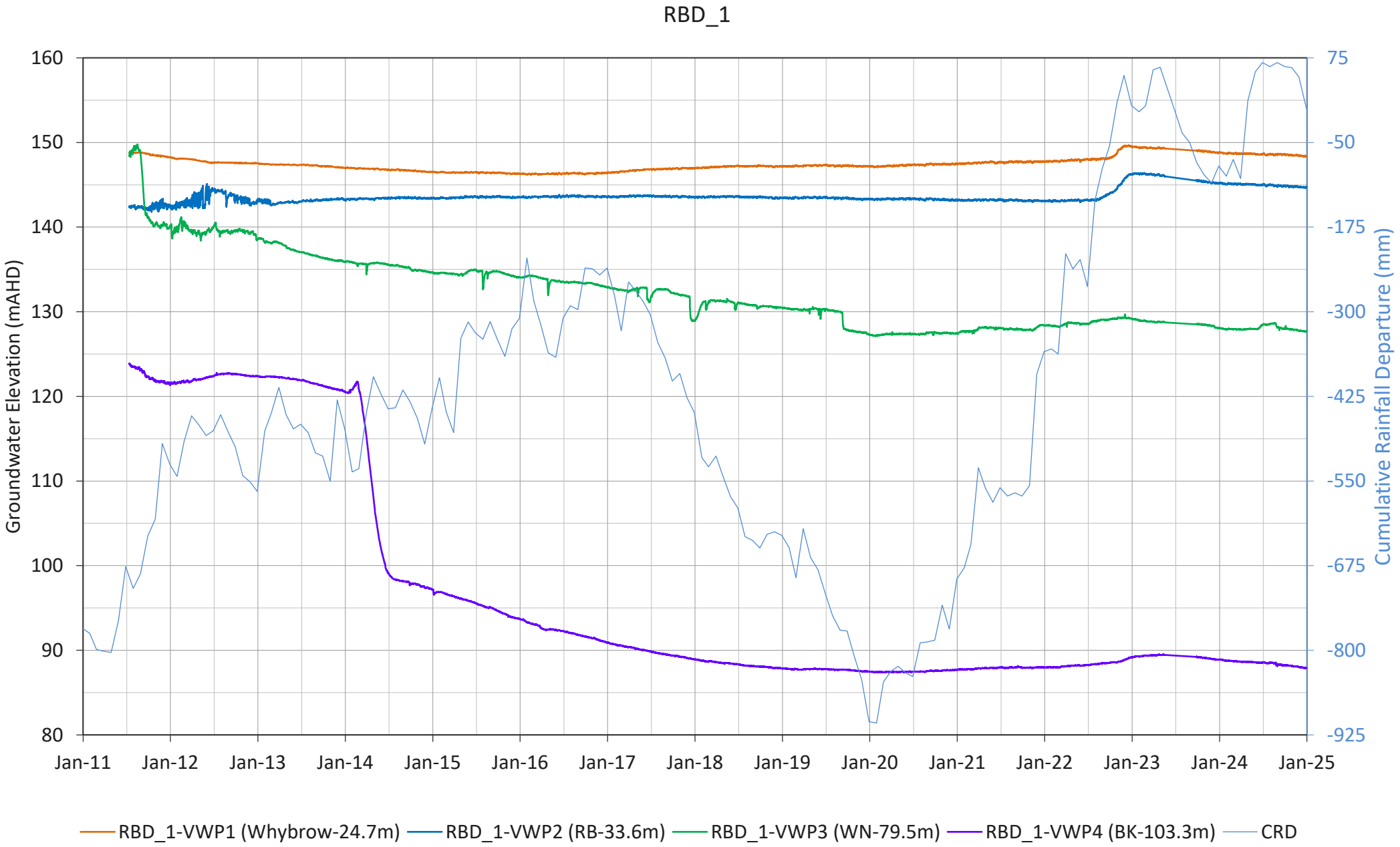

RD1189
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
200
190
180
170
160
150
140
130
120
110
100
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
RD1189-VWP1 (WH1-79m)
RD1189-VWP3 (WW12-186m)
RD1189-VWP4 (Mt Arthur seam-230m)
RD1189-VWP6 (BY2-315m)
CRD

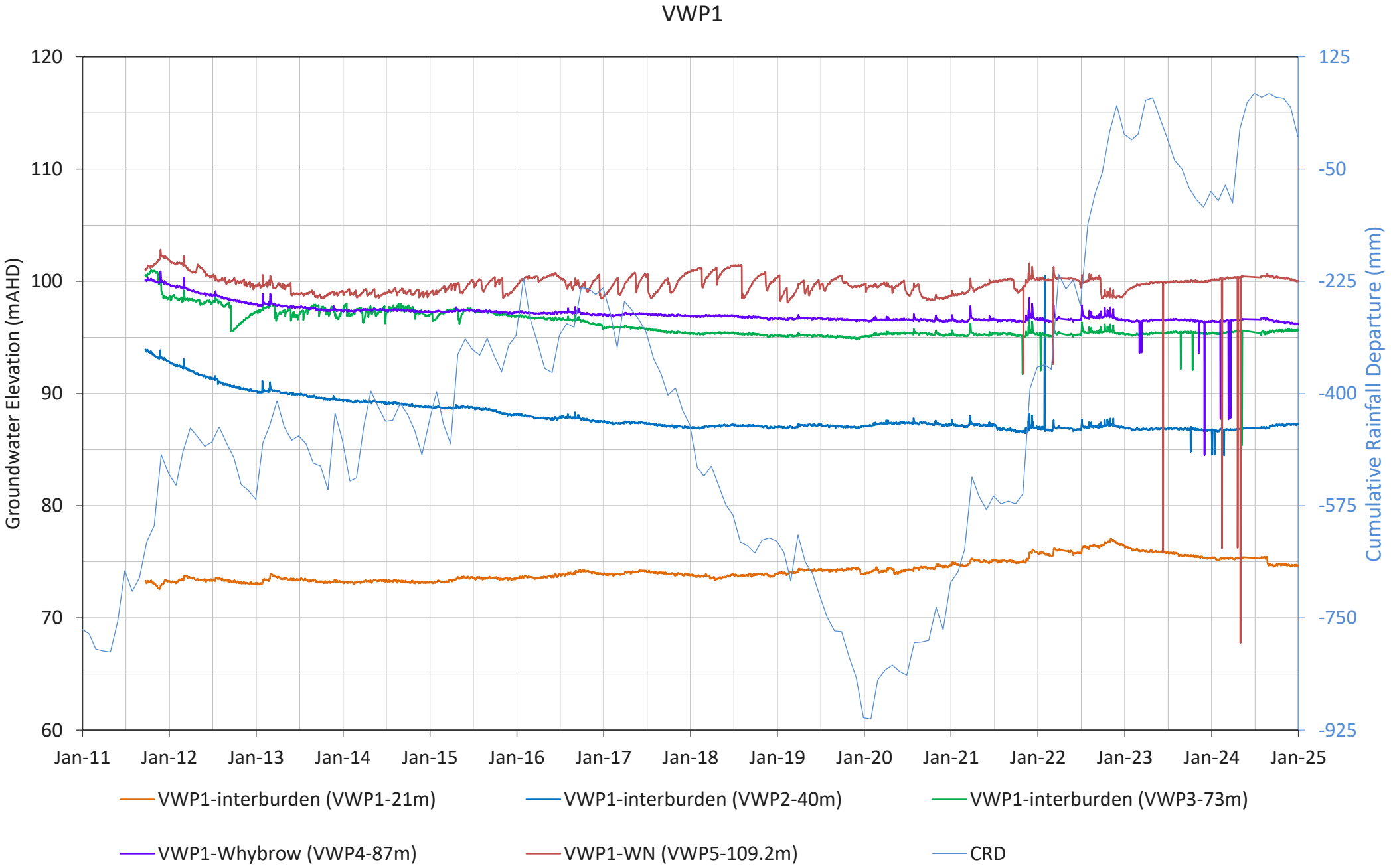

RD1192
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
160
155
150
145
140
135
130
125
120
75
-50
-175
-300
-425
-550
-675
-800
-925
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
RD1192-VWP1 (WB1-61m)
RD1192-VWP2 (RB3-80m)
RD1192-VWP3 (BK1-148.5m)
CRD

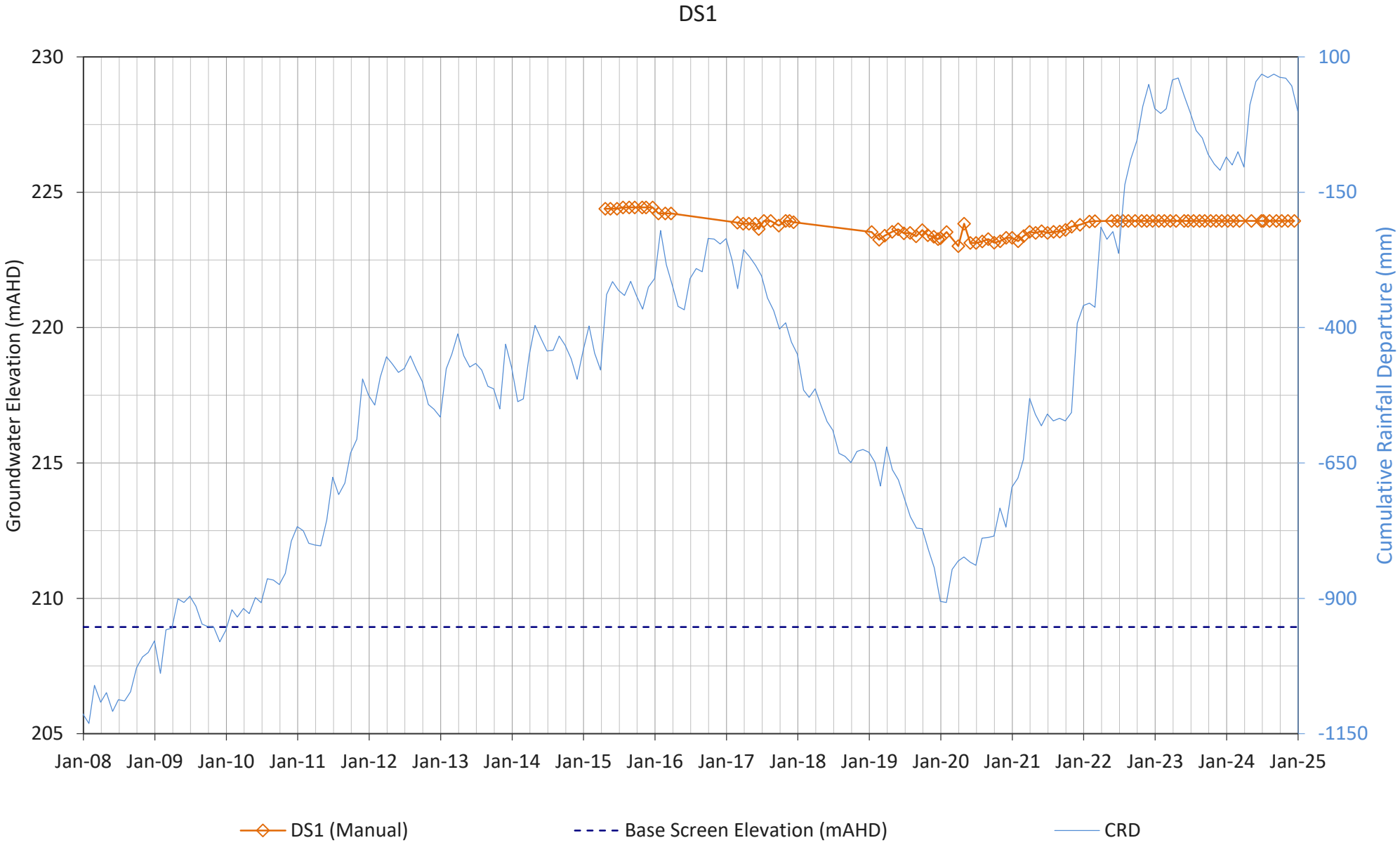

BKL6R12
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
180
170
160
150
140
130
120
110
100
75
-50
-175
-300
-425
-550
-675
-800
-925
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
BKL6R12-VWP1 (WB2-25m)
BKL6R12-VWP2 (RB-40.5m)
BKL6R12-VWP3 (WN2-86.5m)
BKL6R12-VWP4 (BK1-113.7m)
CRD

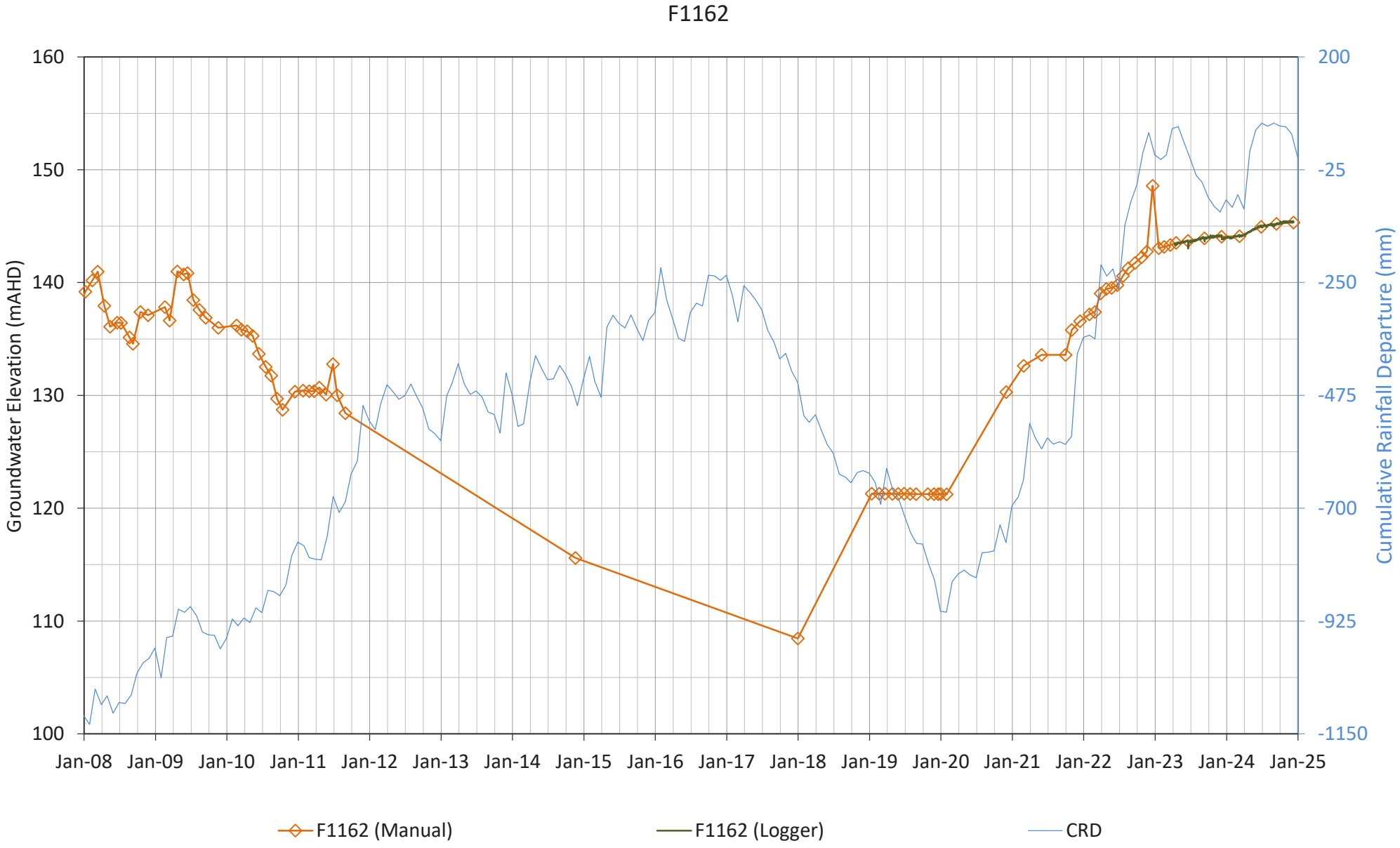

WND16
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
122
120
118
116
114
112
110
108
106
75
-50
-175
-300
-425
-550
-675
-800
-925
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
WND16-VWP1 (WB-33.8m)
WND16-VWP4 (BK-110.5m)
CRD

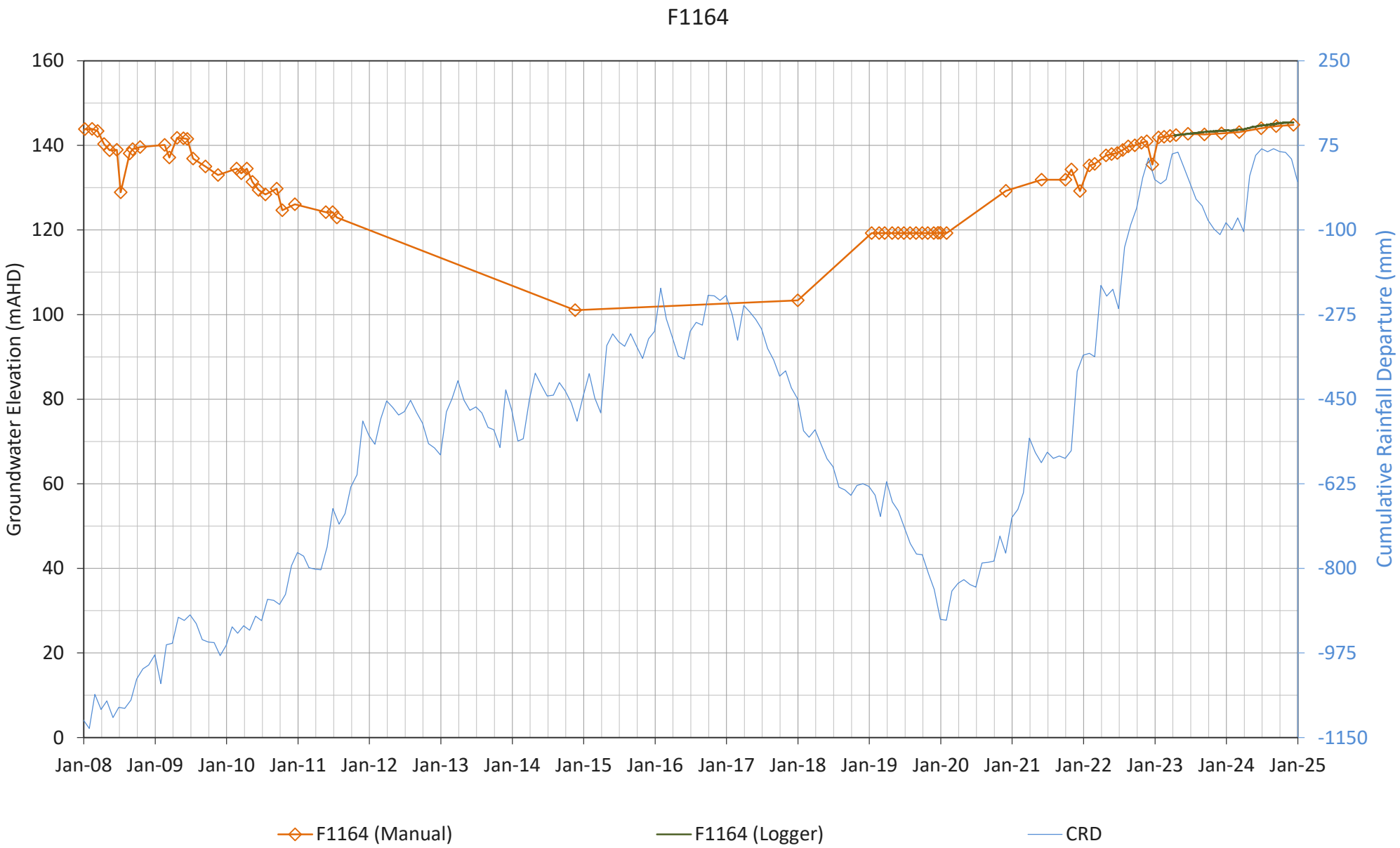

WND26
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
150
145
140
135
130
125
75
-125
-325
-525
-725
-925
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
WND26-VWP1 (Whybrow-77.3m)
WND26-VWP2 (RB-84.6m)
WND26-VWP3 (WB-123.5m)
WND26-VWP4 (WN-144.3m)
CRD

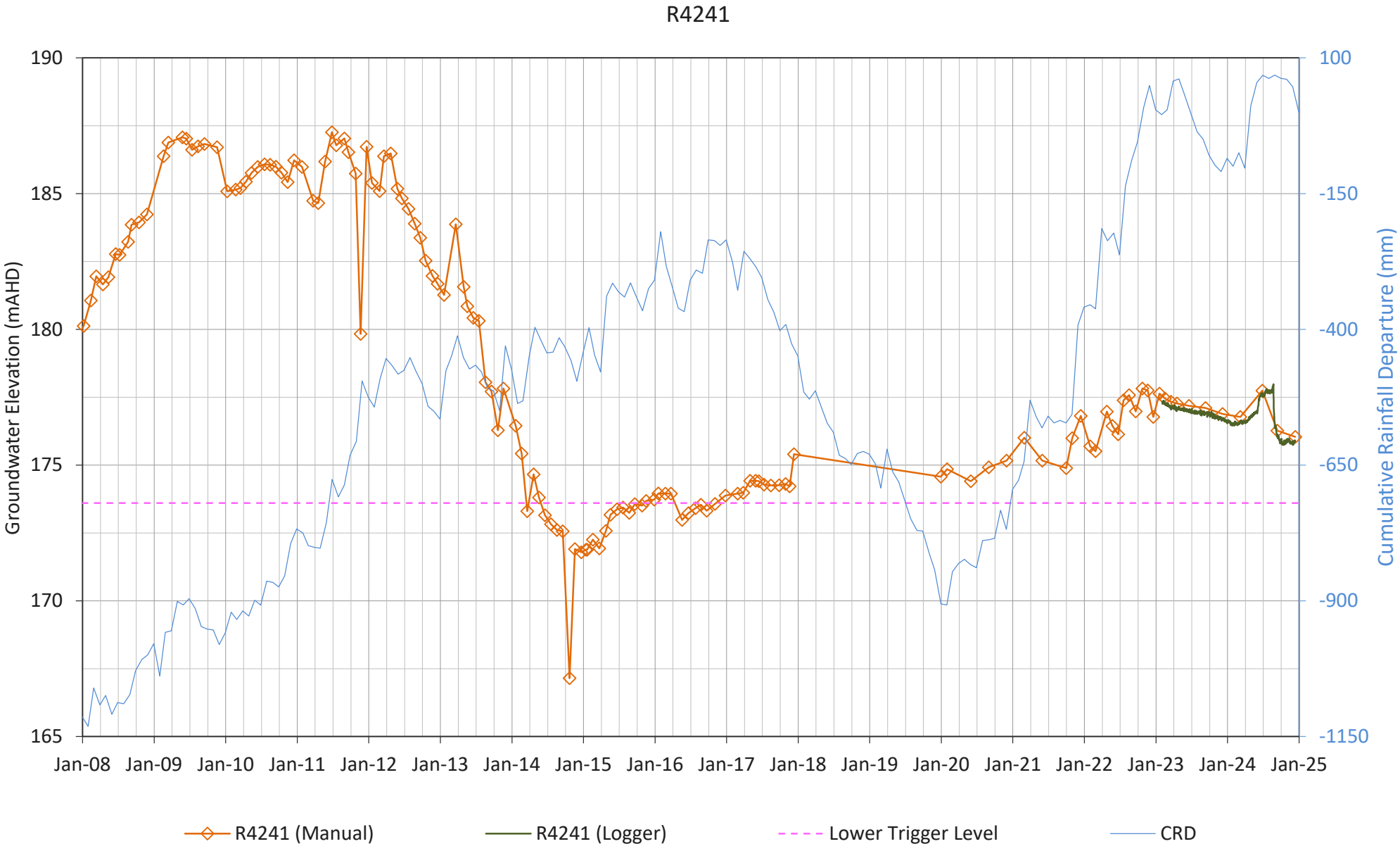

RBD_1
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
160
150
140
130
120
110
100
90
80
75
-50
-175
-300
-425
-550
-675
-800
-925
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
RBD_1-VWP1 (Whybrow-24.7m)
RBD_1-VWP2 (RB-33.6m)
RBD_1-VWP3 (WN-79.5m)
RBD_1-VWP4 (BK-103.3m)
CRD

