

## Memo

**Date** 4 March 2015  
**To** James Duggleby - Senior Hydrogeologist: AGL Upstream Investments Pty Ltd  
**Copy** Andrea Madden  
**From** Becky Rollins  
**Ref** 2268520A-GGP-Y15-Q2 RevB  
**Subject** Gloucester Gas Project - FY15 Q2 Monitoring Update - December 2014

The following presents updated hydrographs for all Gloucester Gas Project groundwater monitoring bores and hydrograph and salinity (measured as electrical conductivity) traces for surface water monitoring sites to December 2014. Full analysis and discussion of these results will be presented in the comprehensive 2015 Annual Report which will detail all groundwater and surface water level and quality results from the 2014/15 monitoring period.

For the FY15 Q2 period:

- Two new groundwater monitoring bores (WKMB06A and WKMB06B) were installed in mid-November 2014 associated with AGL's Waukivory Pilot Project. Water level data are presented in Figure 6. Full analysis and discussion of these results will be included in detailed reports for AGL's Waukivory Pilot Project to be issued during 2015.
- New multizone monitoring well WKMB05 was installed in November 2014. Water level data are presented in Figure 11 and Figures A.32 to A.34.
- New surface water monitoring sites WKSW01, WKSW02 and WKSW03 (Figure 10 and Figures A.27 to A.30) at the location of the Waukivory Pilot Project became operational in September.
- The loggers at S4MB01 and TCMB01 failed and were replaced in October 2014.
- The electrical conductivity sensor at ASW02 failed and was replaced in December 2014.

**Figures 1 - 8: Groundwater hydrographs for Stage 1 and 2 nested monitoring bore sites**

**Figures 9 and 10: Surface water levels and electrical conductivity for all monitoring sites**

**Figure 11: Groundwater levels at the PL03 vibrating wire piezometer and the WKMB05 multizone monitoring well**

**Figures A.1 – A.22: Individual Stage 1 and 2 groundwater monitoring bore hydrographs**


**Figures A.23 – A.30: Individual surface water level and electrical conductivity hydrographs**

**Figure A.31: Individual PL03 vibrating wire piezometer hydrographs**

Figures A.32 – A.34: Individual WKMB05 multizone monitoring well hydrographs

Table 1: Quarterly gas monitoring results from TGMB01 and TGMB02 on the Tiedman property.

Yours sincerely

A handwritten signature in black ink, appearing to read "Becky Rollins", with a stylized flourish at the end.

**Becky Rollins**  
Hydrogeologist

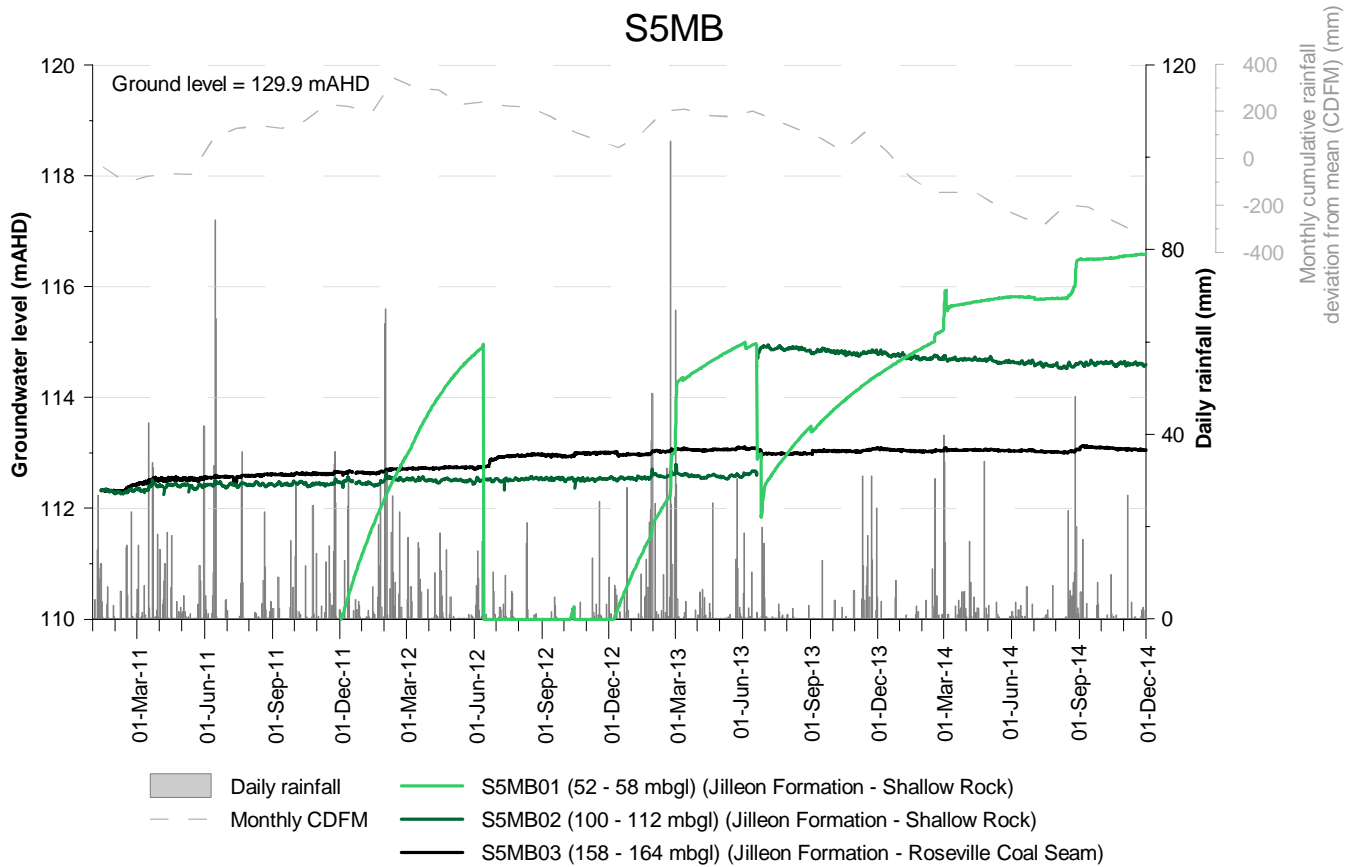
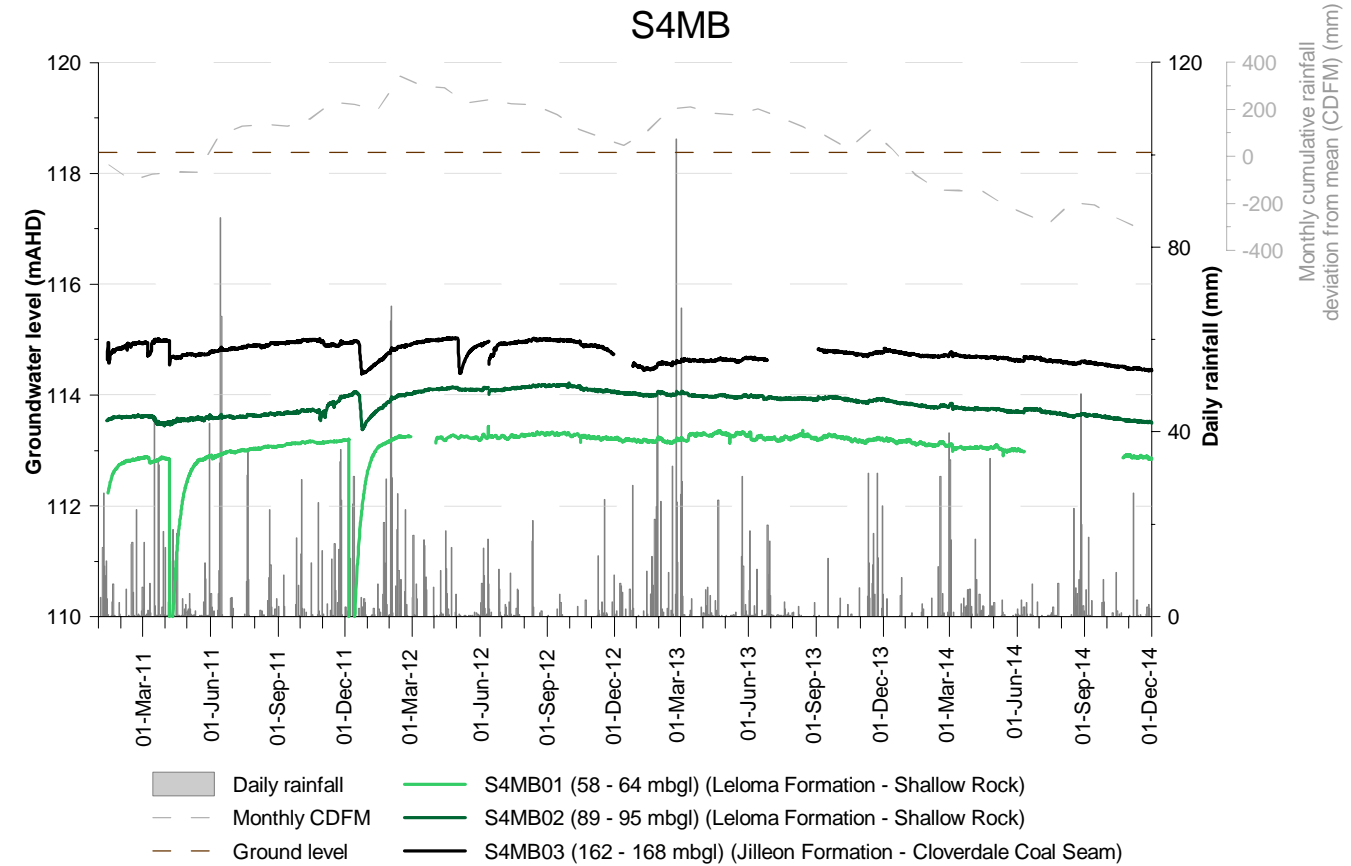


Figure 1: S4 and S5 monitoring bores

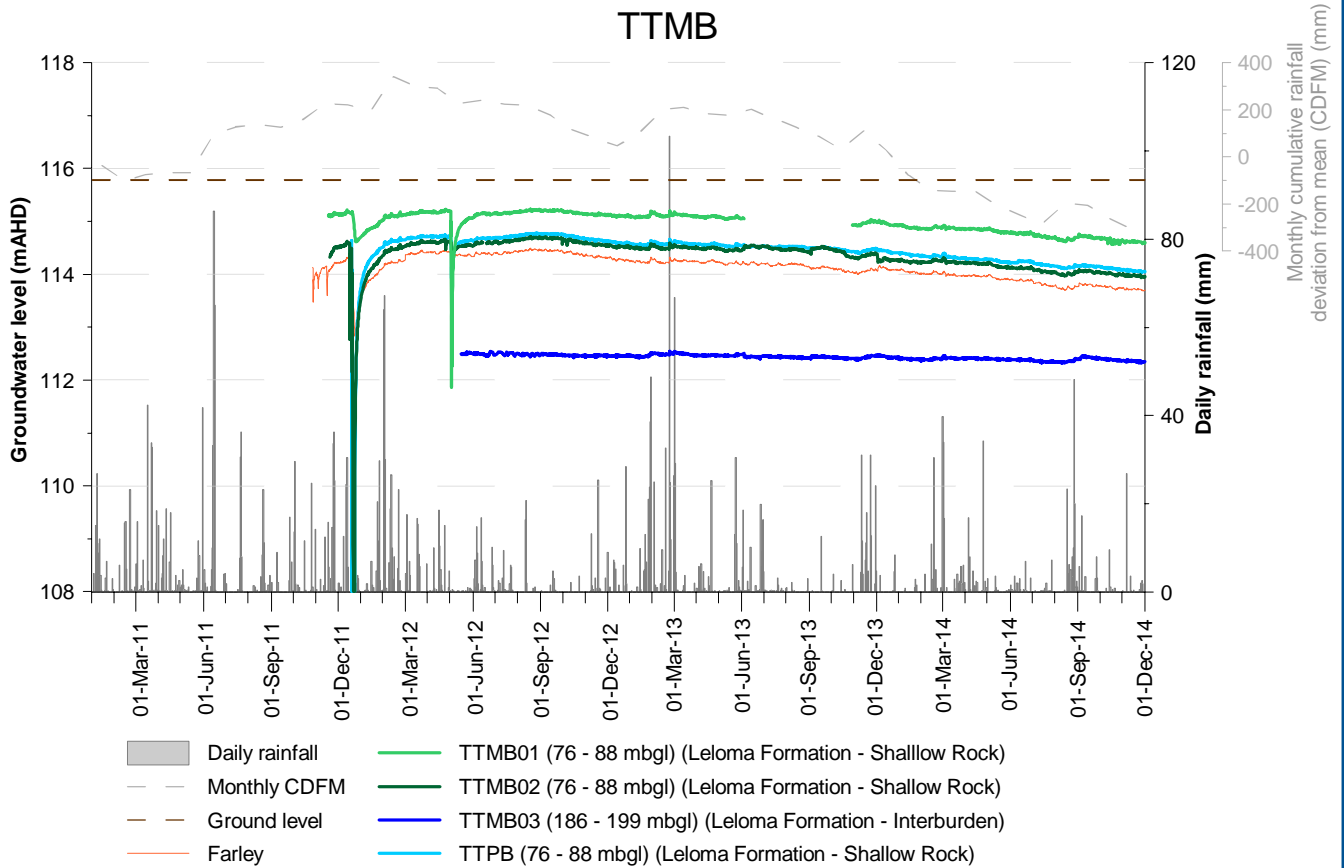
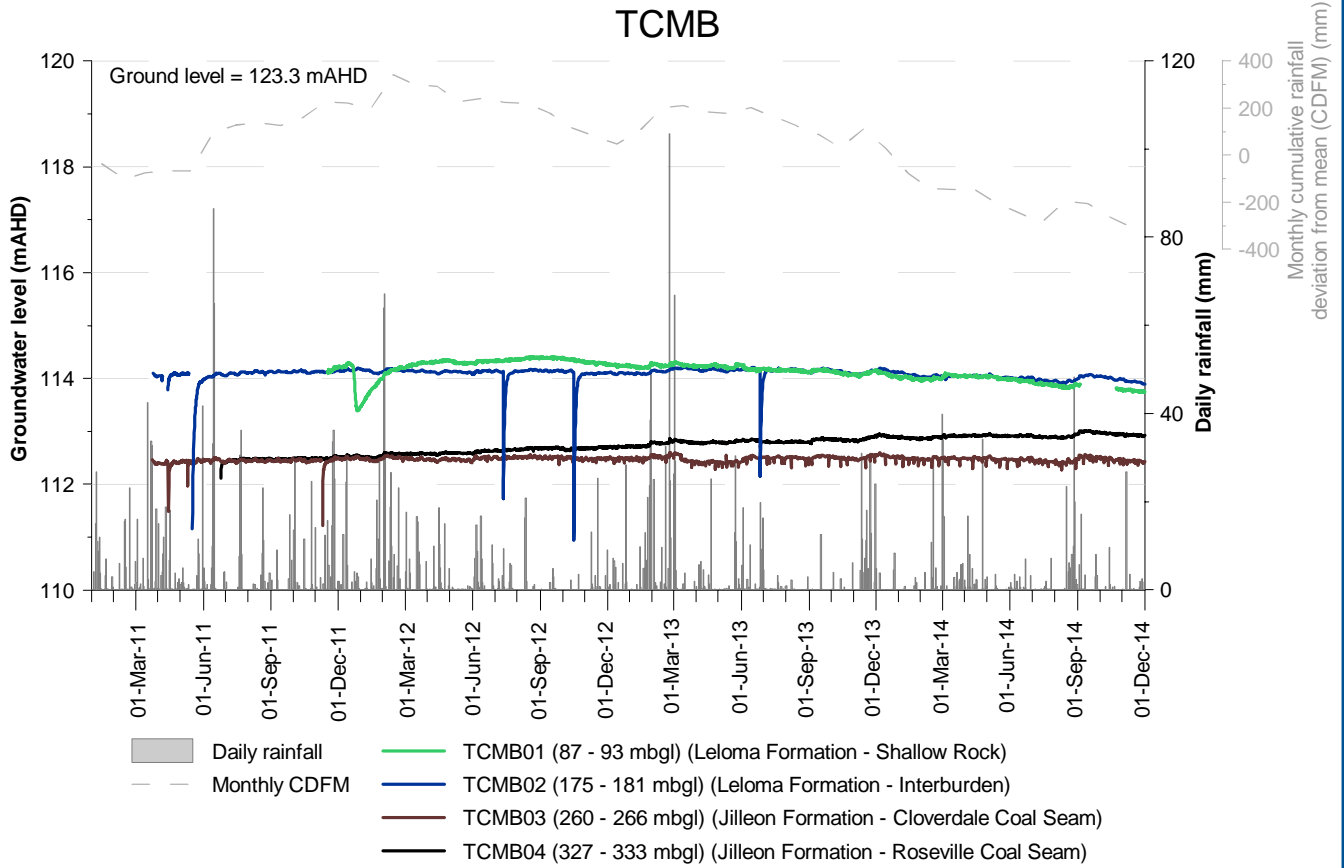


Figure 2: TCMB and TTMB monitoring bores

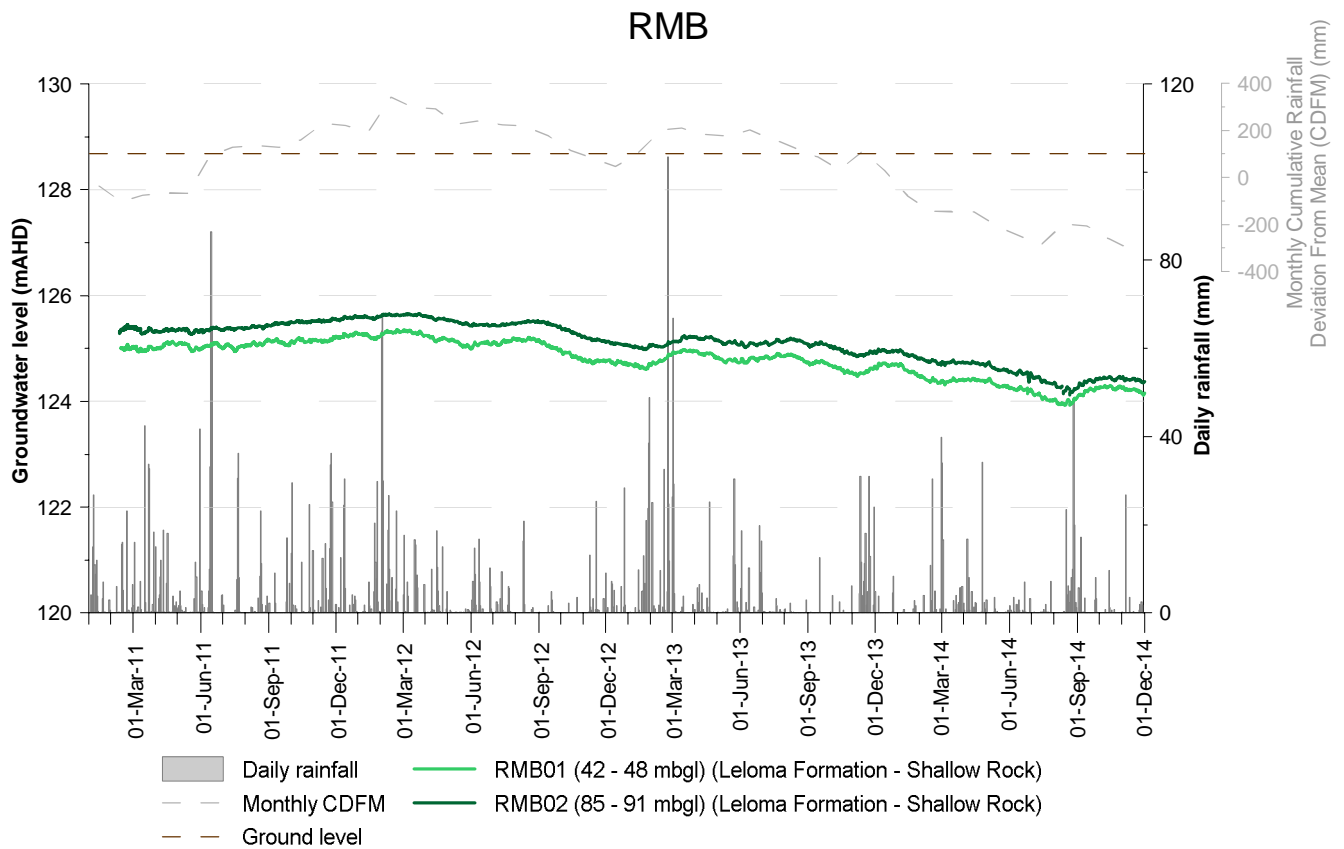
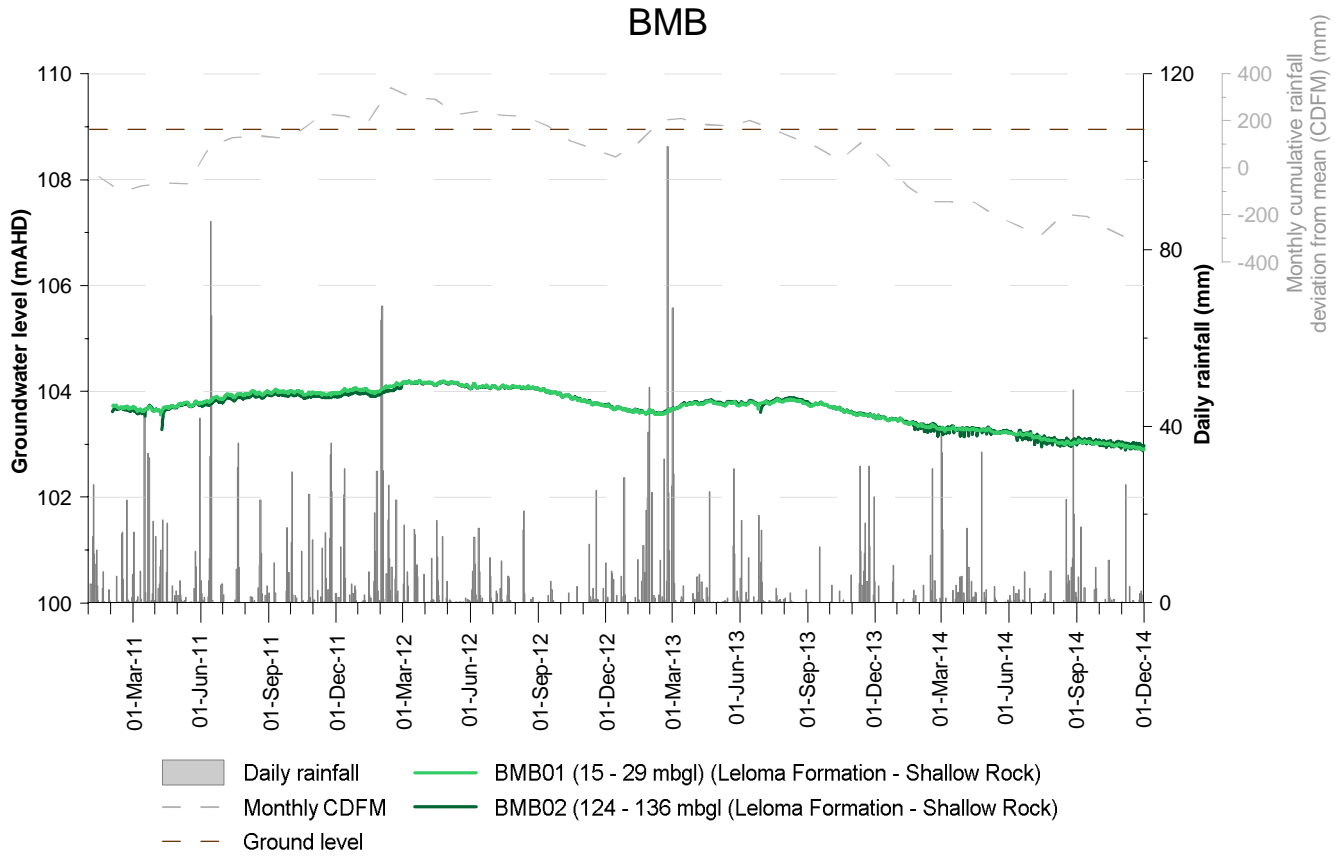


Figure 3: BMB and RMB monitoring bores

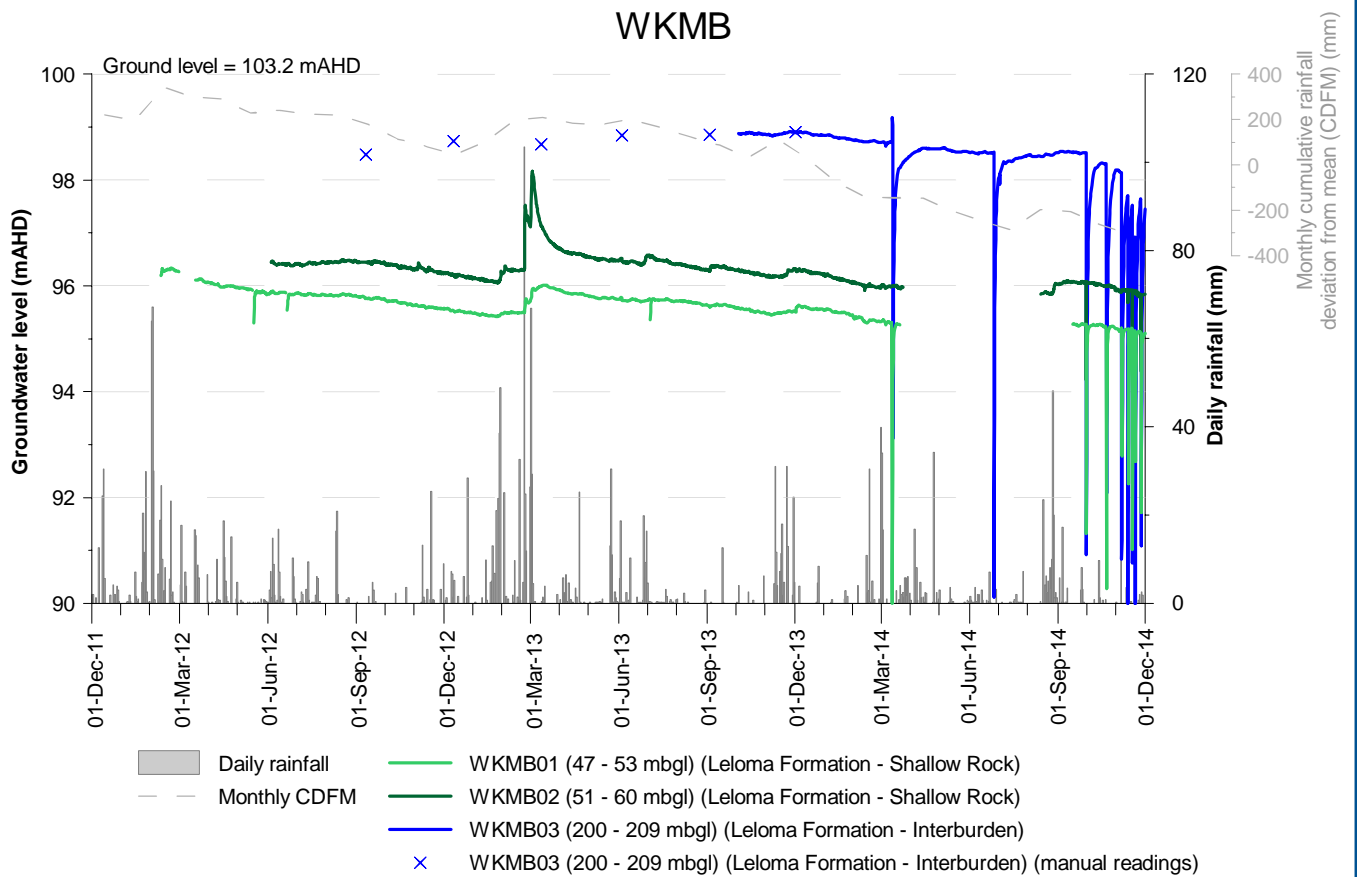
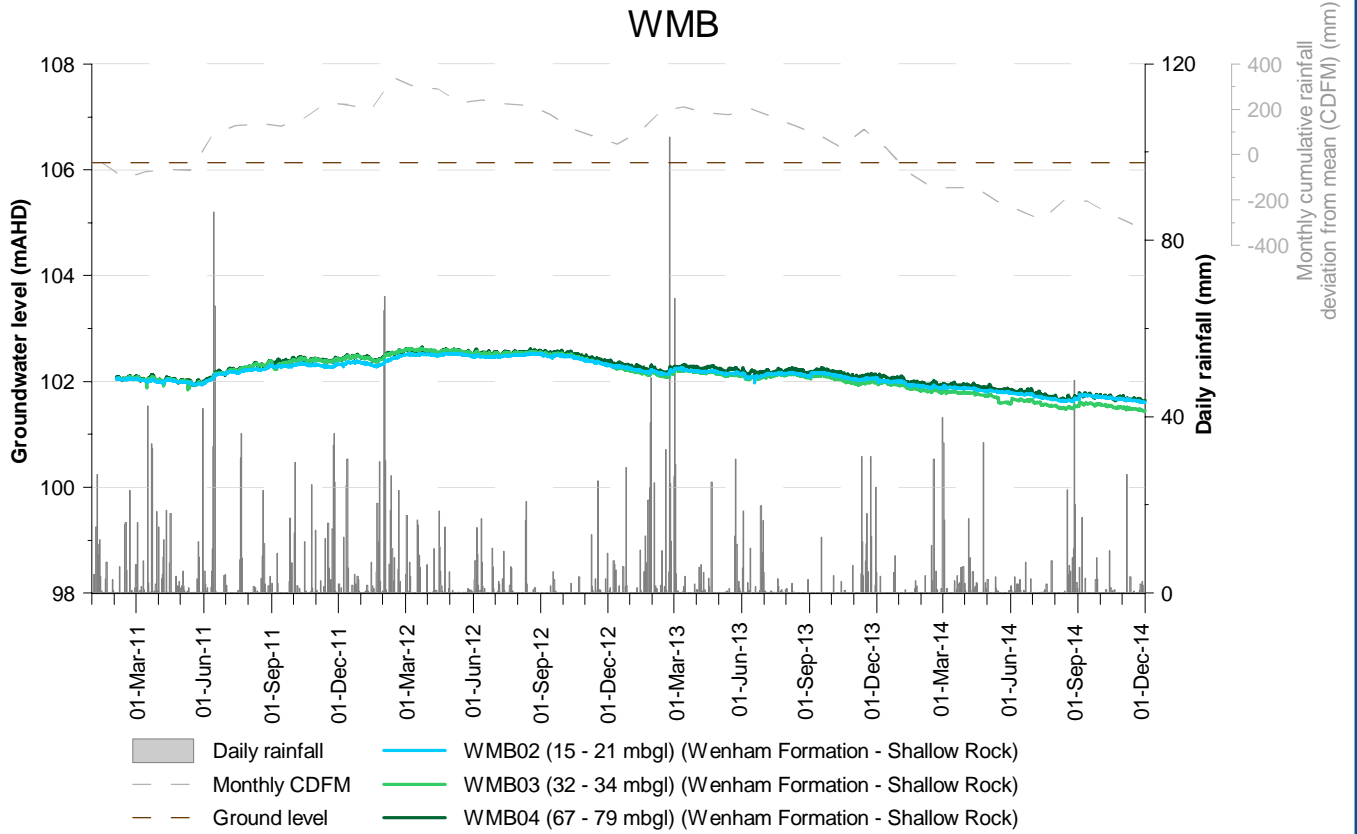


Figure 4: WMB and WKMB monitoring bores

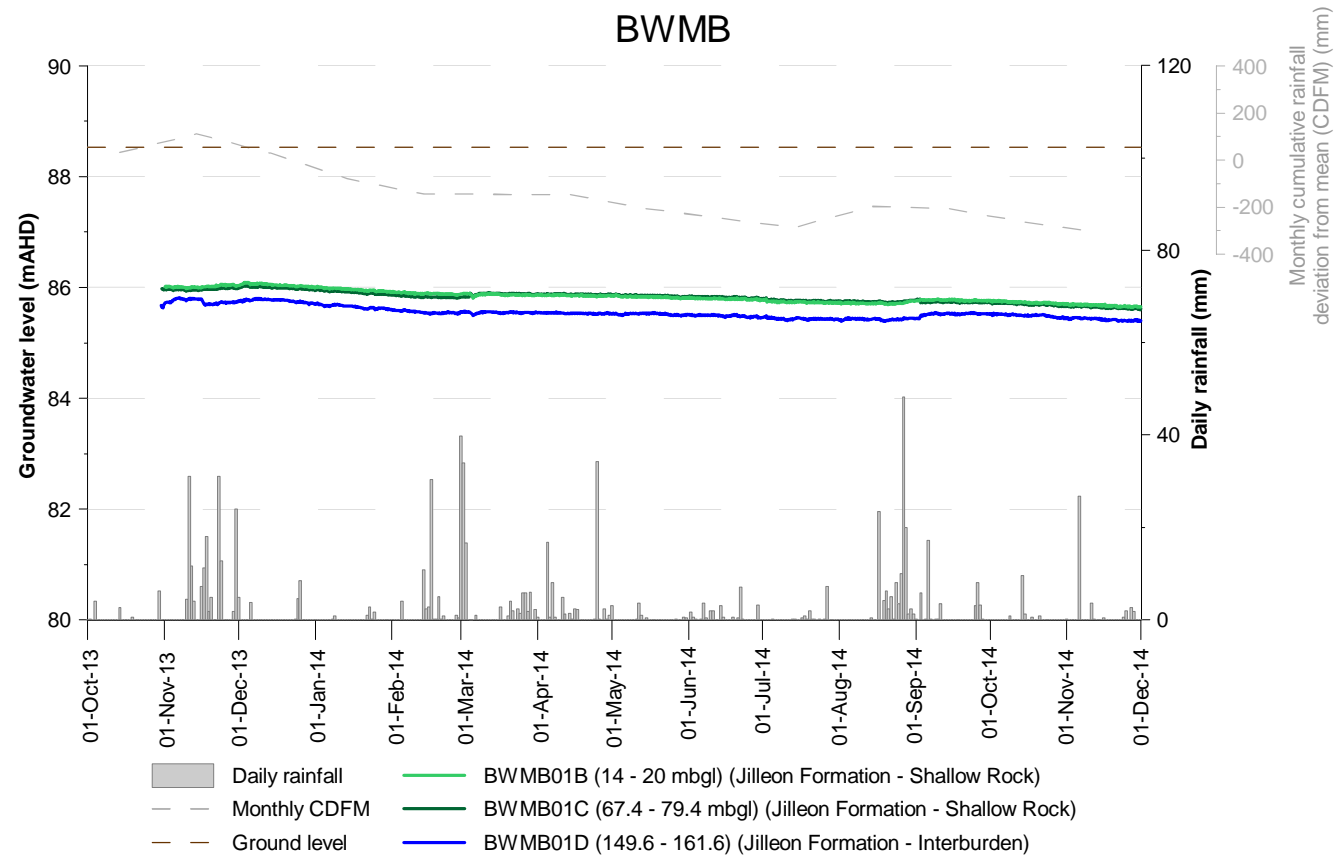
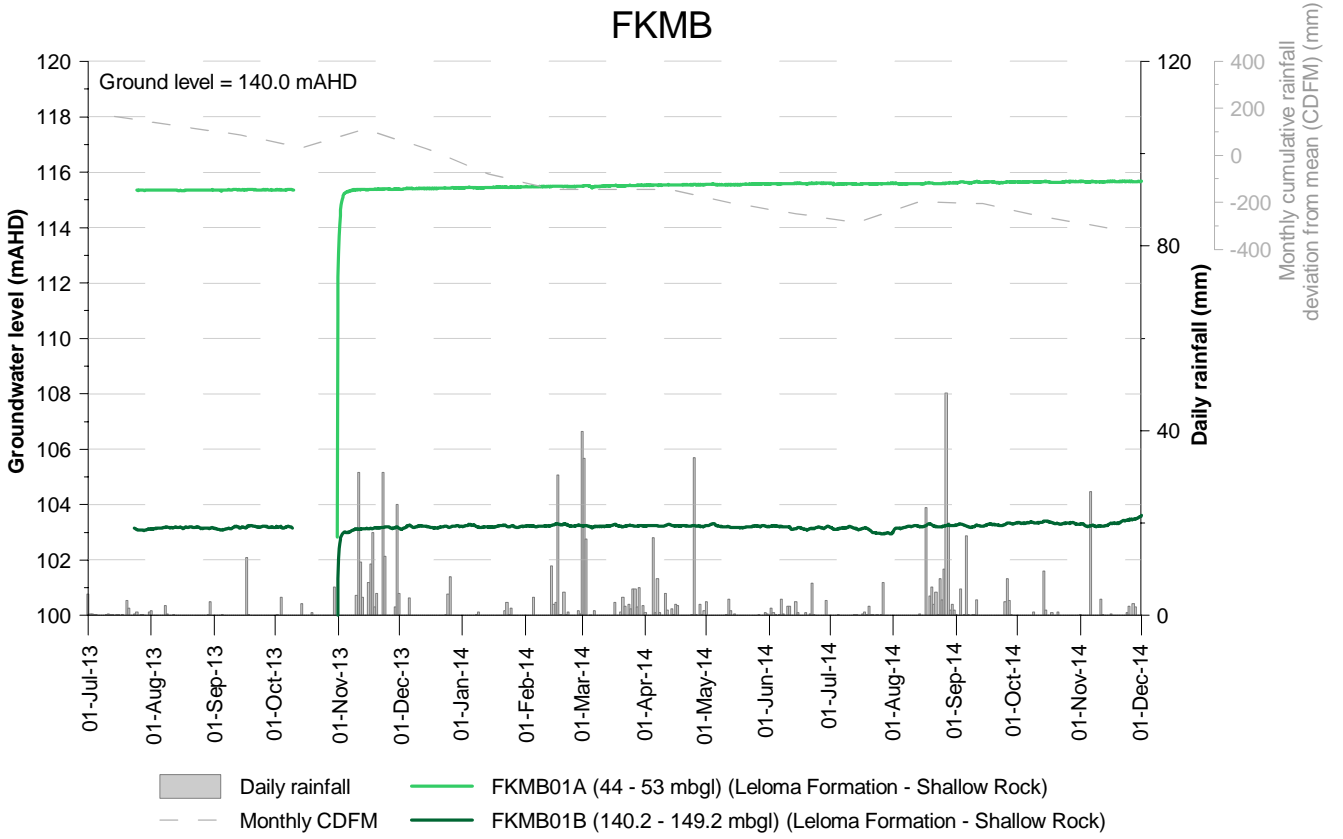
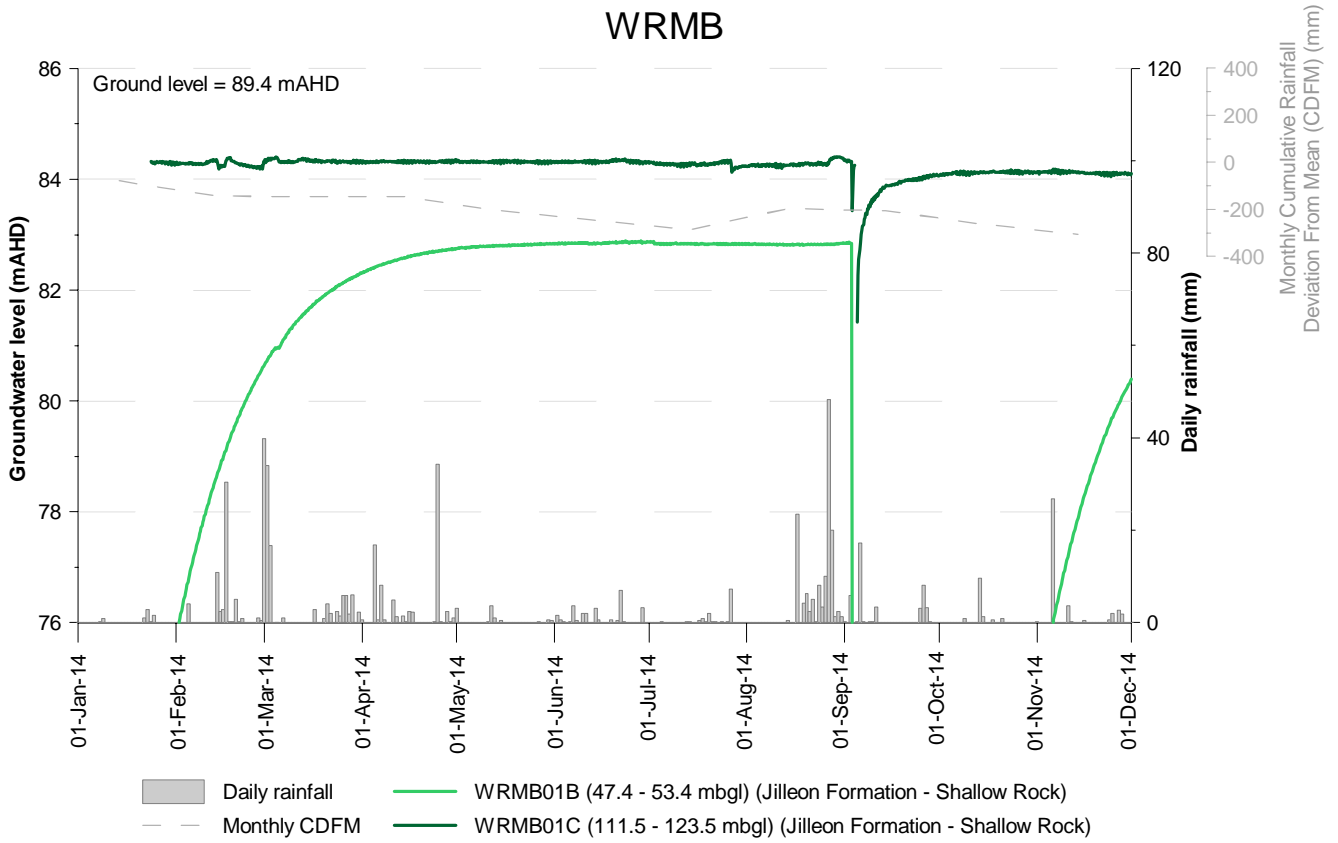


Figure 5: FKMB and BWMB monitoring bores

**WRMB**



**WKMB06**

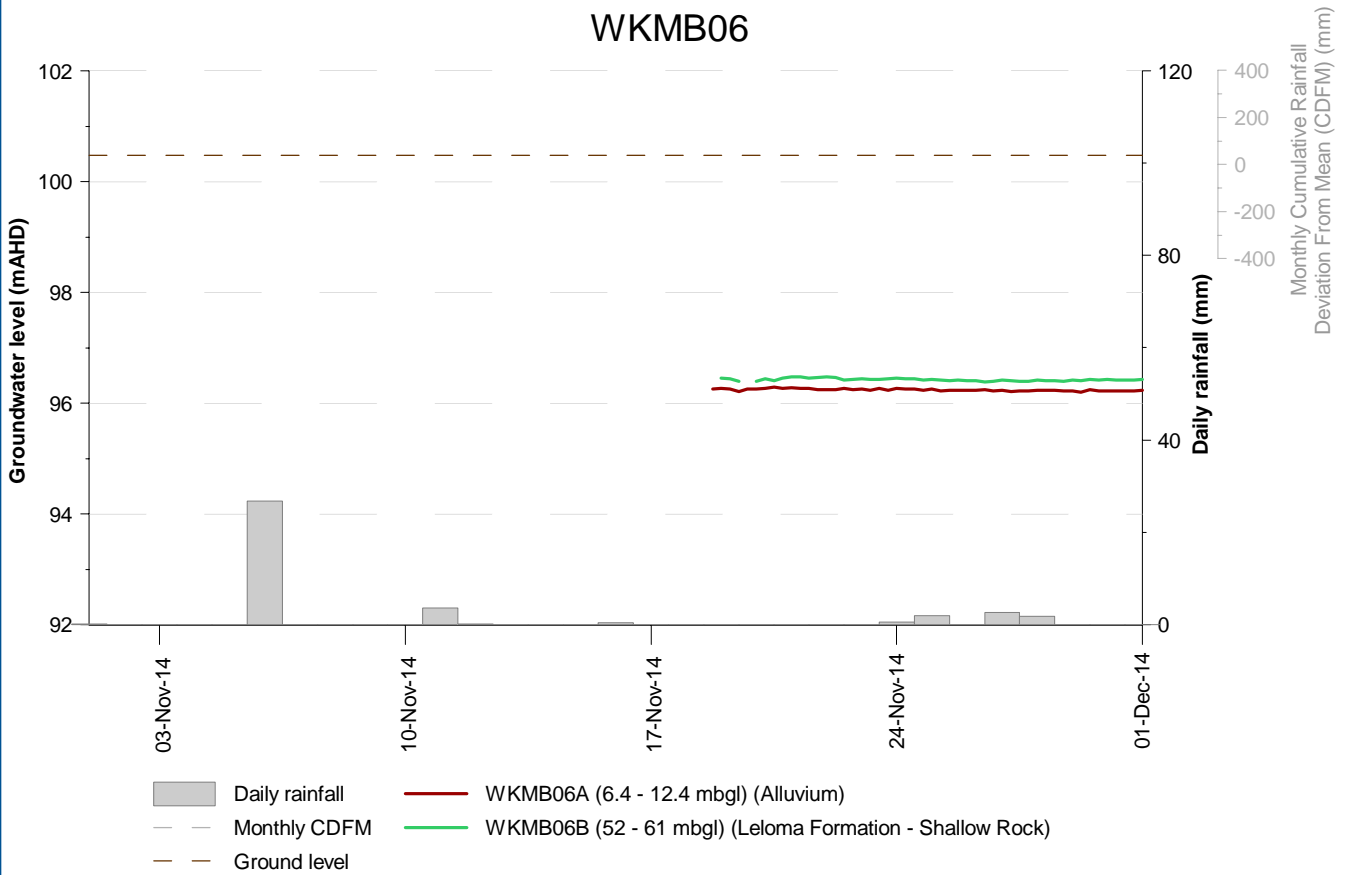


Figure 6: WRMB and WKMB06 monitoring bores



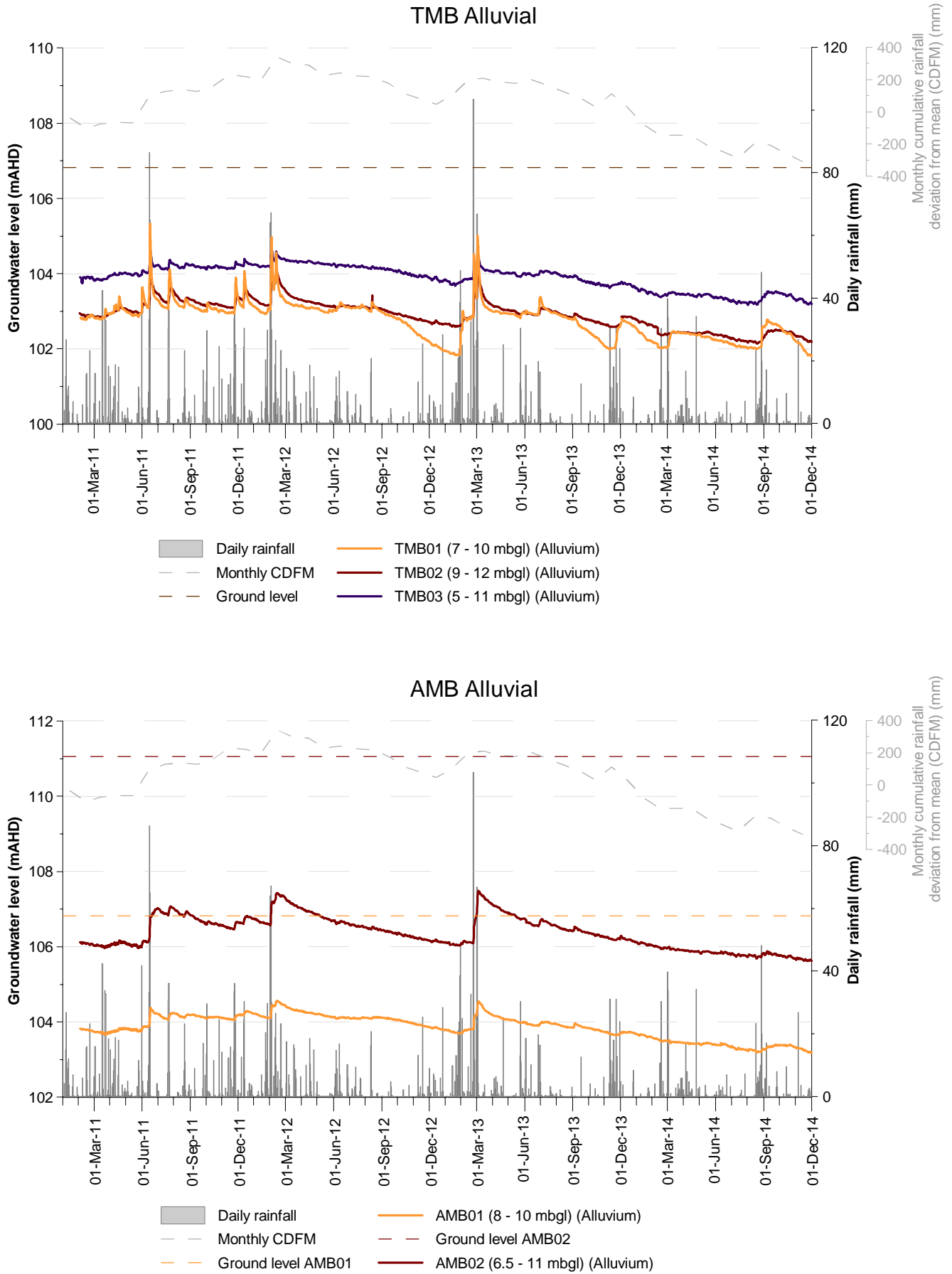


Figure 7: TMB and AMB Alluvial monitoring bores

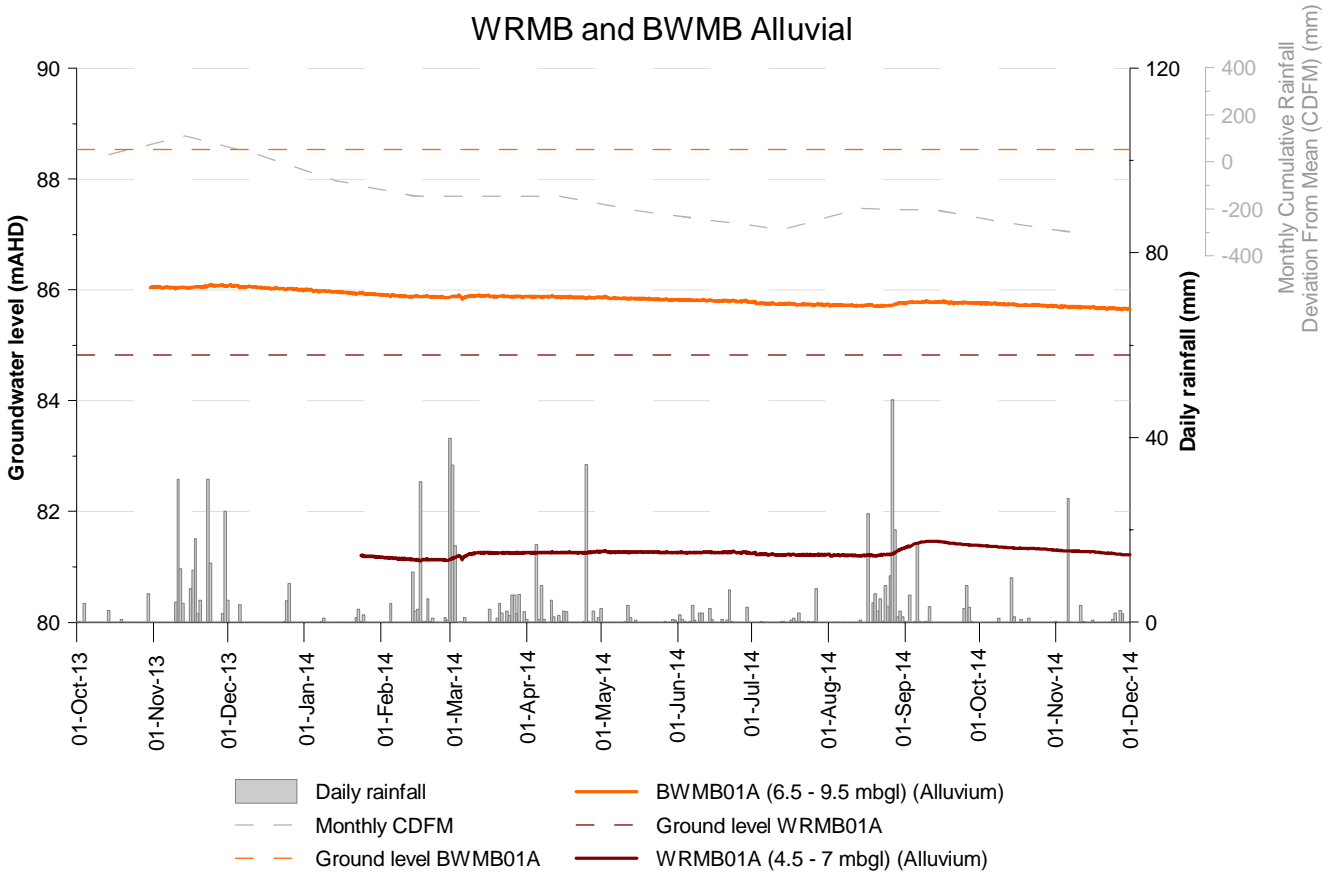
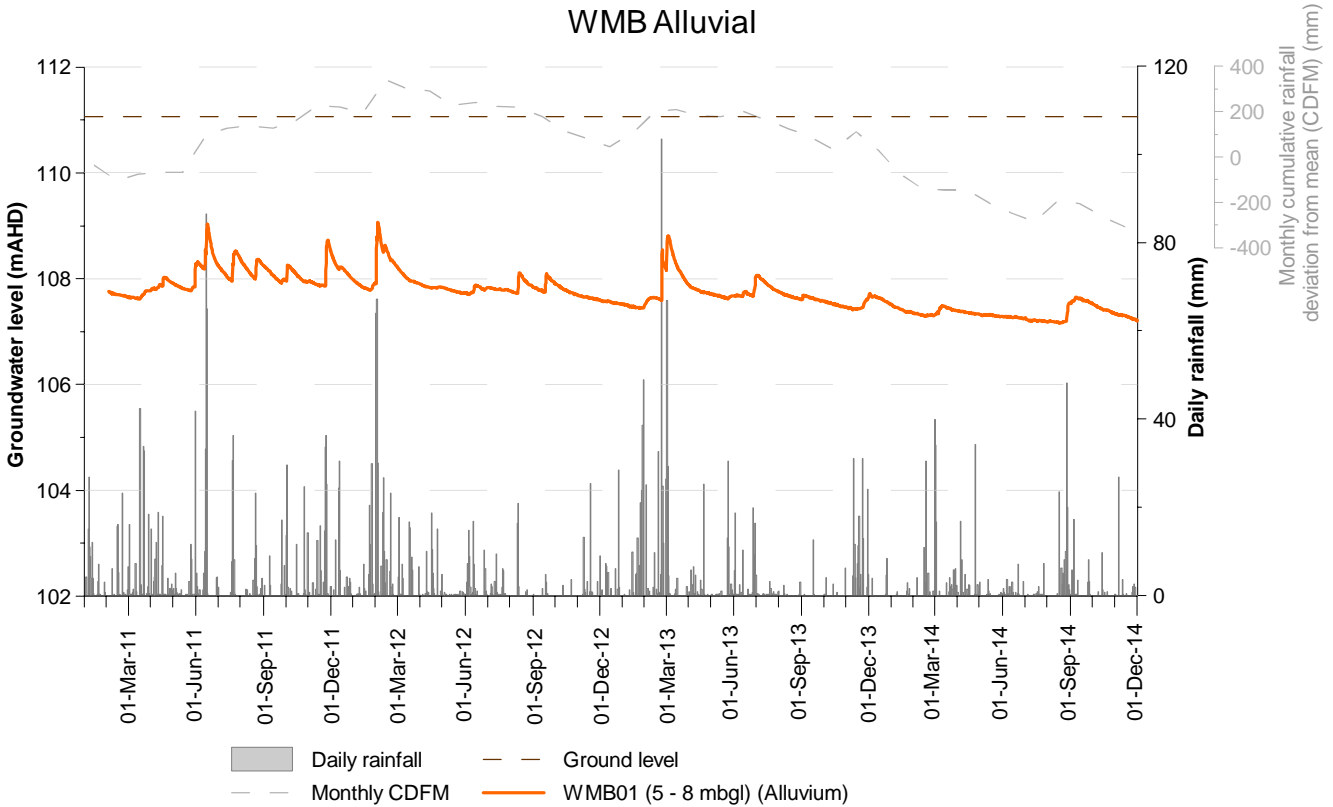