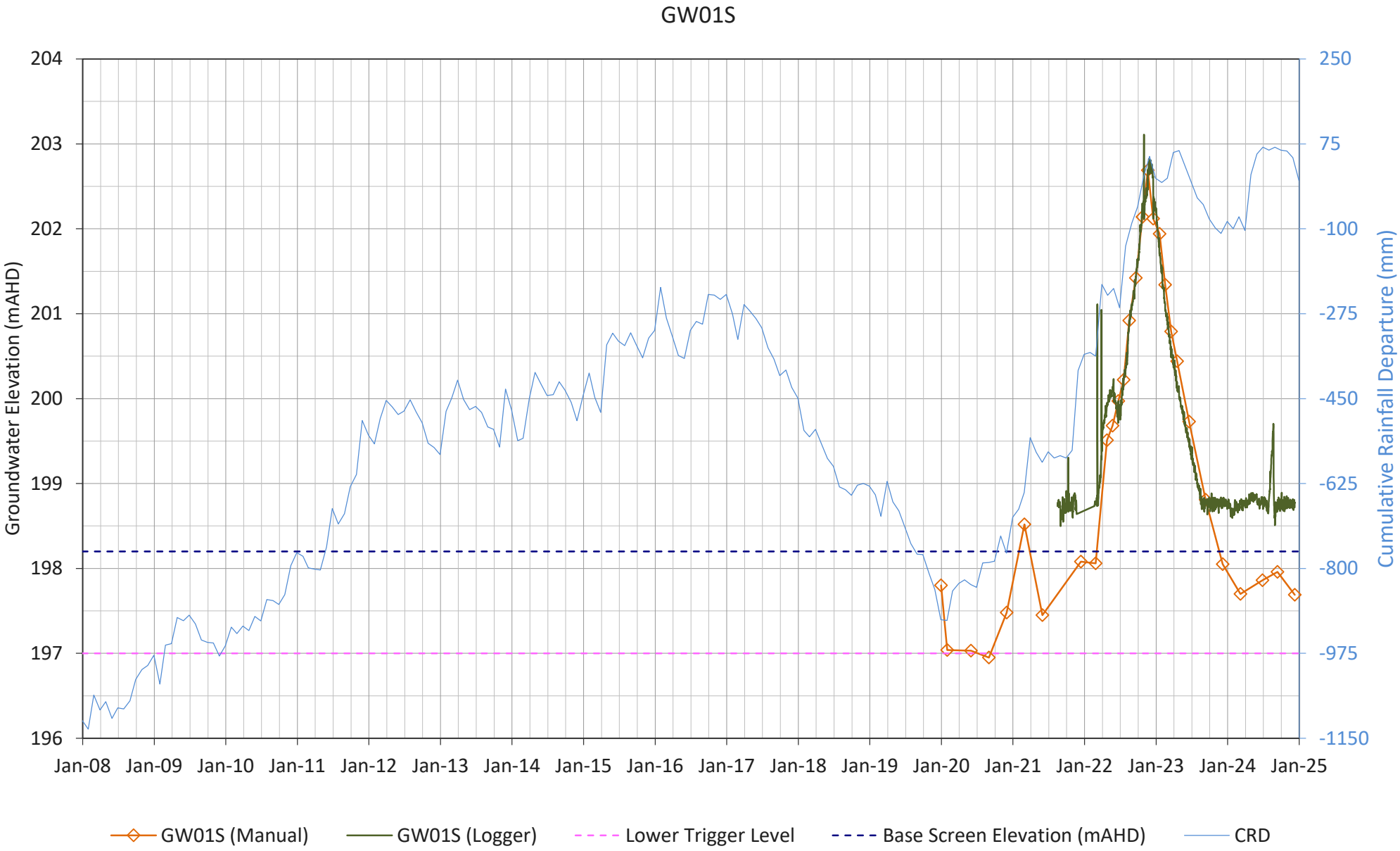

VWP1
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
120
110
100
90
80
70
60
125
-50
-225
-400
-575
-750
-925
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
VWP1-interburden (VWP1-21m)
VWP1-interburden (VWP2-40m)
VWP1-interburden (VWP3-73m)
VWP1-Whybrow (VWP4-87m)
VWP1-WN (VWP5-109.2m)
CRD

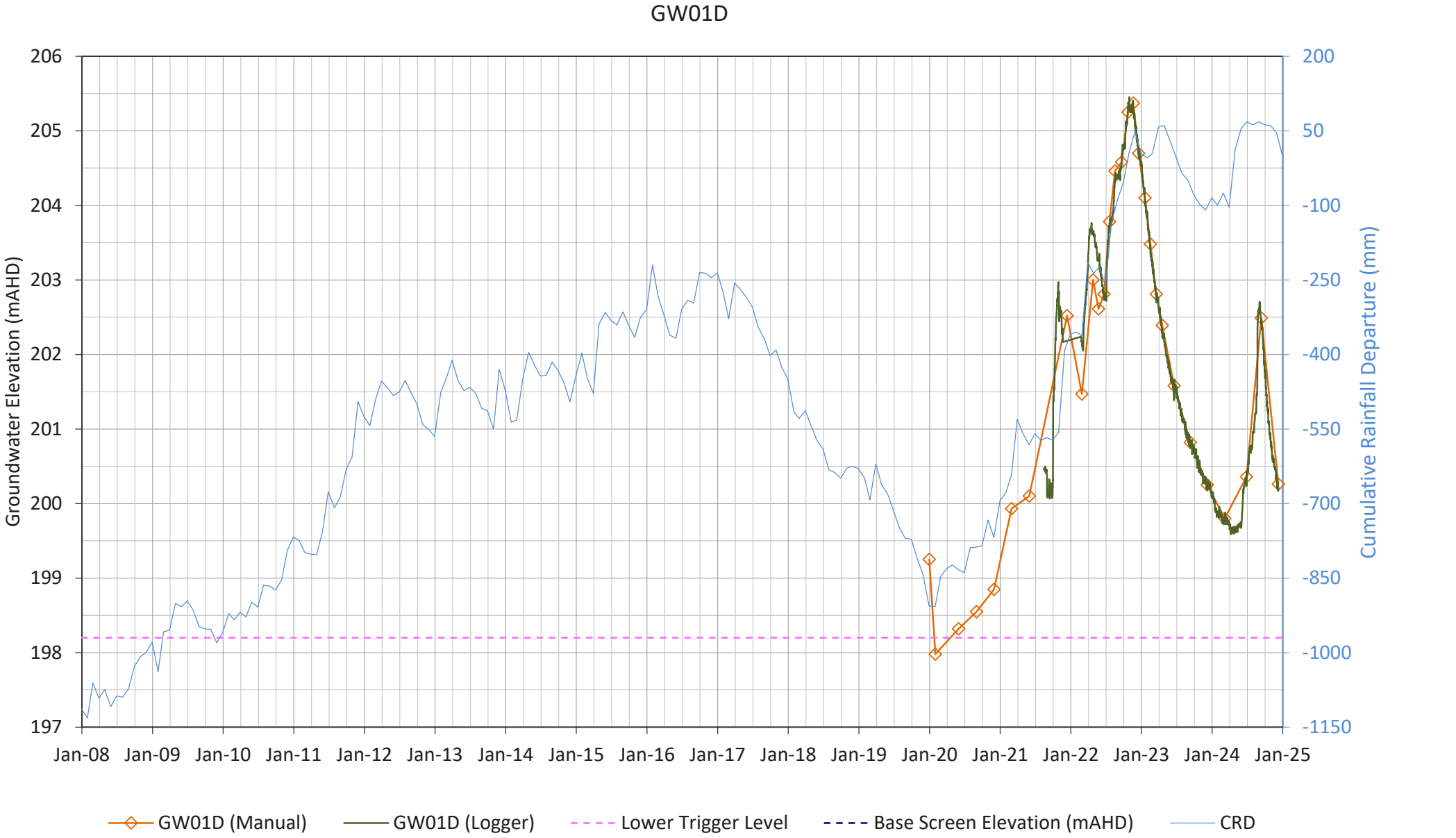

DS1
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
230
225
220
215
210
205
100
-150
-400
-650
-900
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
DS1 (Manual)
Base Screen Elevation (mAHD)
CRD

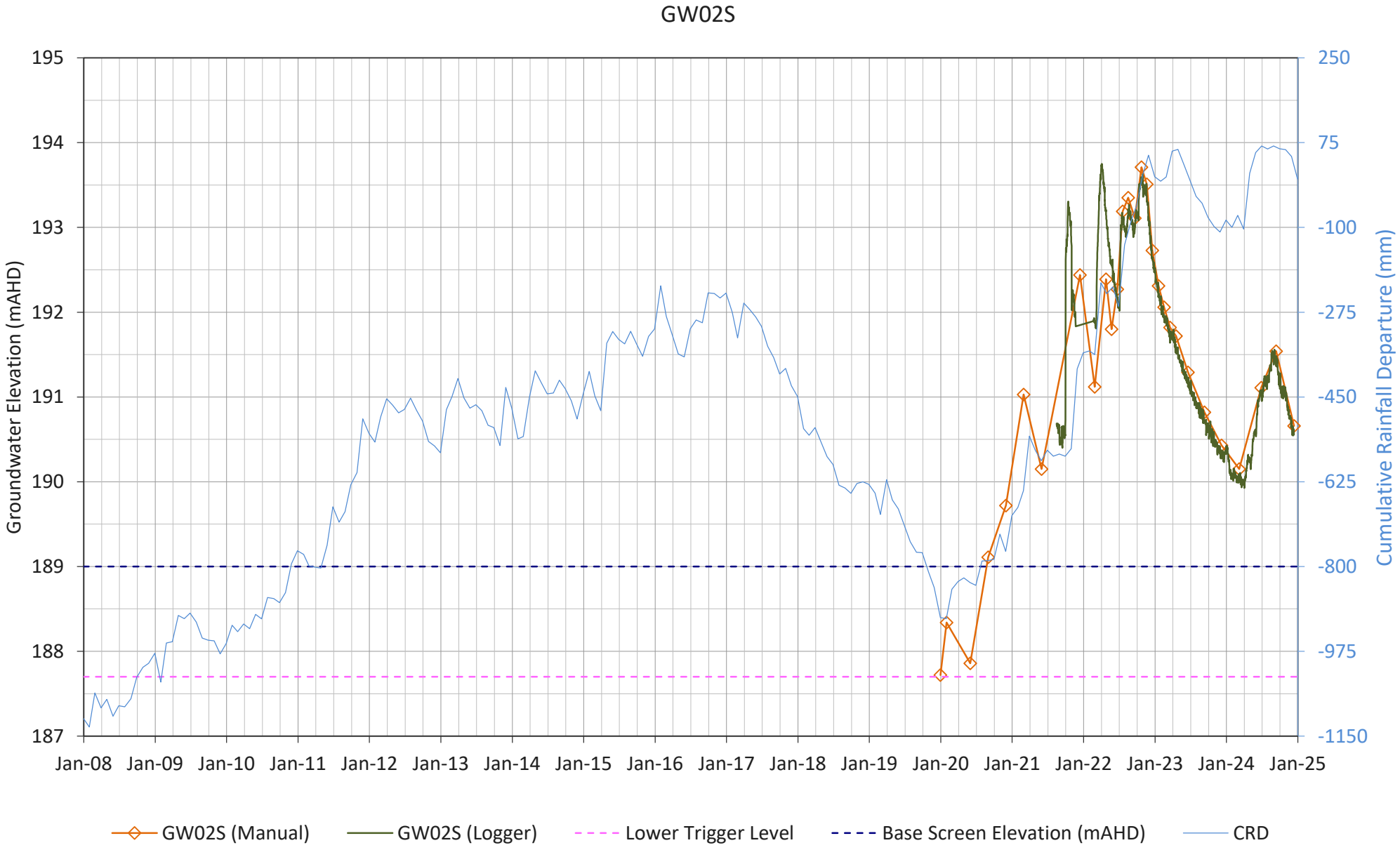

F1162
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
160
150
140
130
120
110
100
200
-25
-250
-475
-700
-925
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
F1162 (Manual)
F1162 (Logger)
CRD

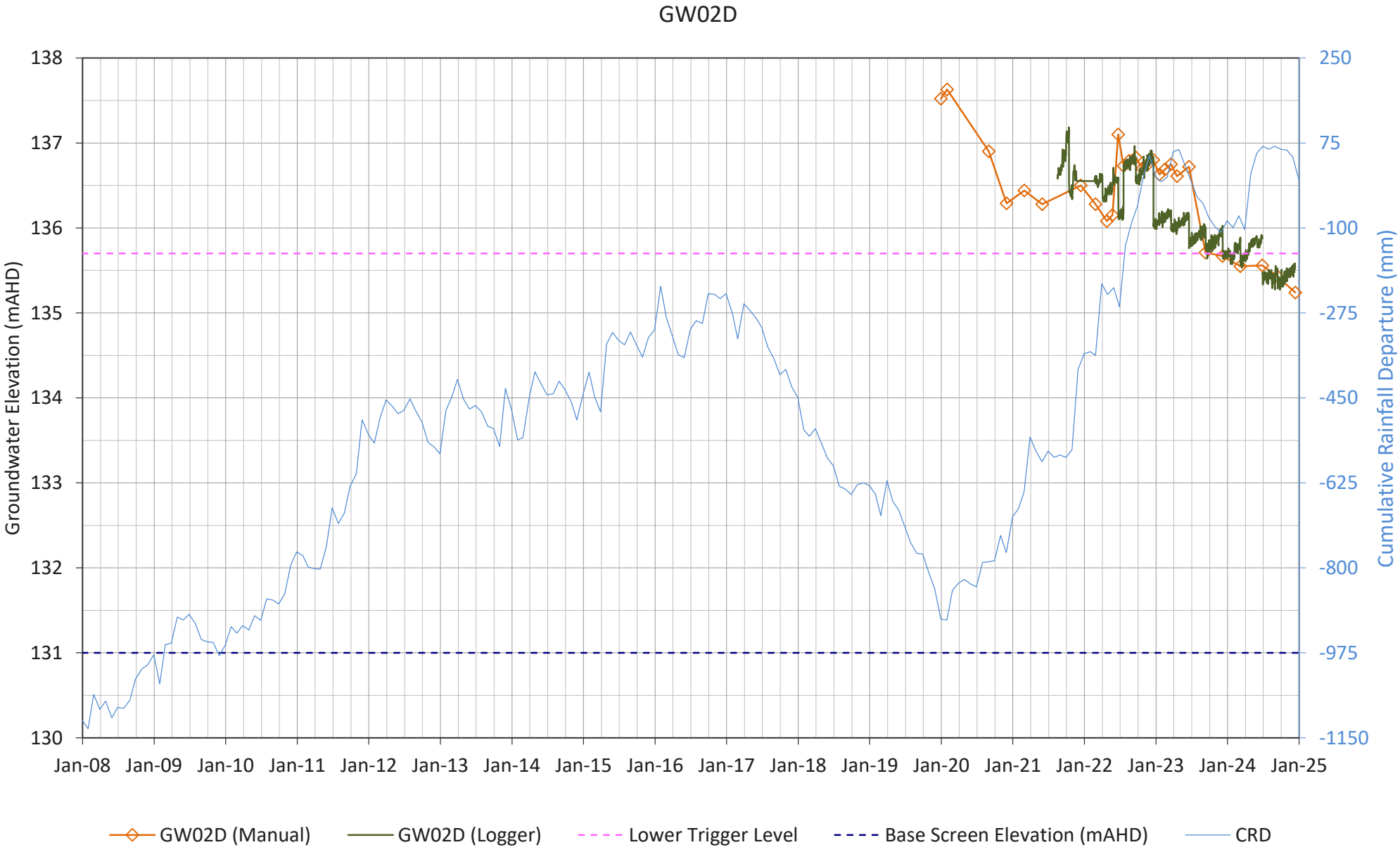

F1164
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
160
140
120
100
80
60
40
20
0
250
75
-100
-275
-450
-625
-800
-975
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
F1164 (Manual)
F1164 (Logger)
CRD

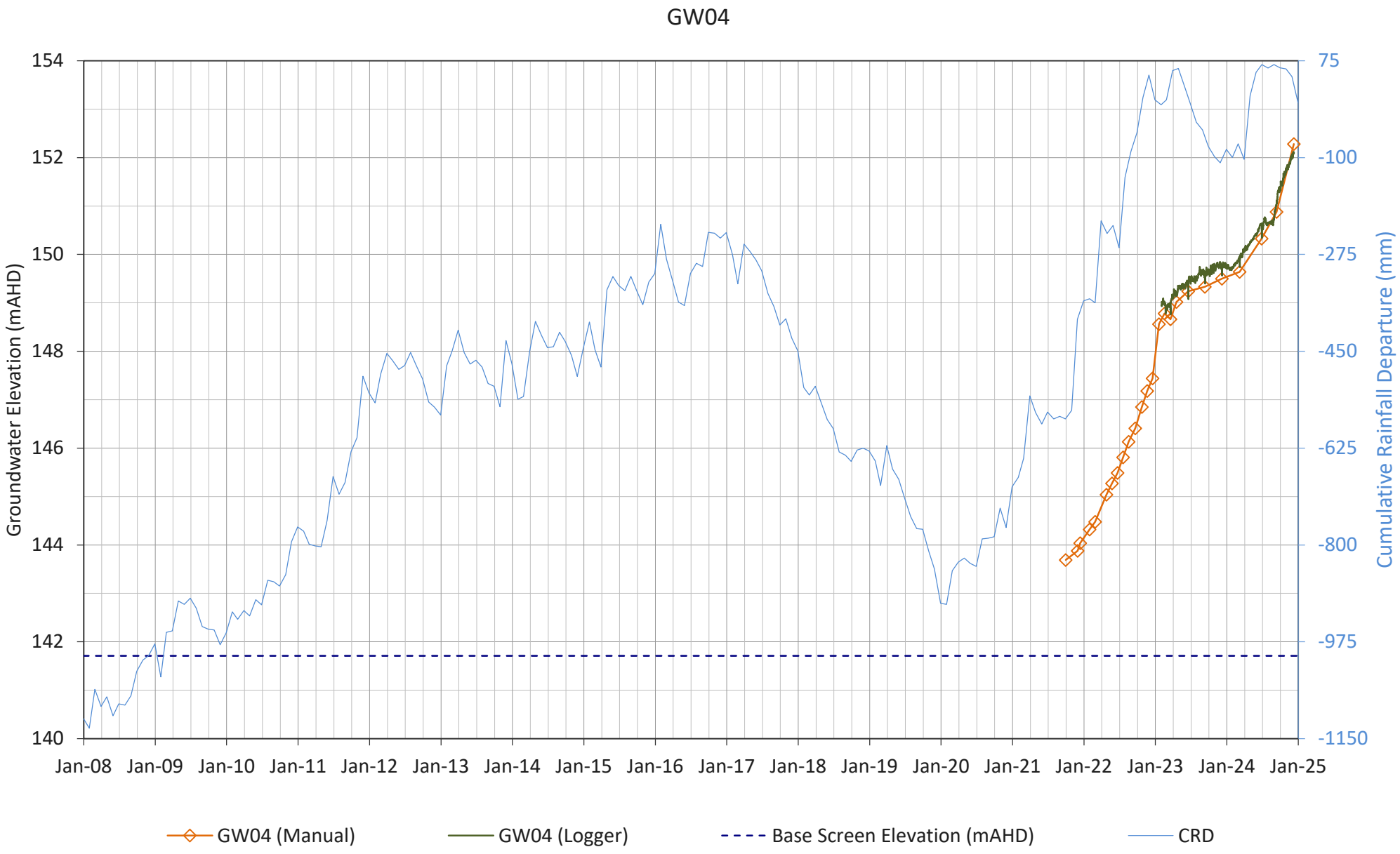

R4241
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
190
185
180
175
170
165
100
-150
-400
-650
-900
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
R4241 (Manual)
R4241 (Logger)
Lower Trigger Level
CRD

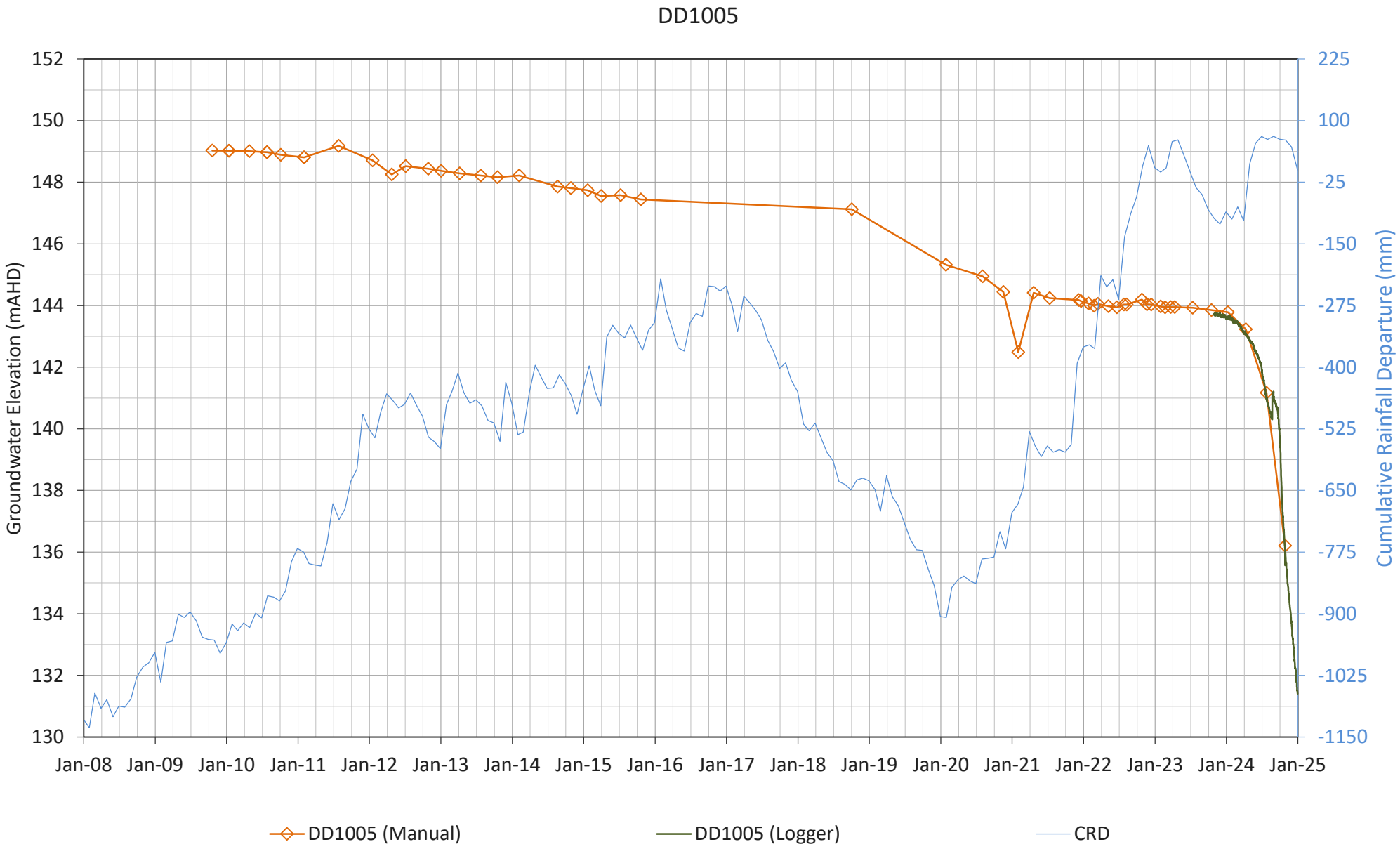

GW01S
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
204
203
202
201
200
199
198
197
196
250
75
-100
-275
-450
-625
-800
-975
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
GW01S (Manual)
GW01S (Logger)
Lower Trigger Level
Base Screen Elevation (mAHD)
CRD

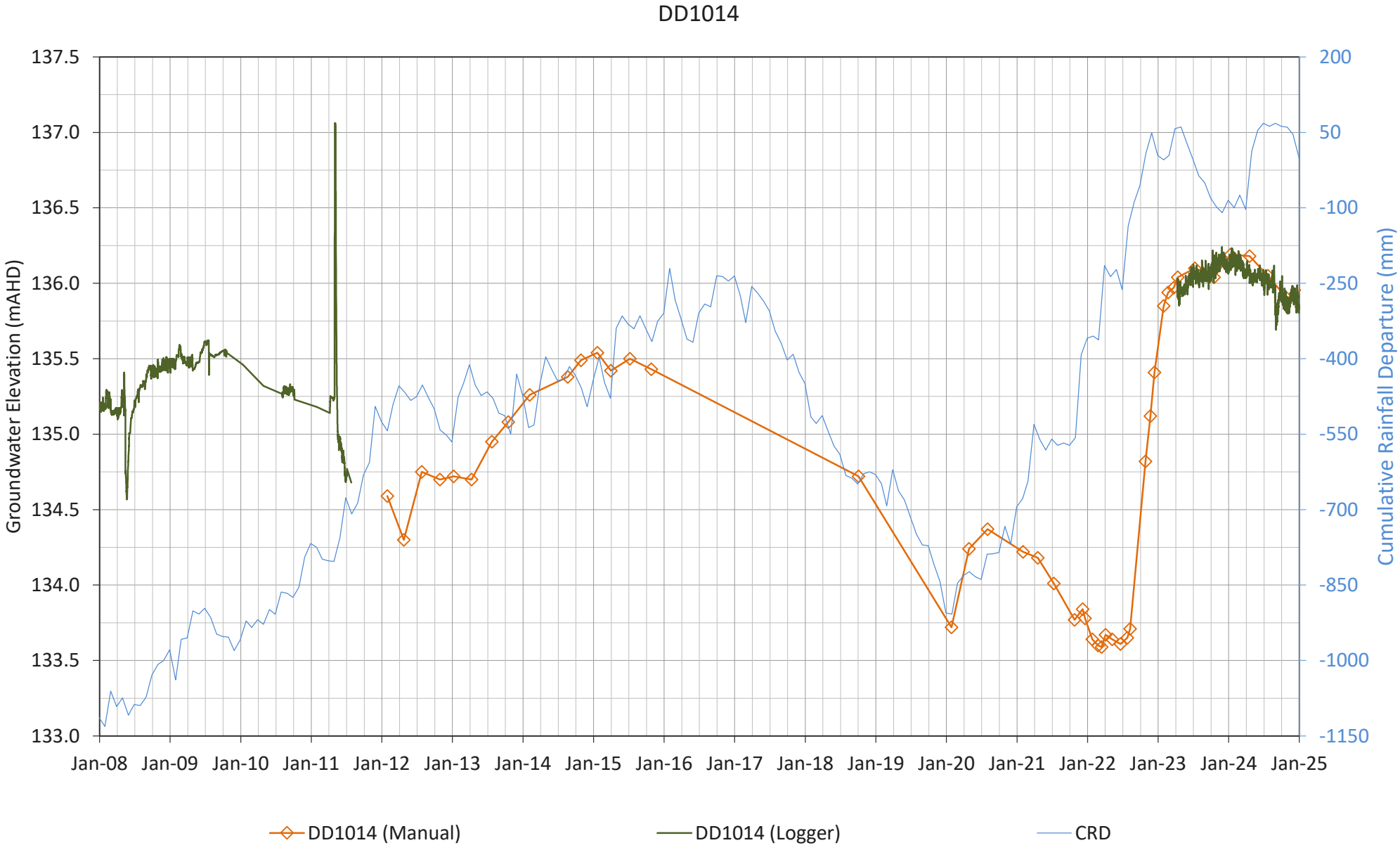

GW01D
Groundwater Elevation (mAHD)
206
205
204
203
202
201
200
199
198
197
Cumulative Rainfall Departure (mm)
200
50
-100
-250
-400
-550
-700
-850
-1000
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
GW01D (Manual)
GW01D (Logger)
Lower Trigger Level
Base Screen Elevation (mAHD)
CRD