Figure 8: WMB, WRMB and BWMB Alluvial monitoring bores

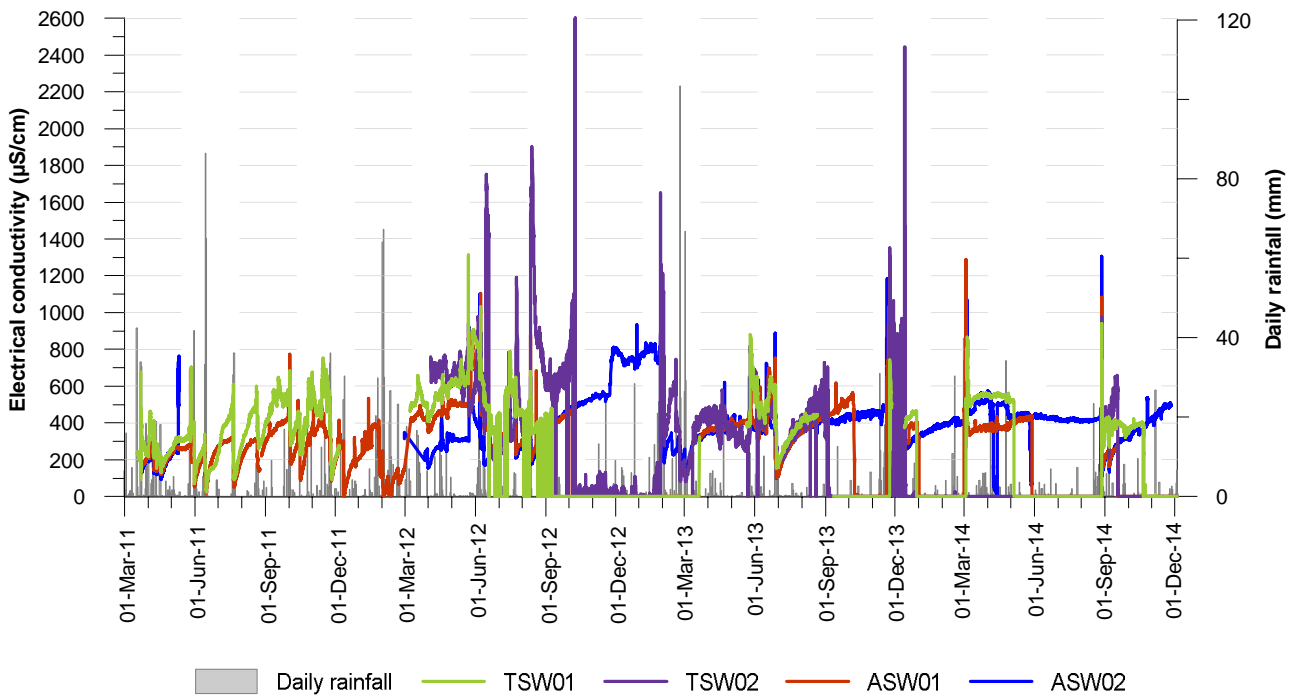
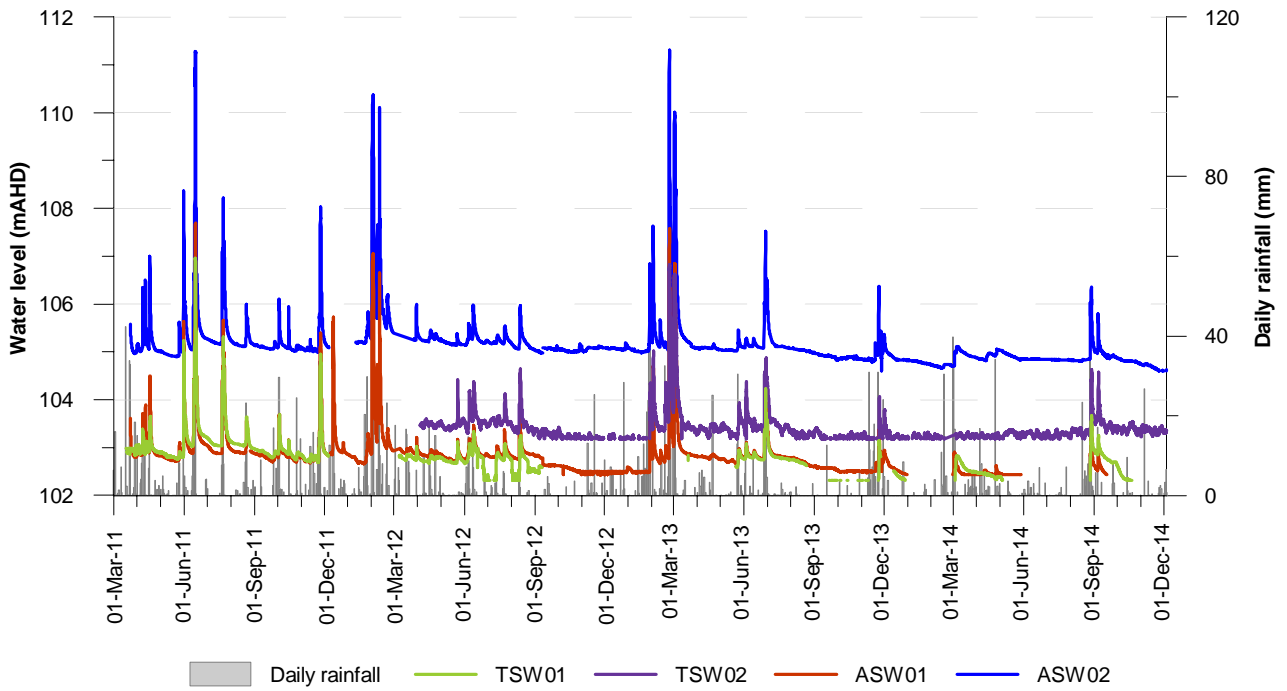


Figure 9: TSW01, TSW02, ASW01 and ASW02 surface water levels and electrical conductivity

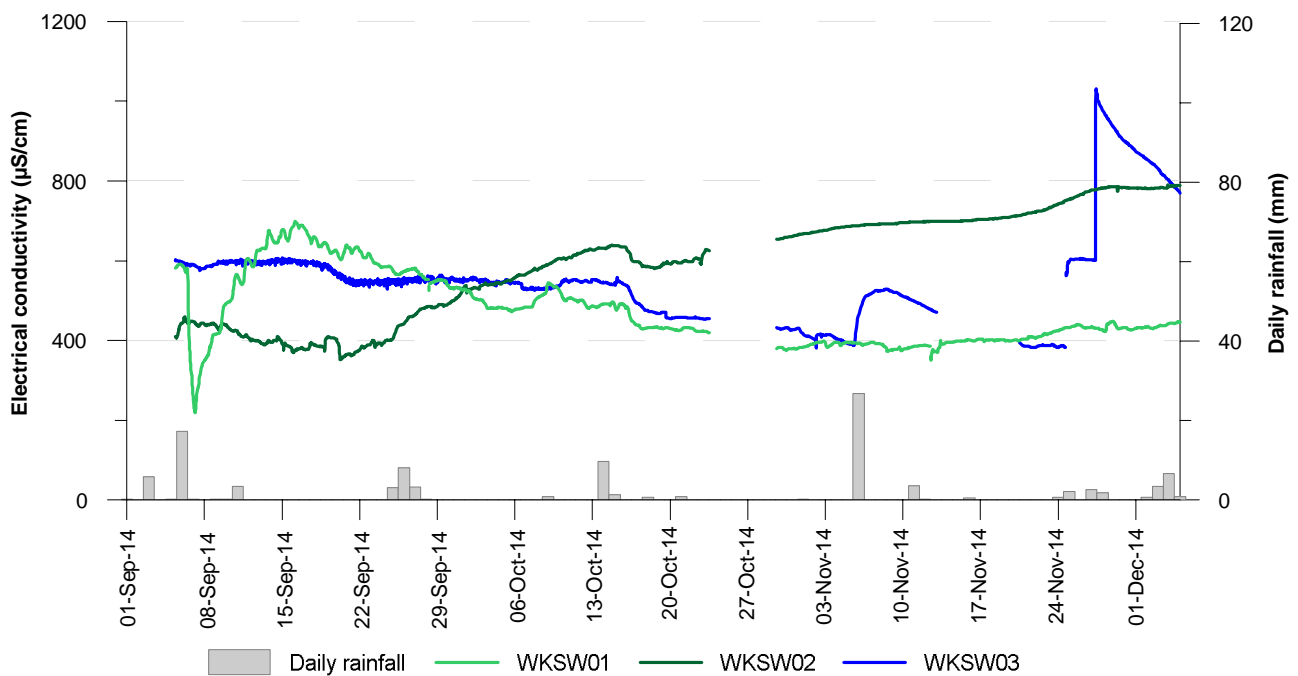
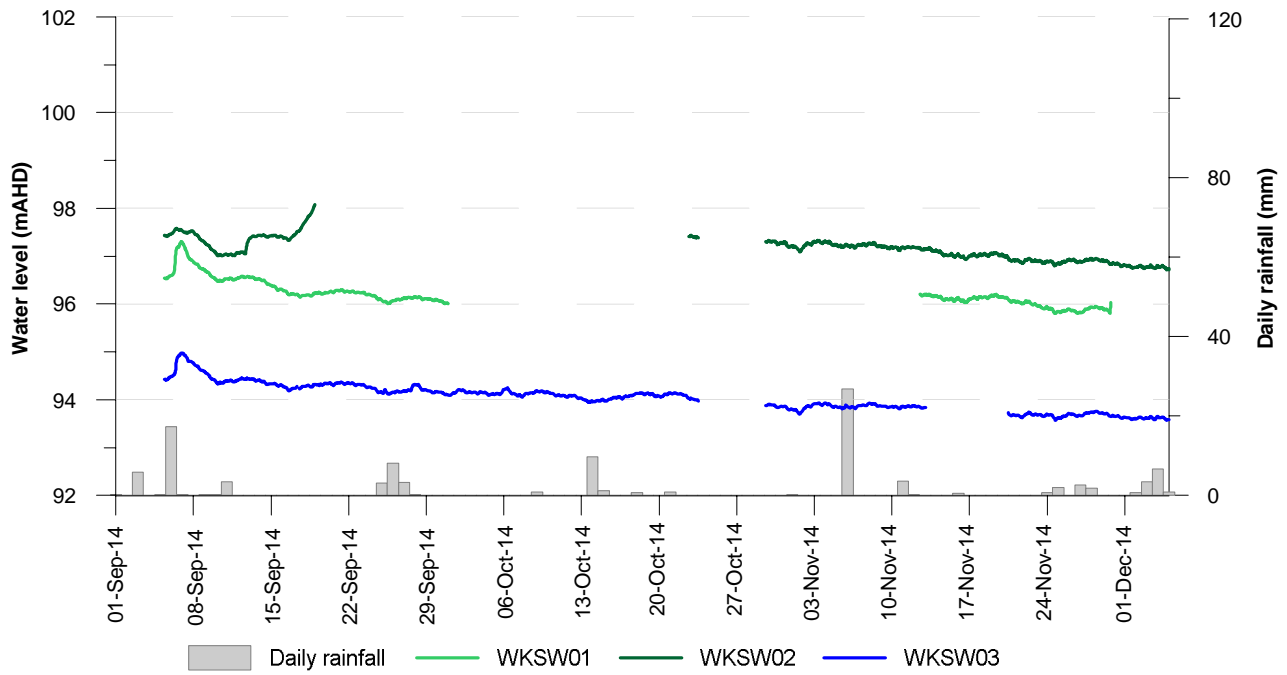


Figure 10: WKSW01, WKSW02 and WKSW03 surface water levels and electrical conductivity

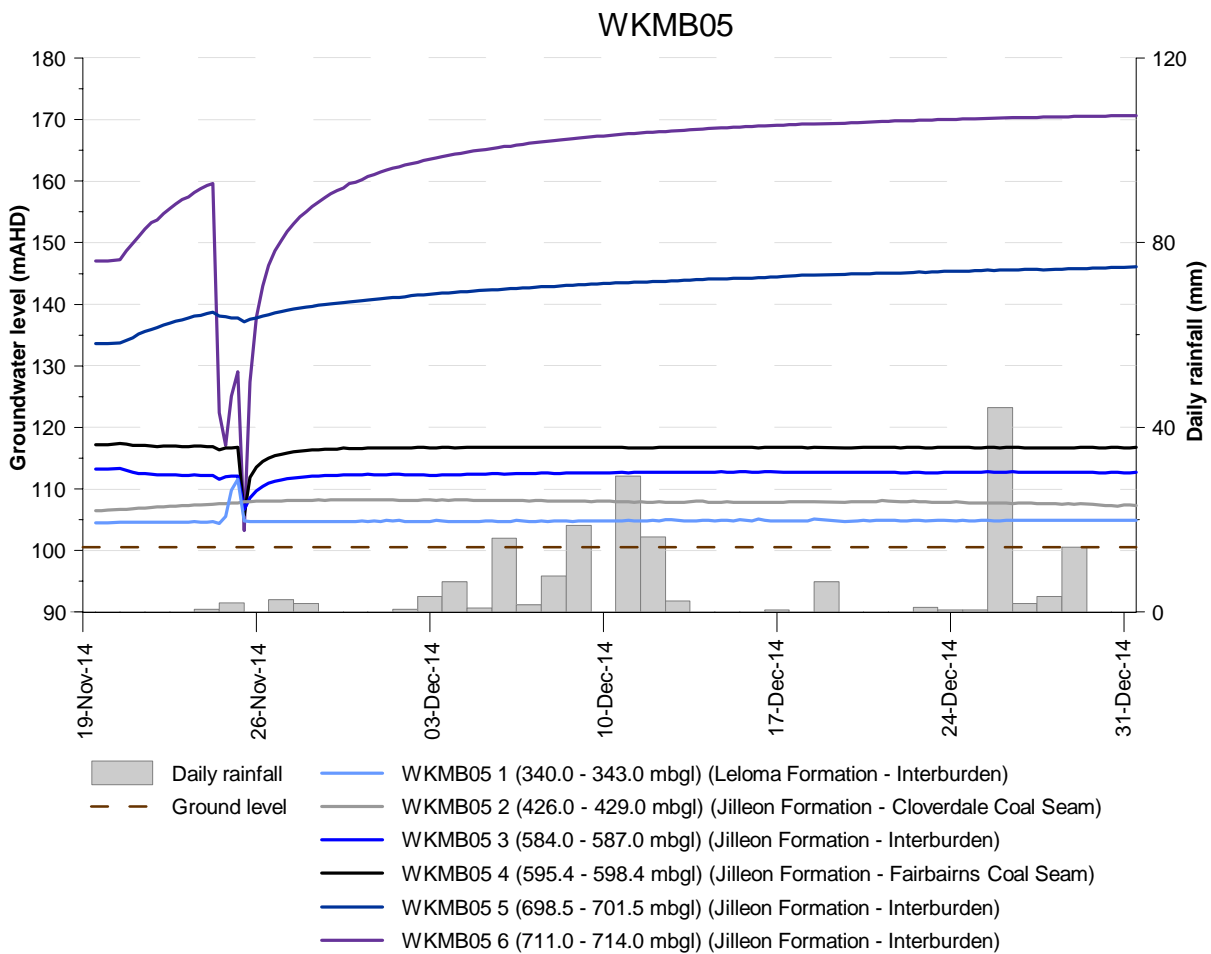
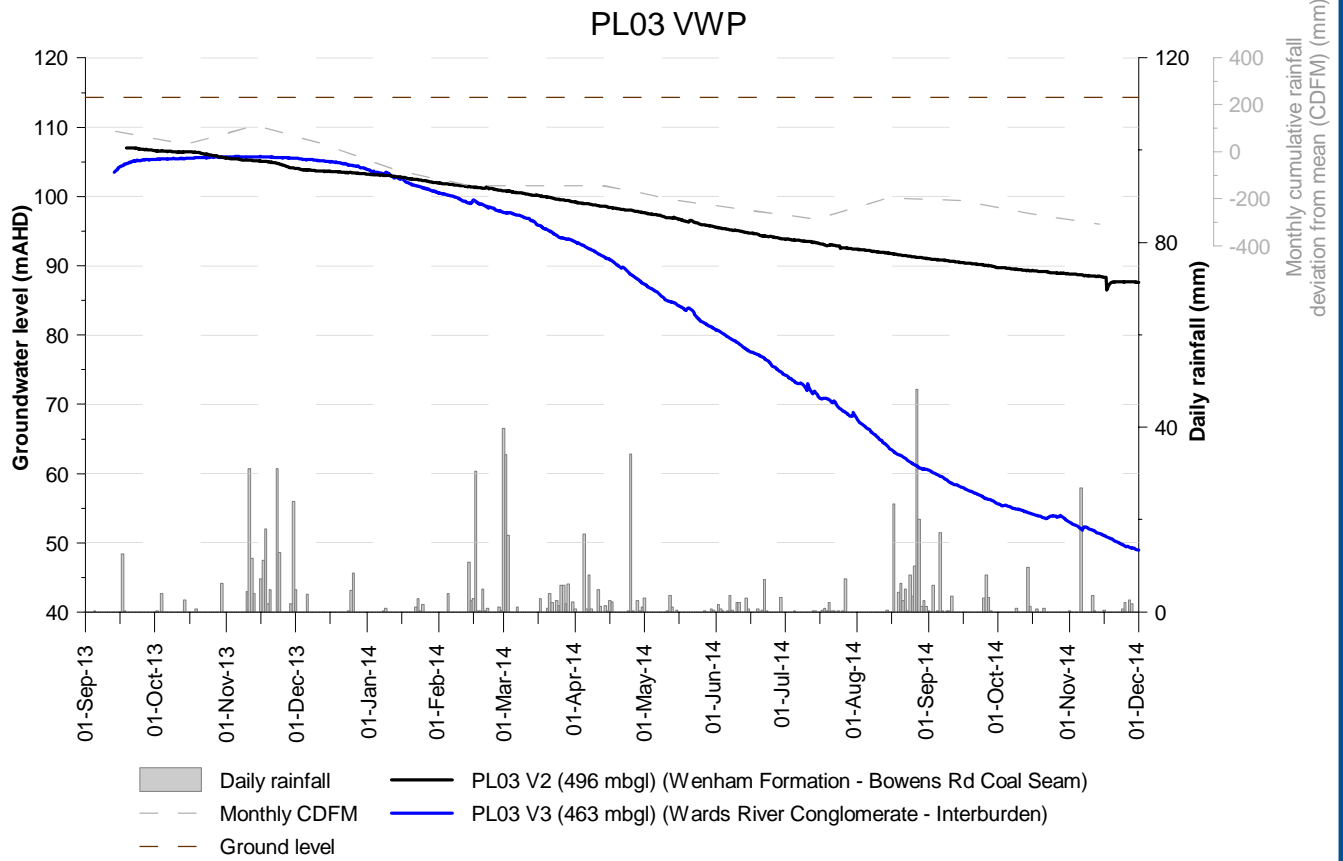