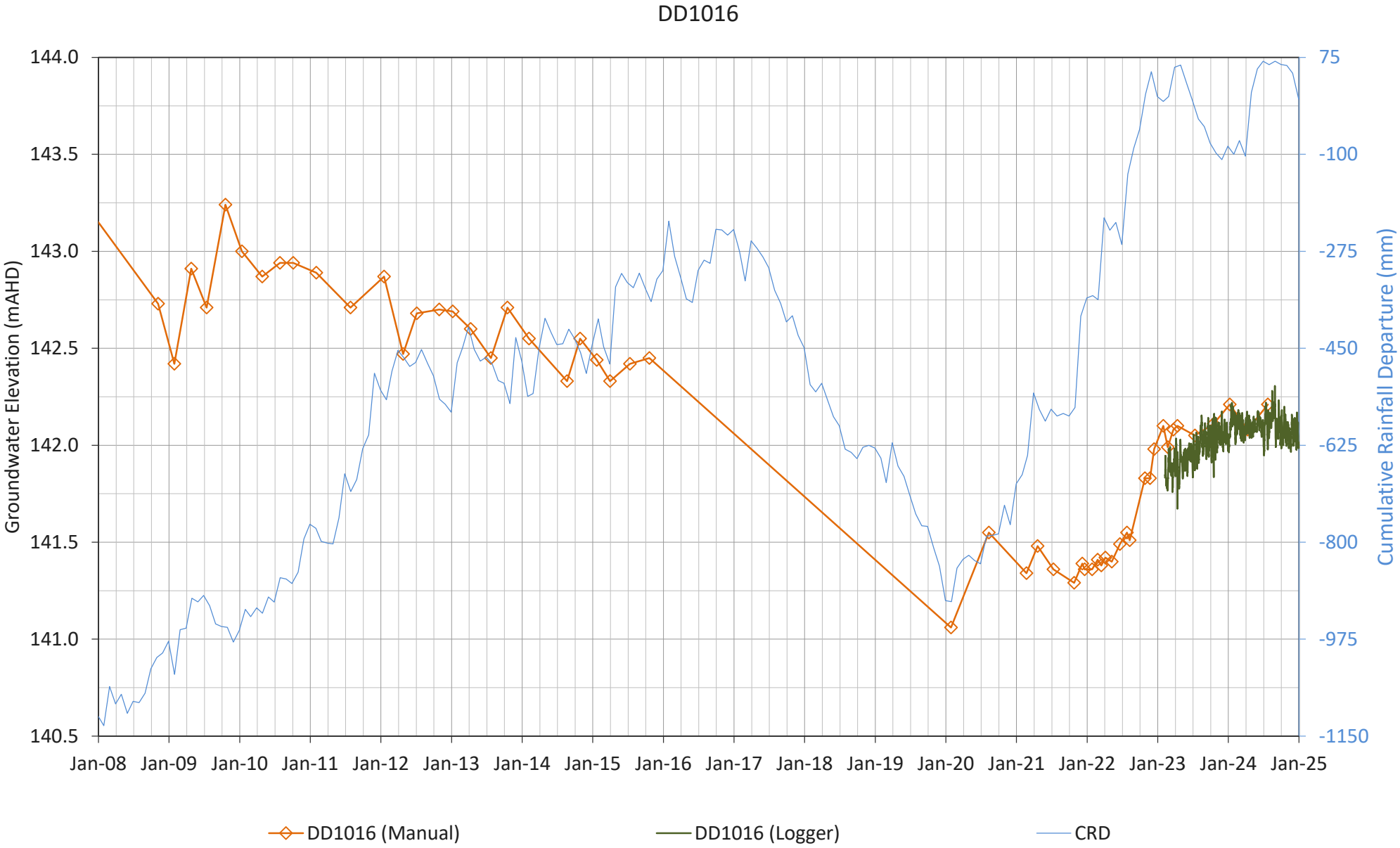

GW02S
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
195
194
193
192
191
190
189
188
187
250
75
-100
-275
-450
-625
-800
-975
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
GW02S (Manual)
GW02S (Logger)
Lower Trigger Level
Base Screen Elevation (mAHD)
CRD

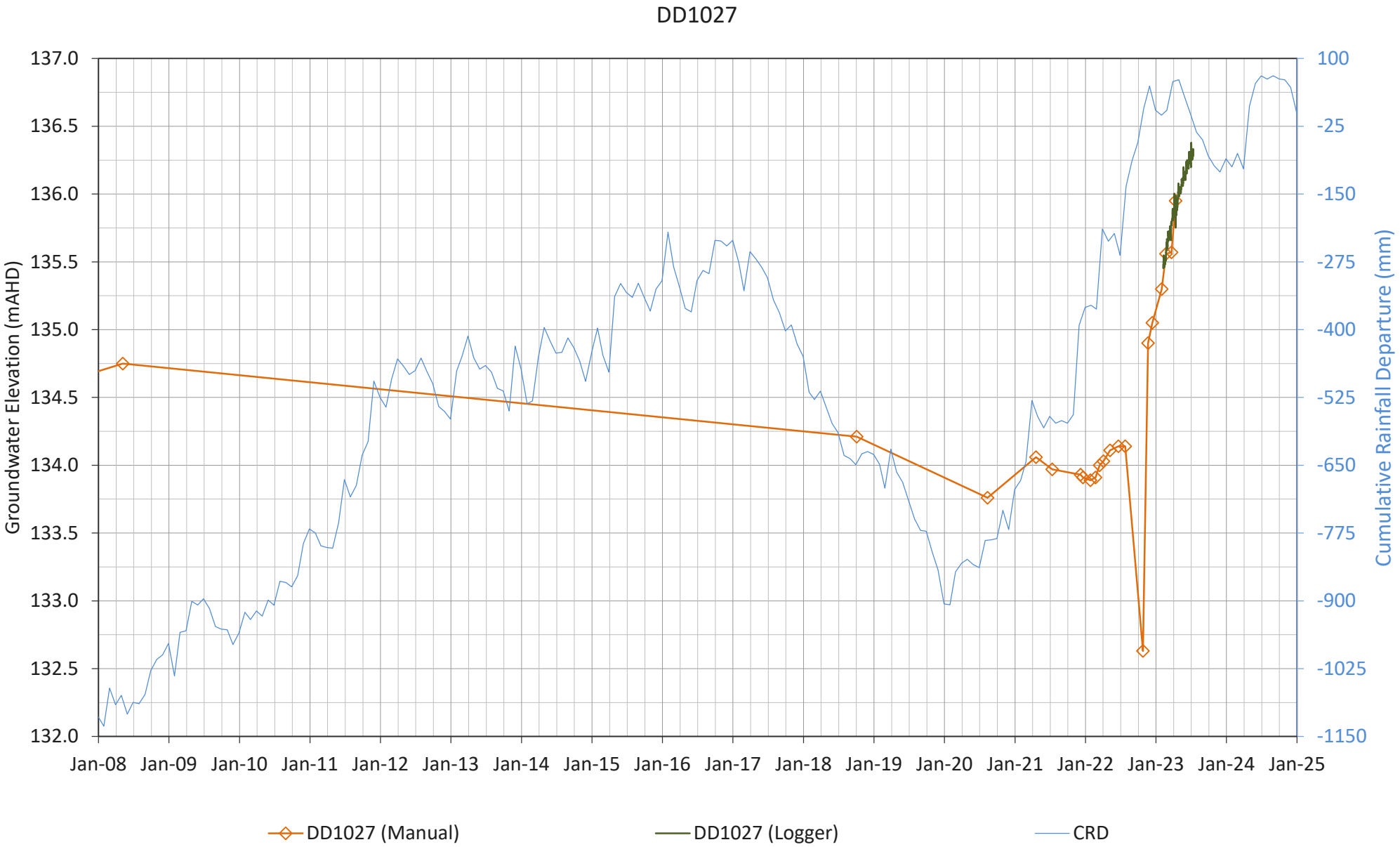

GW02D
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
138
137
136
135
134
133
132
131
130
250
75
-100
-275
-450
-625
-800
-975
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
GW02D (Manual)
GW02D (Logger)
Lower Trigger Level
Base Screen Elevation (mAHD)
CRD

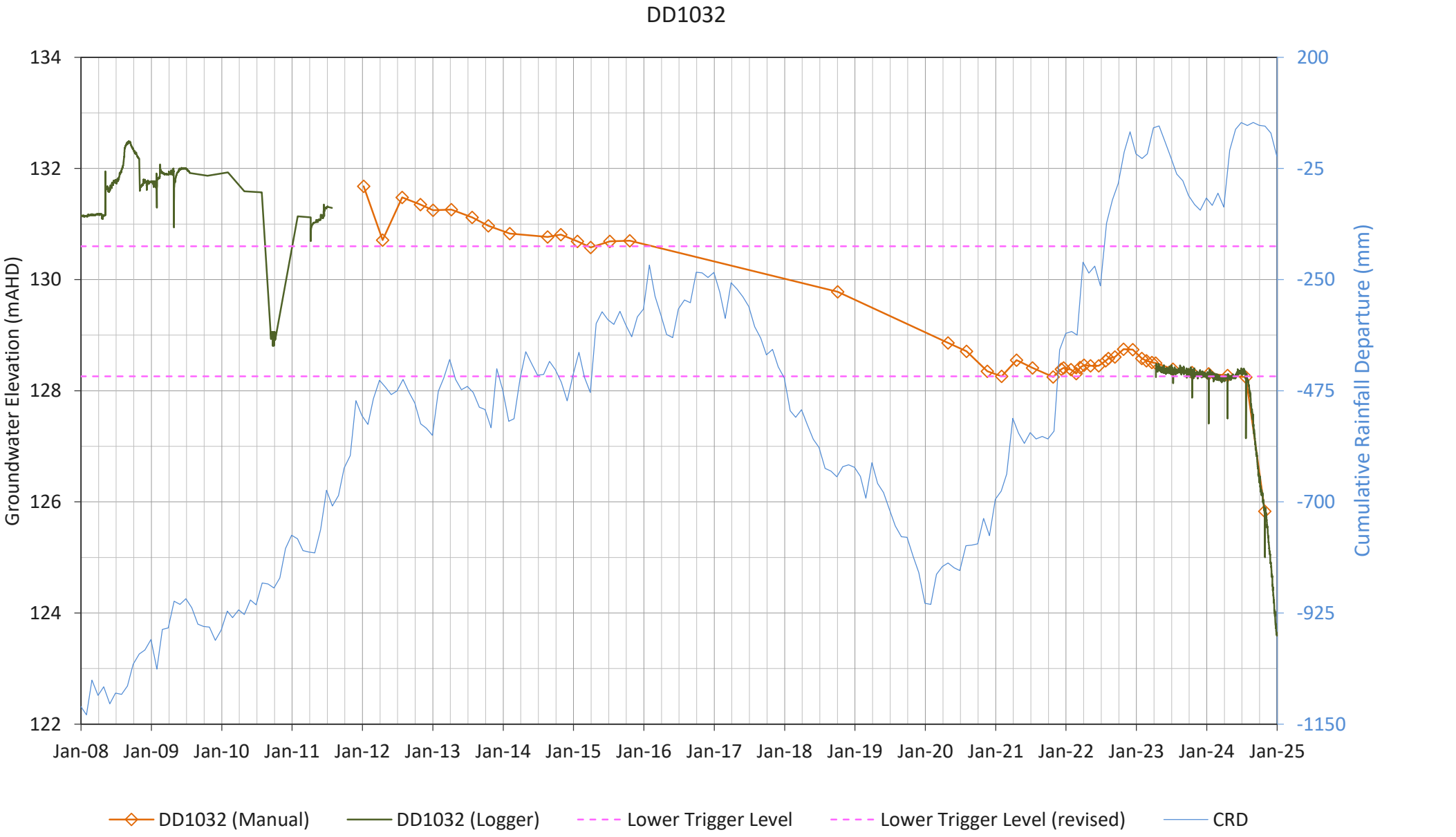

GW04
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
154
152
150
148
146
144
142
140
75
-100
-275
-450
-625
-800
-975
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
GW04 (Manual)
GW04 (Logger)
Base Screen Elevation (mAHD)
CRD

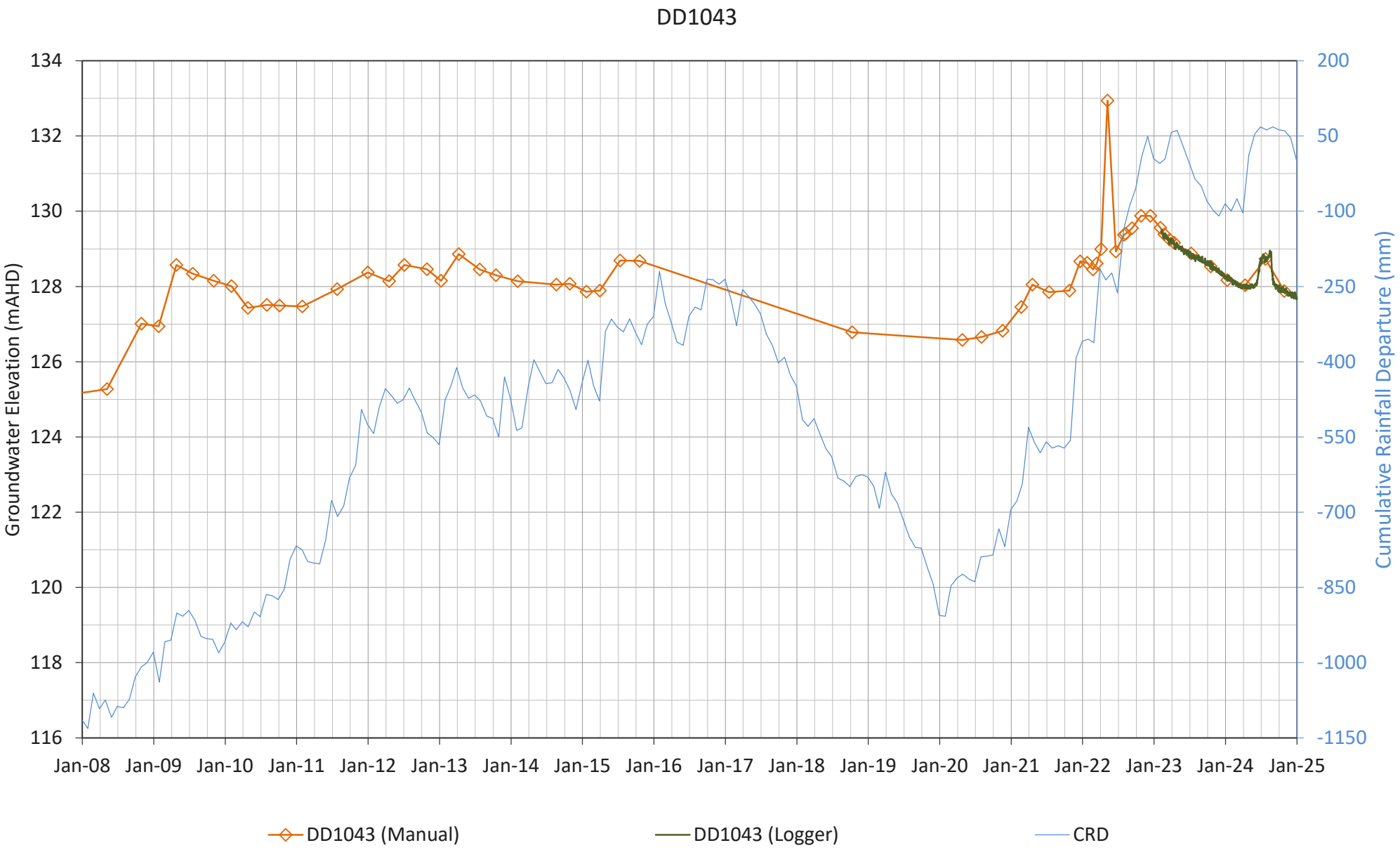

DD1005
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
152
150
148
146
144
142
140
138
136
134
132
130
225
100
-25
-150
-275
-400
-525
-650
-775
-900
-1025
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
DD1005 (Manual)
DD1005 (Logger)
CRD

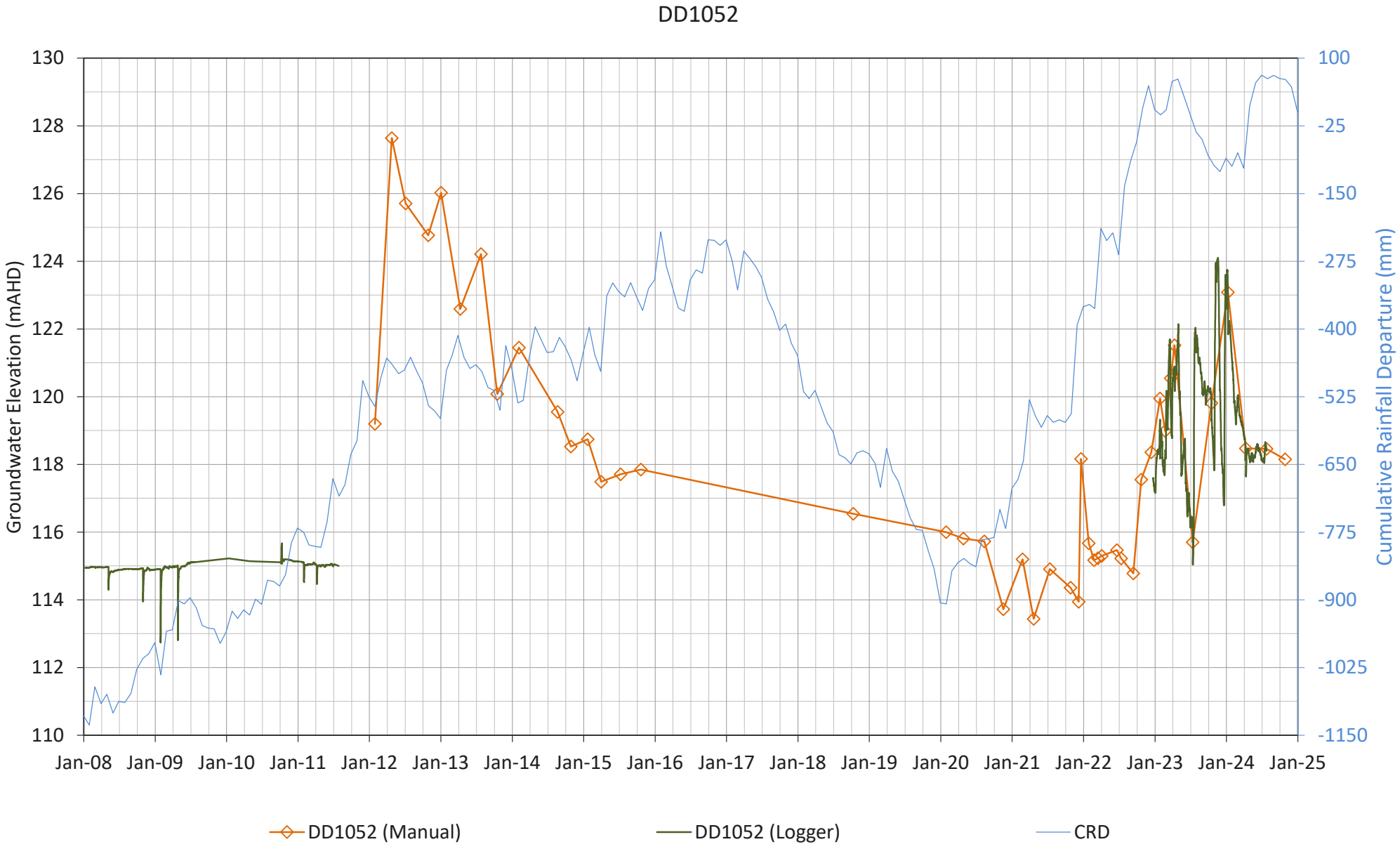

DD1014
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
137.5
137.0
136.5
136.0
135.5
135.0
134.5
134.0
133.5
133.0
200
50
-100
-250
-400
-550
-700
-850
-1000
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
DD1014 (Manual)
DD1014 (Logger)
CRD

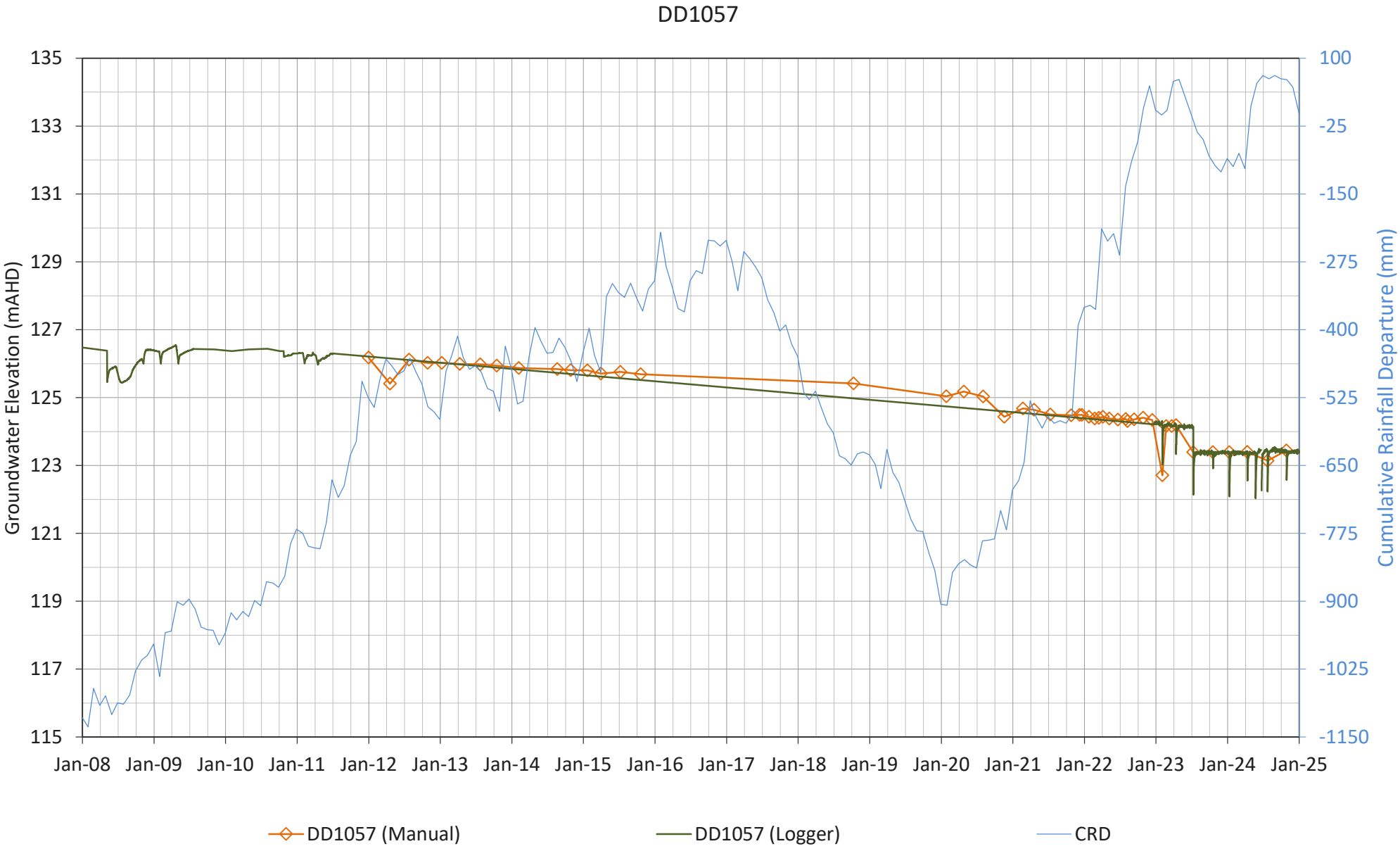

DD1016
144.0
143.5
143.0
142.5
142.0
141.5
141.0
140.5
Groundwater Elevation (mAHD)
75
-100
-275
-450
-625
-800
-975
-1150
Cumulative Rainfall Departure (mm)
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
DD1016 (Manual)
DD1016 (Logger)
CRD

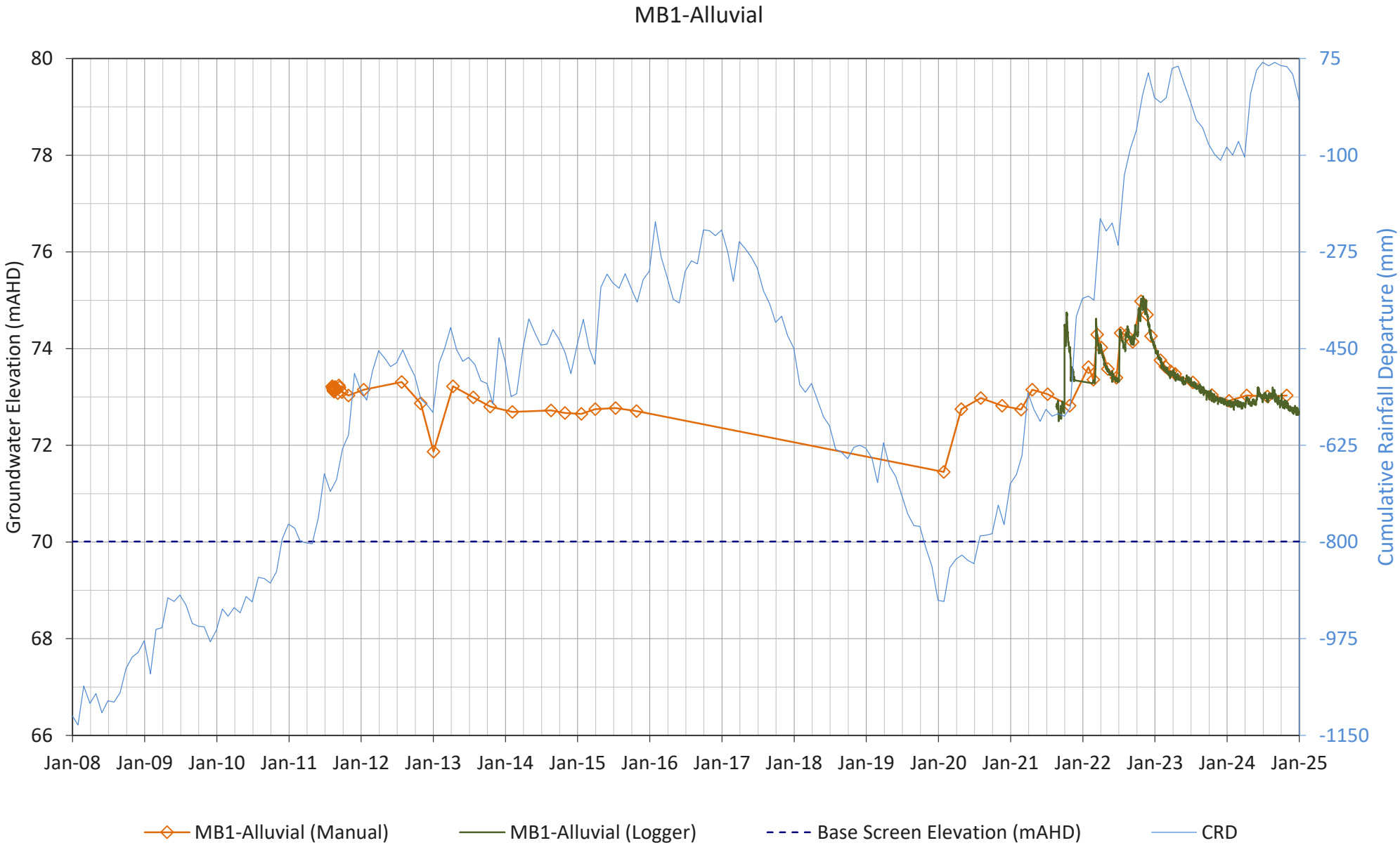

DD1027
Groundwater Elevation (mAHD)
137.0
136.5
136.0
135.5
135.0
134.5
134.0
133.5
133.0
132.5
132.0
Cumulative Rainfall Departure (mm)
100
-25
-150
-275
-400
-525
-650
-775
-900
-1025
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
DD1027 (Manual)
DD1027 (Logger)
CRD