Figure 11: PL03 vibrating wire piezometer and WKMB05 multizone monitoring well

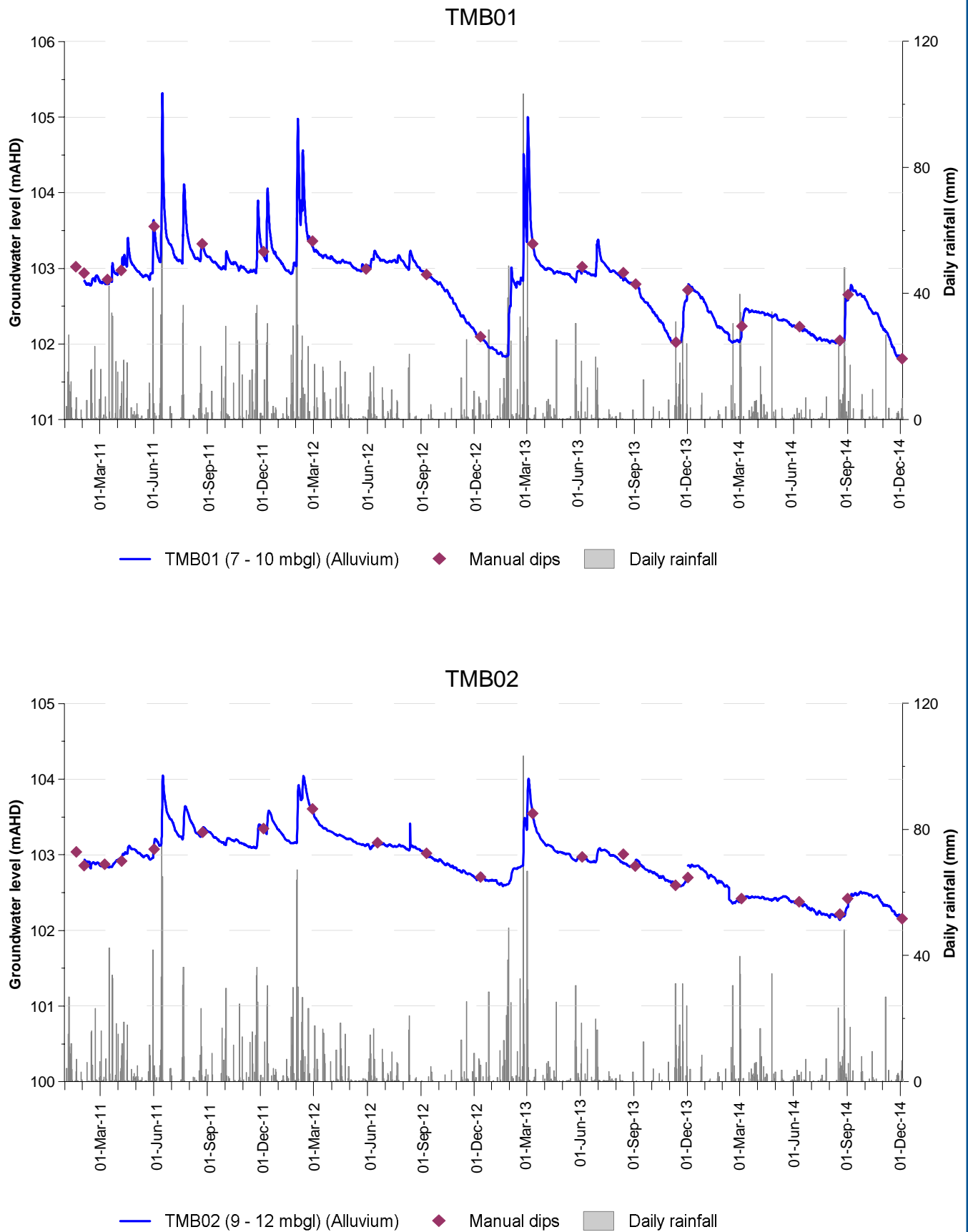


Figure A.1: TMB01 and TMB02 monitoring bores

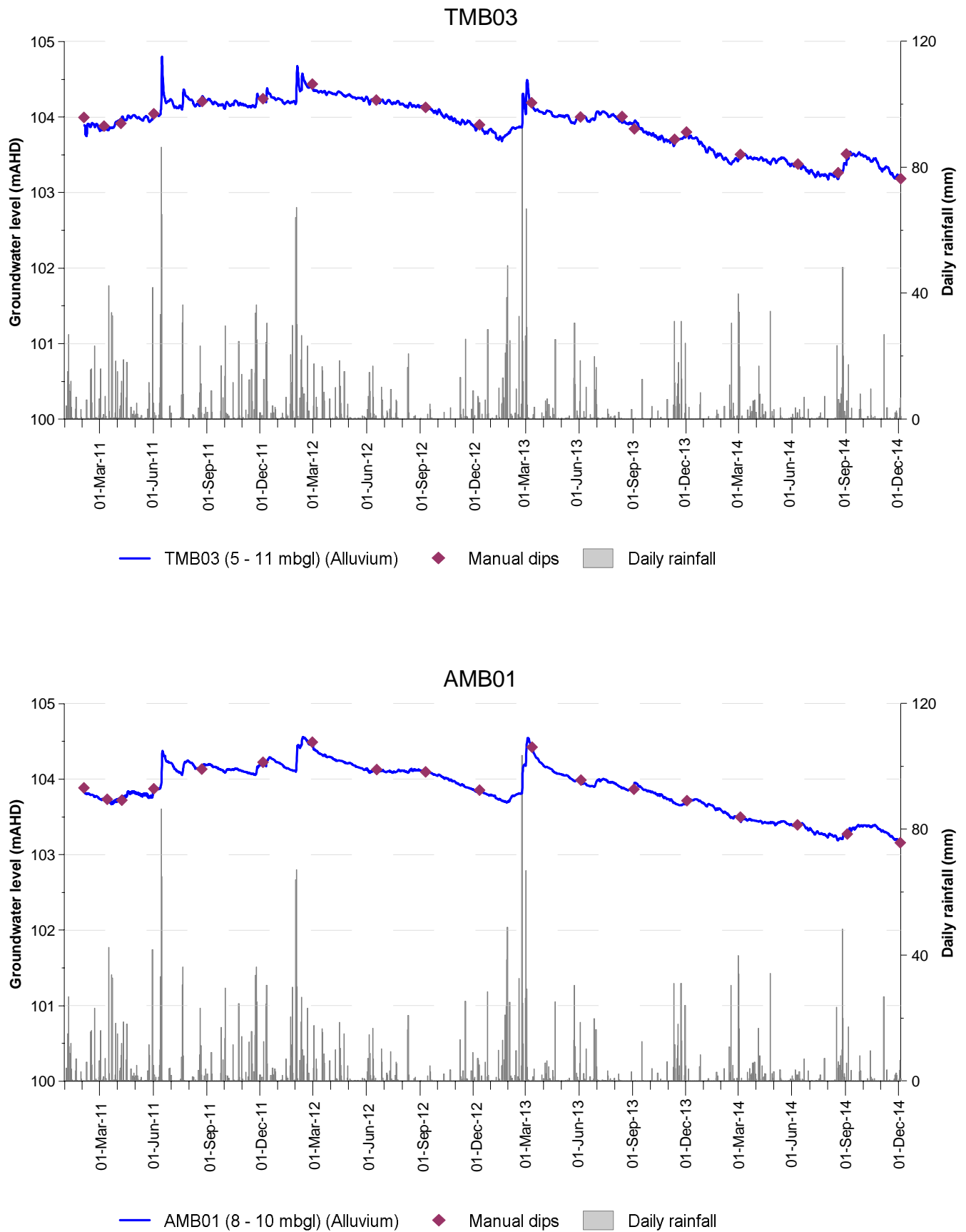


Figure A.2: TMB03 and AMB01 monitoring bores

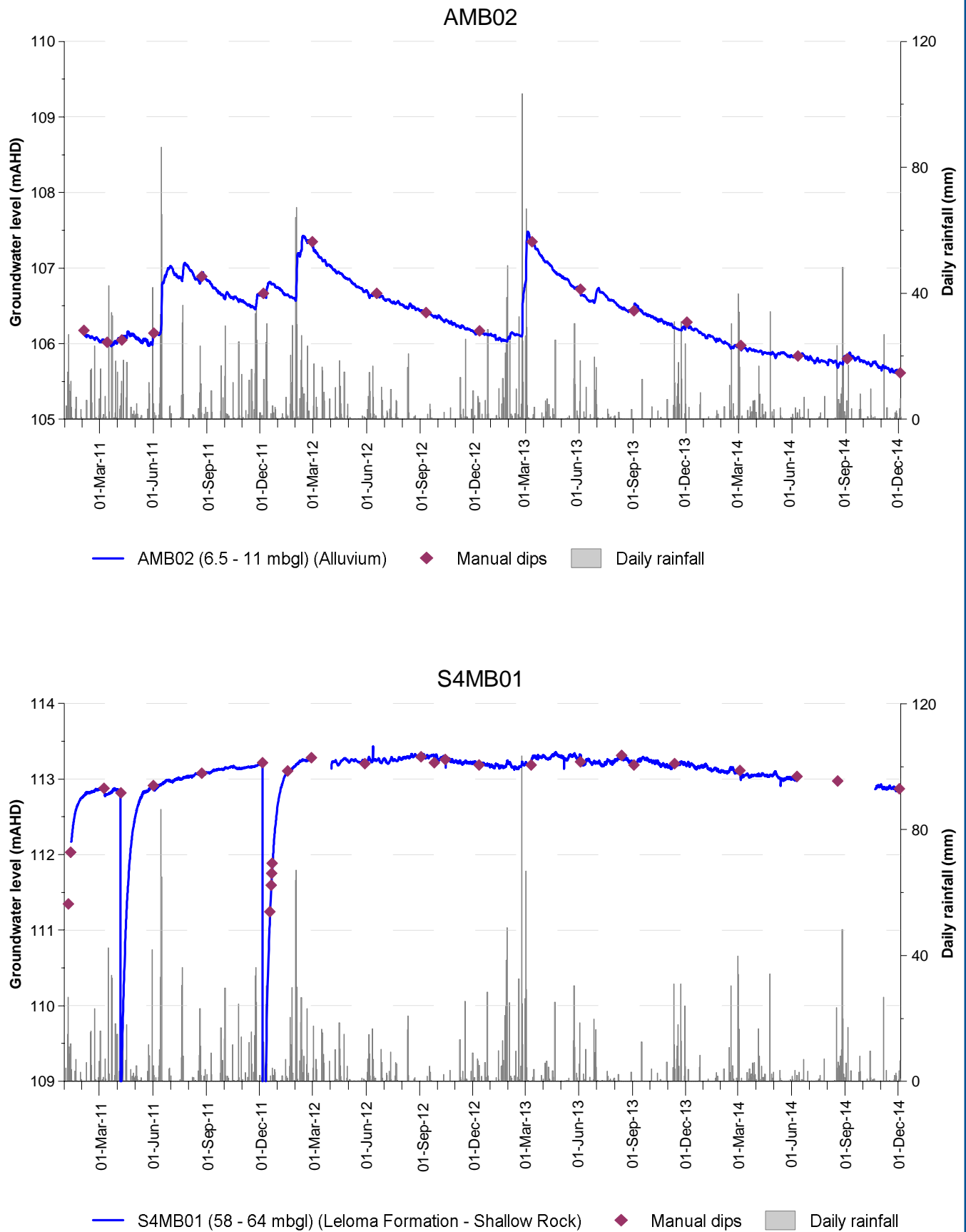


Figure A.3: AMB02 and S4MB01 monitoring bores



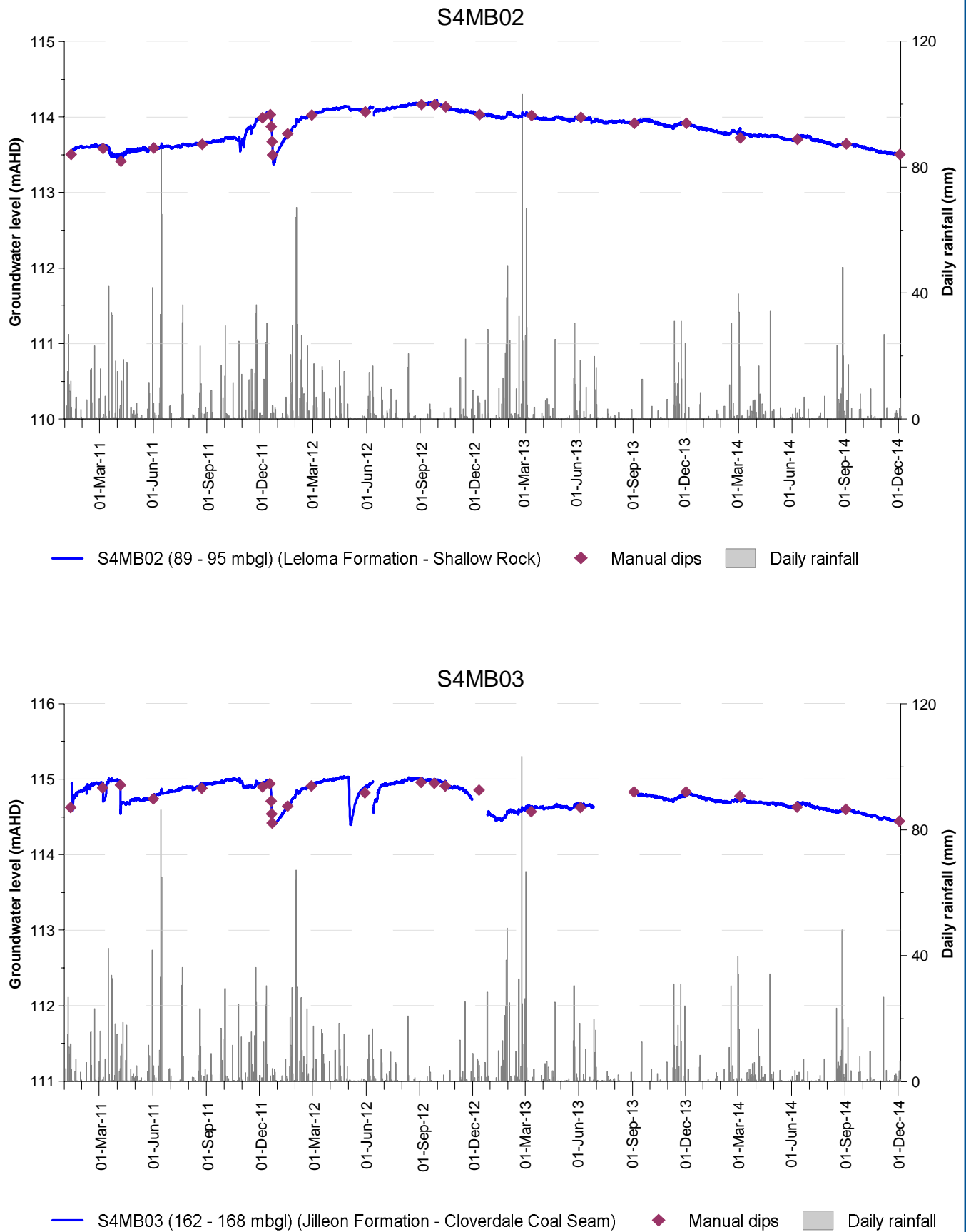


Figure A.4: S4MB02 and S4MB03 monitoring bores

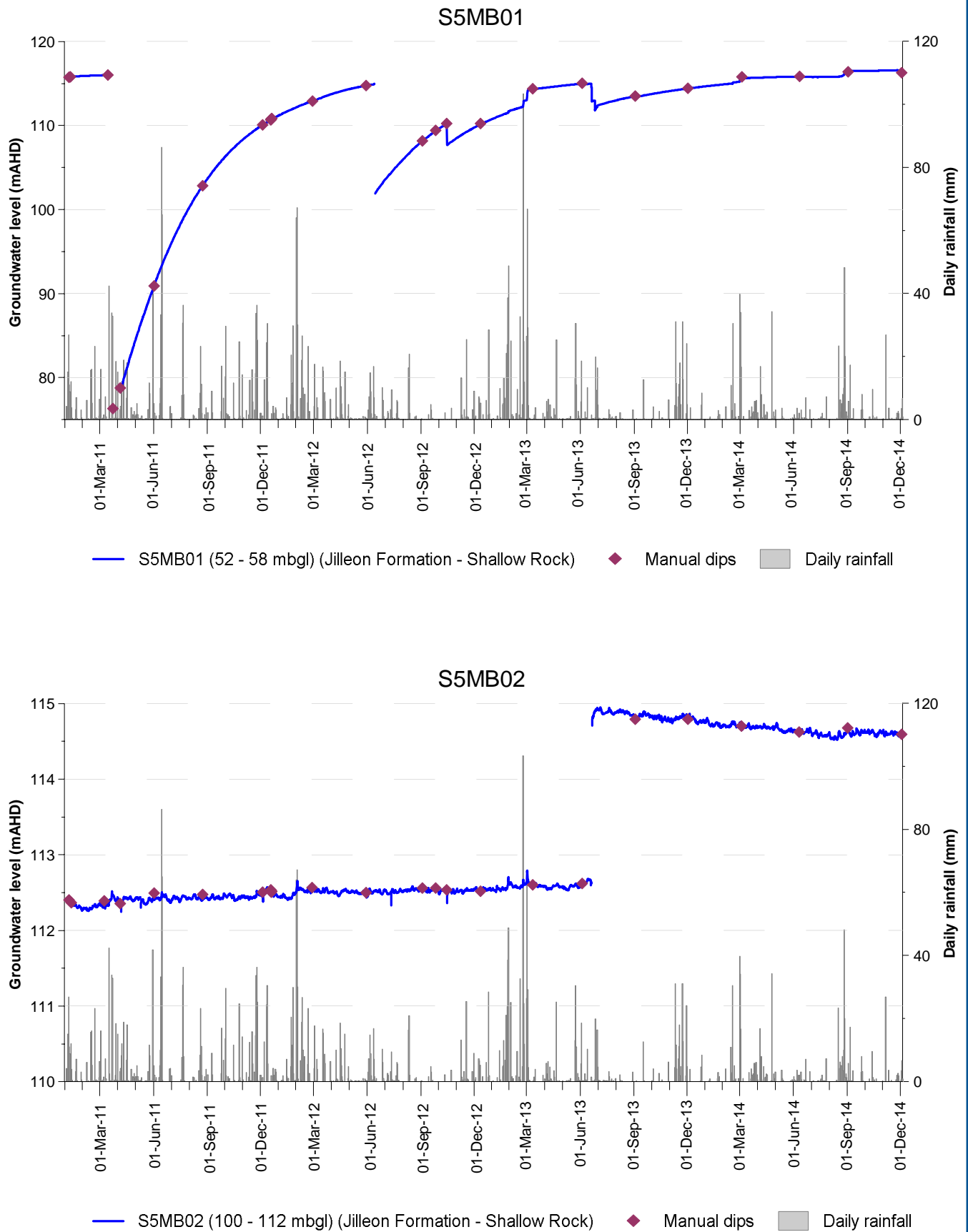


Figure A.5: S5MB01 and S5MB02 monitoring bores

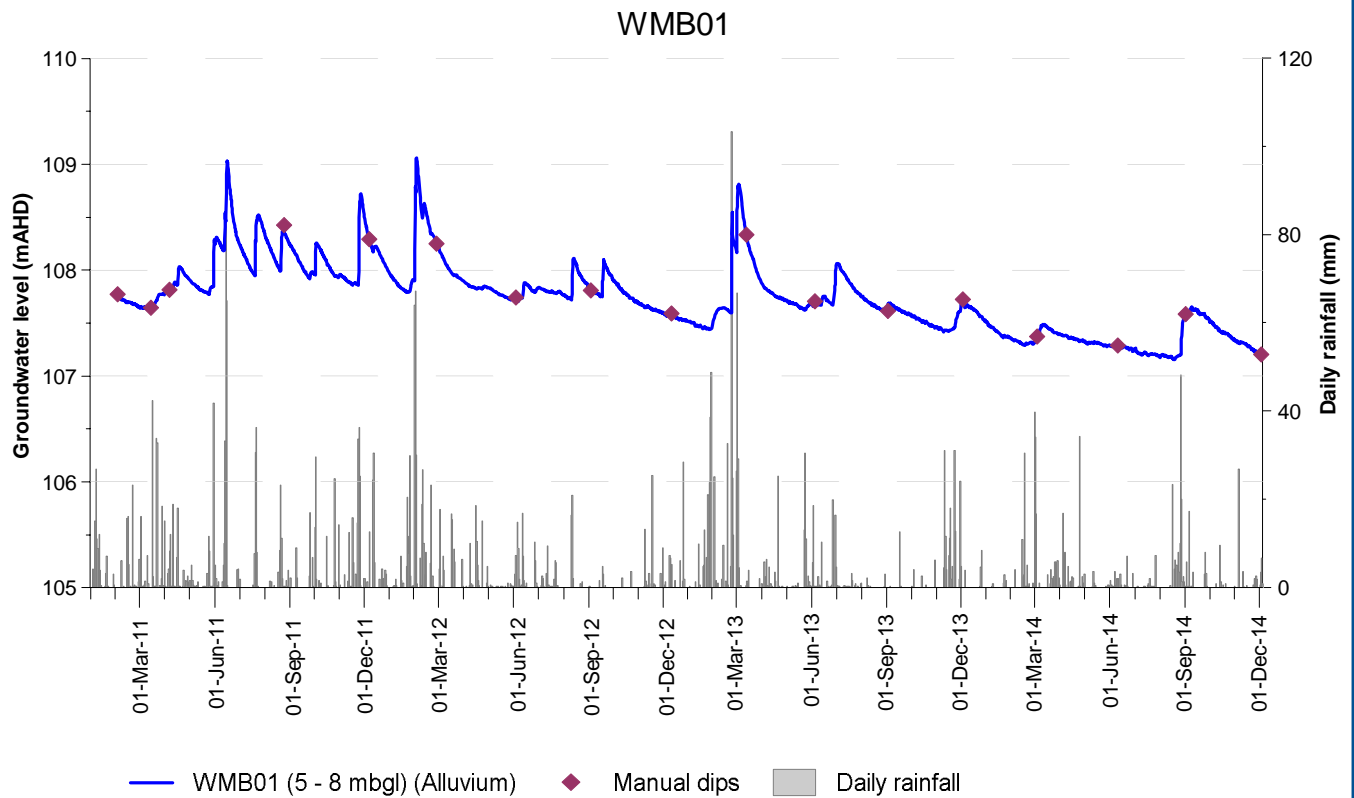
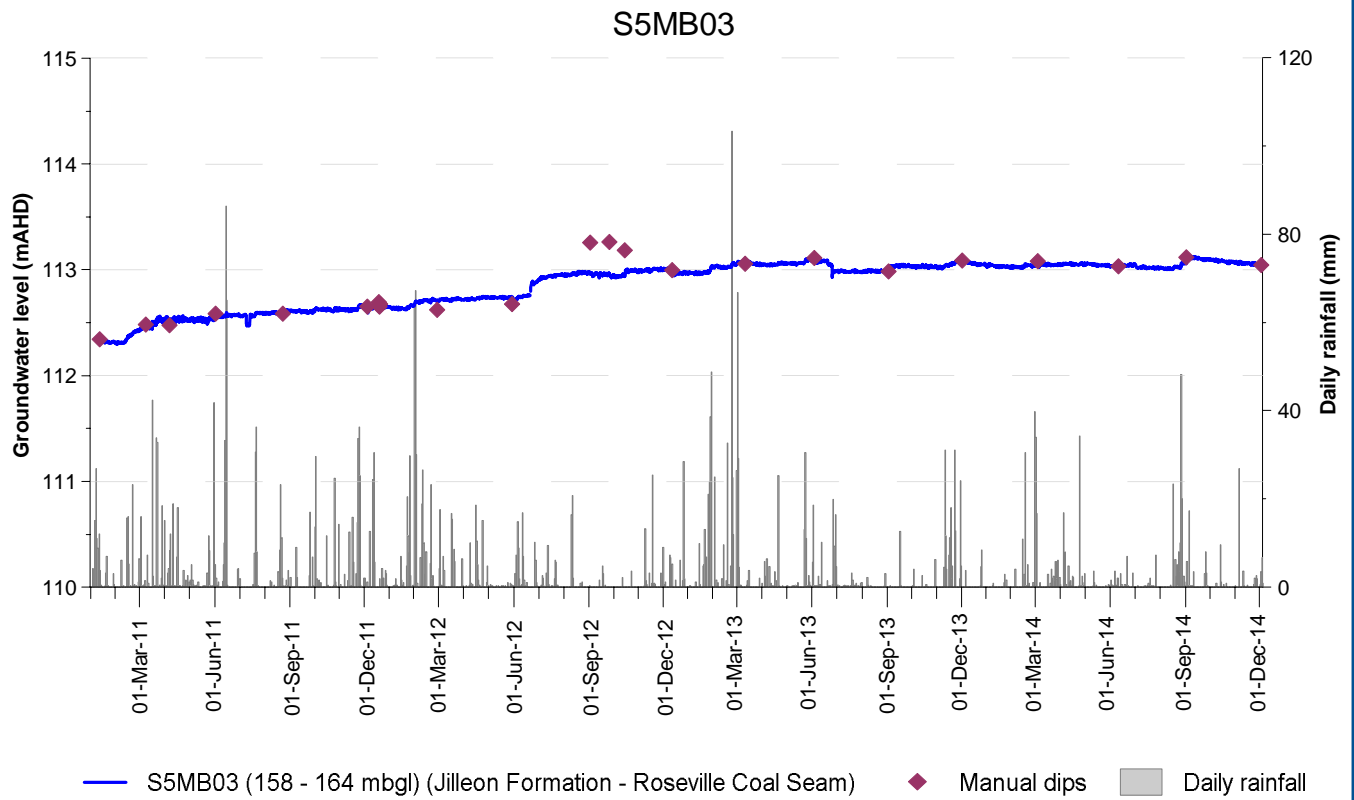


Figure A.6: S5MB03 and WMB01 monitoring bores

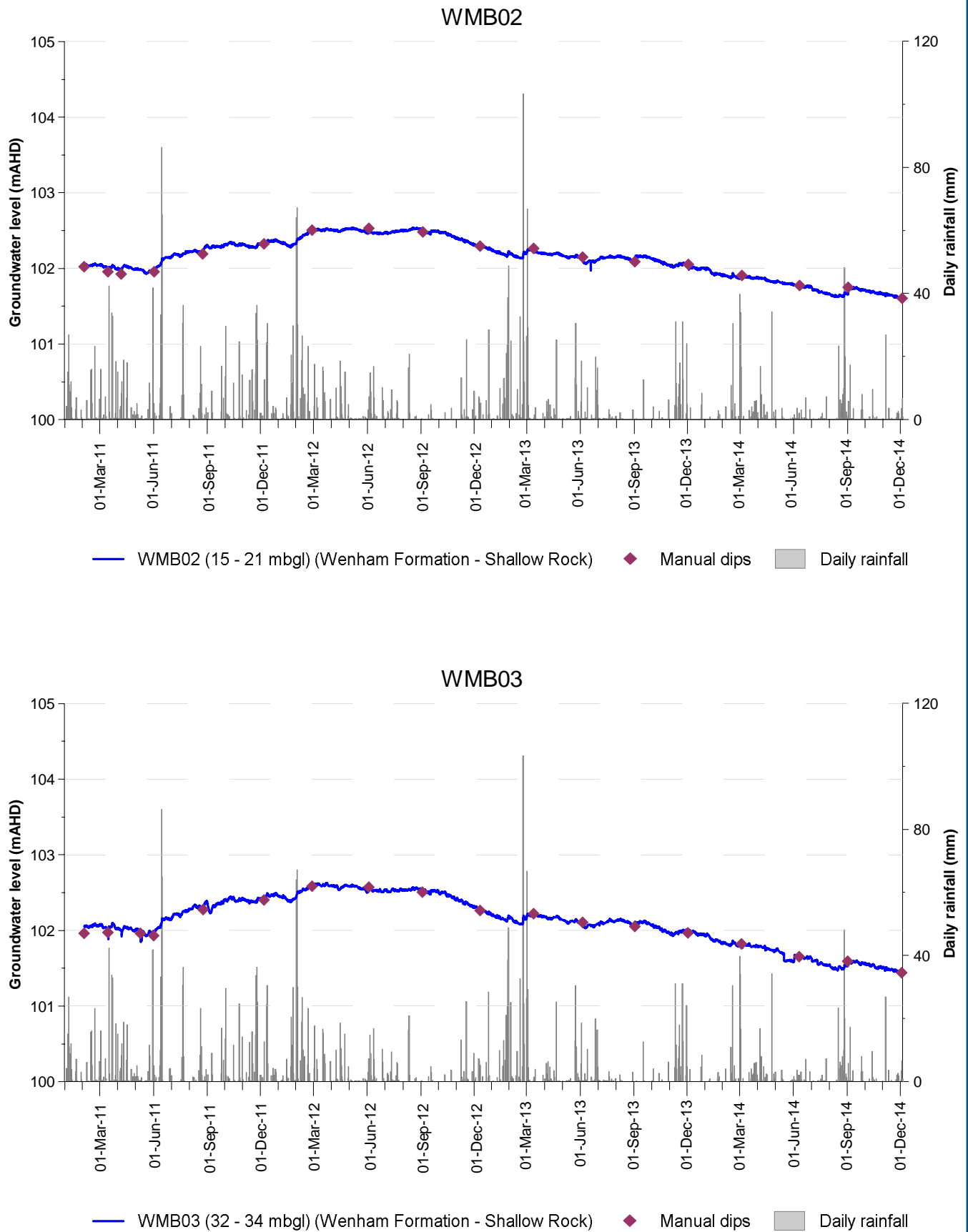


Figure A.7: WMB02 and WMB03 monitoring bores

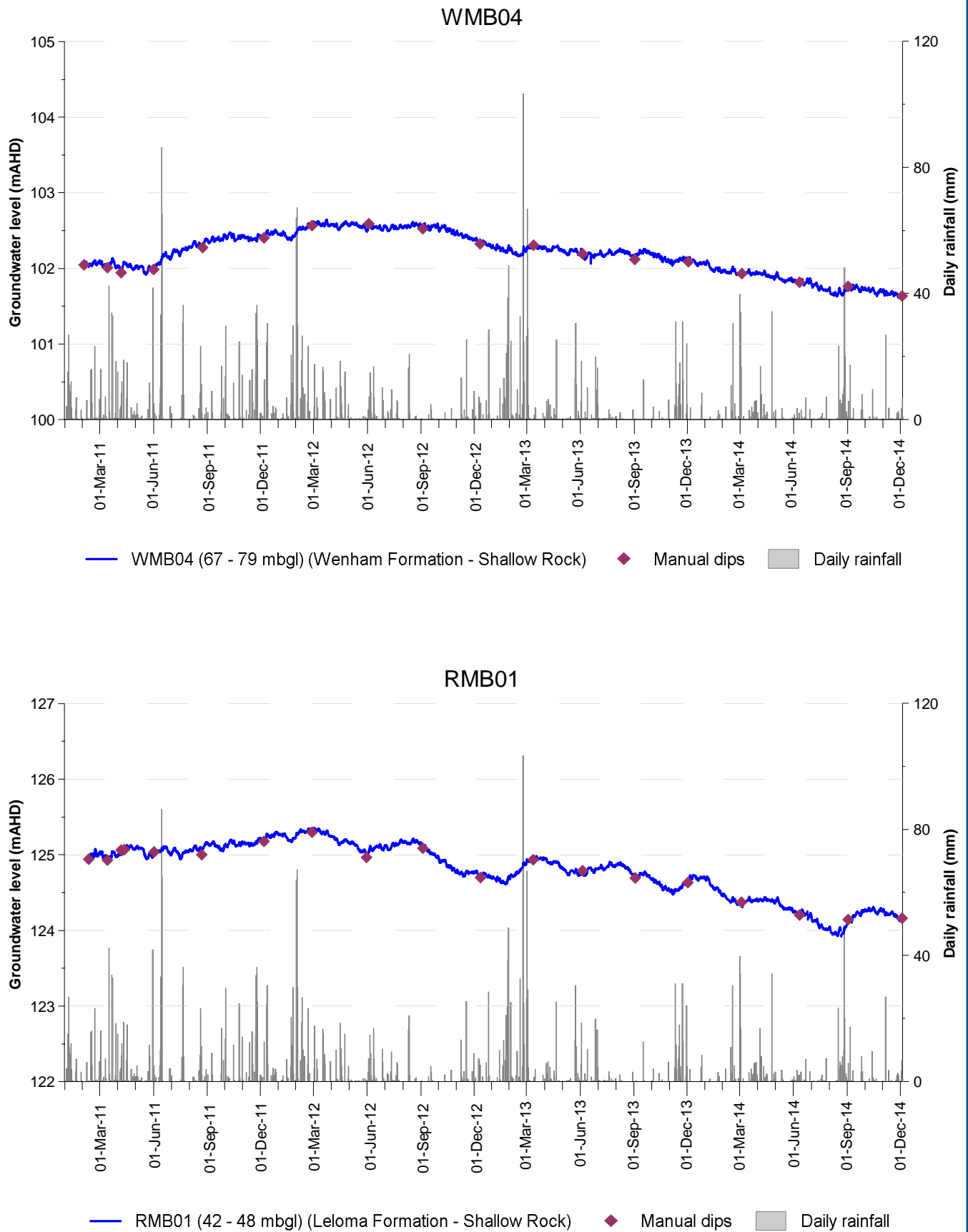


Figure A.8: WMB04 and RMB01 monitoring bores

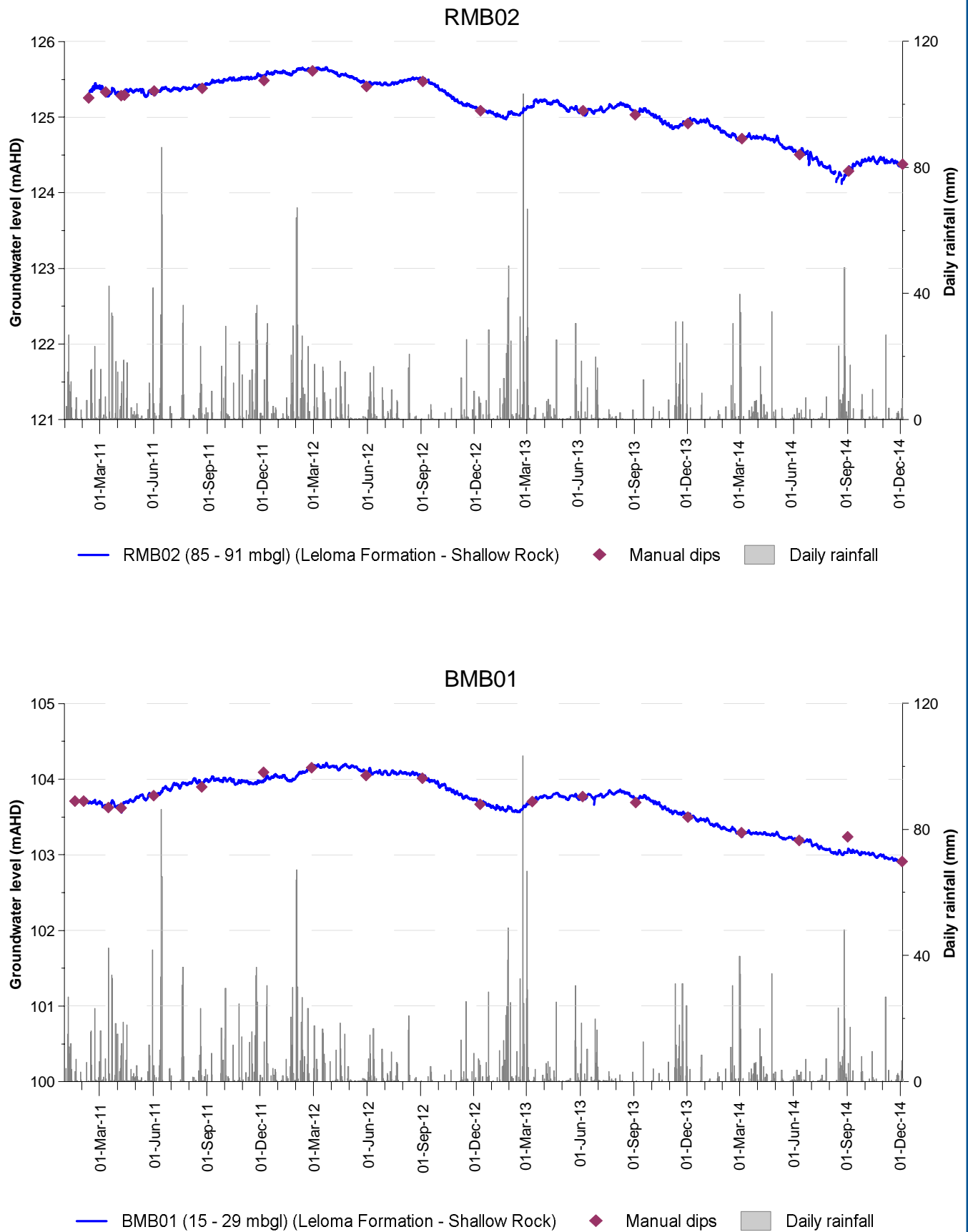


Figure A.9: RMB02 and BMB01 monitoring bores

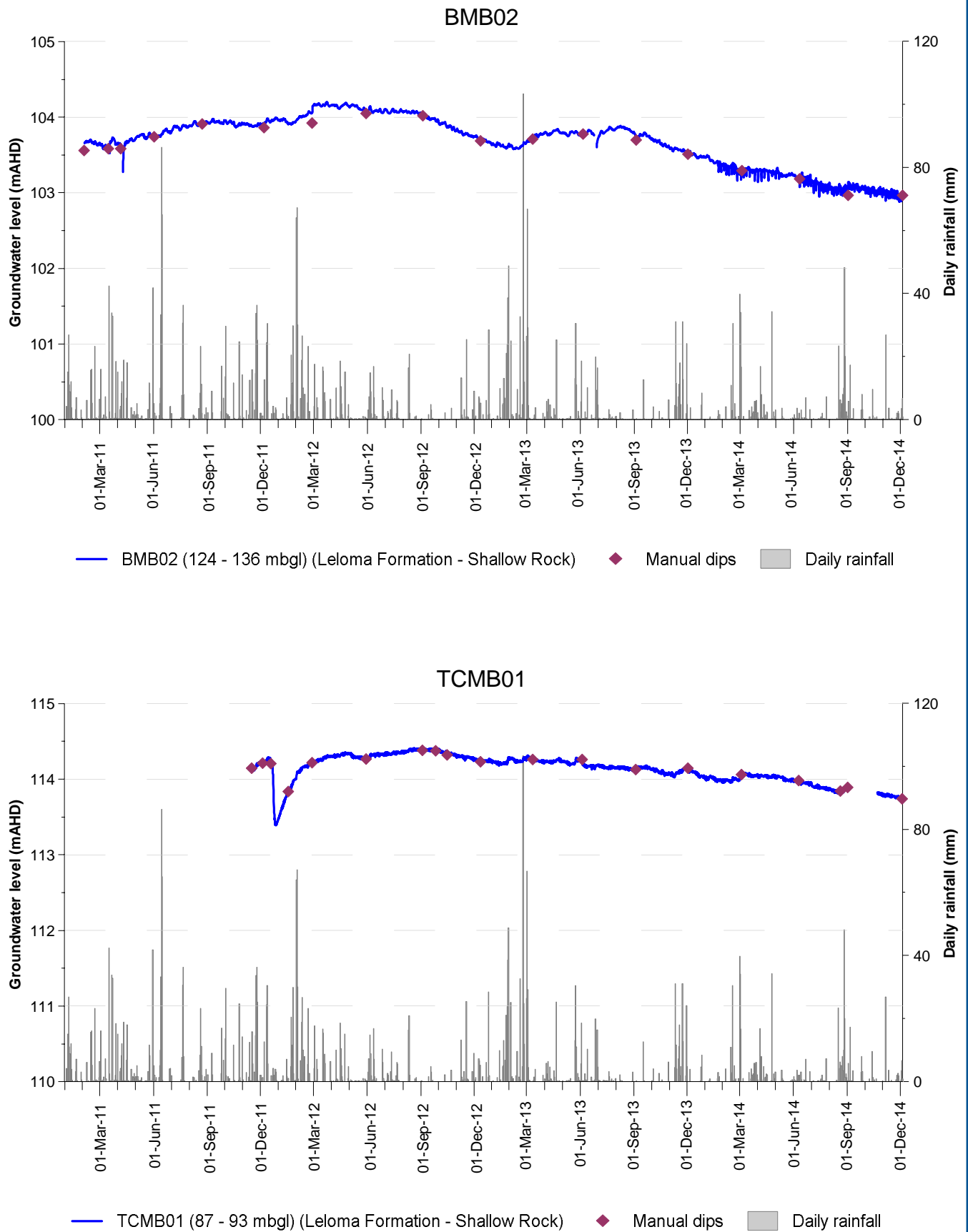


Figure A.10: BMB02 and TCMB01 monitoring bores

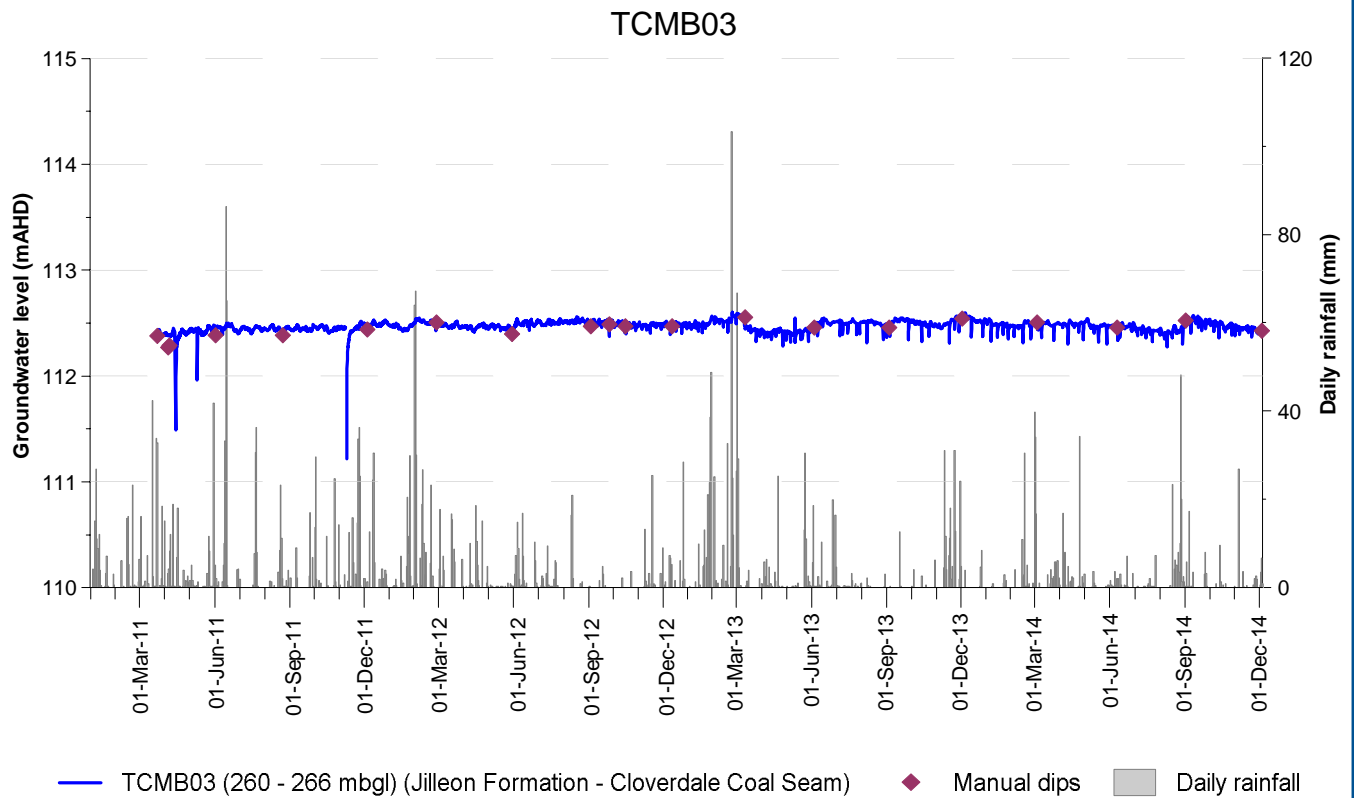
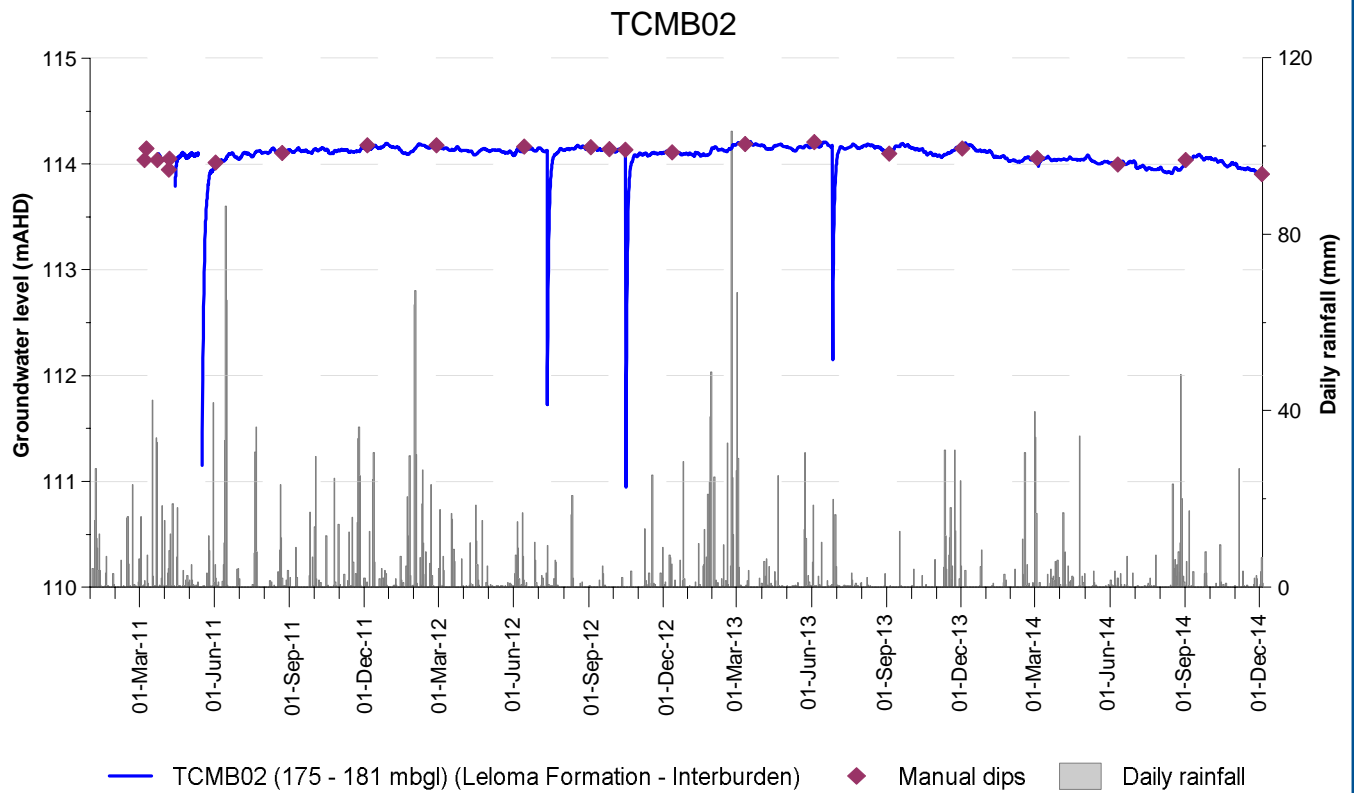


Figure A.11: TCMB02 and TCMB03 monitoring bores



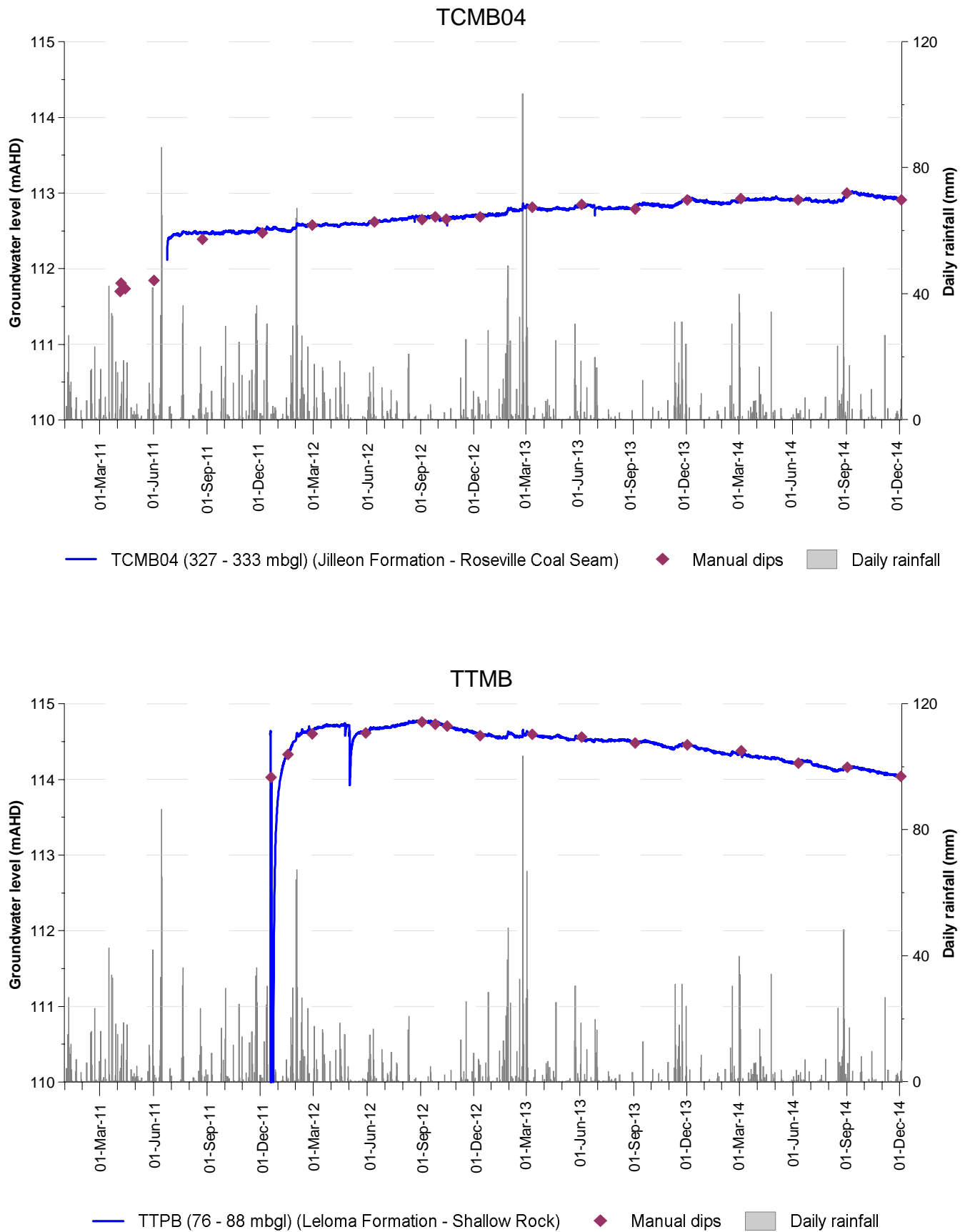


Figure A.12: TCMB04 and TTMB monitoring bores

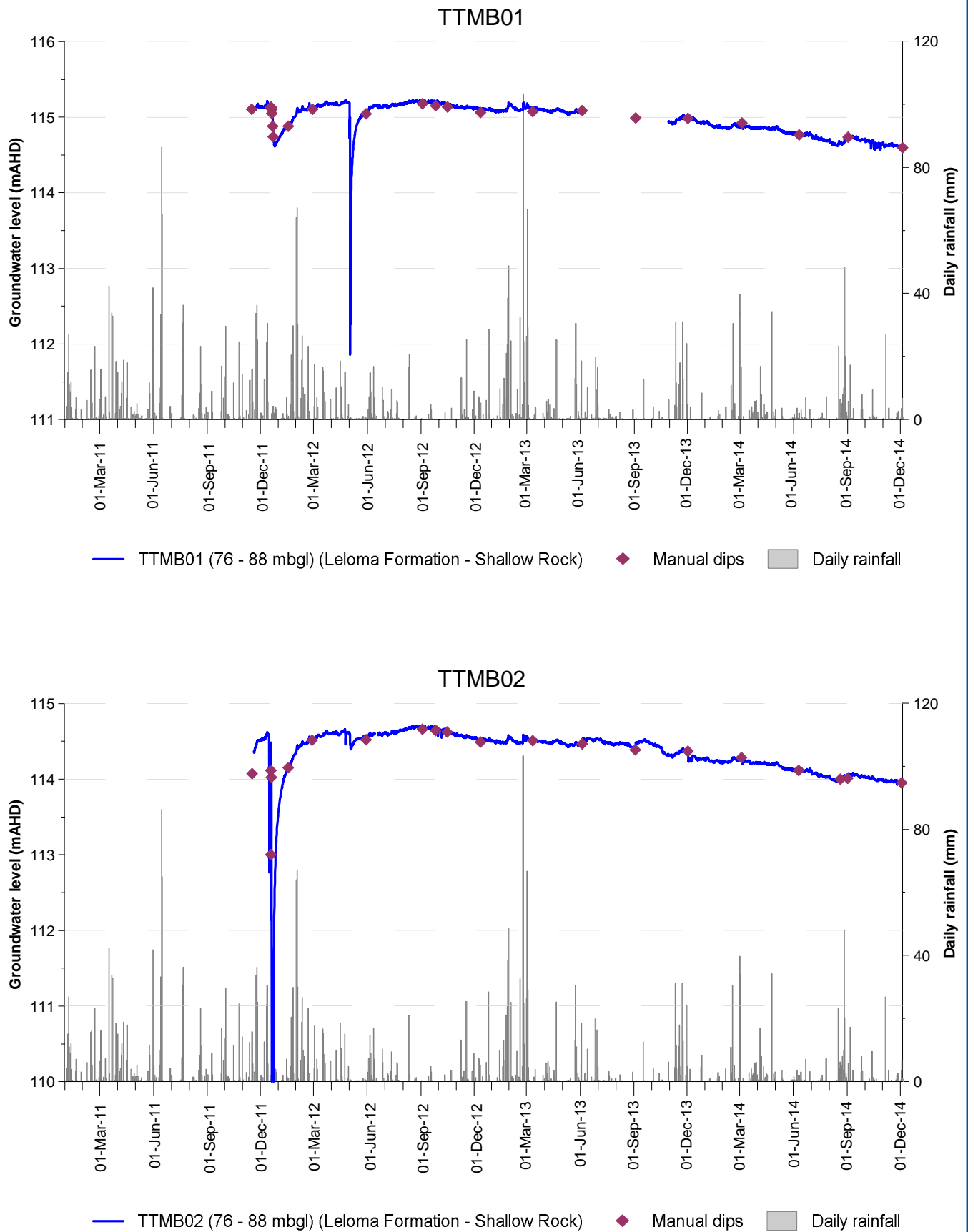


Figure A.13: TTMB01 and TTMB02 monitoring bores

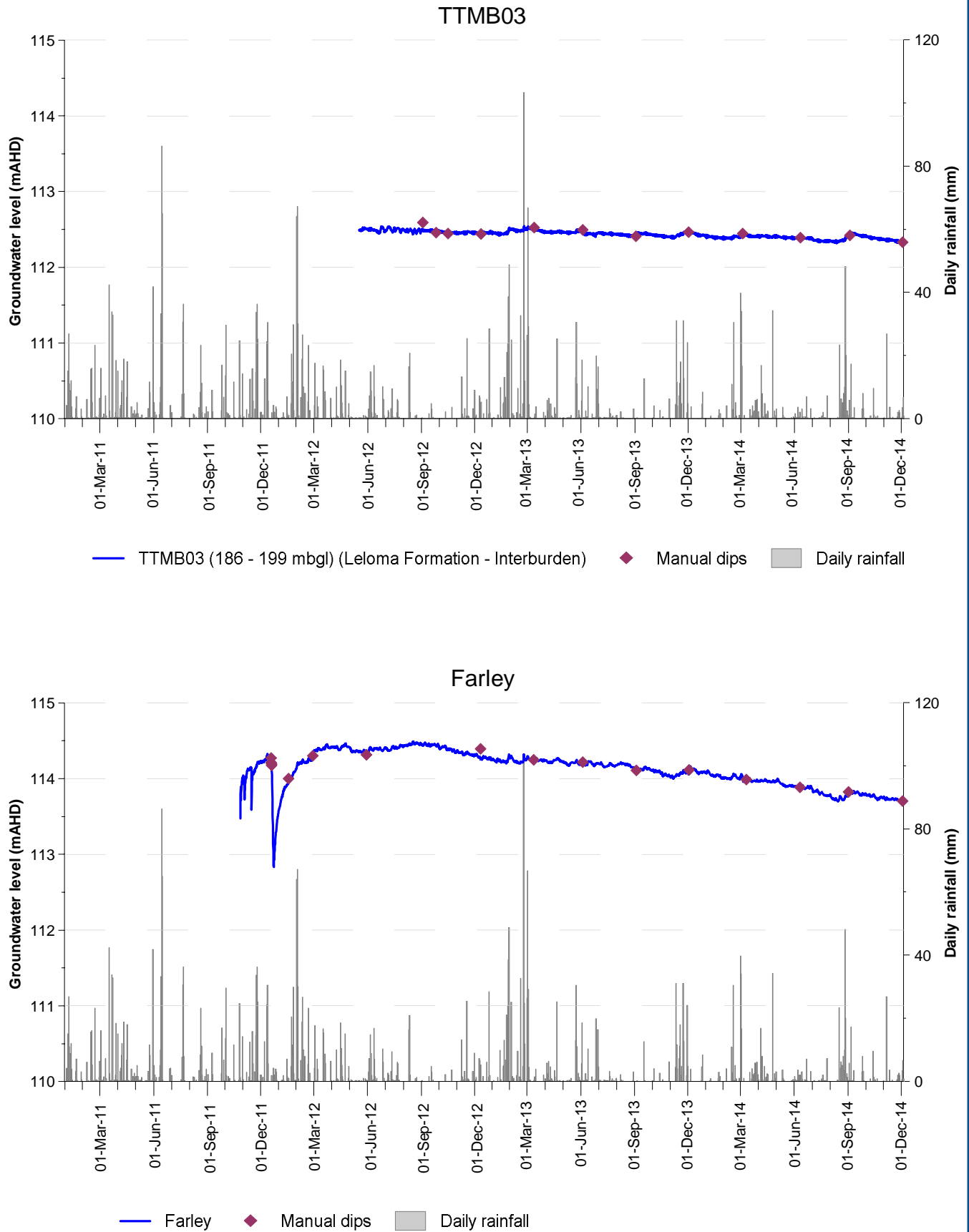


Figure A.14: TTMB03 and Farley monitoring bores

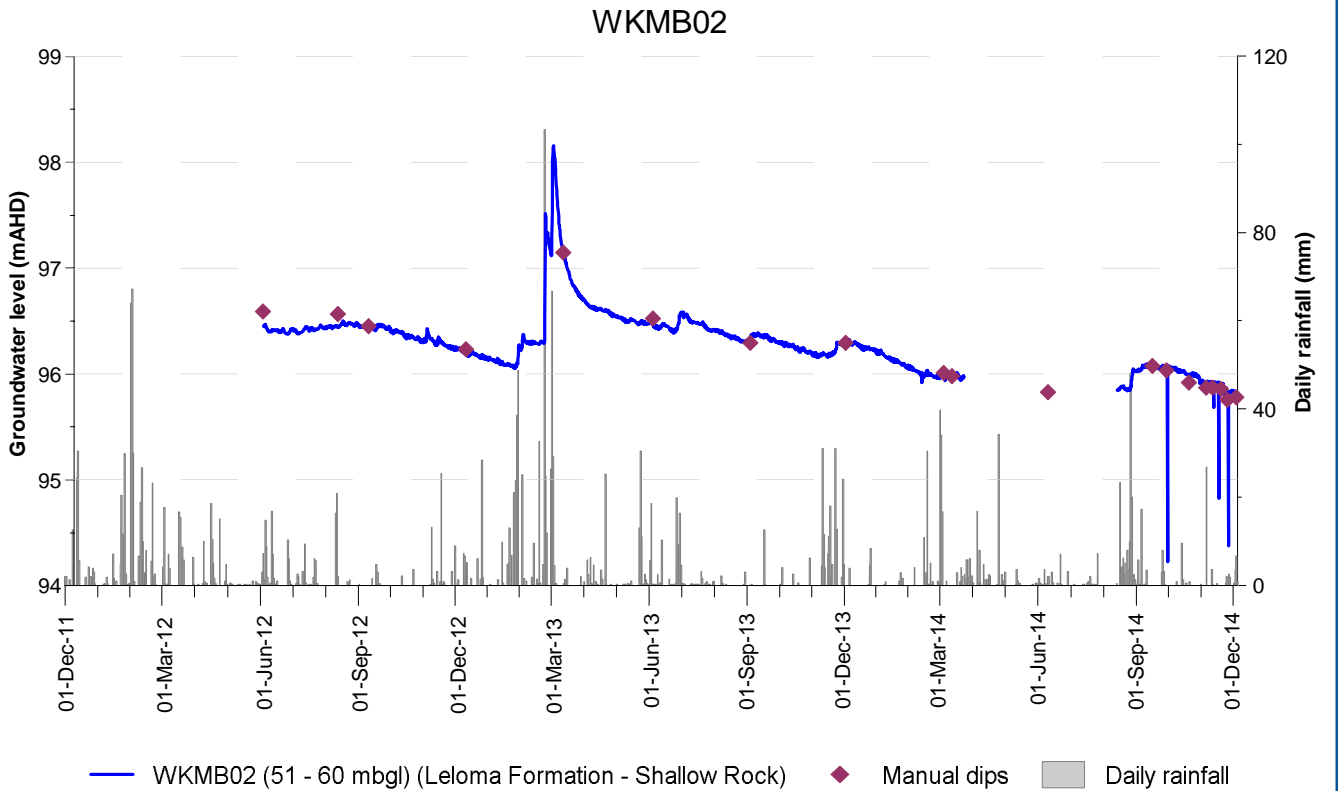
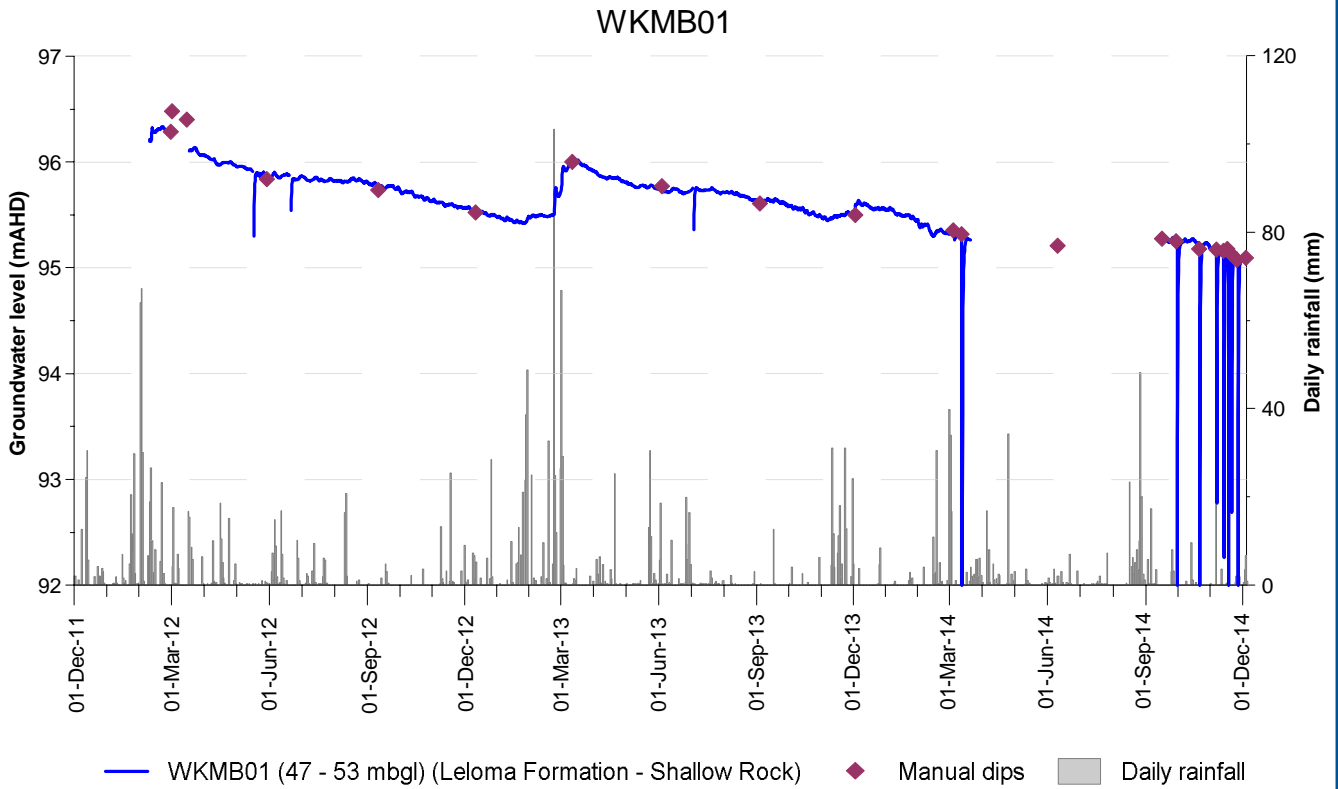