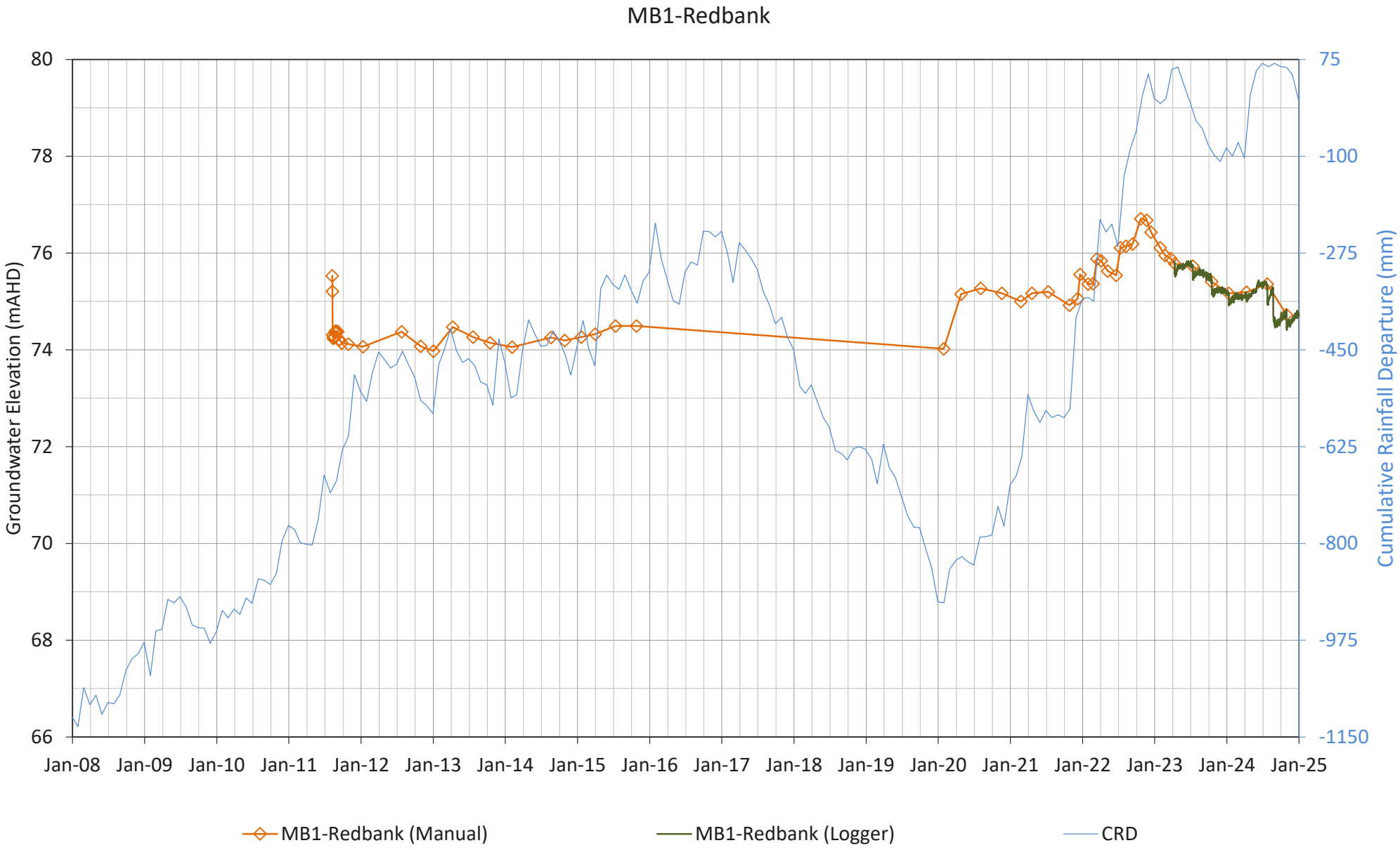

DD1032
Groundwater Elevation (mAHD)
134
132
130
128
126
124
122
Cumulative Rainfall Departure (mm)
200
-25
-250
-475
-700
-925
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
DD1032 (Manual)
DD1032 (Logger)
Lower Trigger Level
Lower Trigger Level (revised)
CRD

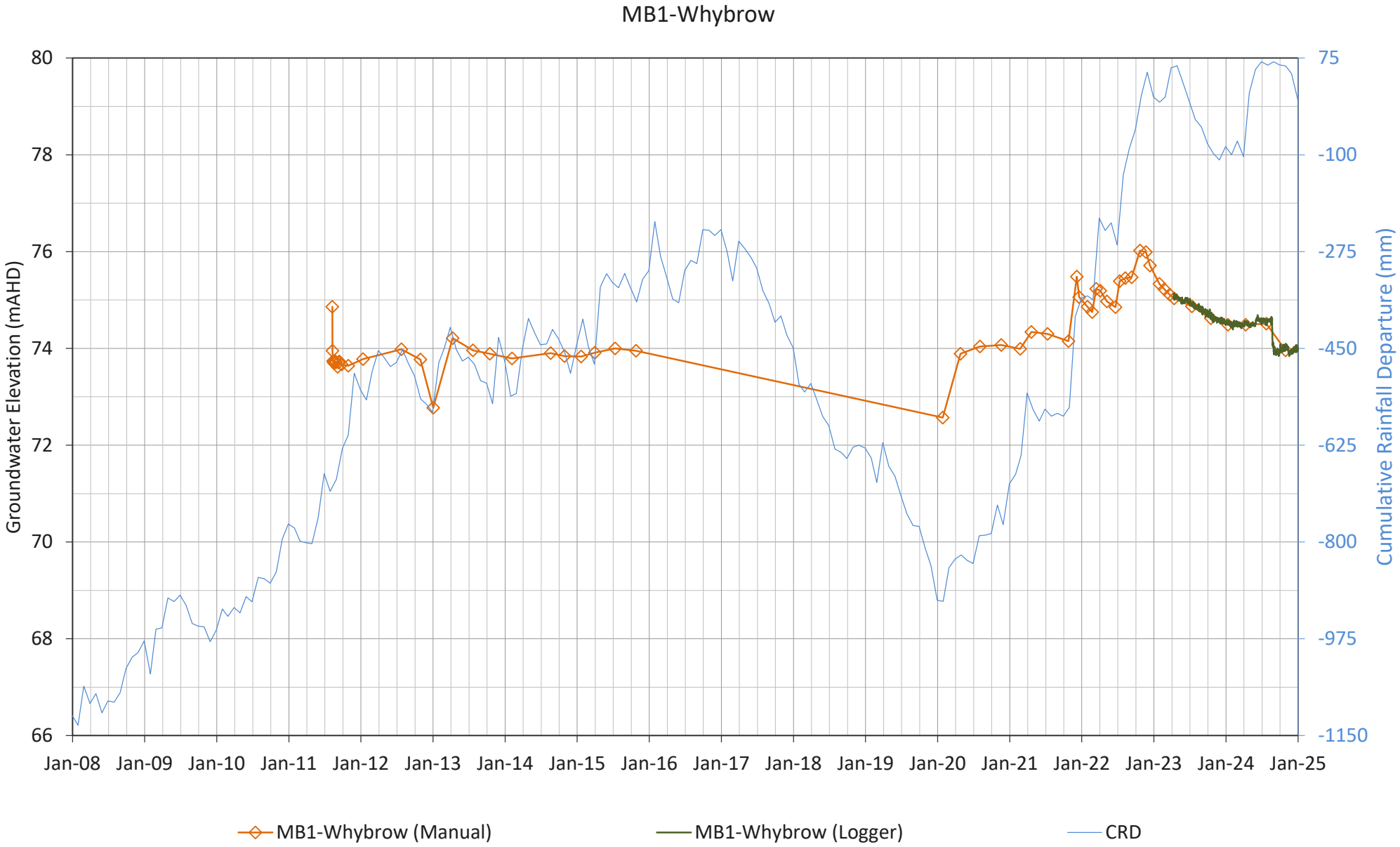

DD1043
Groundwater Elevation (mAHD)
134
132
130
128
126
124
122
120
118
116
Cumulative Rainfall Departure (mm)
200
50
-100
-250
-400
-550
-700
-850
-1000
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
DD1043 (Manual)
DD1043 (Logger)
CRD

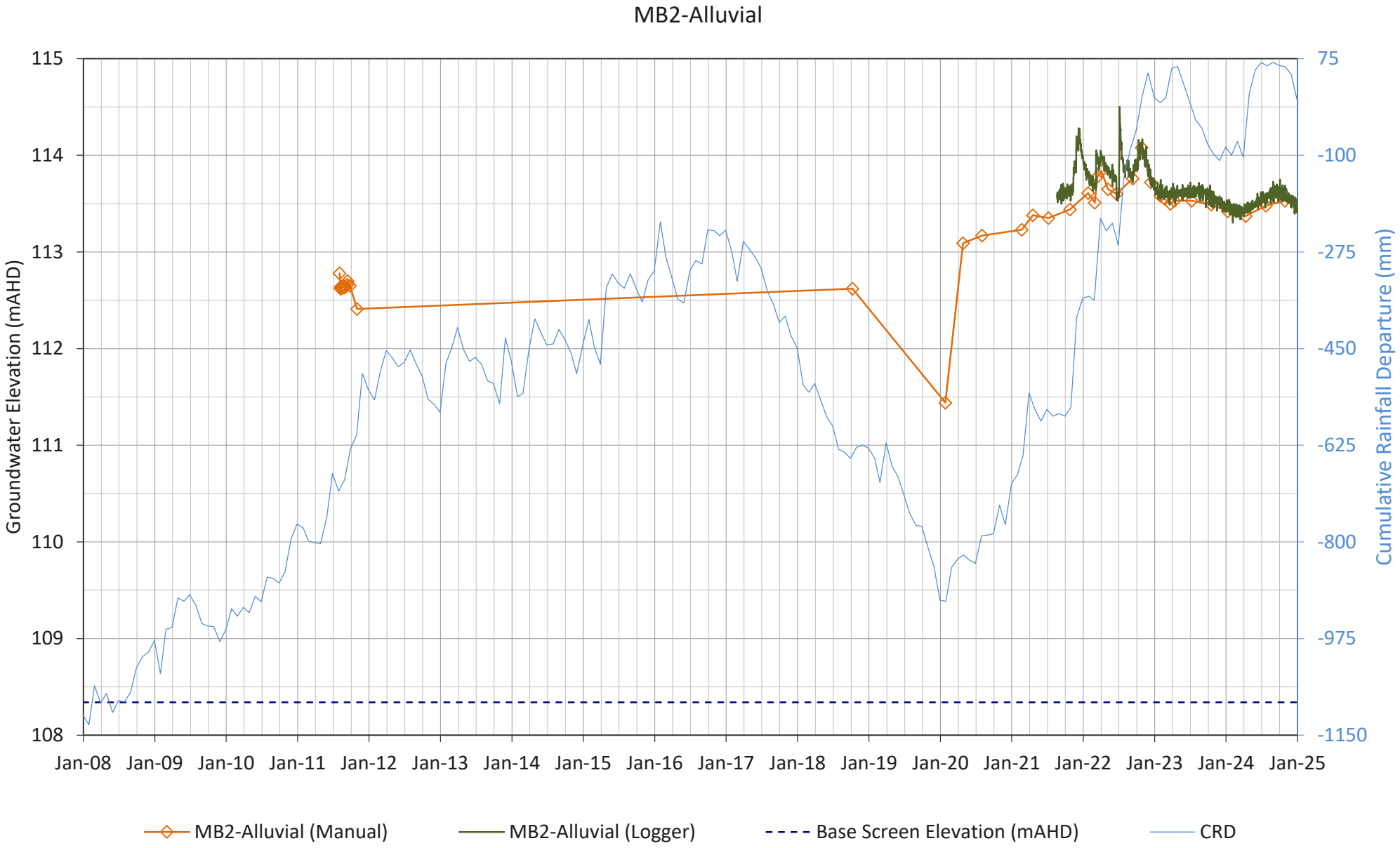

DD1052
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
130
128
126
124
122
120
118
116
114
112
110
100
-25
-150
-275
-400
-525
-650
-775
-900
-1025
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
DD1052 (Manual)
DD1052 (Logger)
CRD

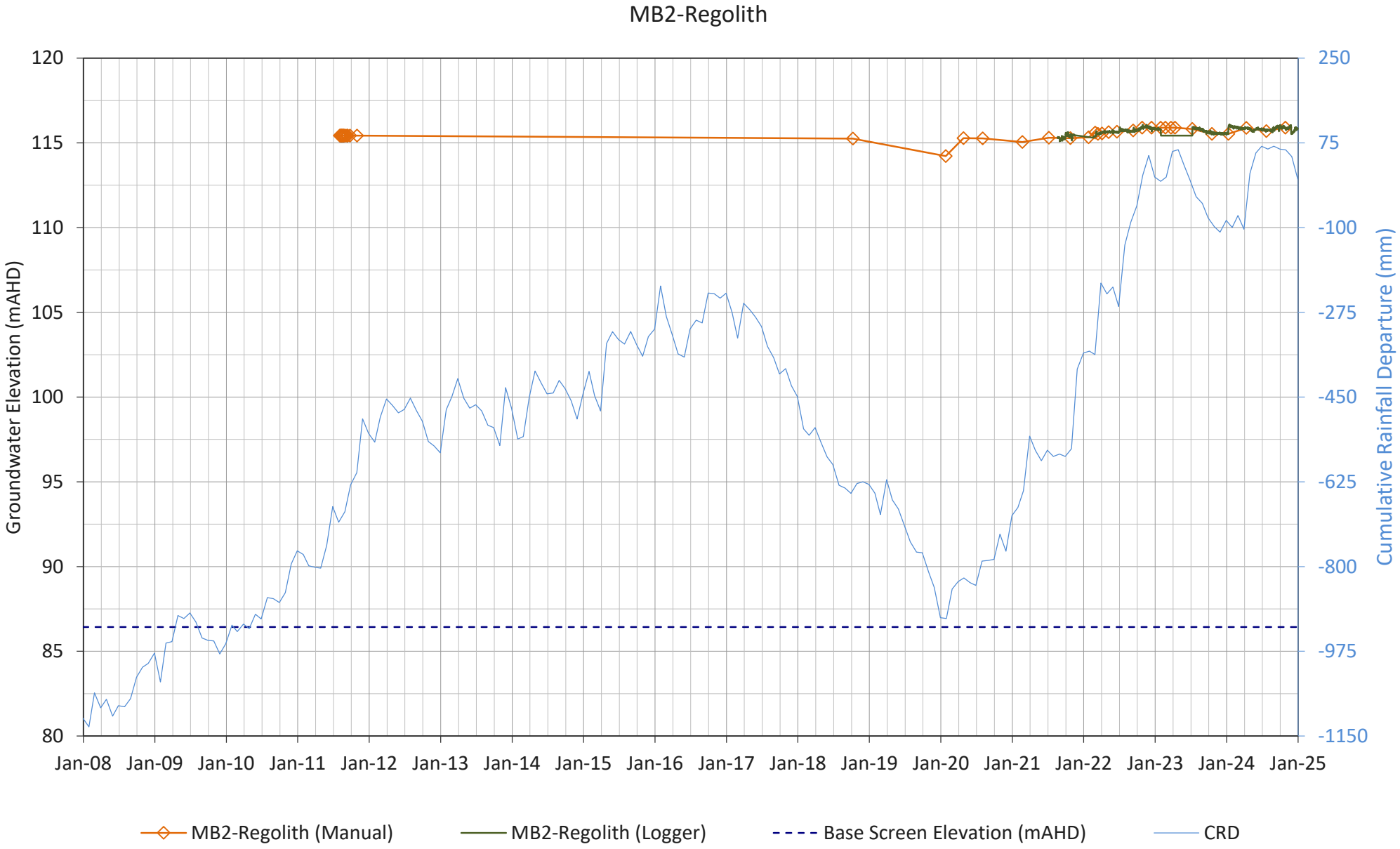

DD1057
Groundwater Elevation (mAHD)
135
133
131
129
127
125
123
121
119
117
115
Cumulative Rainfall Departure (mm)
100
-25
-150
-275
-400
-525
-650
-775
-900
-1025
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
DD1057 (Manual)
DD1057 (Logger)
CRD

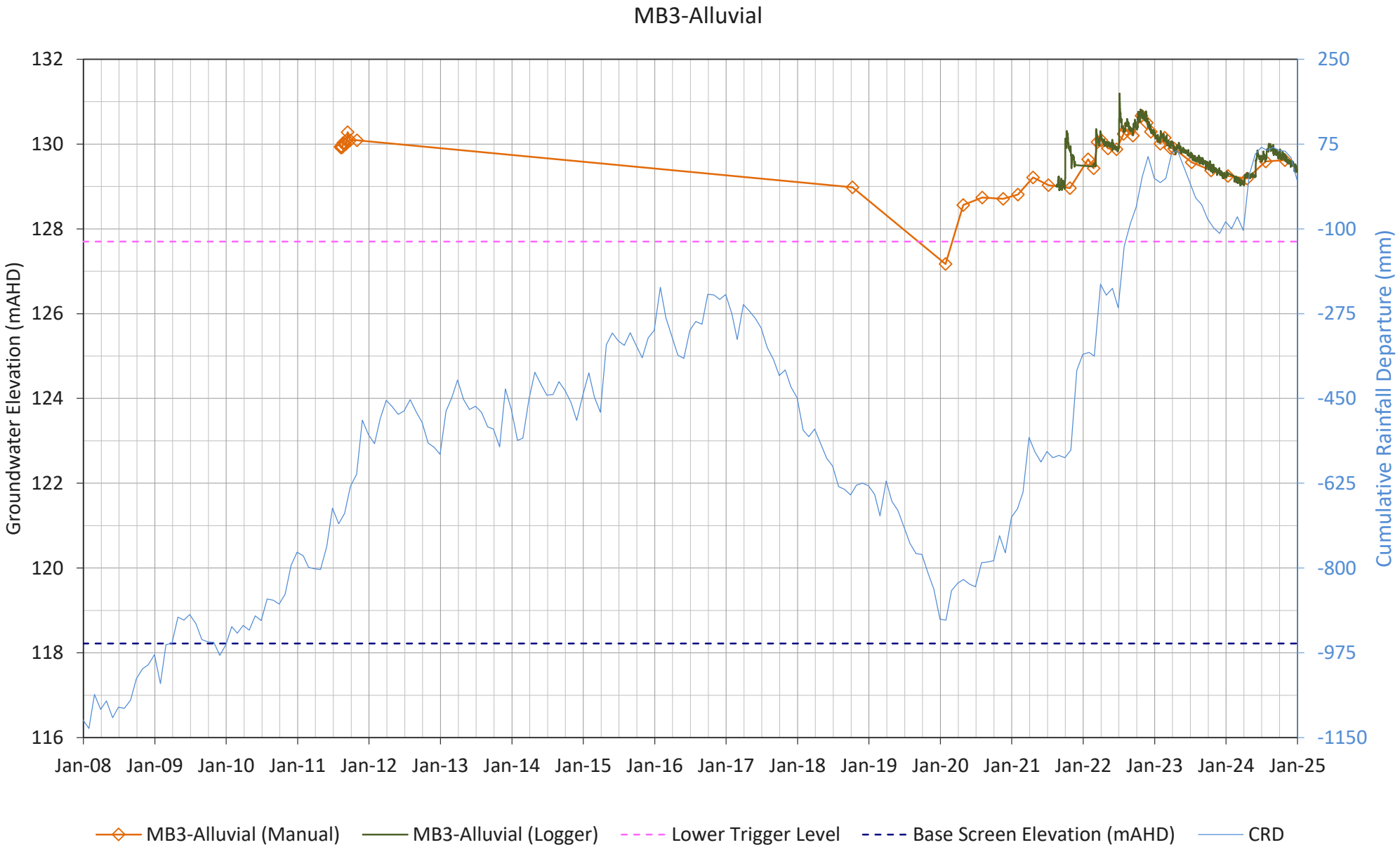

MB1-Alluvial
Groundwater Elevation (mAHD)
80
78
76
74
72
70
68
66
Cumulative Rainfall Departure (mm)
75
-100
-275
-450
-625
-800
-975
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
MB1-Alluvial (Manual)
MB1-Alluvial (Logger)
Base Screen Elevation (mAHD)
CRD

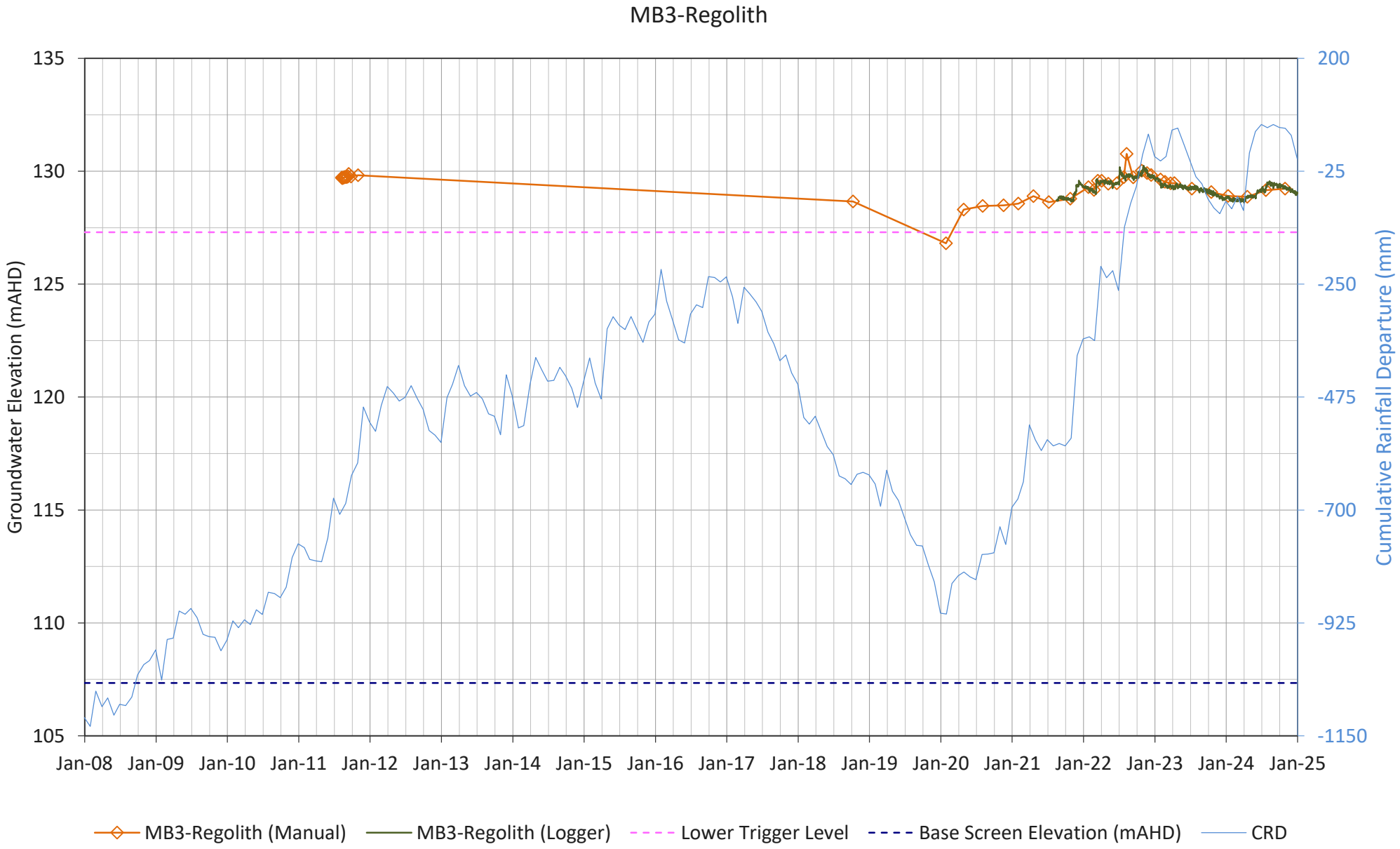

MB1-Redbank
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
80
78
76
74
72
70
68
66
75
-100
-275
-450
-625
-800
-975
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
MB1-Redbank (Manual)
MB1-Redbank (Logger)
CRD