Figure A.15: WKMB01 and WKMB02 monitoring bores

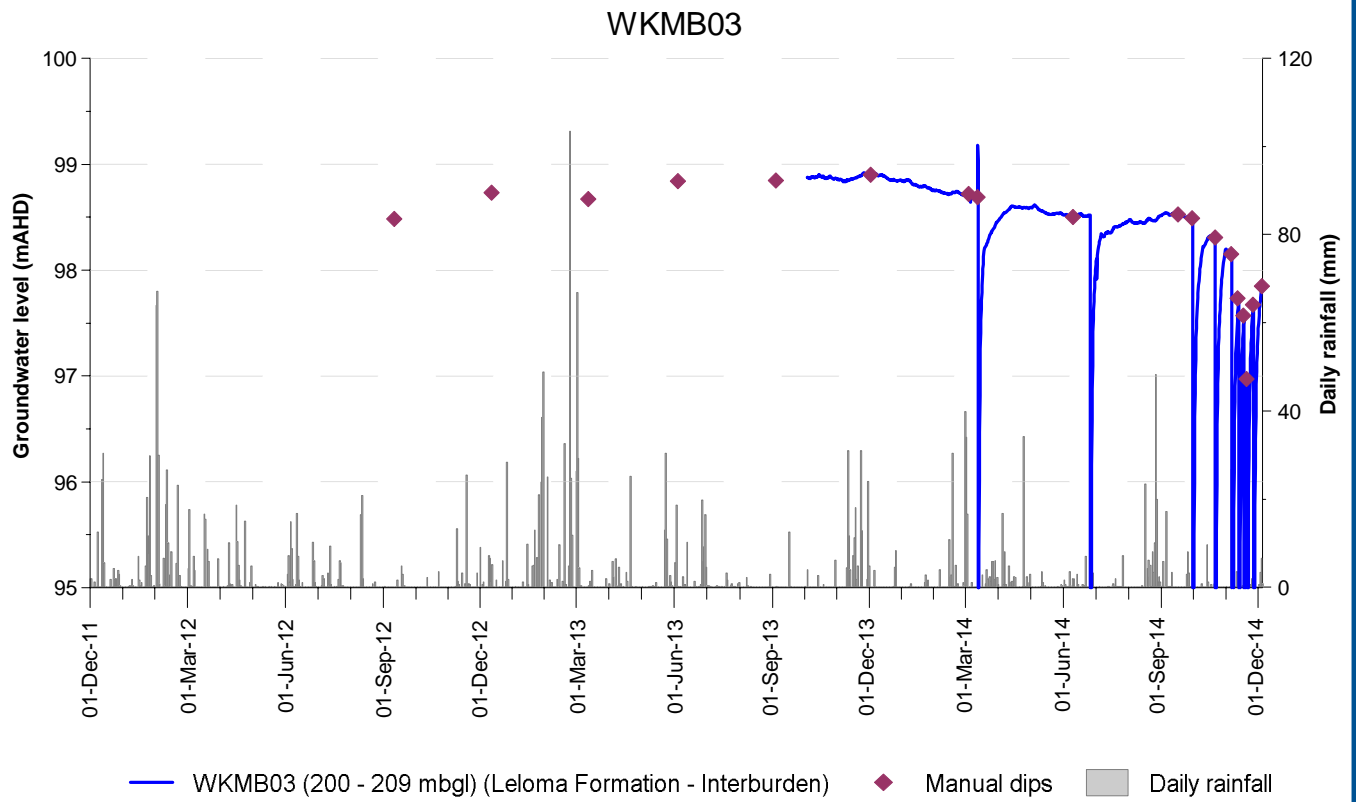


Figure A.16: WKMB03 monitoring bore

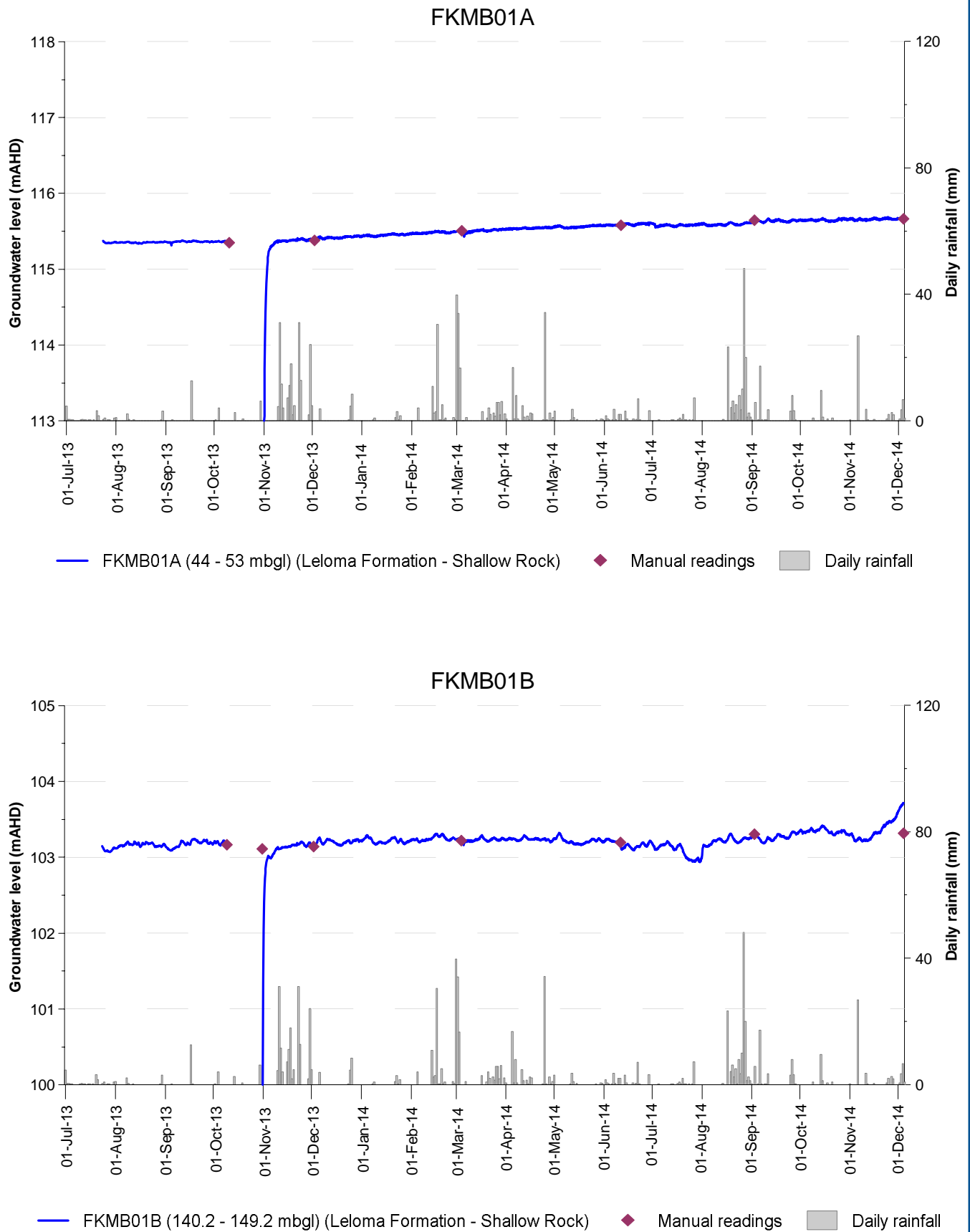


Figure A.17: FKMB01A and FKMB01B monitoring bores

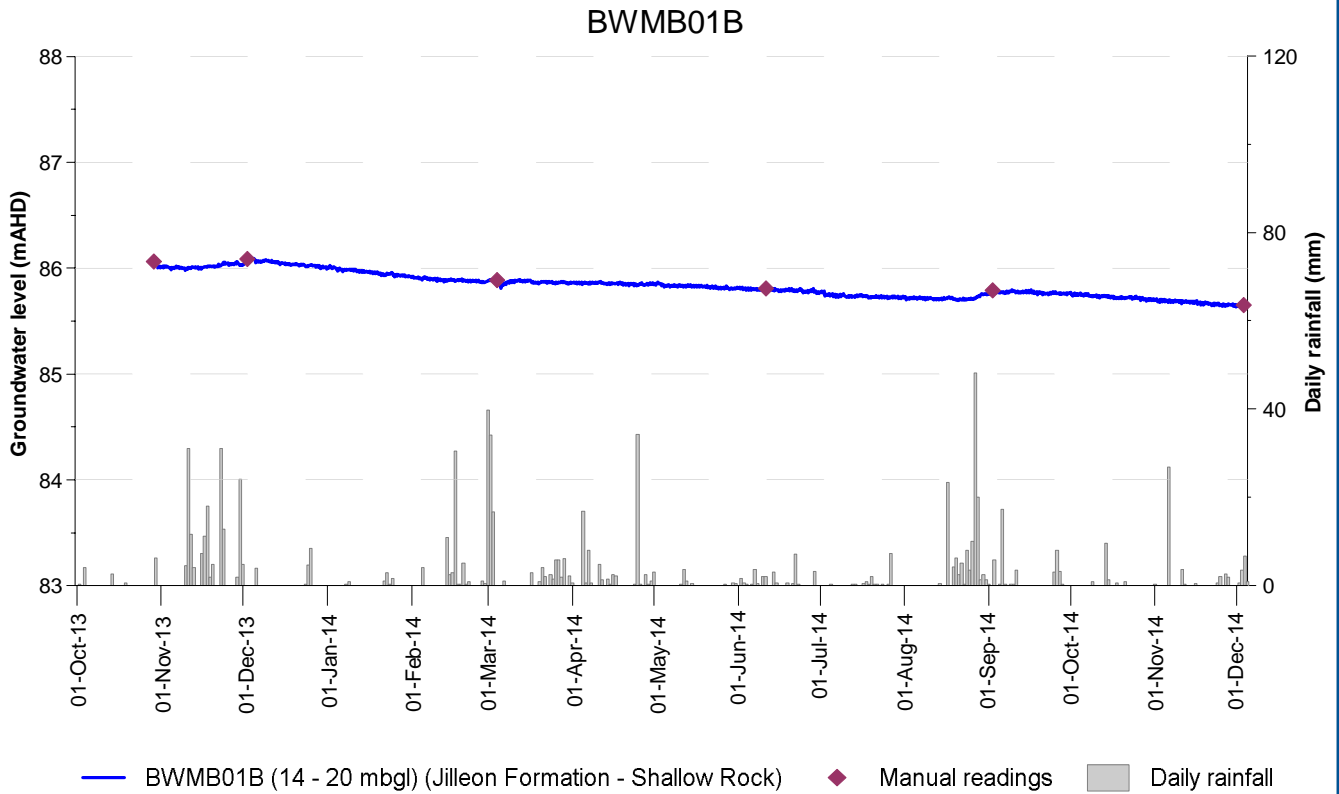
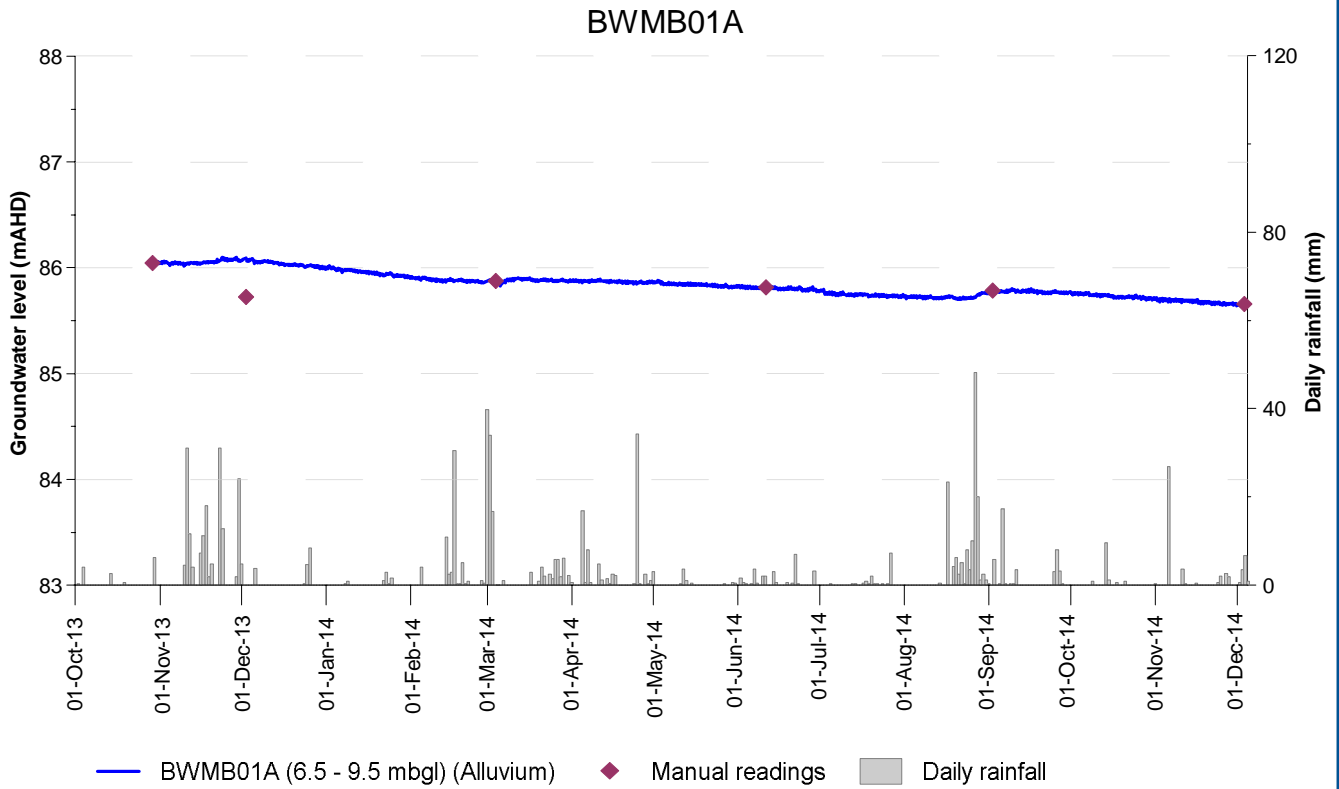


Figure A.18: BWMB01A and BWMB01B monitoring bores

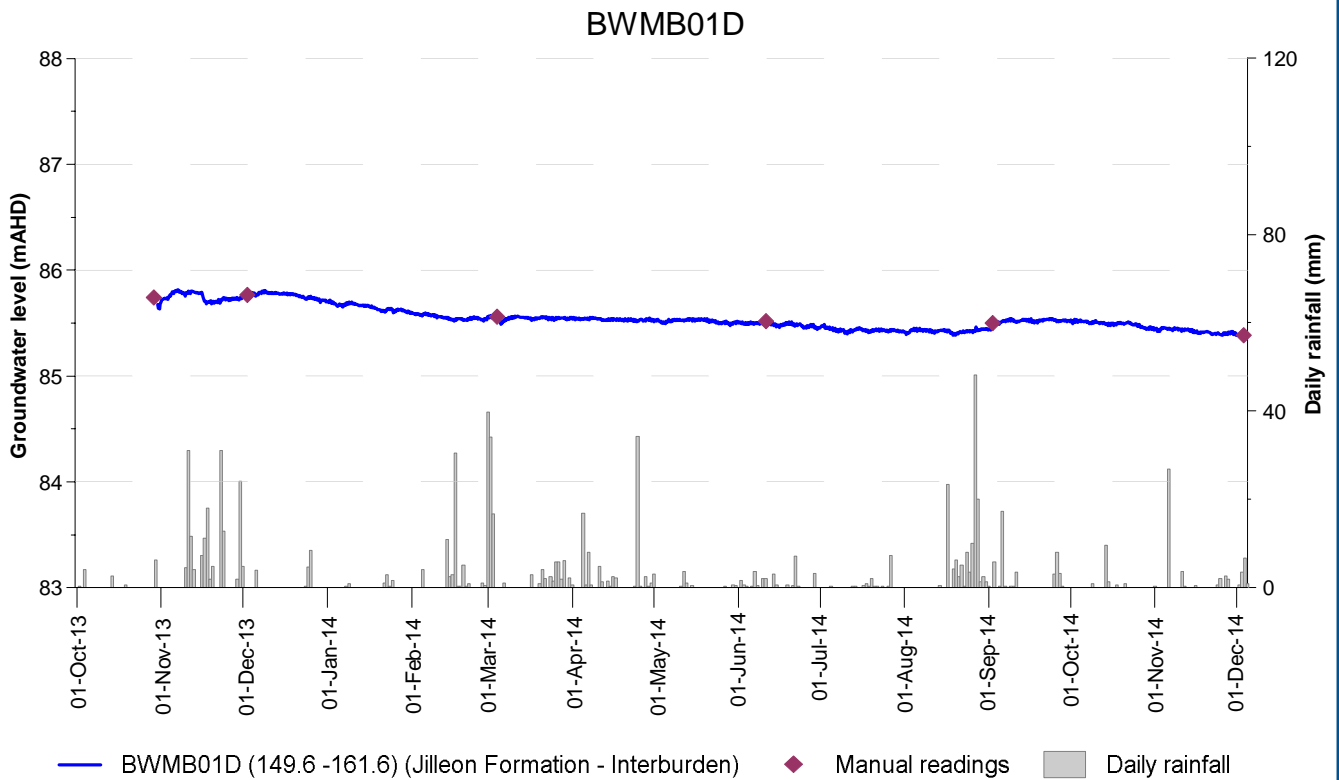
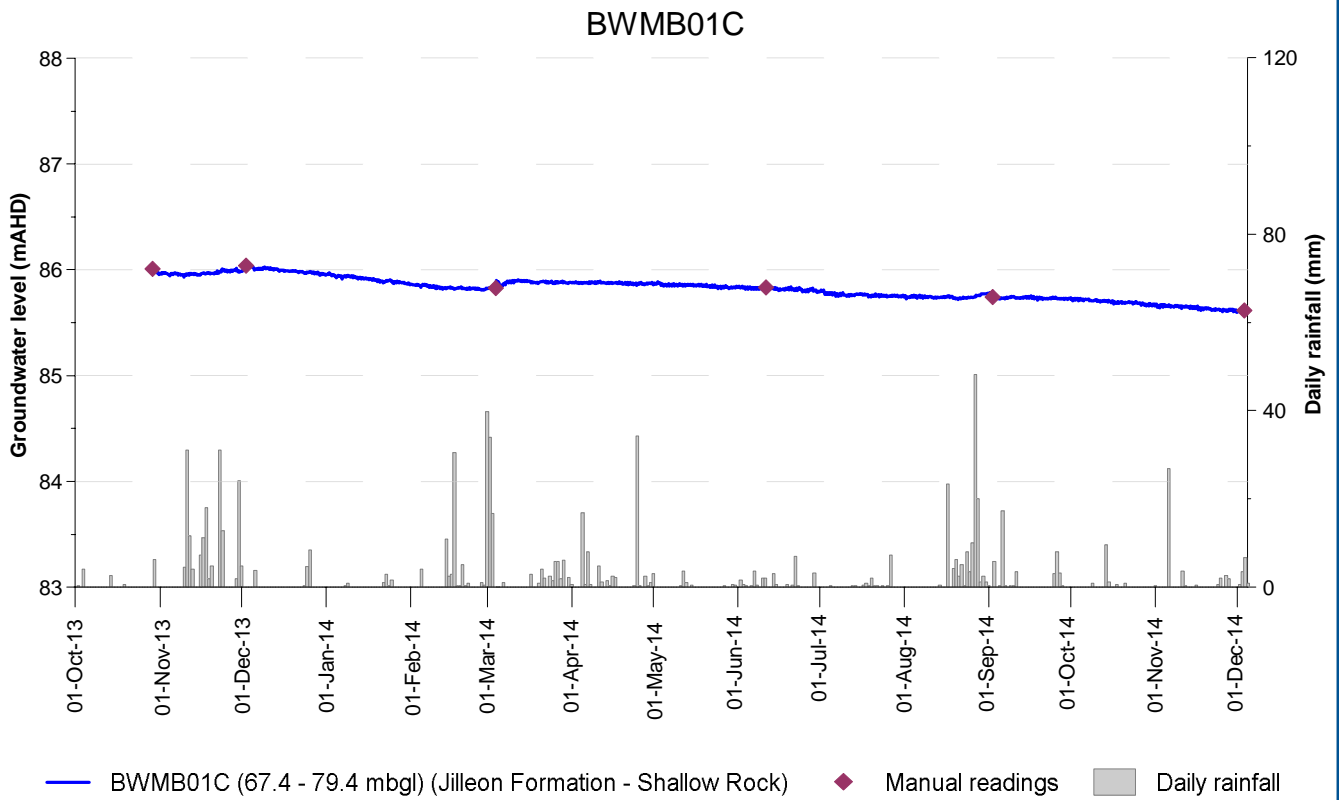


Figure A.19: BWMB01C and BWMB01D monitoring bores



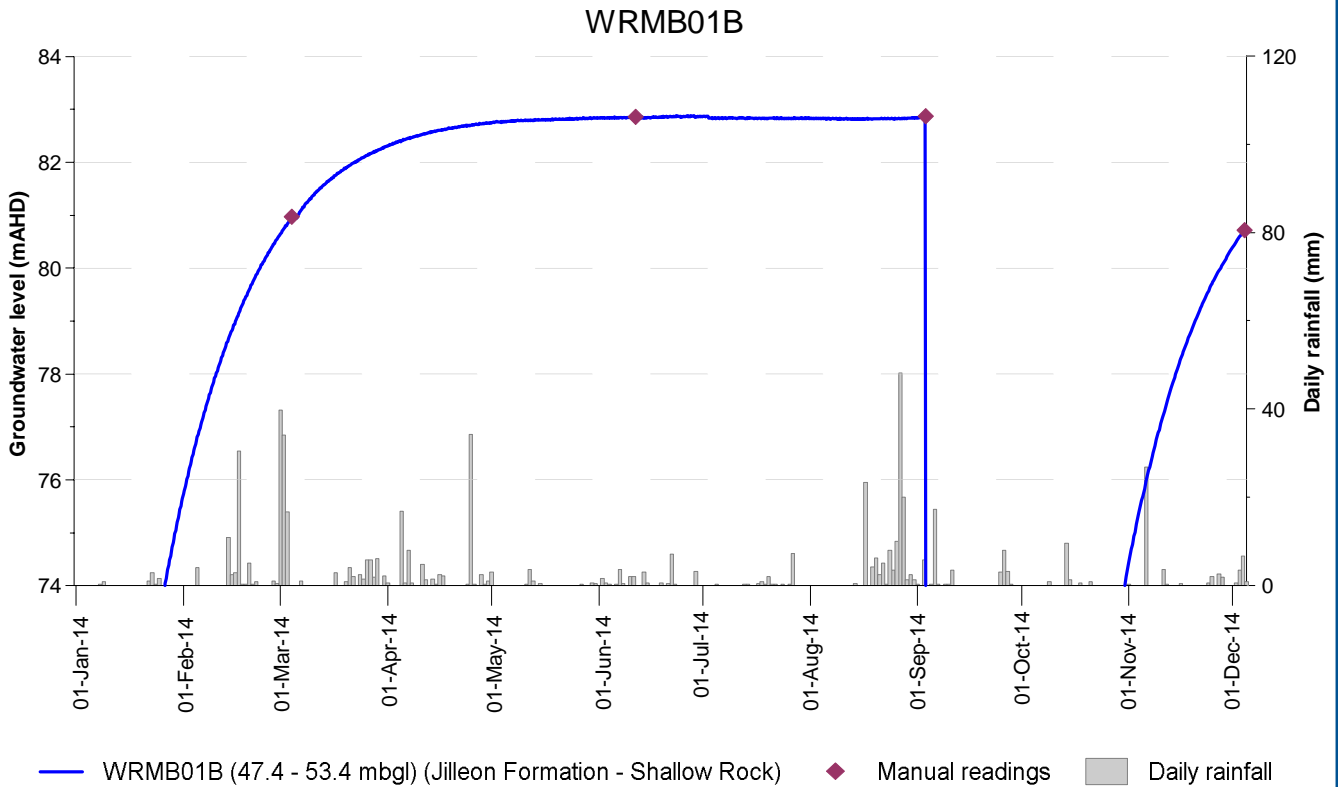
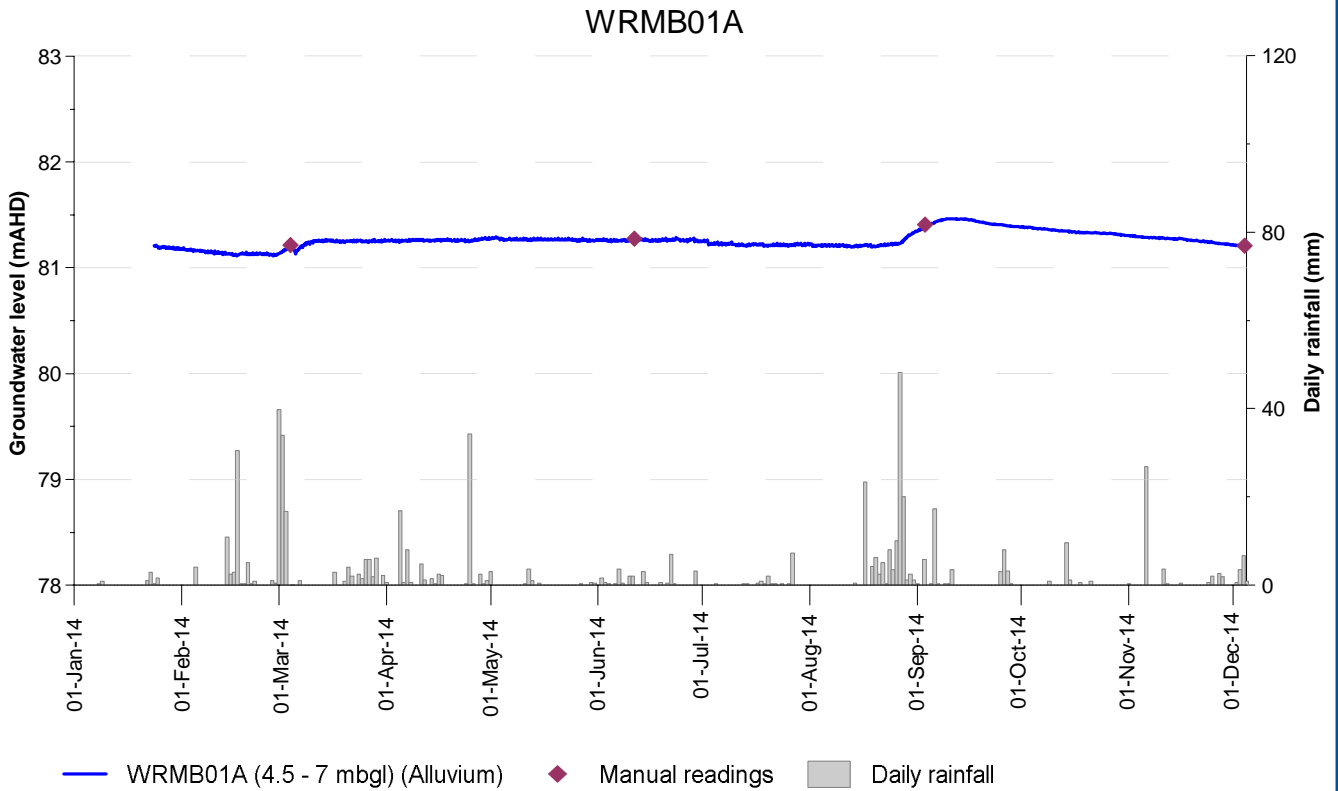


Figure A.20: WRMB01A and WRMB01B monitoring bores

**WRMB01C**

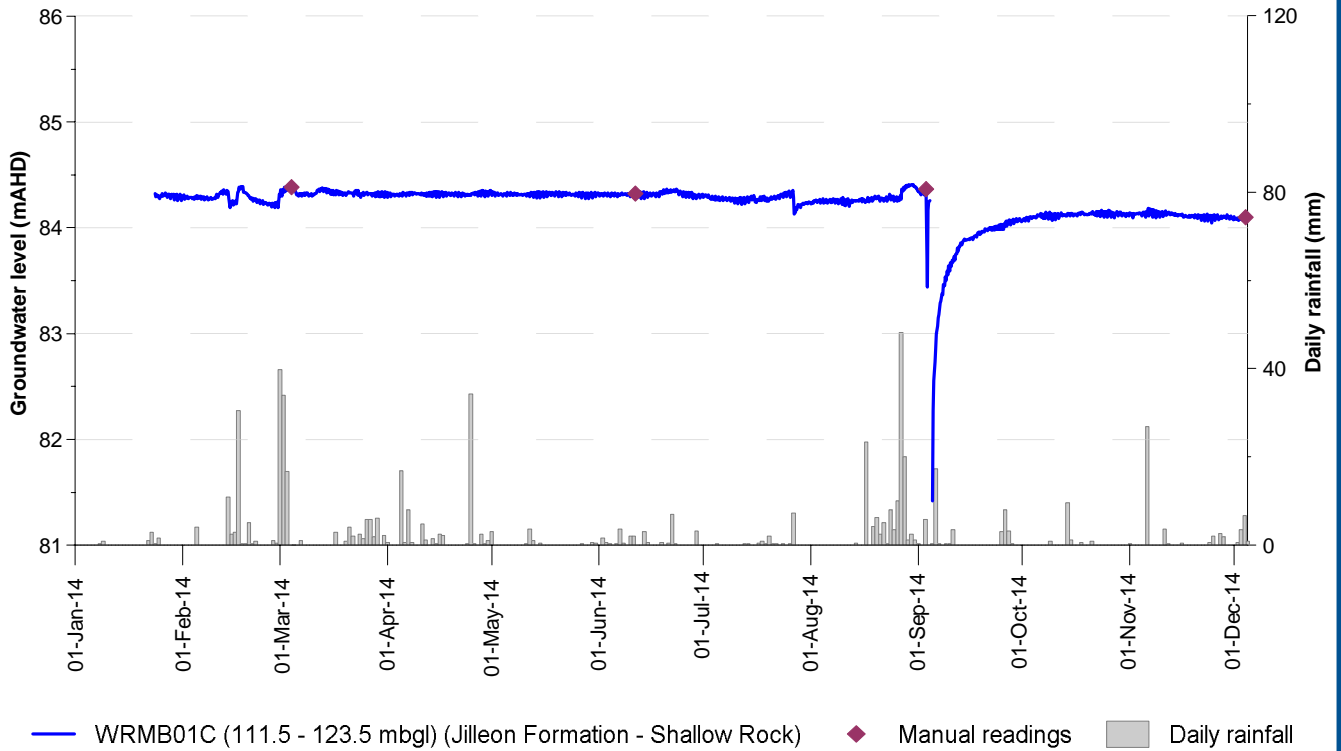


Figure A.21: WRMB01C monitoring bore

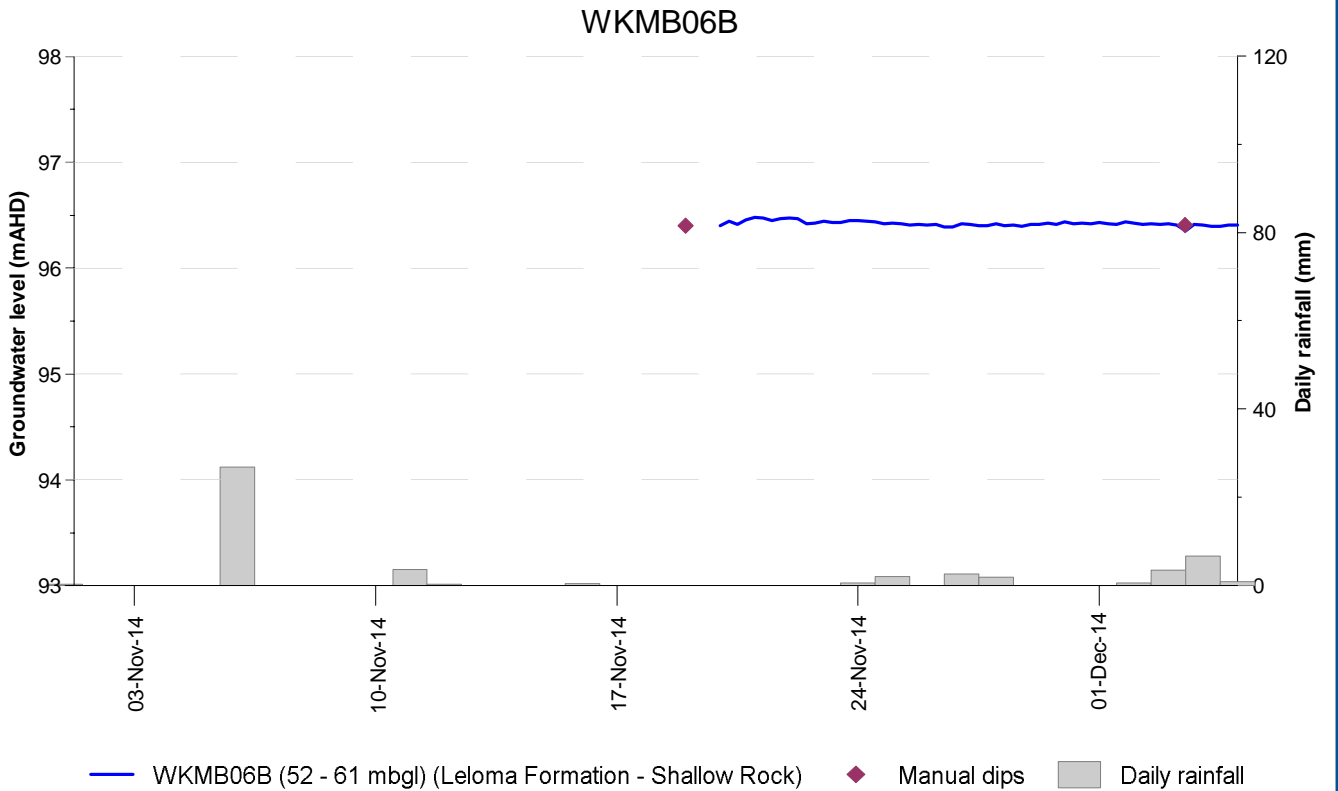
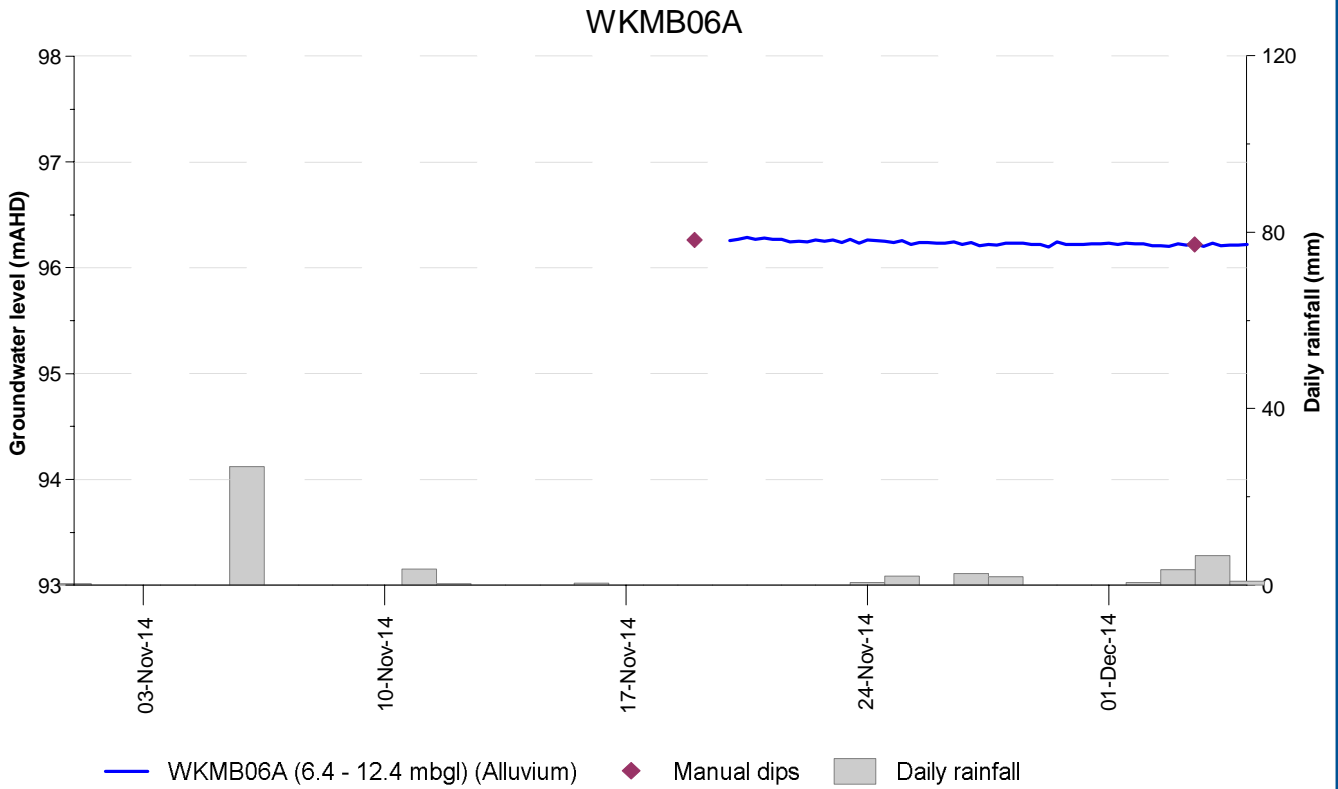