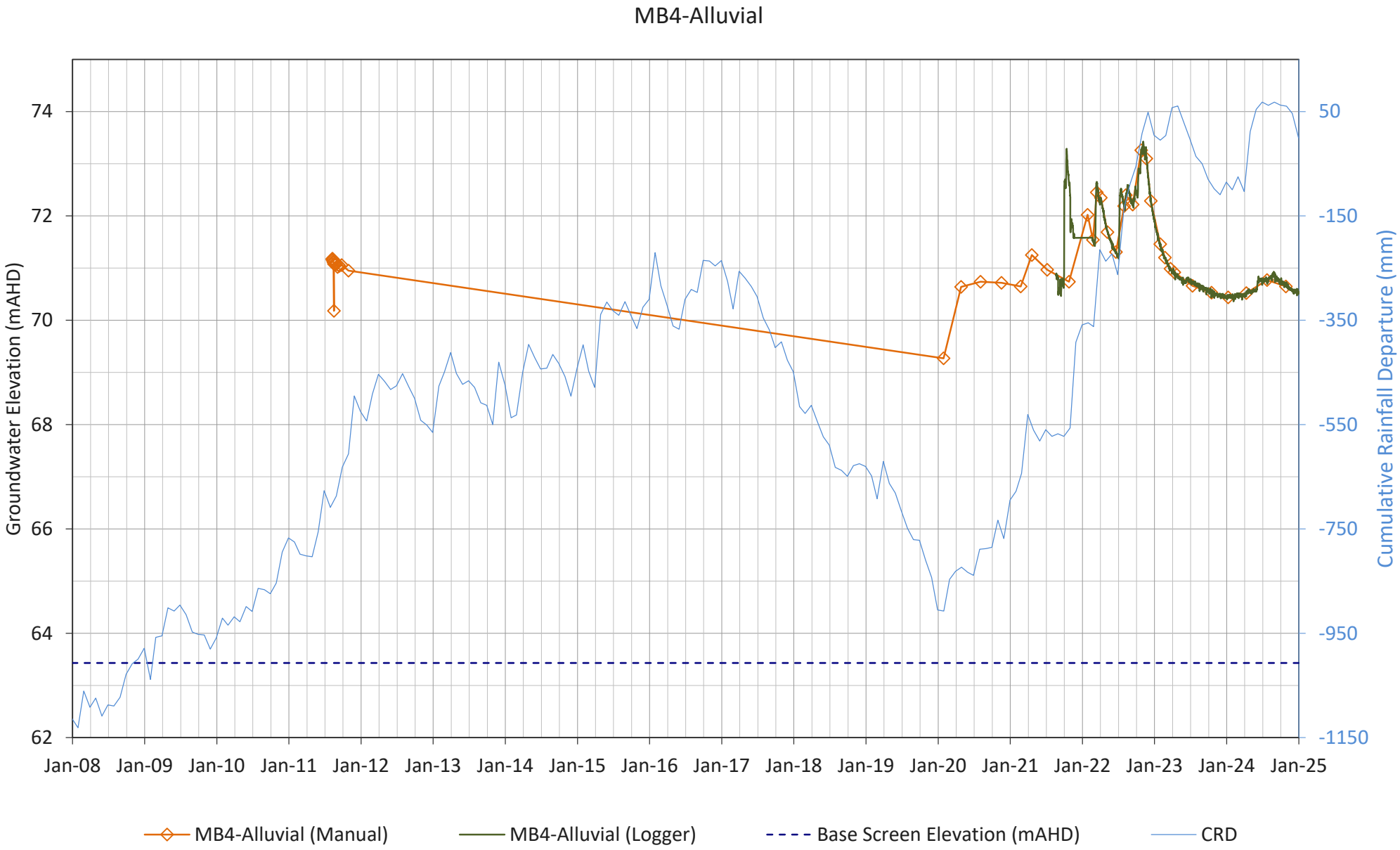

MB1-Whybrow
Groundwater Elevation (mAHD)
80
78
76
74
72
70
68
66
Cumulative Rainfall Departure (mm)
75
-100
-275
-450
-625
-800
-975
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
MB1-Whybrow (Manual)
MB1-Whybrow (Logger)
CRD

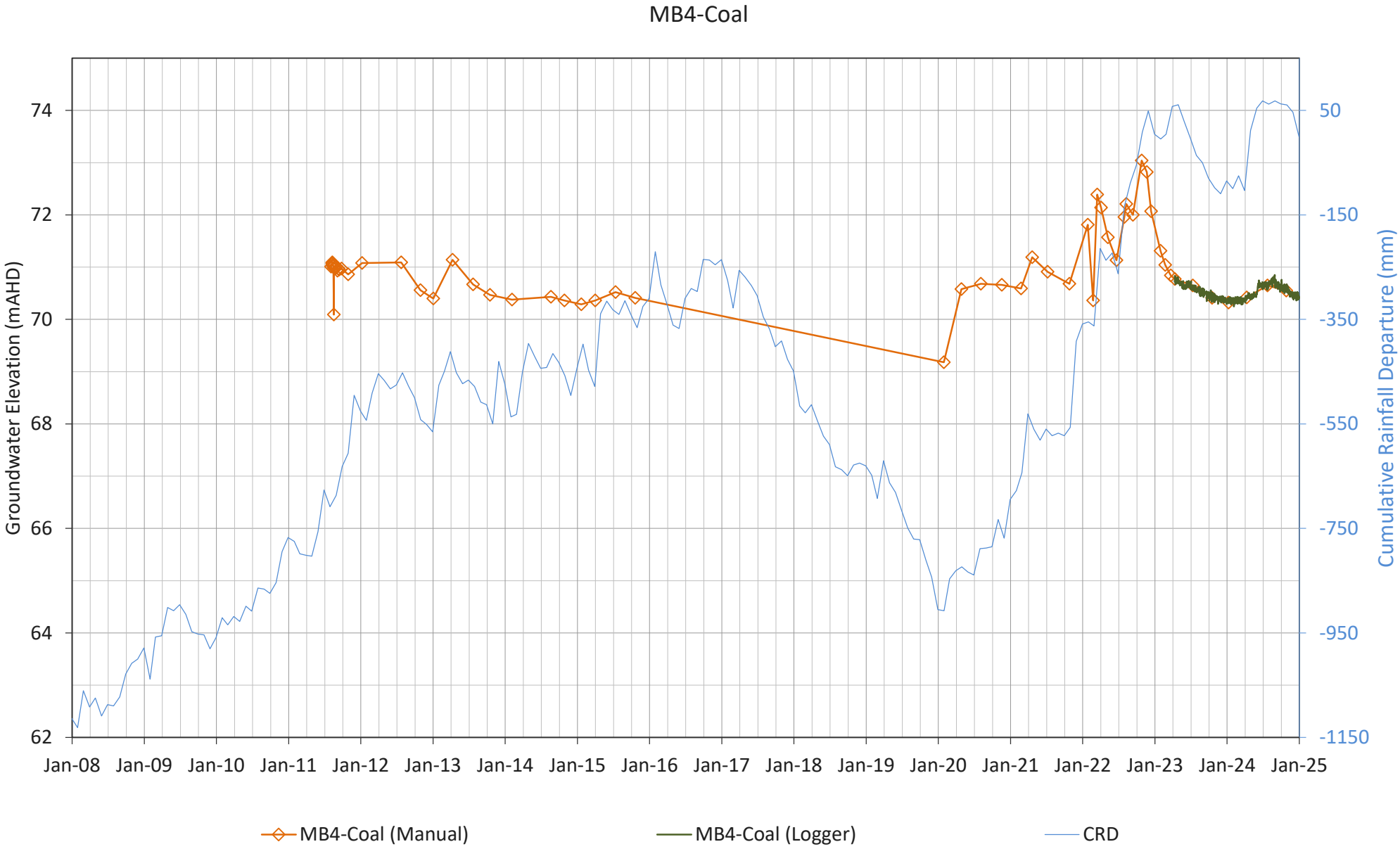

MB2-Alluvial
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
115
114
113
112
111
110
109
108
75
-100
-275
-450
-625
-800
-975
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
MB2-Alluvial (Manual)
MB2-Alluvial (Logger)
Base Screen Elevation (mAHD)
CRD

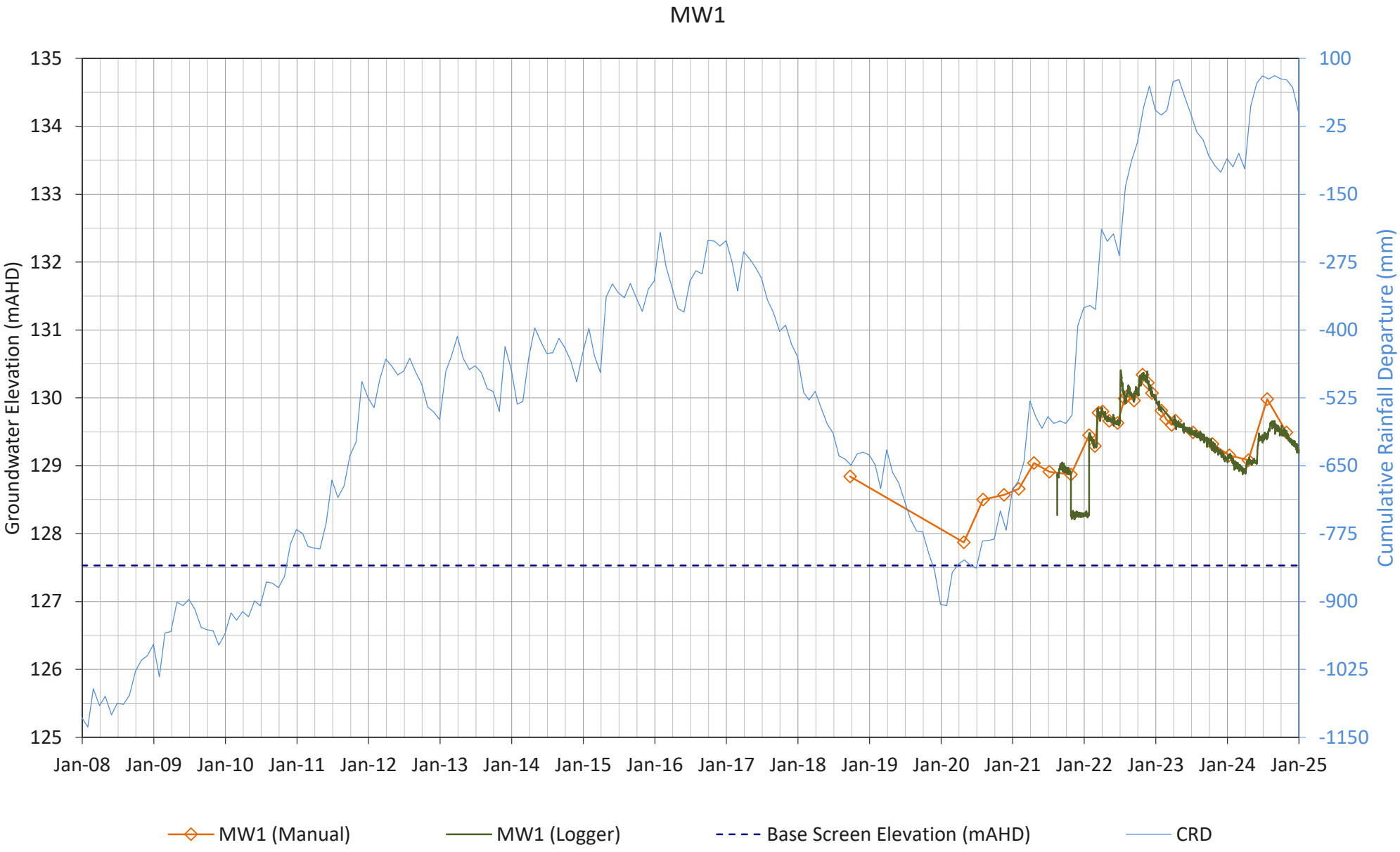

MB2-Regolith
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
120
115
110
105
100
95
90
85
80
250
75
-100
-275
-450
-625
-800
-975
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
MB2-Regolith (Manual)
MB2-Regolith (Logger)
Base Screen Elevation (mAHD)
CRD

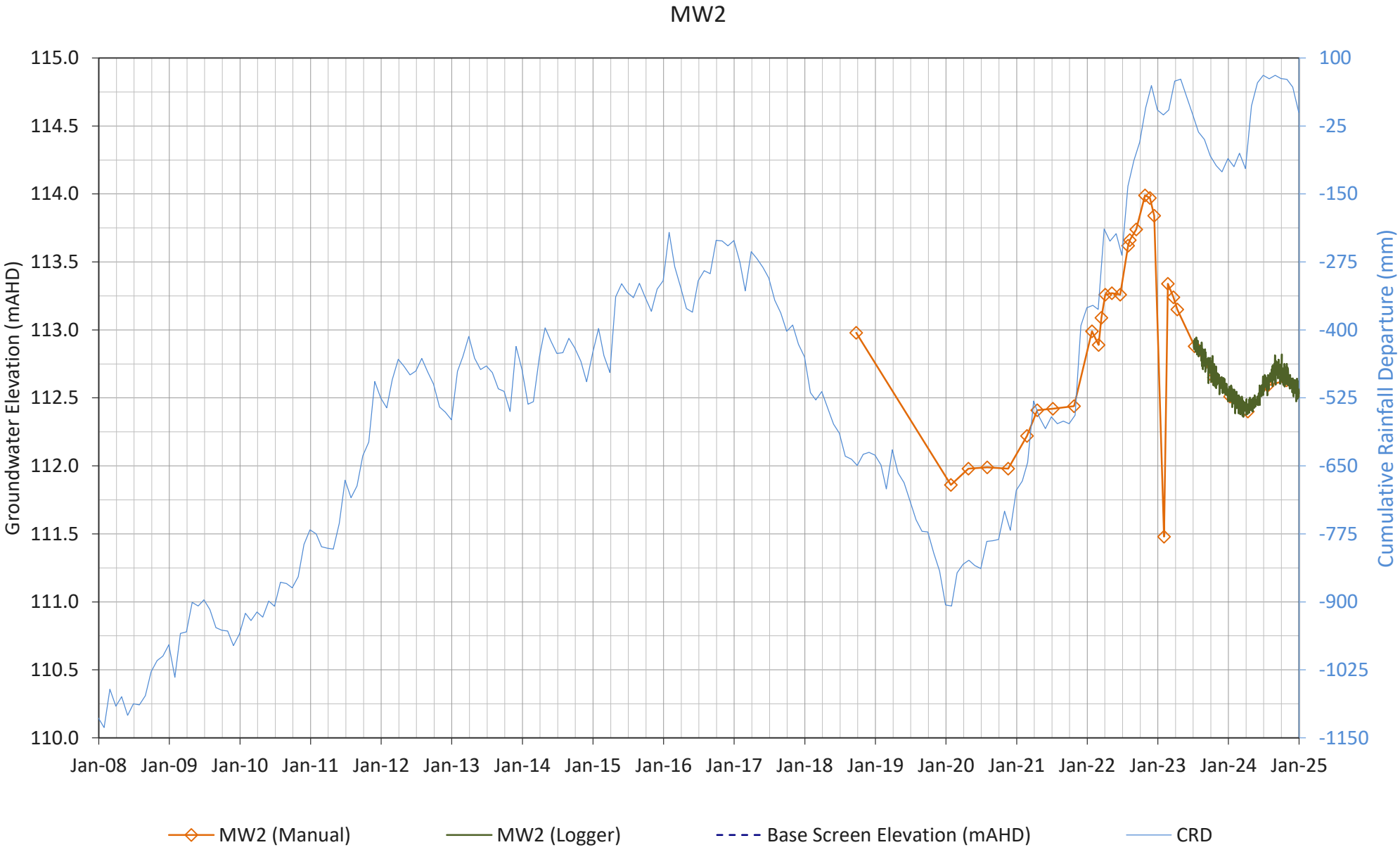

MB3-Alluvial
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
132
130
128
126
124
122
120
118
116
250
75
-100
-275
-450
-625
-800
-975
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
MB3-Alluvial (Manual)
MB3-Alluvial (Logger)
Lower Trigger Level
Base Screen Elevation (mAHD)
CRD

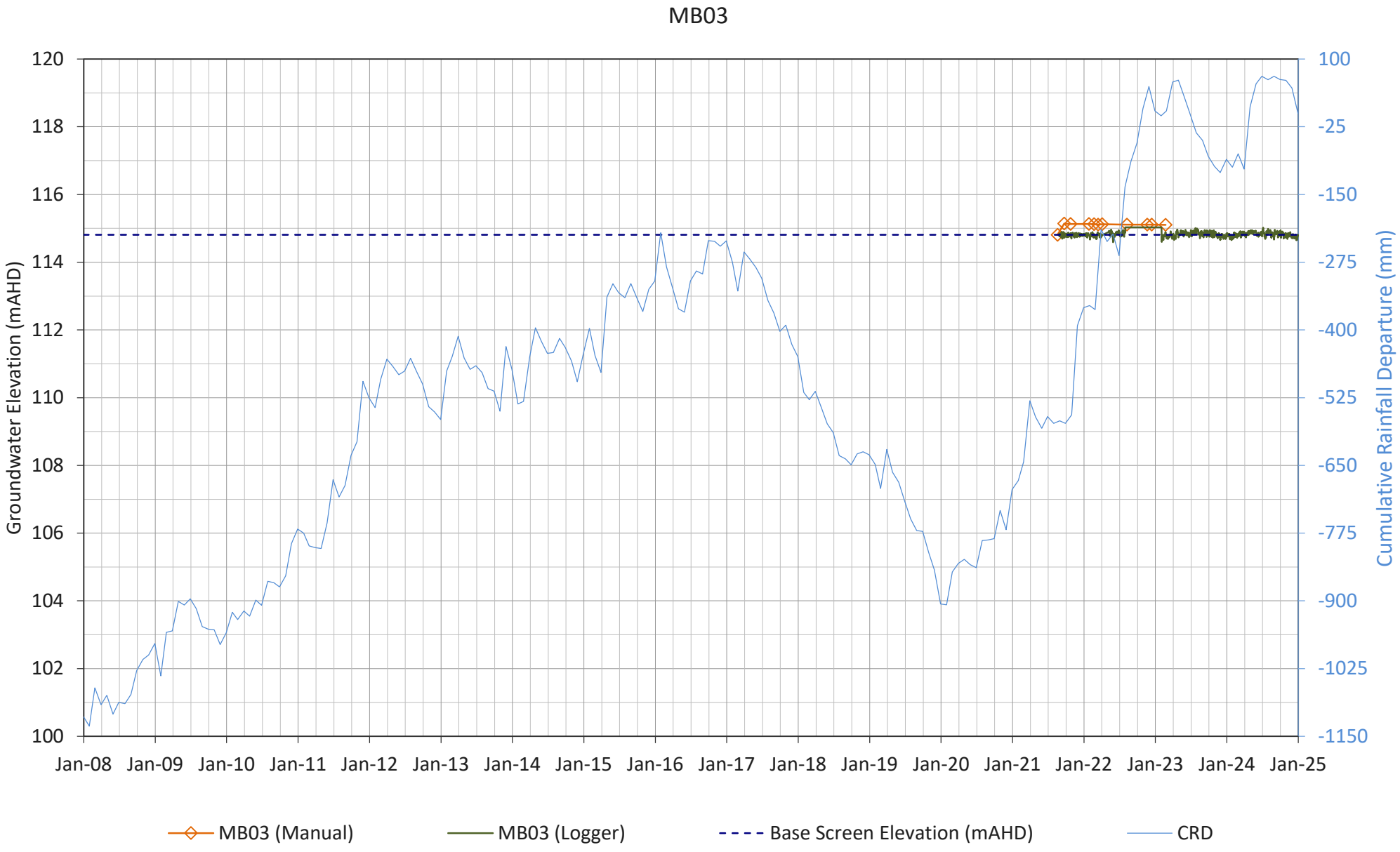

MB3-Regolith
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
135
130
125
120
115
110
105
200
-25
-250
-475
-700
-925
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
MB3-Regolith (Manual)
MB3-Regolith (Logger)
Lower Trigger Level
Base Screen Elevation (mAHD)
CRD

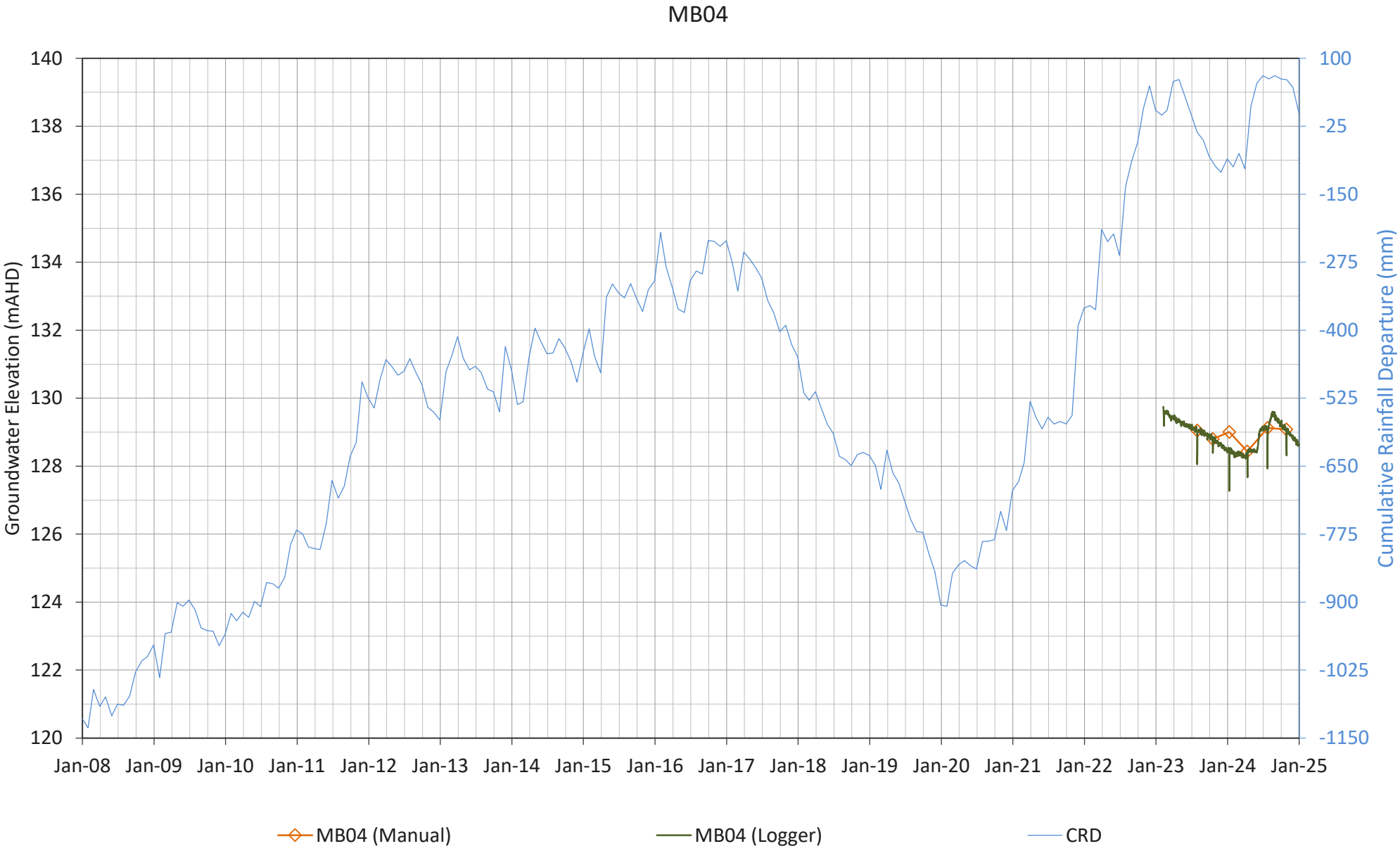

MB4-Alluvial
Groundwater Elevation (mAHD)
74
72
70
68
66
64
62
Cumulative Rainfall Departure (mm)
50
-150
-350
-550
-750
-950
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
MB4-Alluvial (Manual)
MB4-Alluvial (Logger)
Base Screen Elevation (mAHD)
CRD

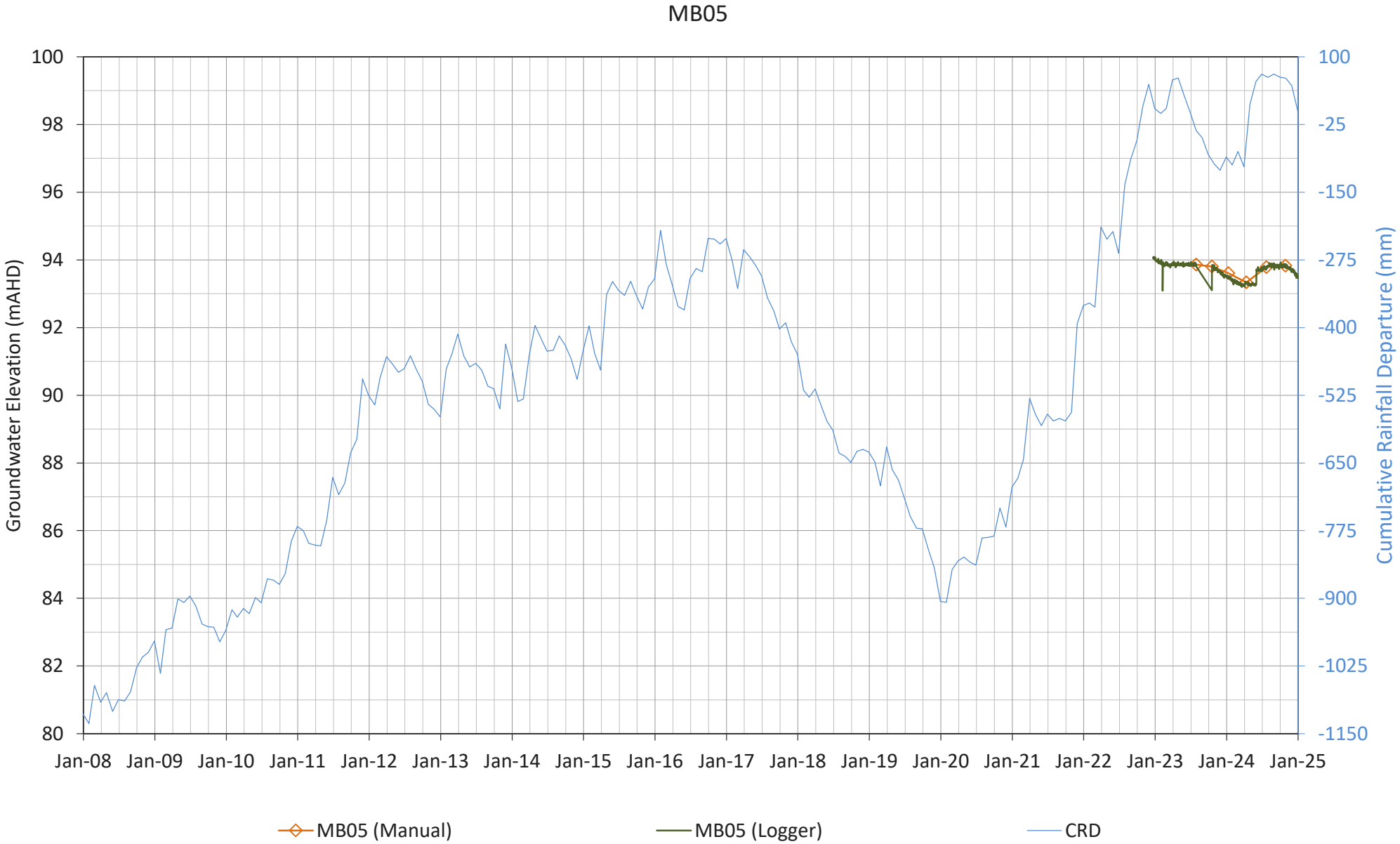

MB4-Coal
Groundwater Elevation (mAHD)
74
72
70
68
66
64
62
Cumulative Rainfall Departure (mm)
50
-150
-350
-550
-750
-950
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
MB4-Coal (Manual)
MB4-Coal (Logger)
CRD