Figure A.22: WKMB06A and WKMB06B monitoring bores

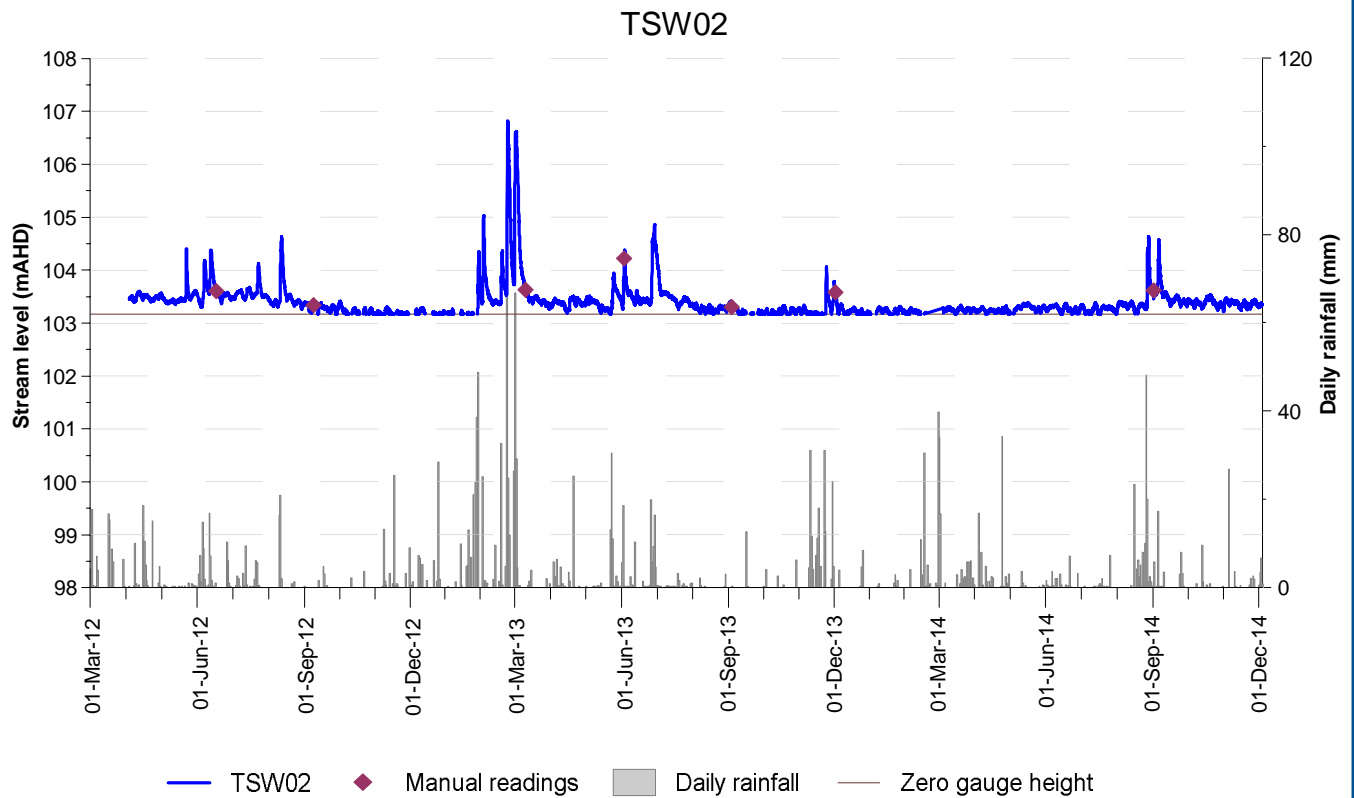
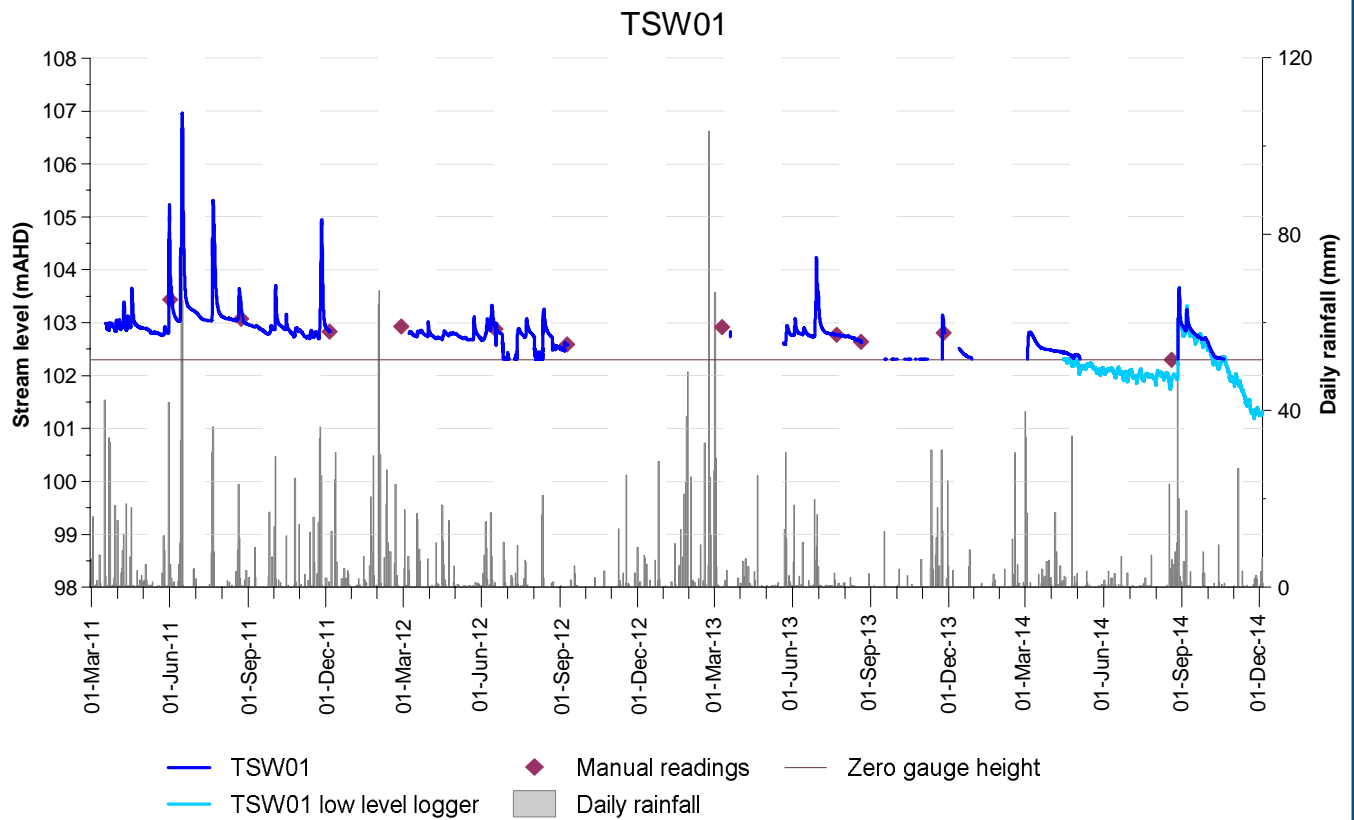


Figure A.23: TSW01 and TSW02 stream levels

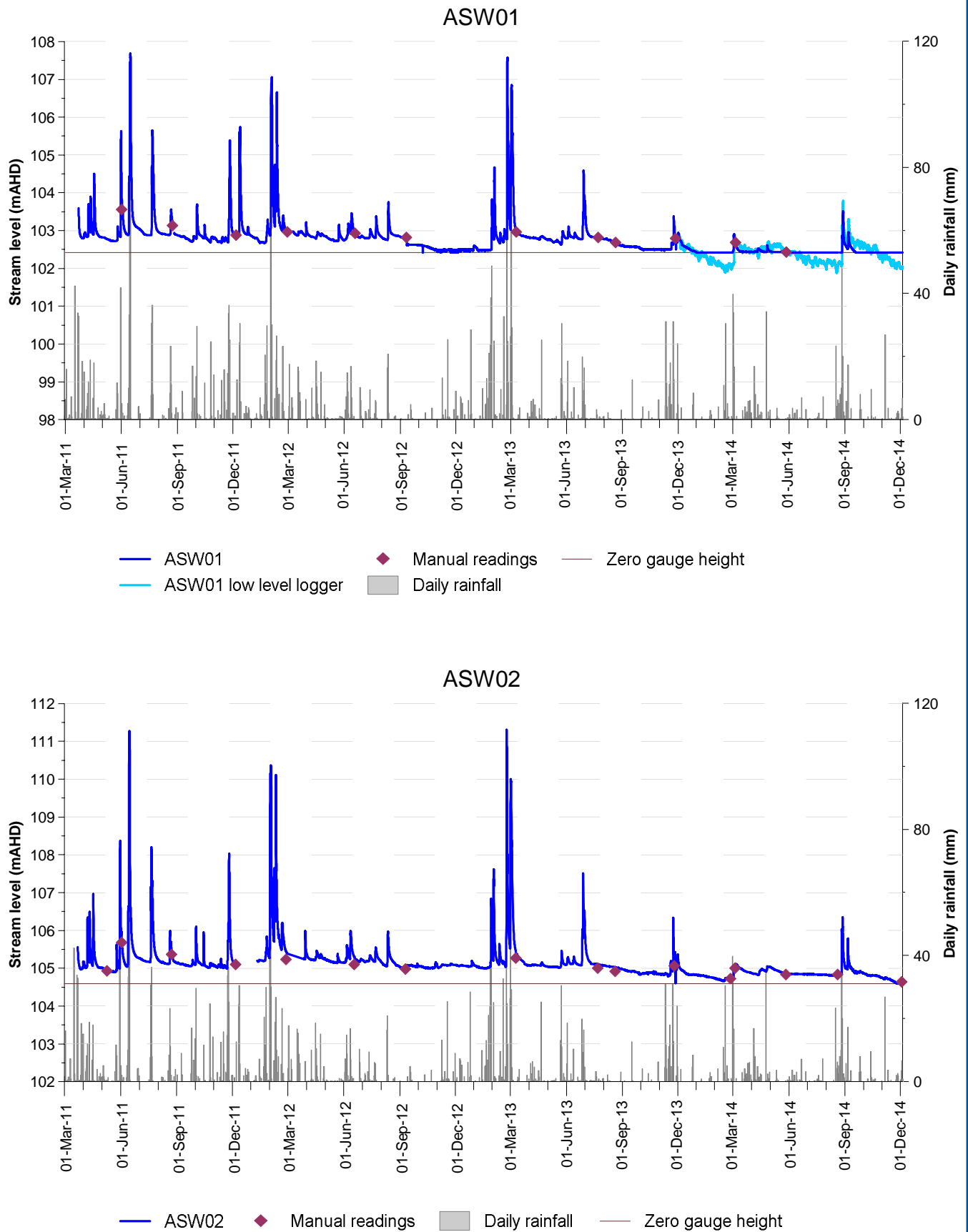
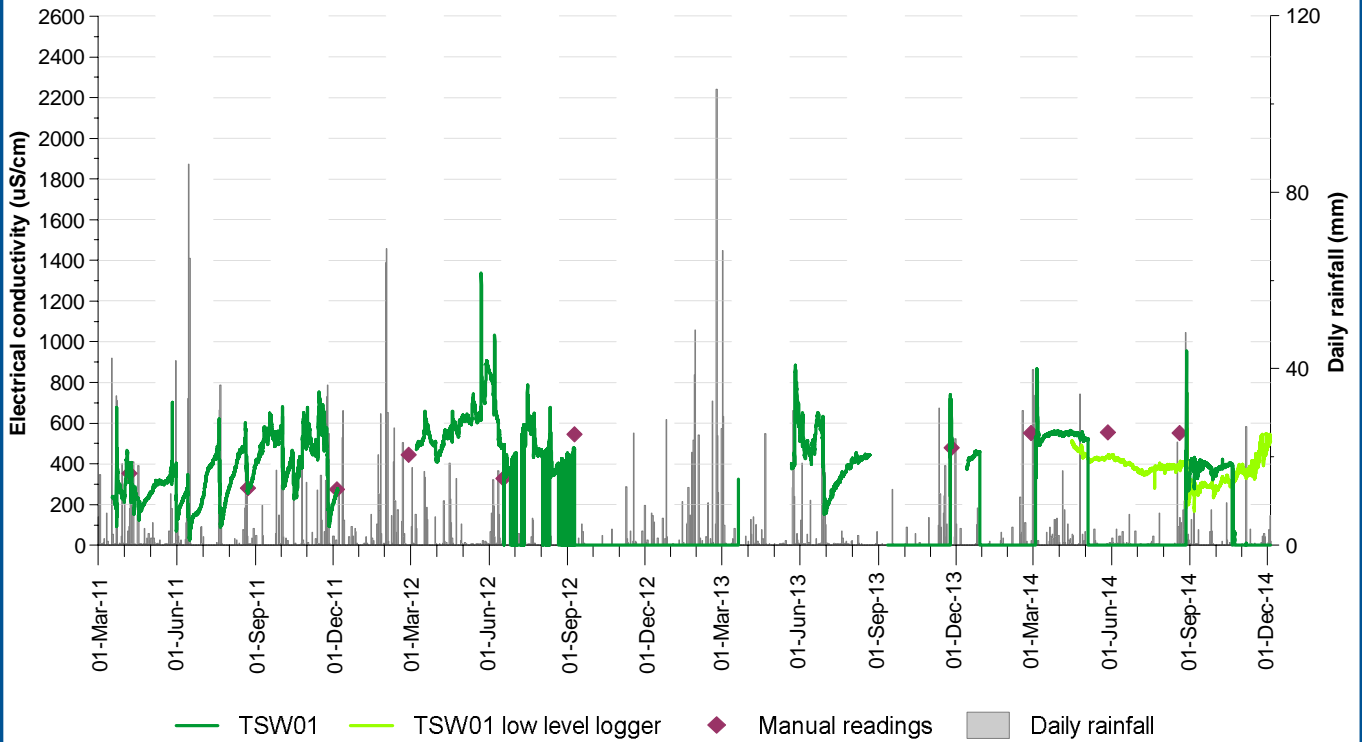


Figure A.24: ASW01 and ASW02 stream levels

**TSW01**



**TSW02**

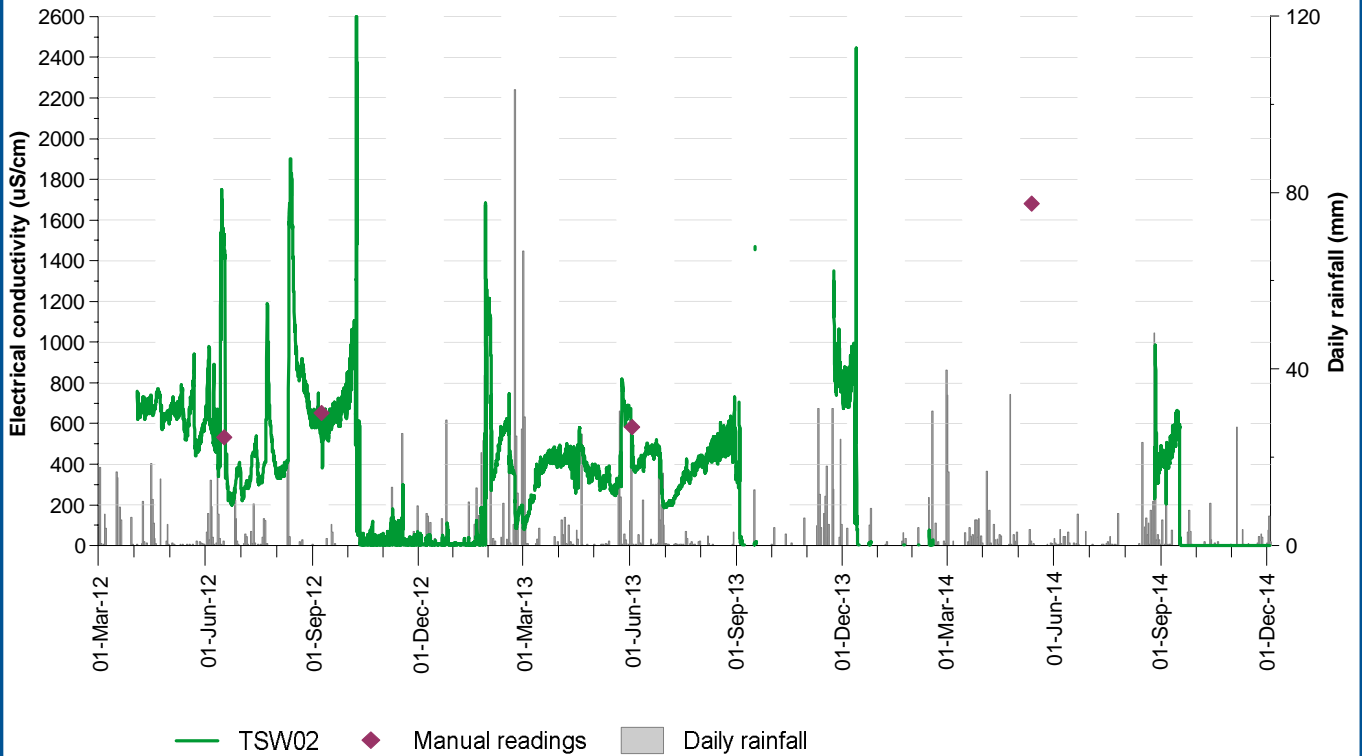


Figure A.25: TSW01 and TSW02 electrical conductivity

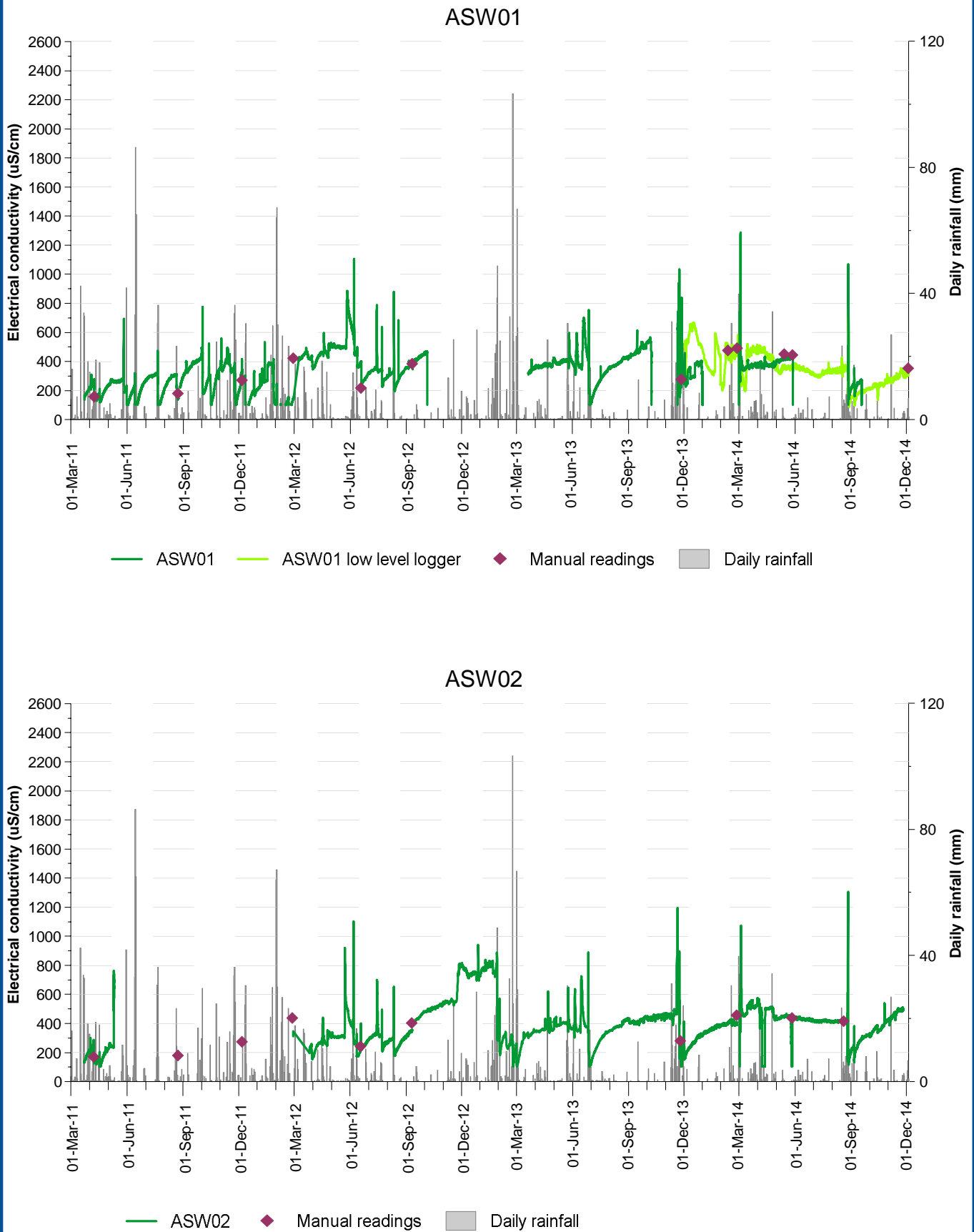


Figure A.26: ASW01 and ASW02 electrical conductivity

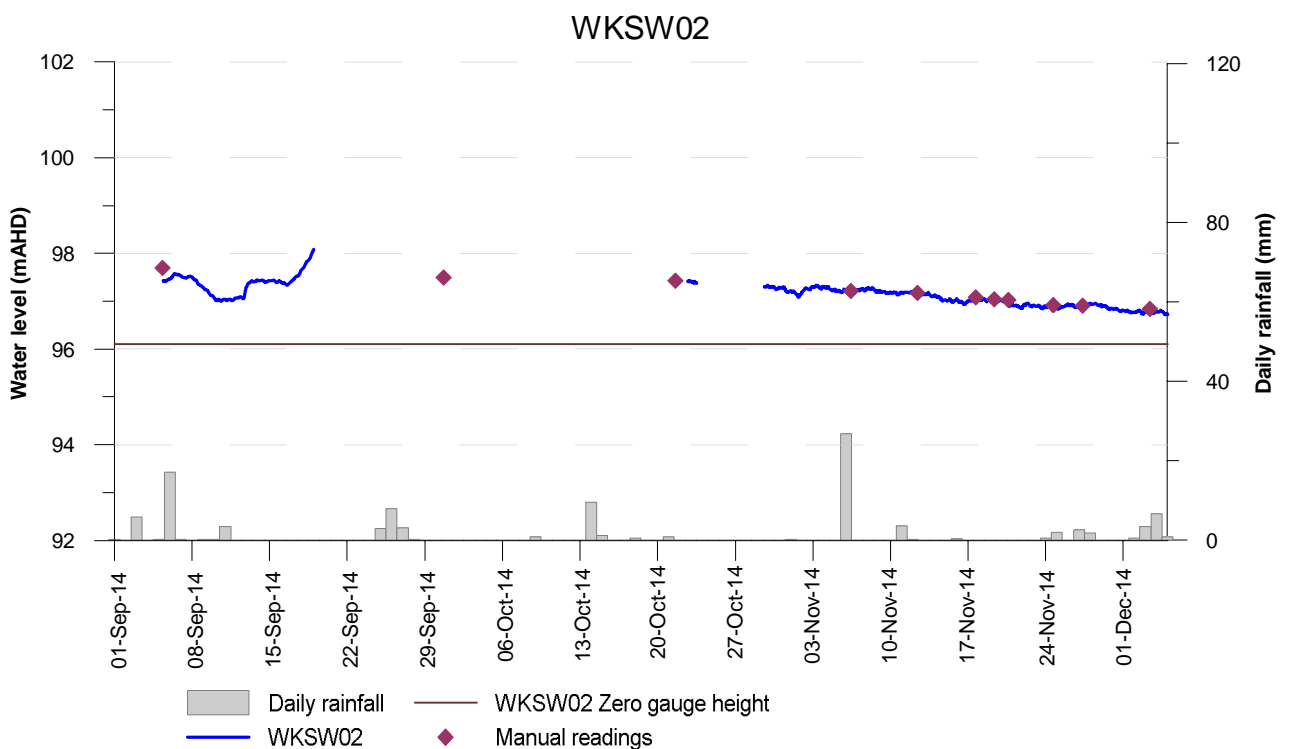
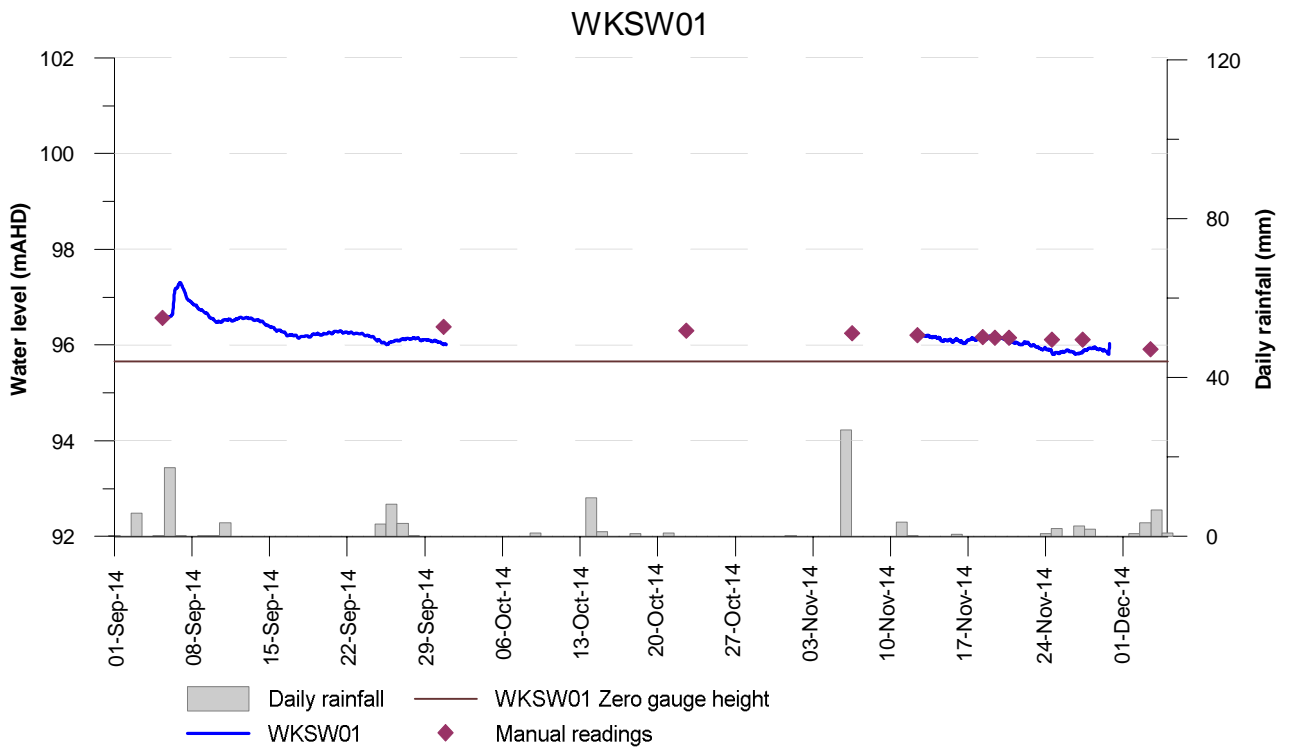