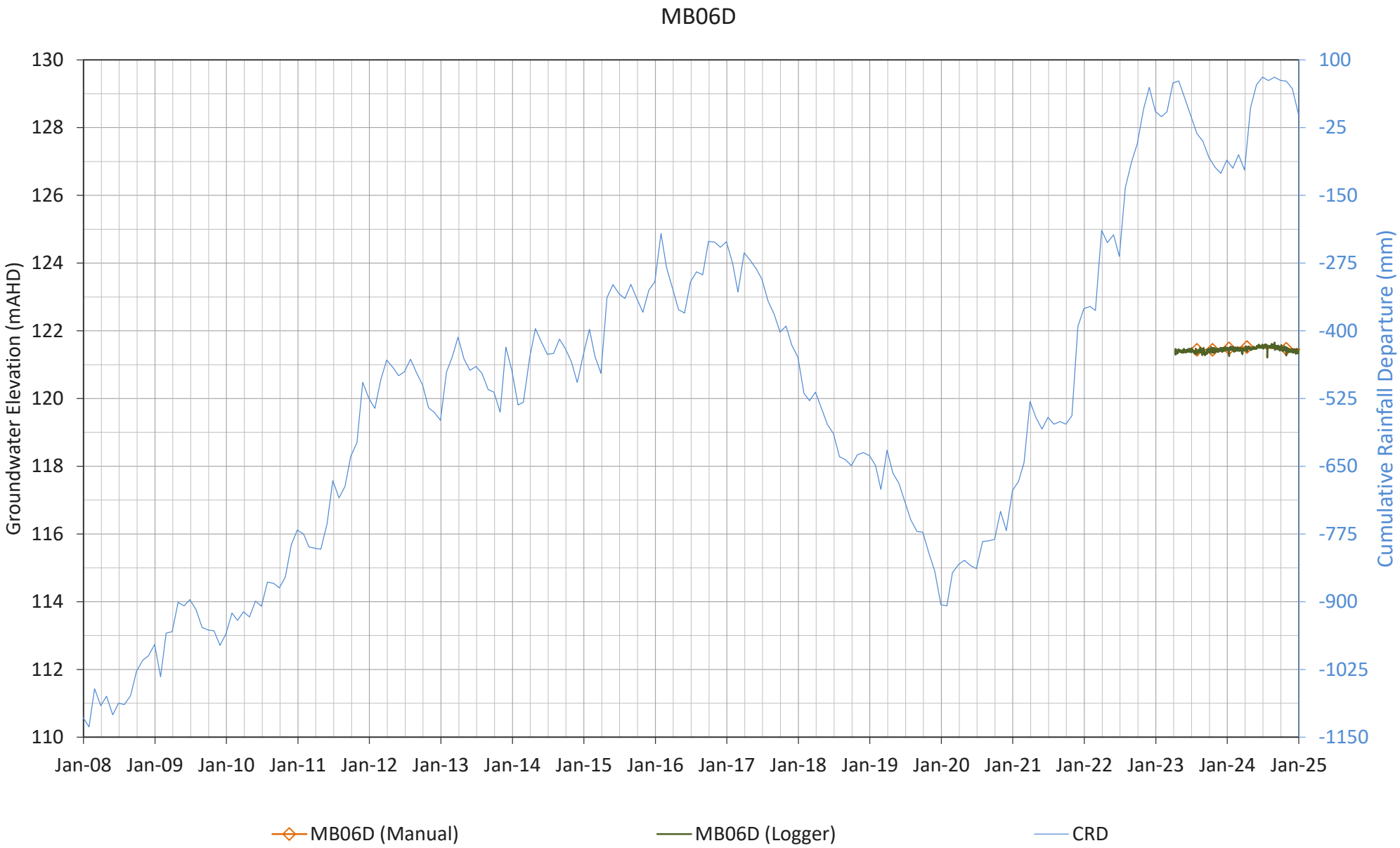

MW1
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
135
134
133
132
131
130
129
128
127
126
125
100
-25
-150
-275
-400
-525
-650
-775
-900
-1025
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
MW1 (Manual)
MW1 (Logger)
Base Screen Elevation (mAHD)
CRD

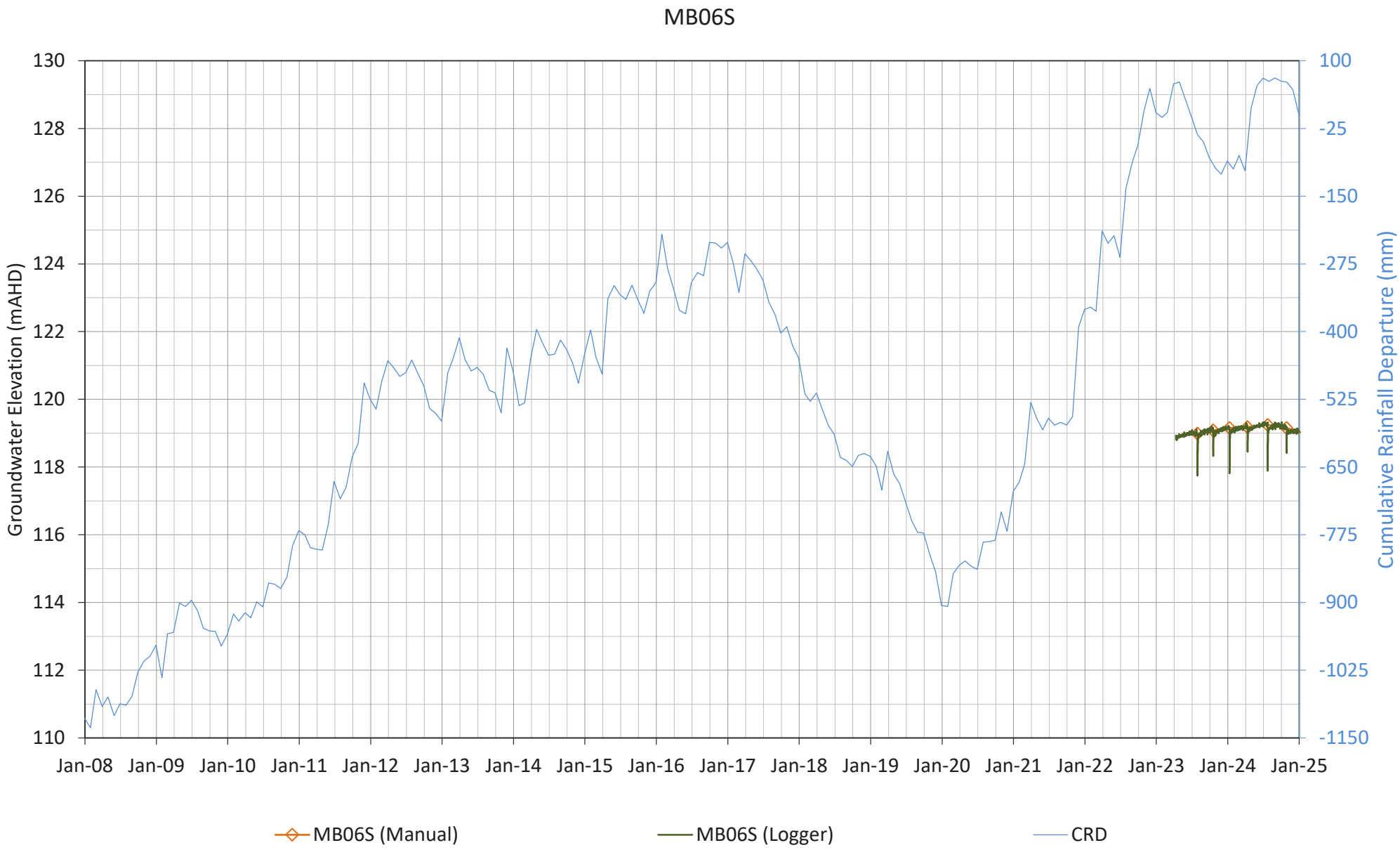

MW2
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
115.0
114.5
114.0
113.5
113.0
112.5
112.0
111.5
111.0
110.5
110.0
100
-25
-150
-275
-400
-525
-650
-775
-900
-1025
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
MW2 (Manual)
MW2 (Logger)
Base Screen Elevation (mAHD)
CRD

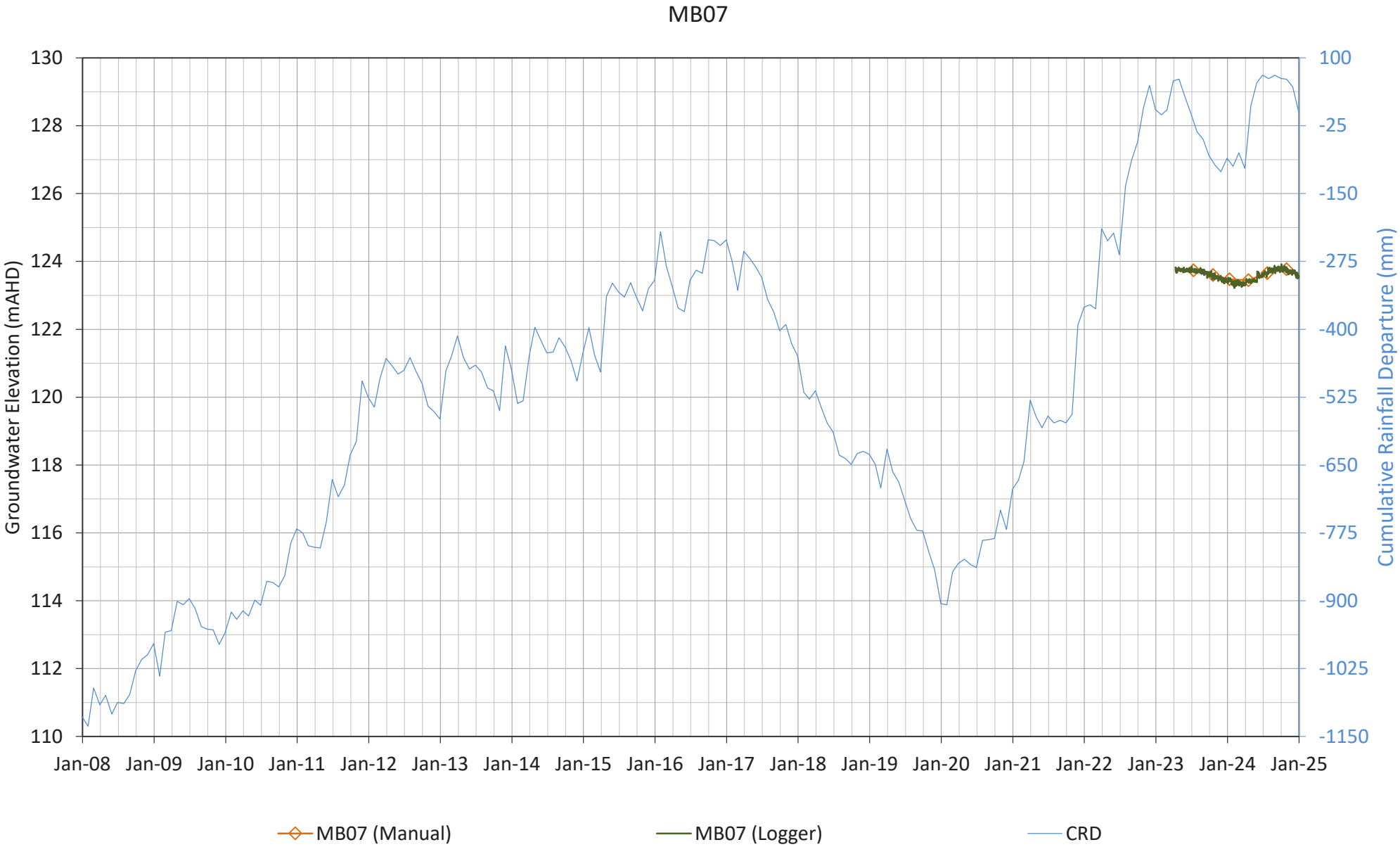

MB03
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
120
118
116
114
112
110
108
106
104
102
100
100
-25
-150
-275
-400
-525
-650
-775
-900
-1025
-1150
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
Jan-24
Jan-25
MB03 (Manual)
MB03 (Logger)
Base Screen Elevation (mAHD)
CRD


MB04
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
140
138
136
134
132
130
128
126
124
122
120
100
-25
-150
-275
-400
-525
-650
-775
-900
-1025
-1150
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
Jan-24
Jan-25
MB04 (Manual)
MB04 (Logger)
CRD


MB05
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
100
98
96
94
92
90
88
86
84
82
80
100
-25
-150
-275
-400
-525
-650
-775
-900
-1025
-1150
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
Jan-24
Jan-25
MB05 (Manual)
MB05 (Logger)
CRD


MB06D
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
130
128
126
124
122
120
118
116
114
112
110
100
-25
-150
-275
-400
-525
-650
-775
-900
-1025
-1150
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
Jan-24
Jan-25
MB06D (Manual)
MB06D (Logger)
CRD


MB06S
Groundwater Elevation (mAHD)
Cumulative Rainfall Departure (mm)
130
128
126
124
122
120
118
116
114
112
110
100
-25
-150
-275
-400
-525
-650
-775
-900
-1025
-1150
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
Jan-24
Jan-25
MB06S (Manual)
MB06S (Logger)
CRD


MB07
Groundwater Elevation (mAHD)
130
128
126
124
122
120
118
116
114
112
110
Cumulative Rainfall Departure (mm)
100
-25
-150
-275
-400
-525
-650
-775
-900
-1025
-1150
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
Jan-24
Jan-25
MB07 (Manual)
MB07 (Logger)
CRD

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

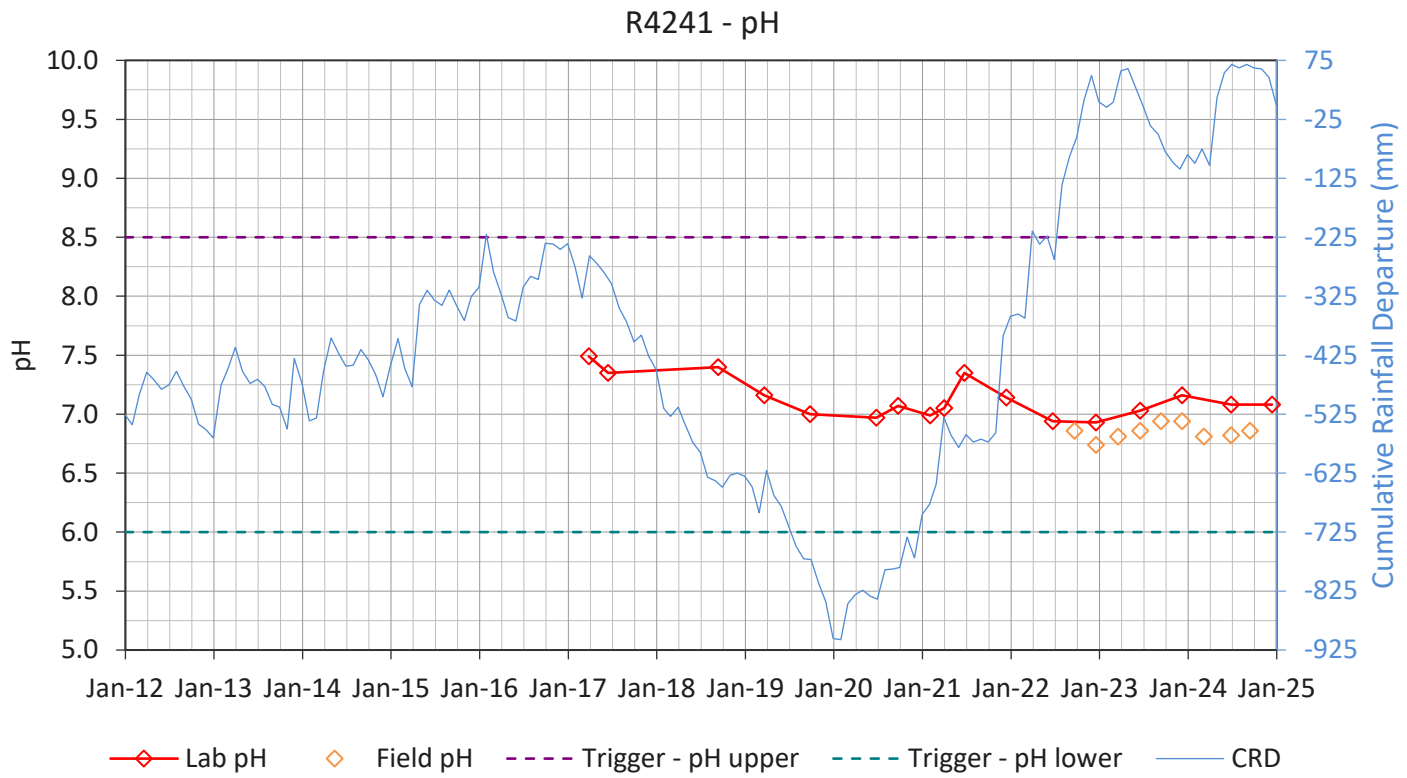
Maxwell Underground Mine

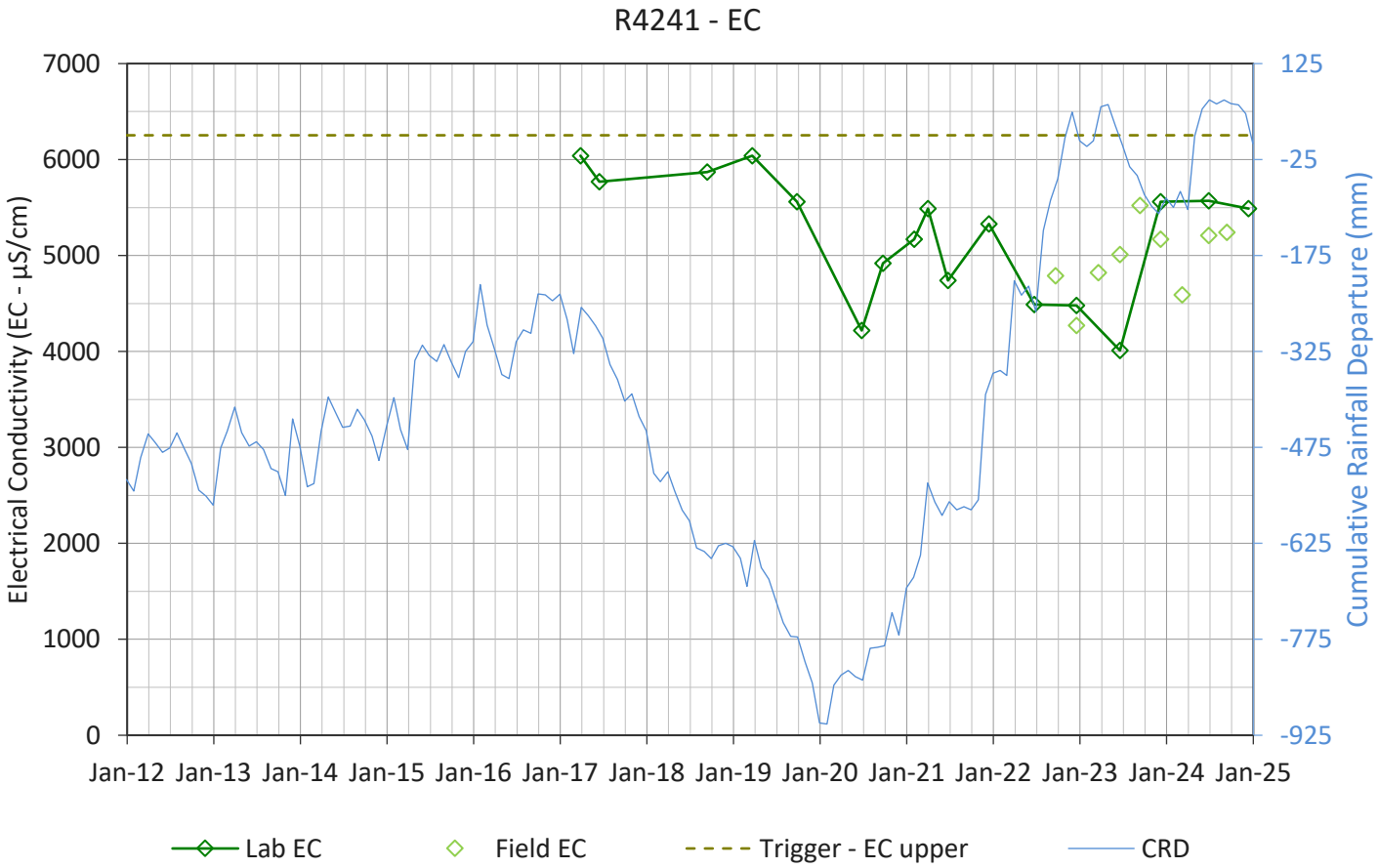
Groundwater Monitoring Report – Quarter 4 – 2024

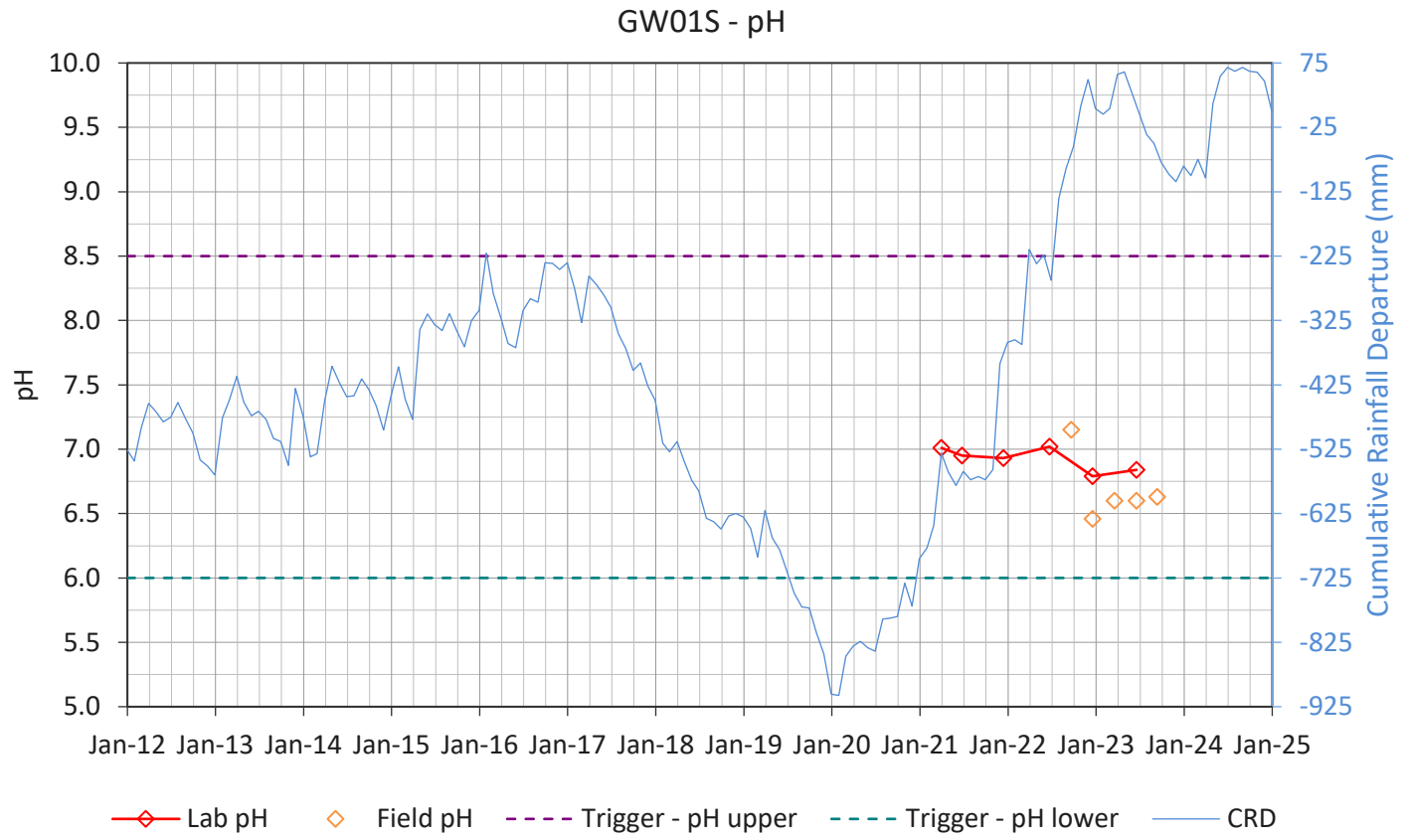
Malabar Resources Pty Ltd

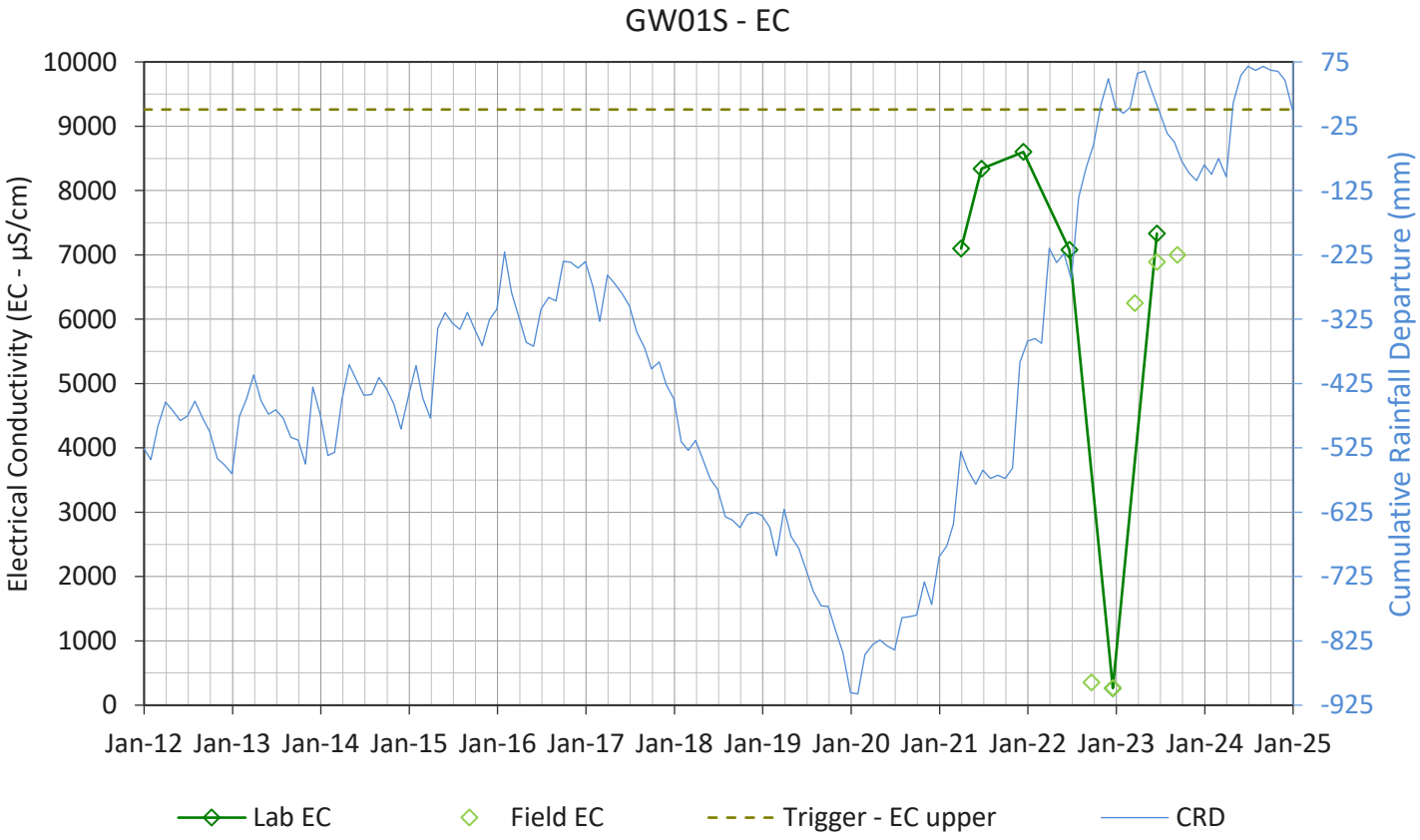
SLR Project No.: 610.031830.00001

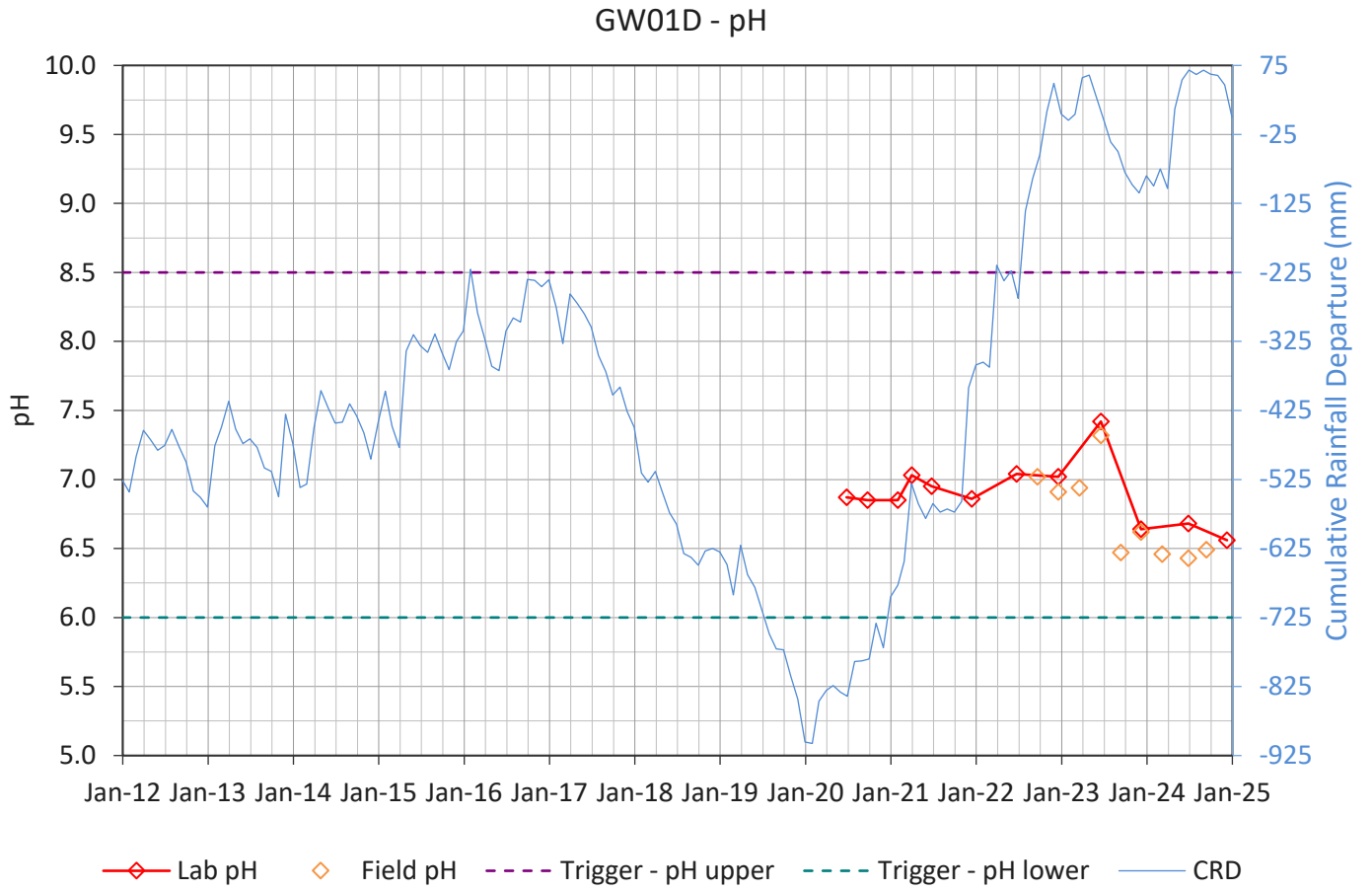
26 February 2025

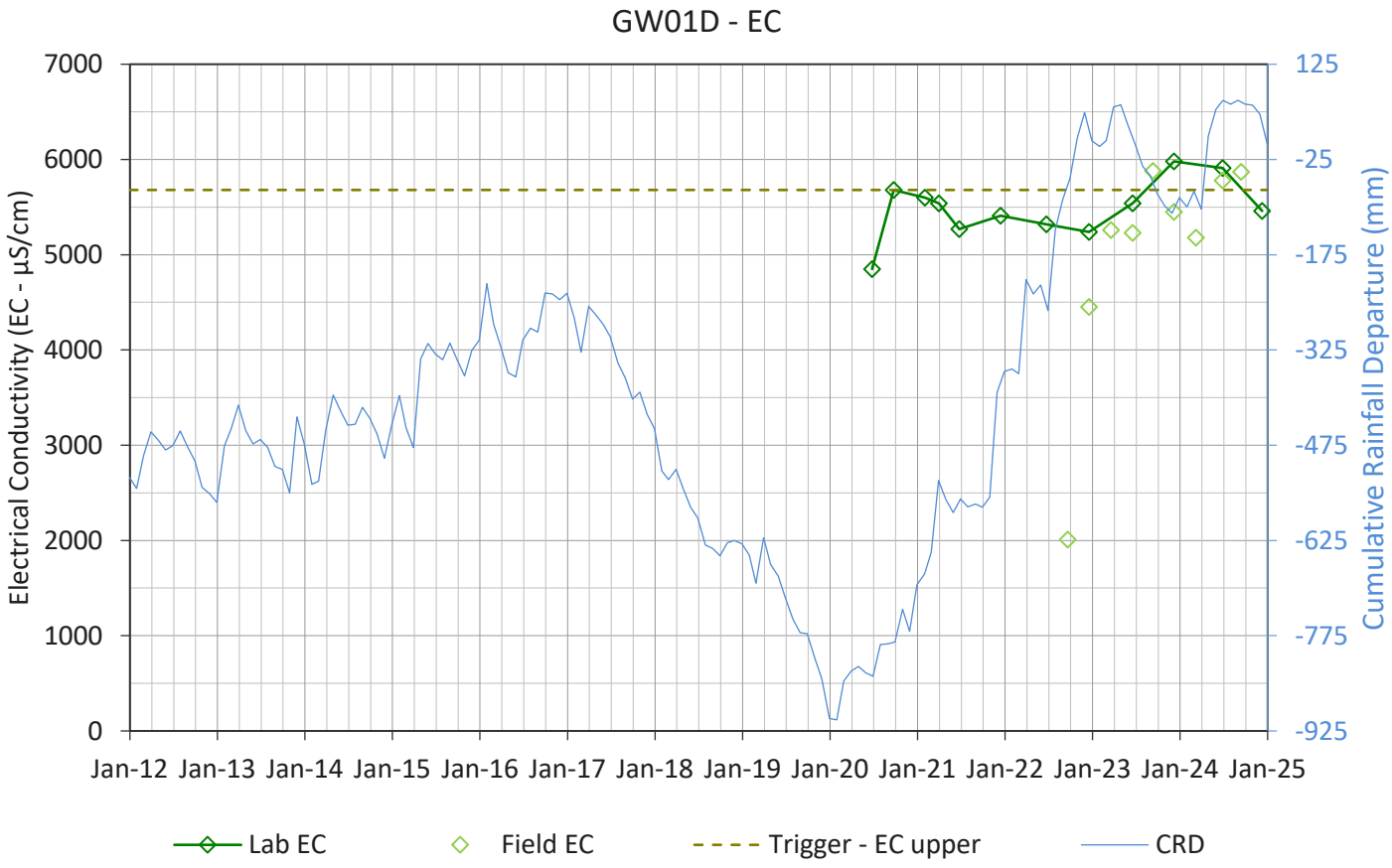

R4241 - pH
pH
Cumulative Rainfall Departure (mm)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20 Jan-21 Jan-22 Jan-23 Jan-24 Jan-25
Lab pH
Field pH
Trigger - pH upper
Trigger - pH lower
CRD

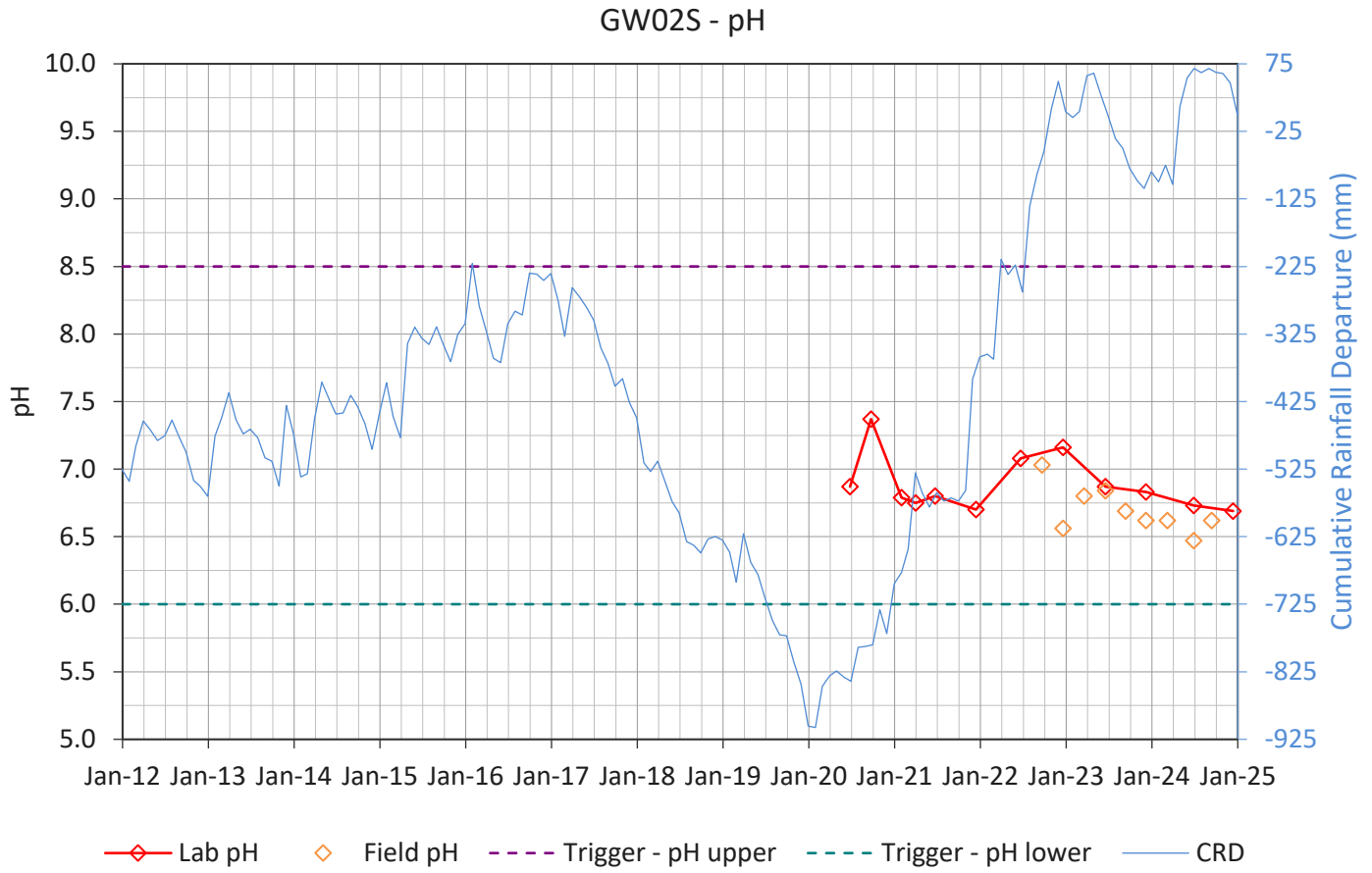

R4241 - EC
Electrical Conductivity (EC - µS/cm)
Cumulative Rainfall Departure (mm)
7000
6000
5000
4000
3000
2000
1000
0
125
-25
-175
-325
-475
-625
-775
-925
Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20 Jan-21 Jan-22 Jan-23 Jan-24 Jan-25
Lab EC
Field EC
Trigger - EC upper
CRD

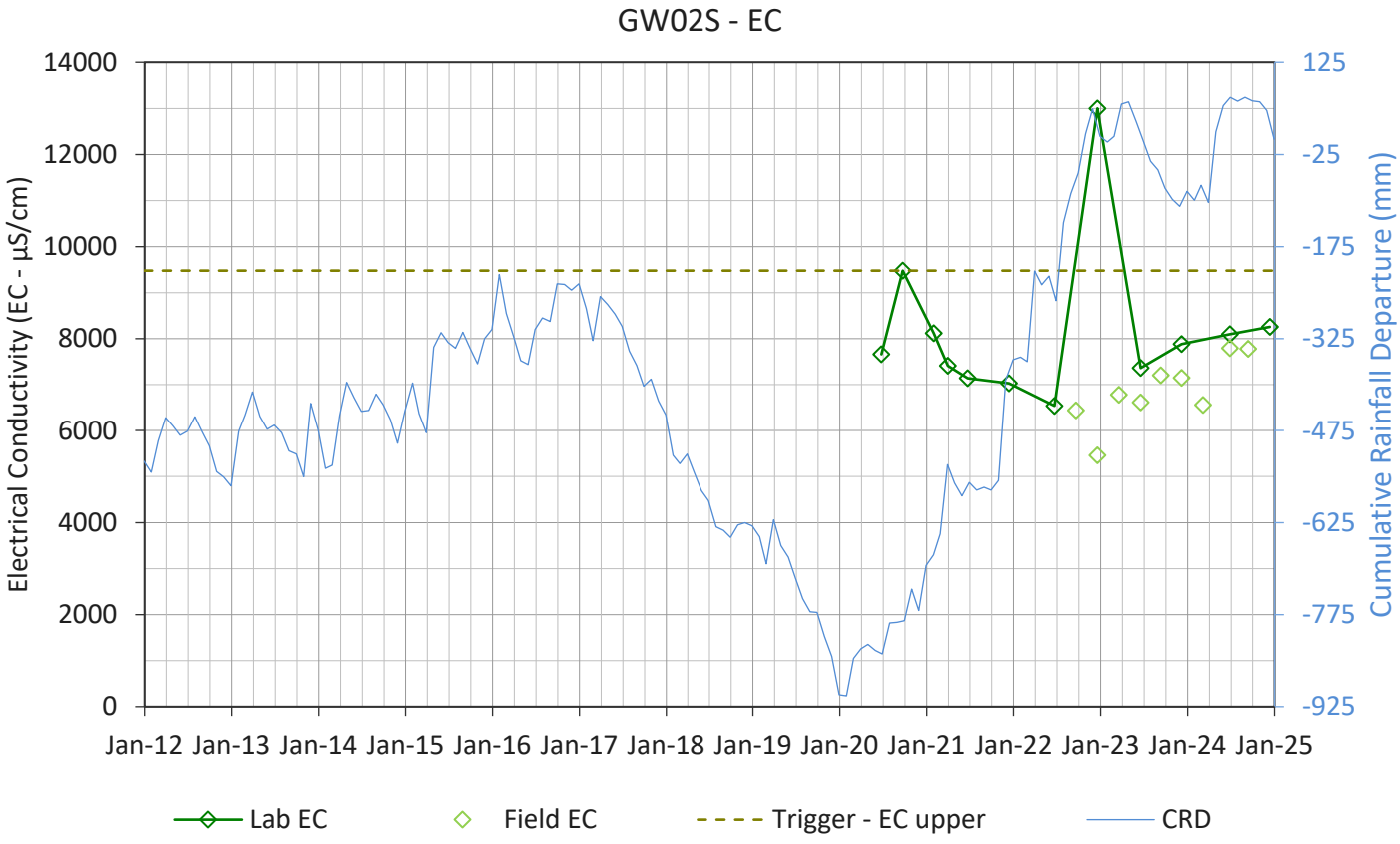

GW01S - pH
pH
Cumulative Rainfall Departure (mm)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20 Jan-21 Jan-22 Jan-23 Jan-24 Jan-25
Lab pH
Field pH
Trigger - pH upper
Trigger - pH lower
CRD

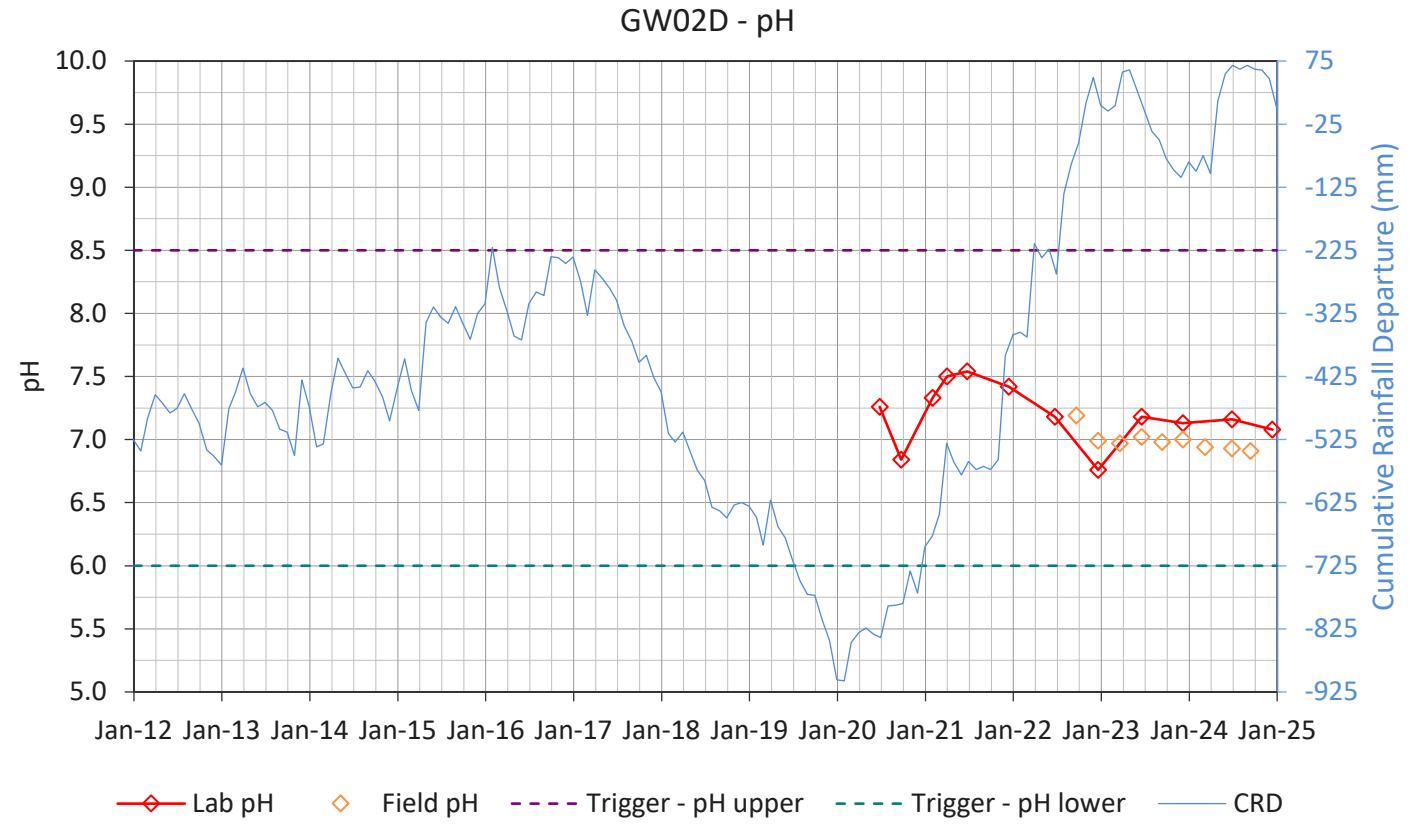

GW01S - EC
Electrical Conductivity (EC - µS/cm)
Cumulative Rainfall Departure (mm)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20 Jan-21 Jan-22 Jan-23 Jan-24 Jan-25
Lab EC
Field EC
Trigger - EC upper
CRD

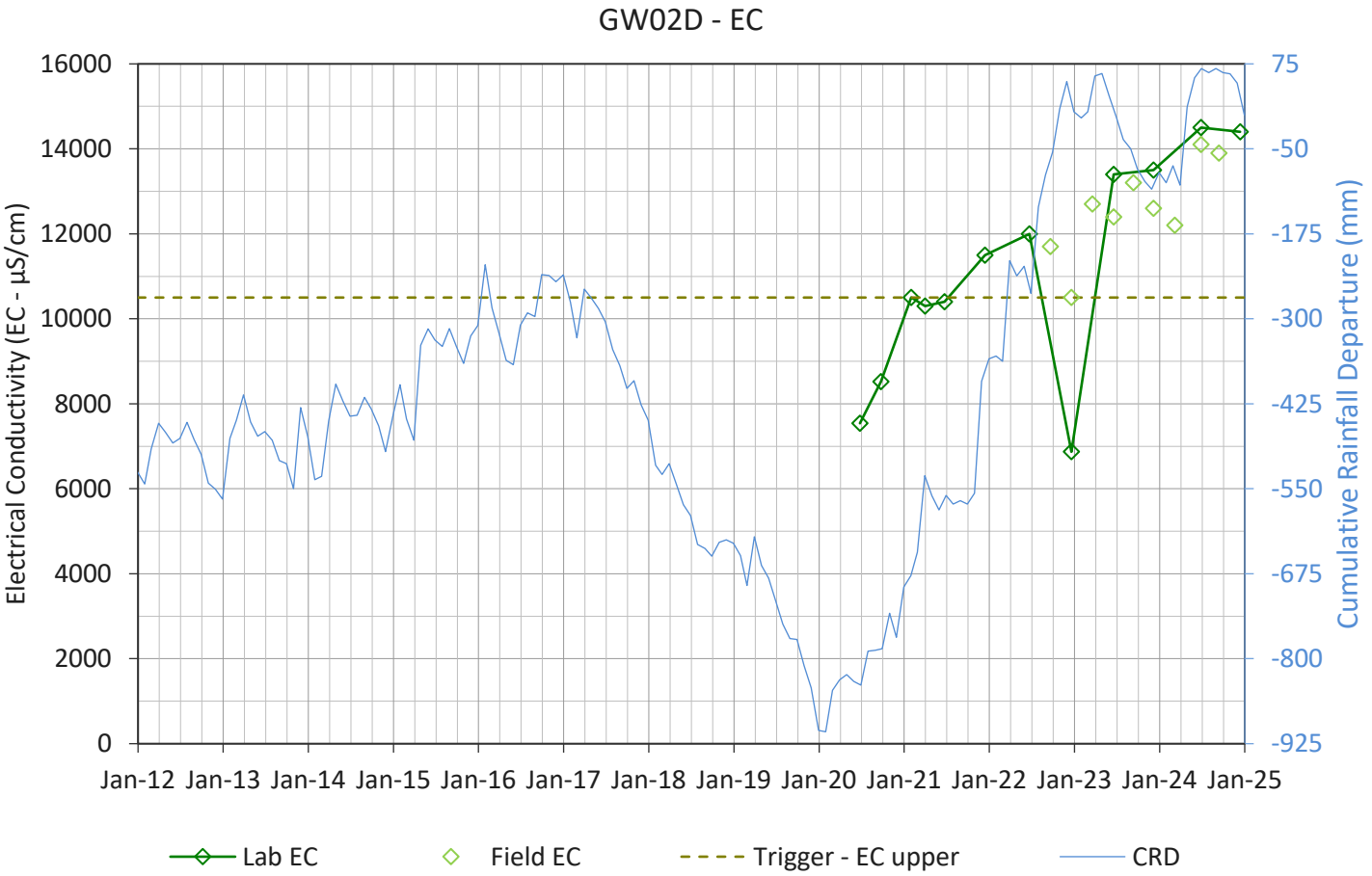

GW01D - pH
pH
Cumulative Rainfall Departure (mm)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20 Jan-21 Jan-22 Jan-23 Jan-24 Jan-25
Lab pH
Field pH
Trigger - pH upper
Trigger - pH lower
CRD

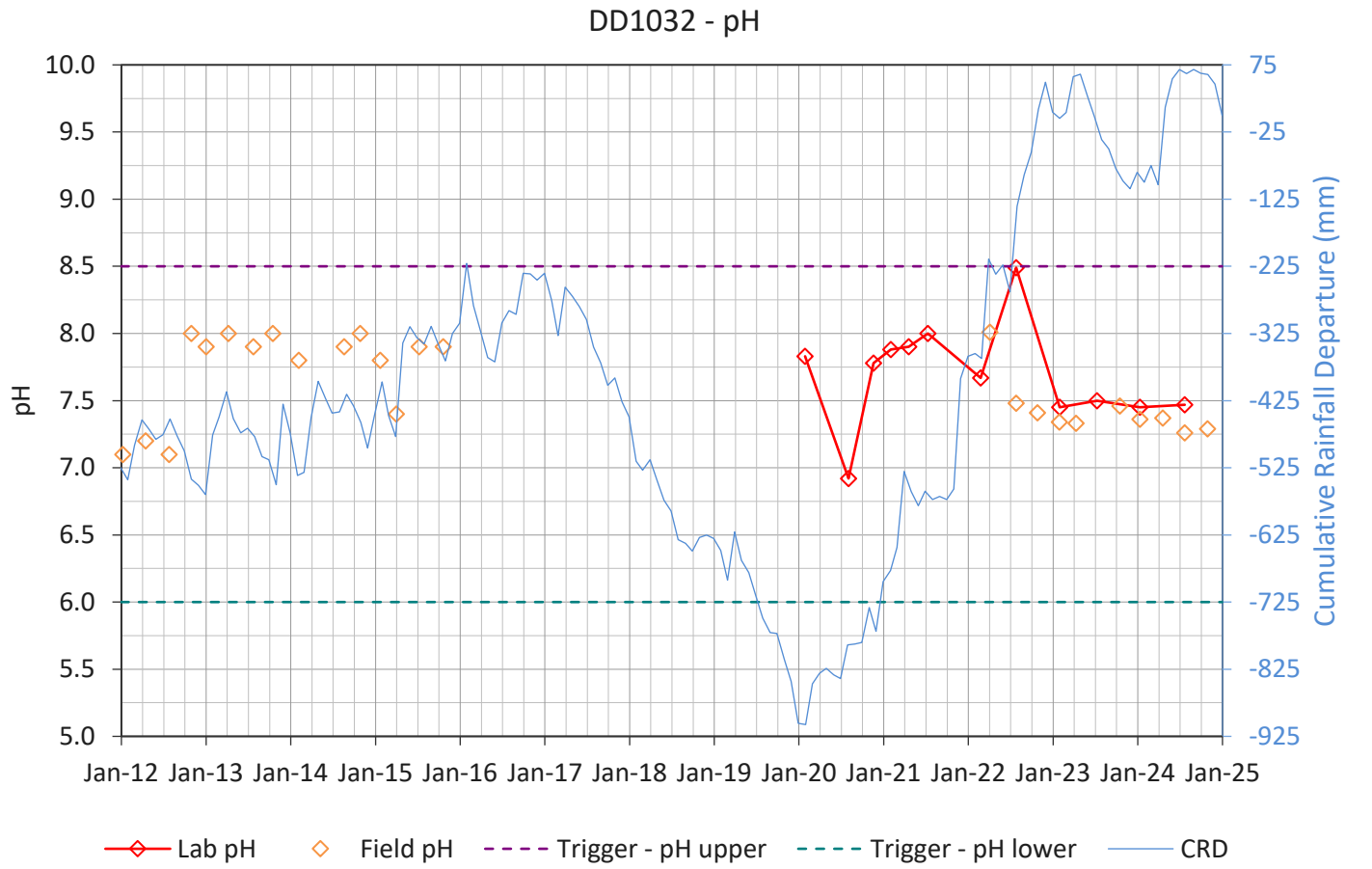

GW01D - EC
Electrical Conductivity (EC - µS/cm)
Cumulative Rainfall Departure (mm)
7000
6000
5000
4000
3000
2000
1000
0
125
-25
-175
-325
-475
-625
-775
-925
Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20 Jan-21 Jan-22 Jan-23 Jan-24 Jan-25
Lab EC
Field EC
Trigger - EC upper
CRD

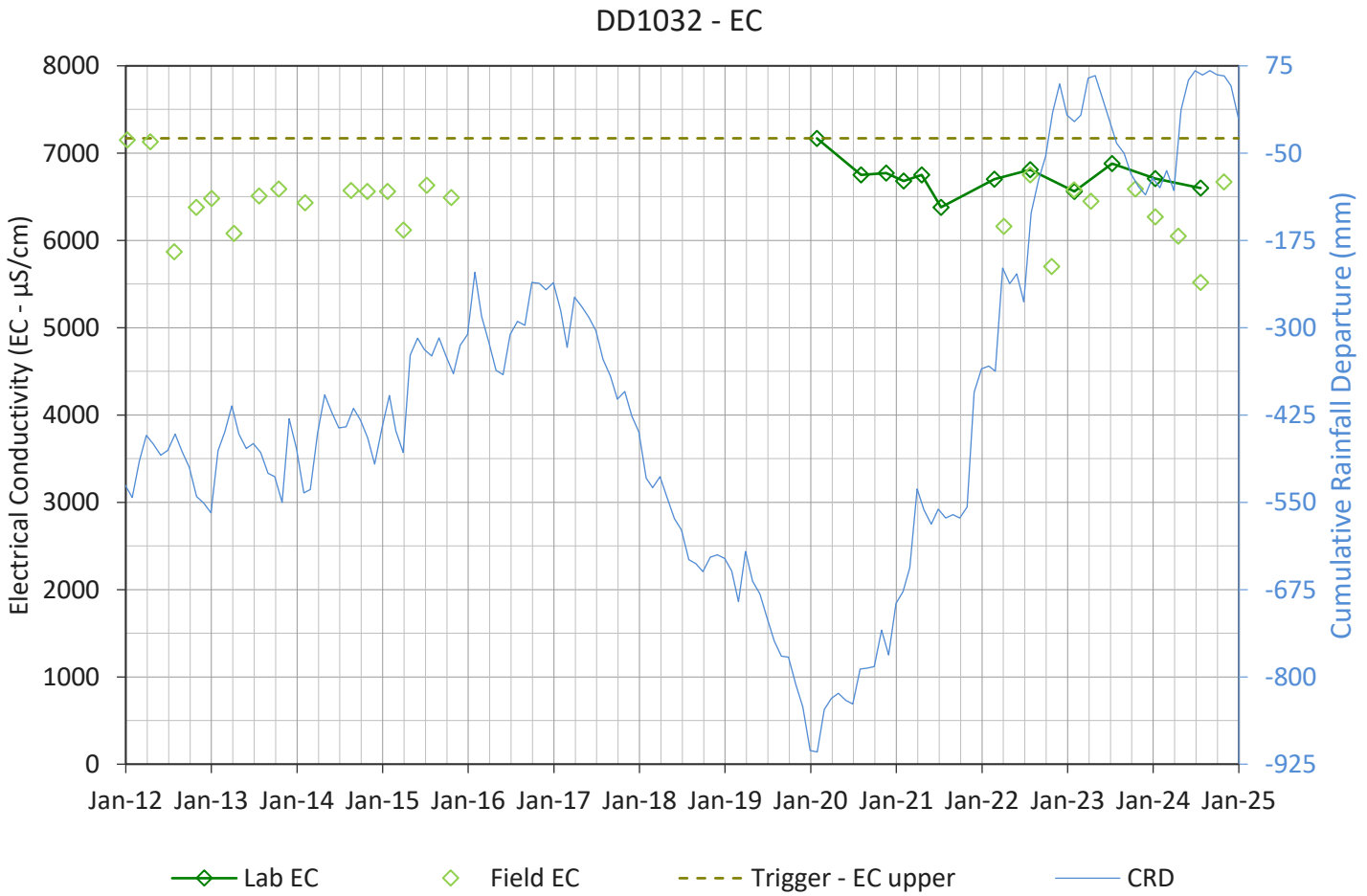

GW02S - pH
pH
Cumulative Rainfall Departure (mm)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20 Jan-21 Jan-22 Jan-23 Jan-24 Jan-25
Lab pH
Field pH
Trigger - pH upper
Trigger - pH lower
CRD

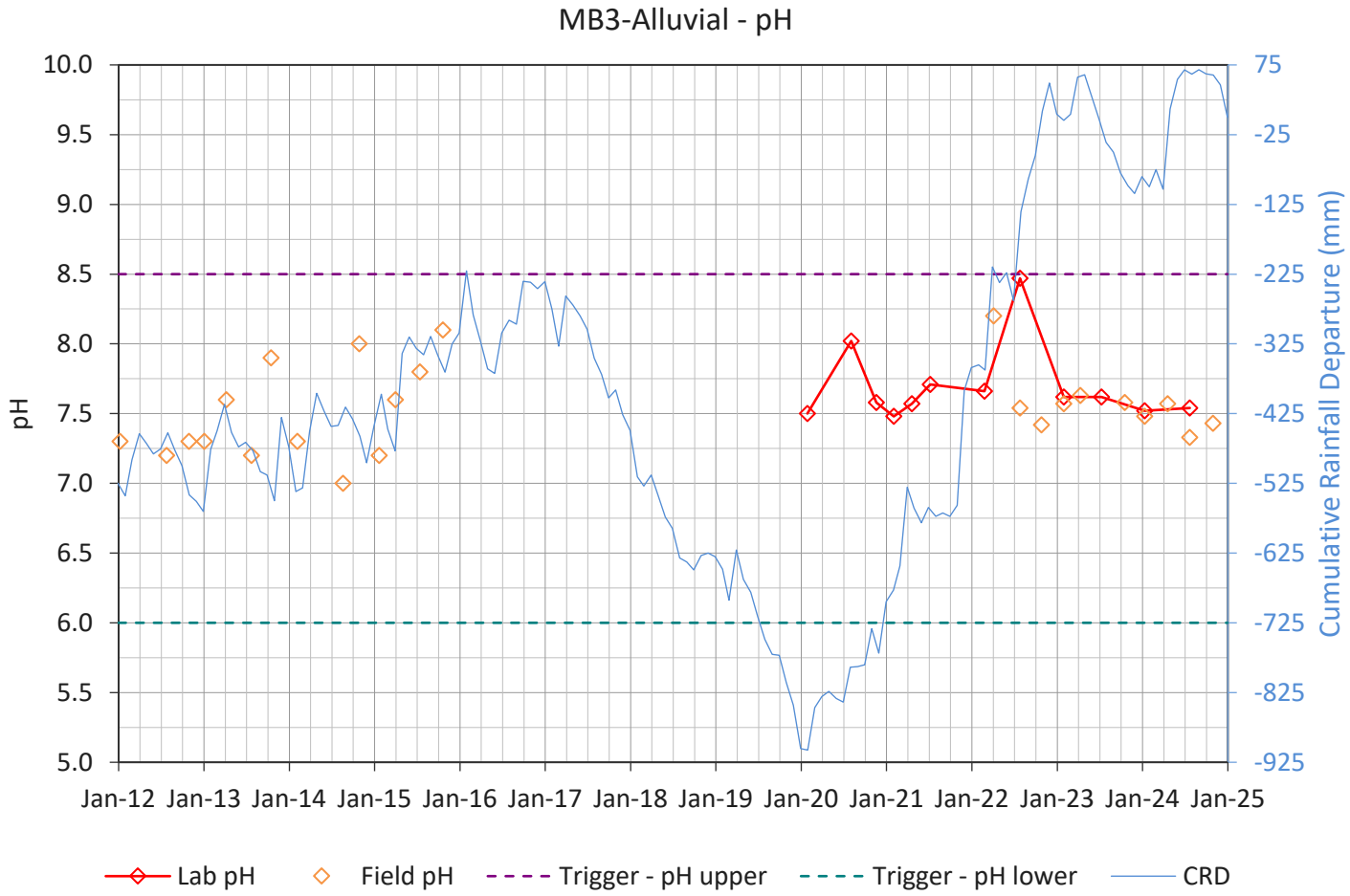

GW02S - EC
Electrical Conductivity (EC - µS/cm)
Cumulative Rainfall Departure (mm)
14000
12000
10000
8000
6000
4000
2000
0
125
-25
-175
-325
-475
-625
-775
-925
Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20 Jan-21 Jan-22 Jan-23 Jan-24 Jan-25
Lab EC
Field EC
Trigger - EC upper
CRD

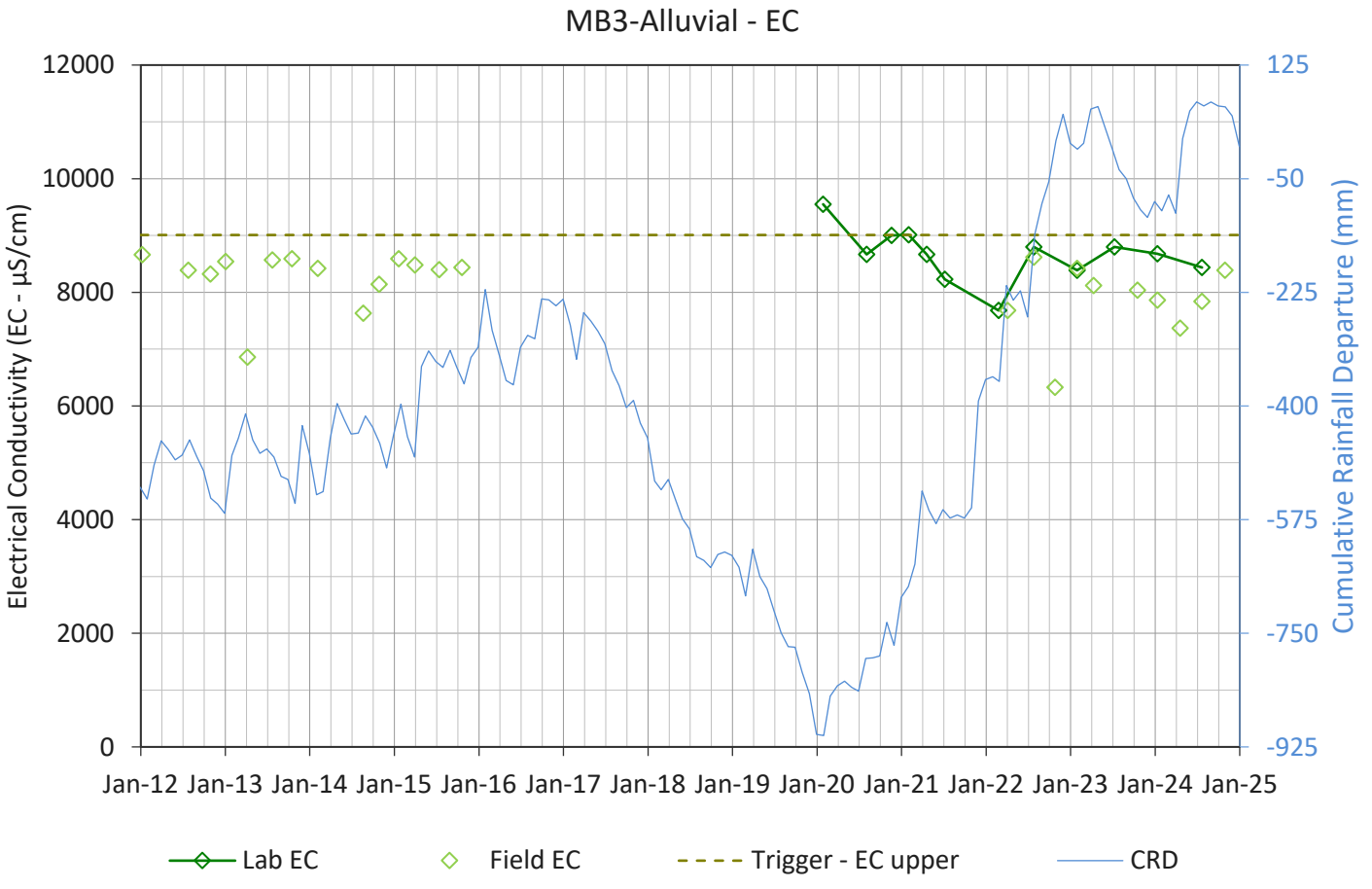

GW02D - pH
pH
Cumulative Rainfall Departure (mm)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20 Jan-21 Jan-22 Jan-23 Jan-24 Jan-25
Lab pH
Field pH
Trigger - pH upper
Trigger - pH lower
CRD

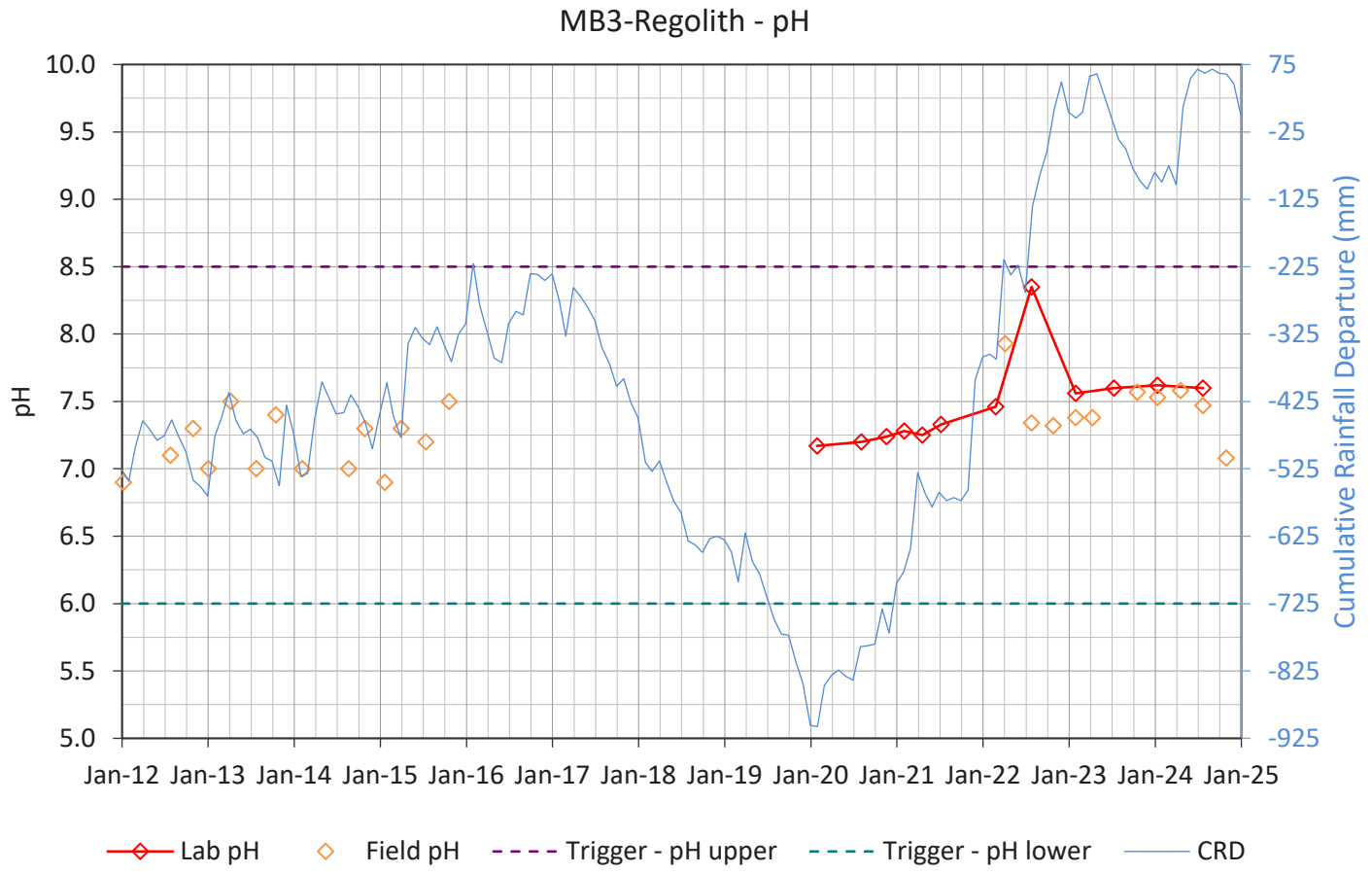

GW02D - EC
Electrical Conductivity (EC - µS/cm)
Cumulative Rainfall Departure (mm)
16000
14000
12000
10000
8000
6000
4000
2000
0
75
-50
-175
-300
-425
-550
-675
-800
-925
Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20 Jan-21 Jan-22 Jan-23 Jan-24 Jan-25
Lab EC
Field EC
Trigger - EC upper
CRD

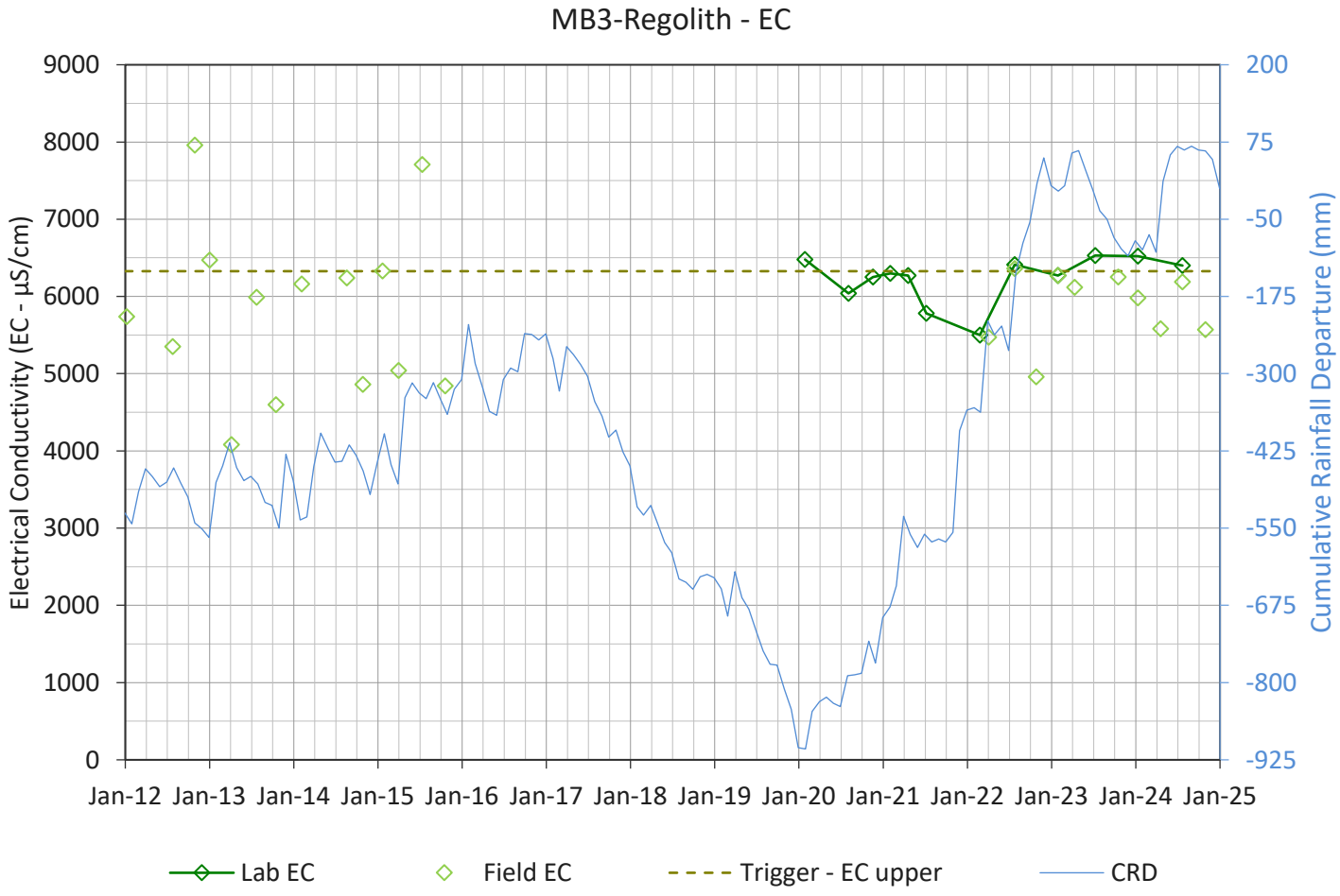

DD1032 - pH
pH
Cumulative Rainfall Departure (mm)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
75
-25
-125
-225
-325
-425
-525
-625
-725
-825
-925
Jan-12 Jan-13 Jan-14 Jan-15 Jan-16 Jan-17 Jan-18 Jan-19 Jan-20 Jan-21 Jan-22 Jan-23 Jan-24 Jan-25
Lab pH
Field pH
Trigger - pH upper
Trigger - pH lower
CRD


DD1032 - EC
Electrical Conductivity (EC - µS/cm)
Cumulative Rainfall Departure (mm)
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 Jan-24 Jan-25
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 Jan-24 Jan-25
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 Jan-24 Jan-25
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 Jan-24 Jan-25
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
200
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 Jan-24 Jan-25
Lab EC
Field EC
Trigger - EC upper
CRD

Making Sustainability Happen