Figure A27: WKSW01 and WKSW02 stream levels



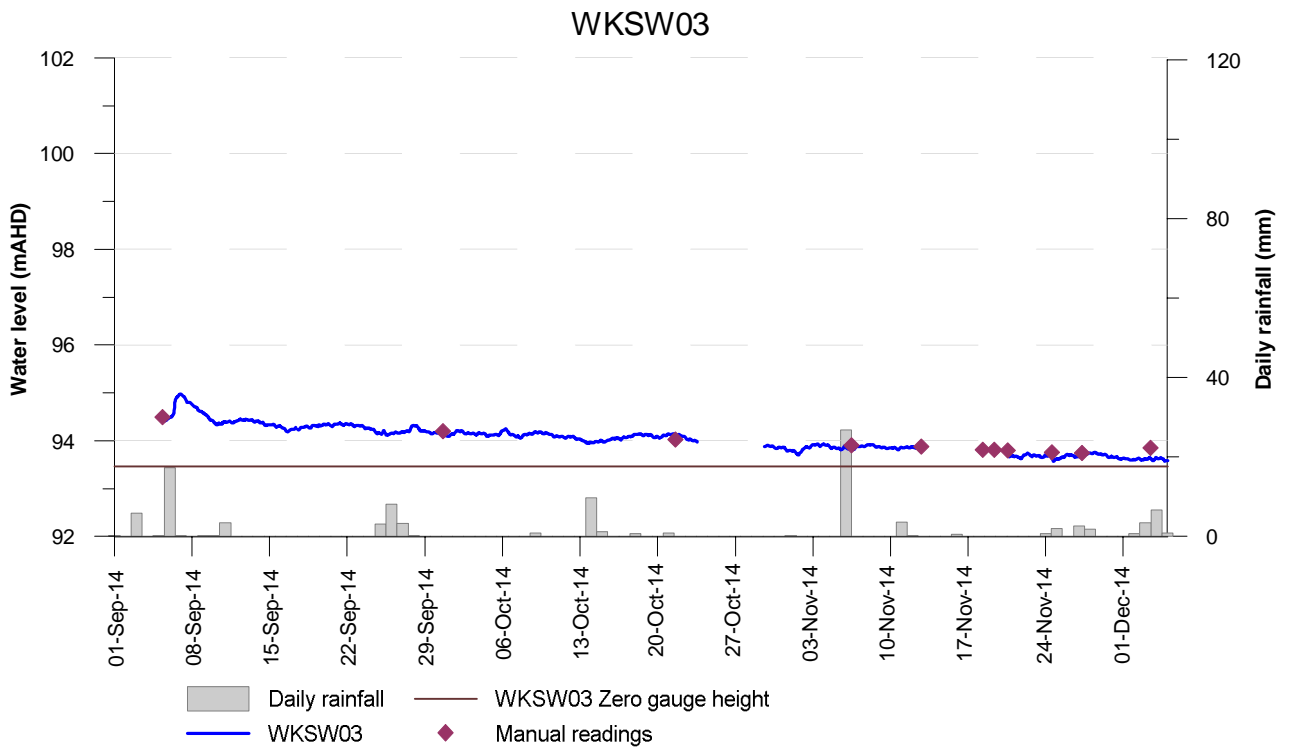


Figure A28: WКСW03 stream levels

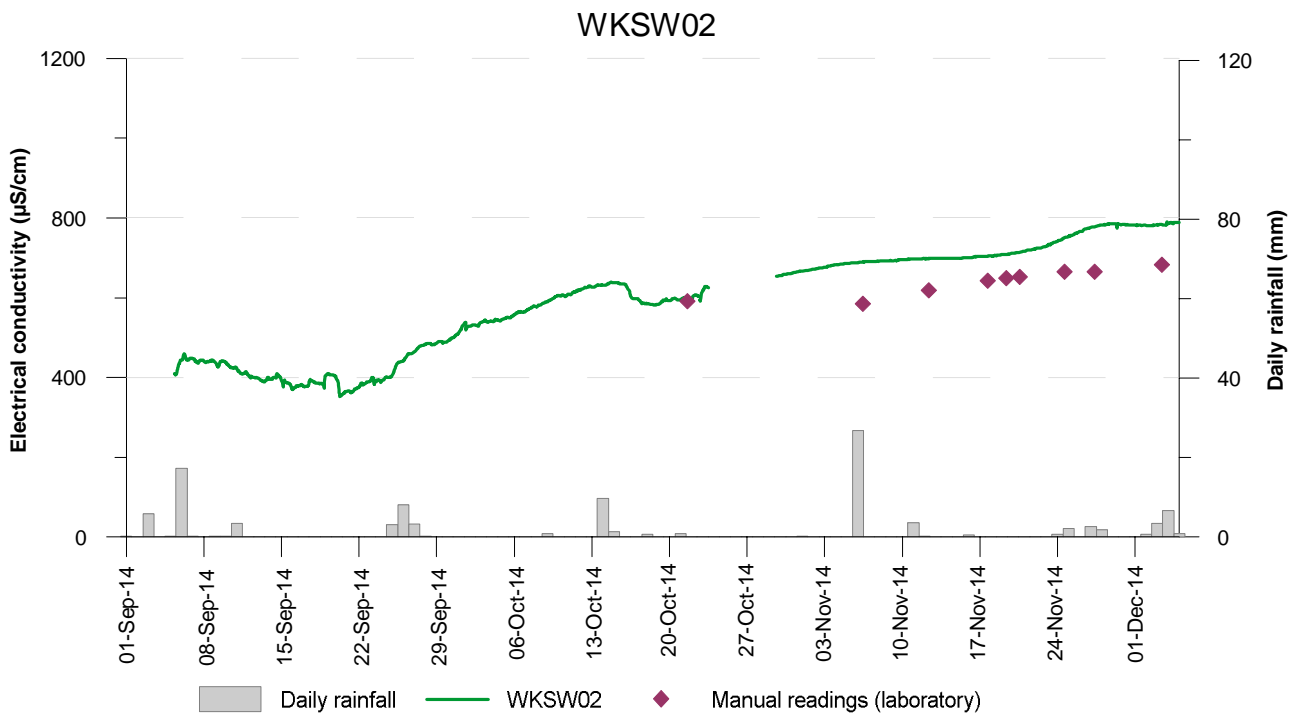
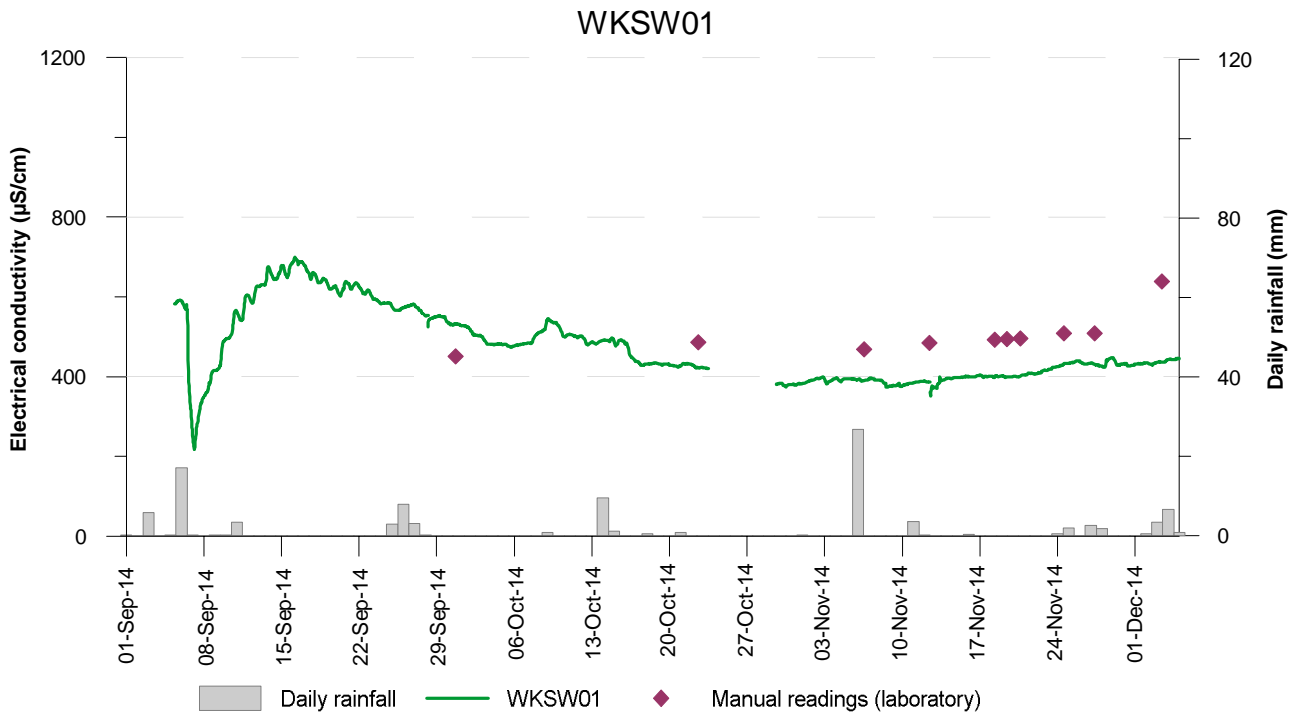


Figure A29: WKS01 and WKS02 electrical conductivity

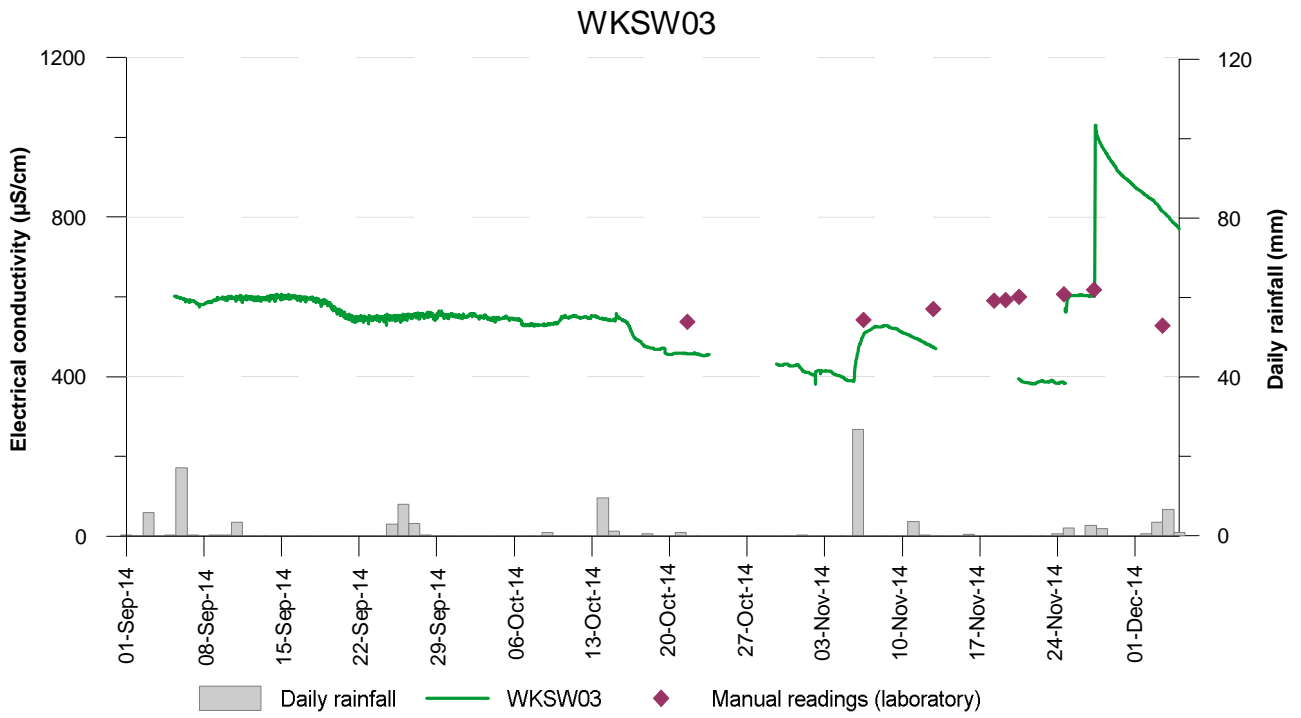


Figure A30: WКСW03 electrical conductivity

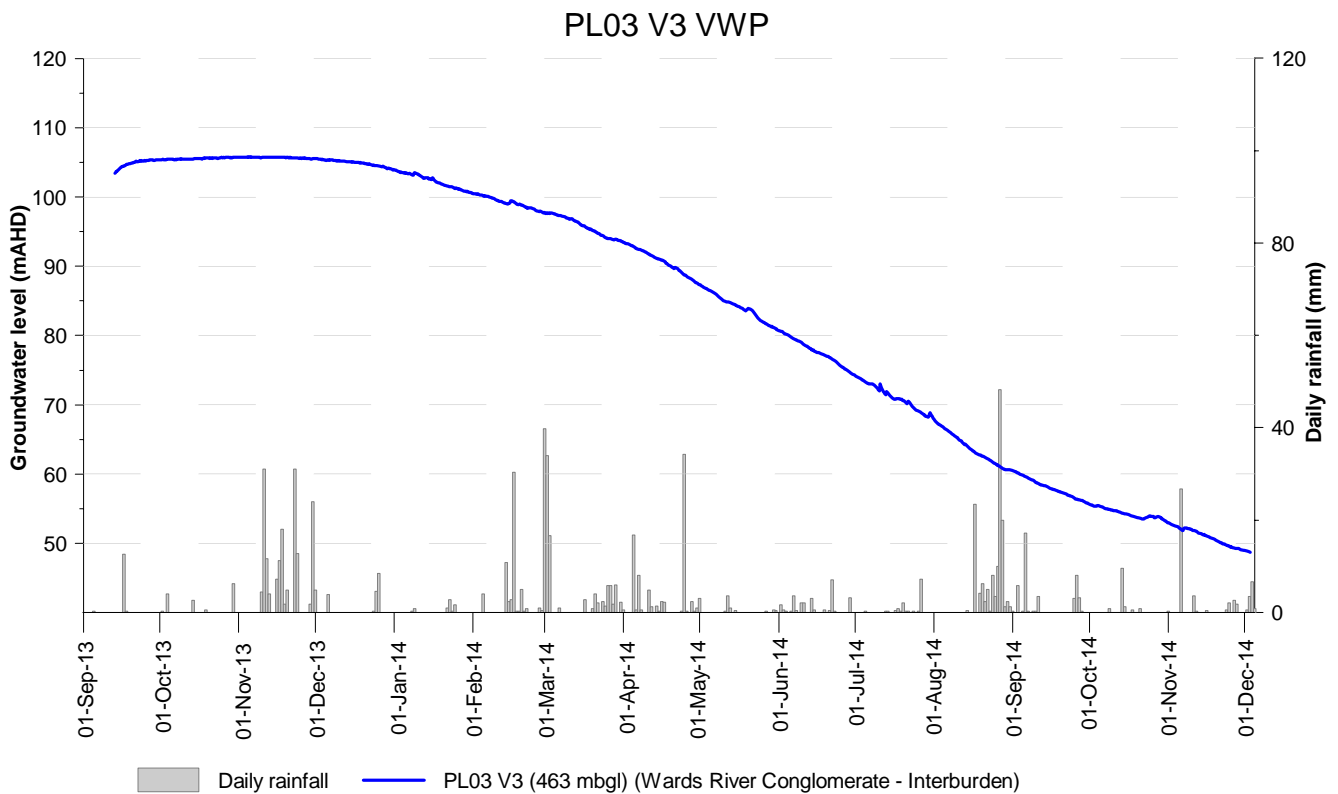
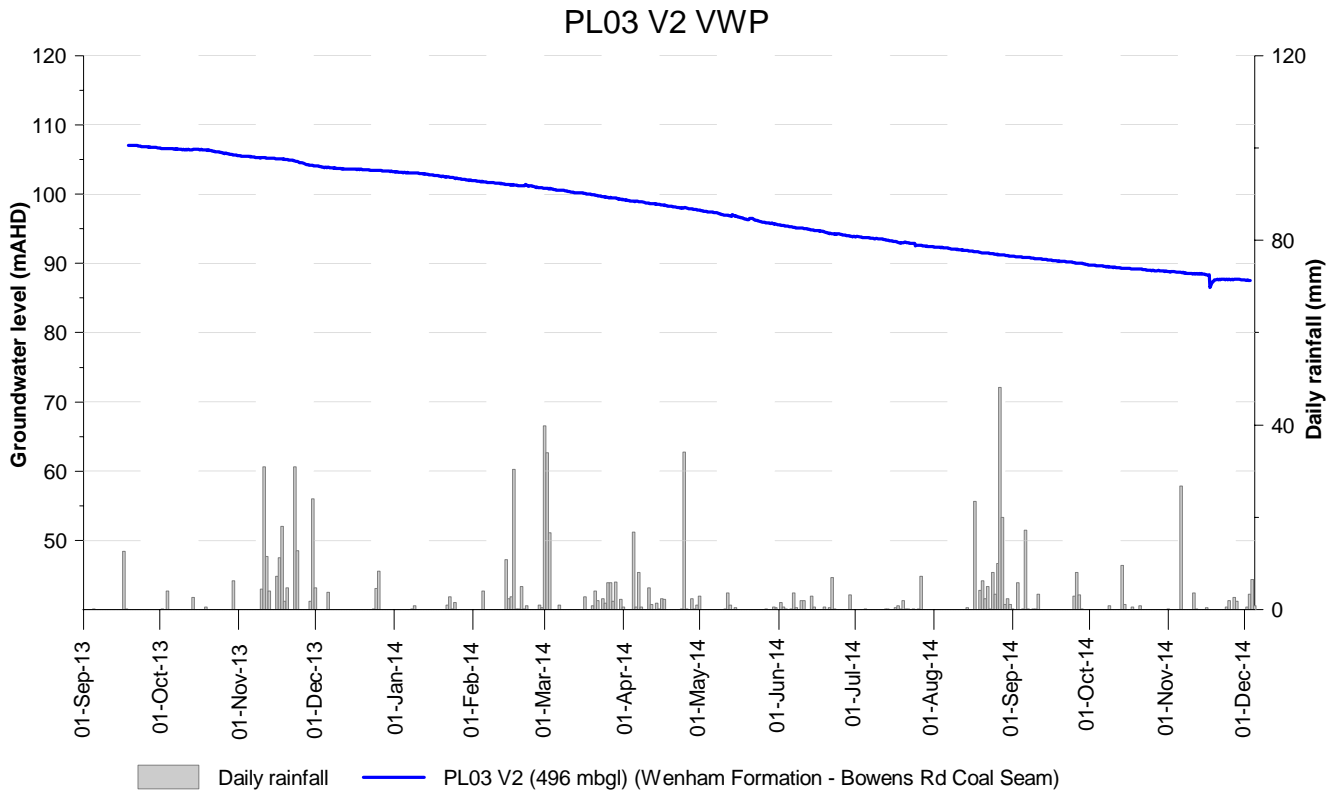


Figure A.31: PL03 VWP

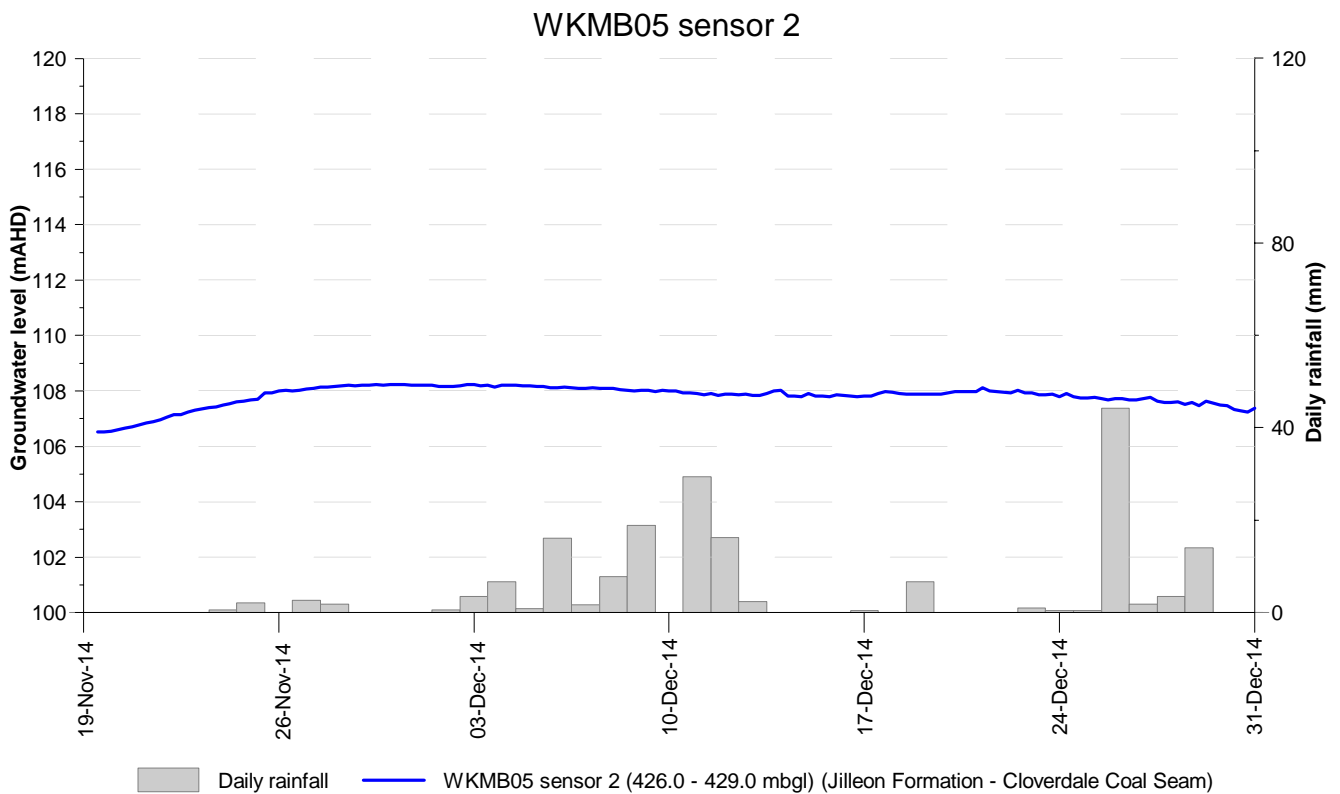
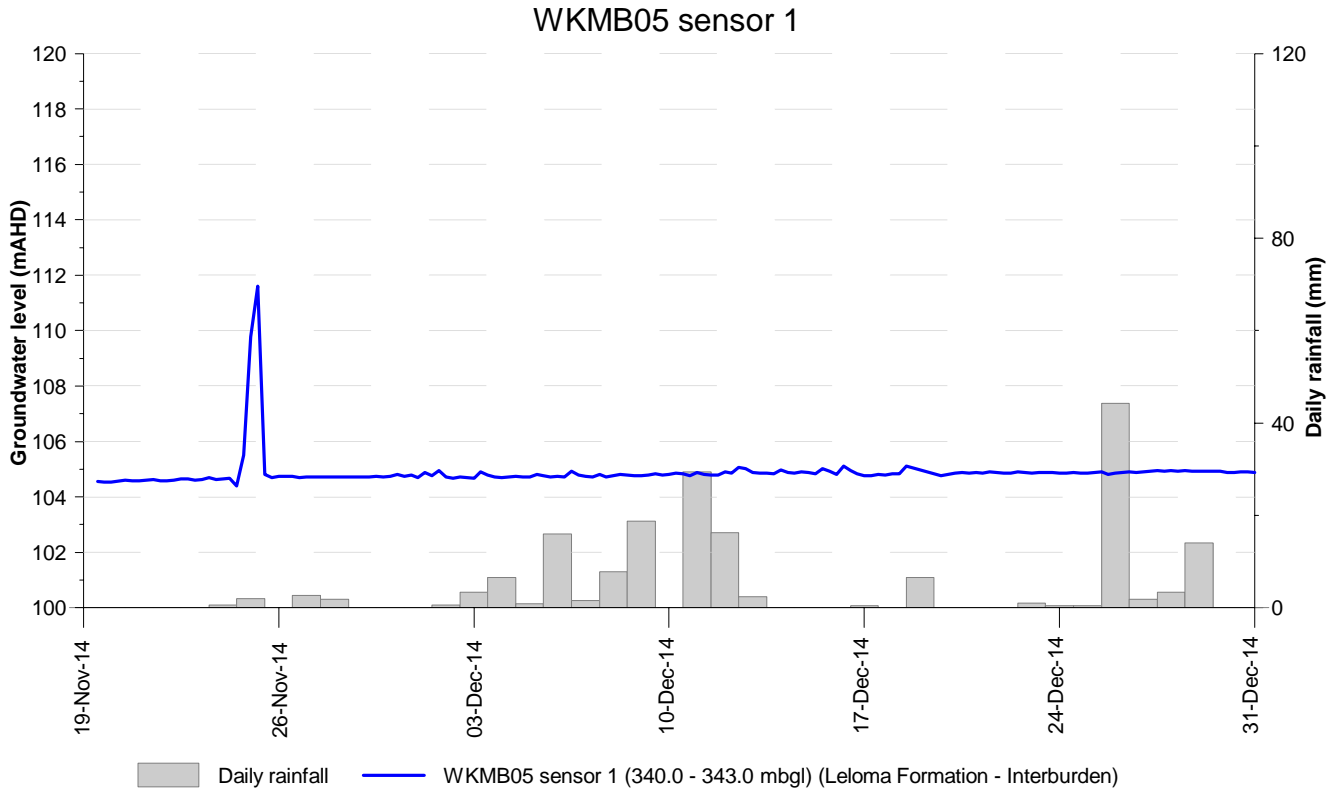


Figure A.32: WKMB05 sensors 1 and 2

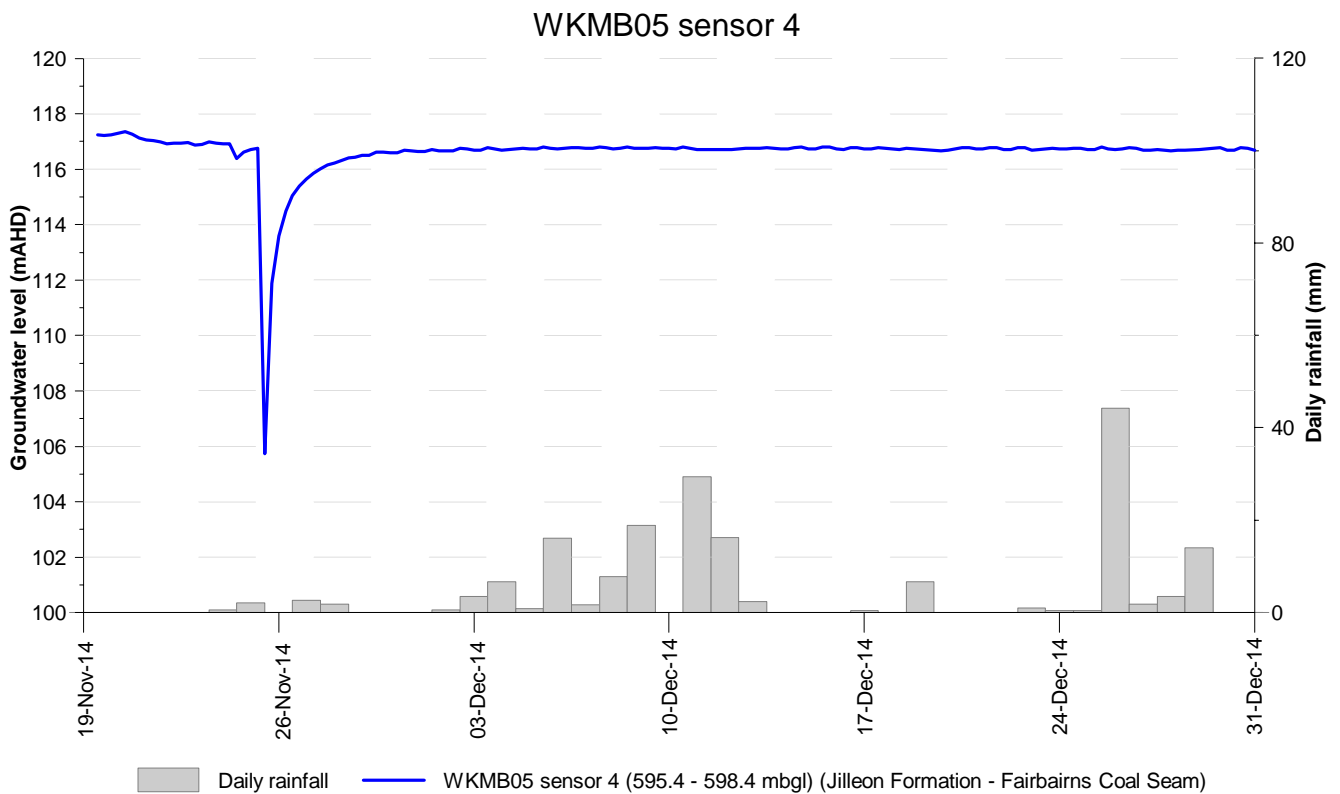
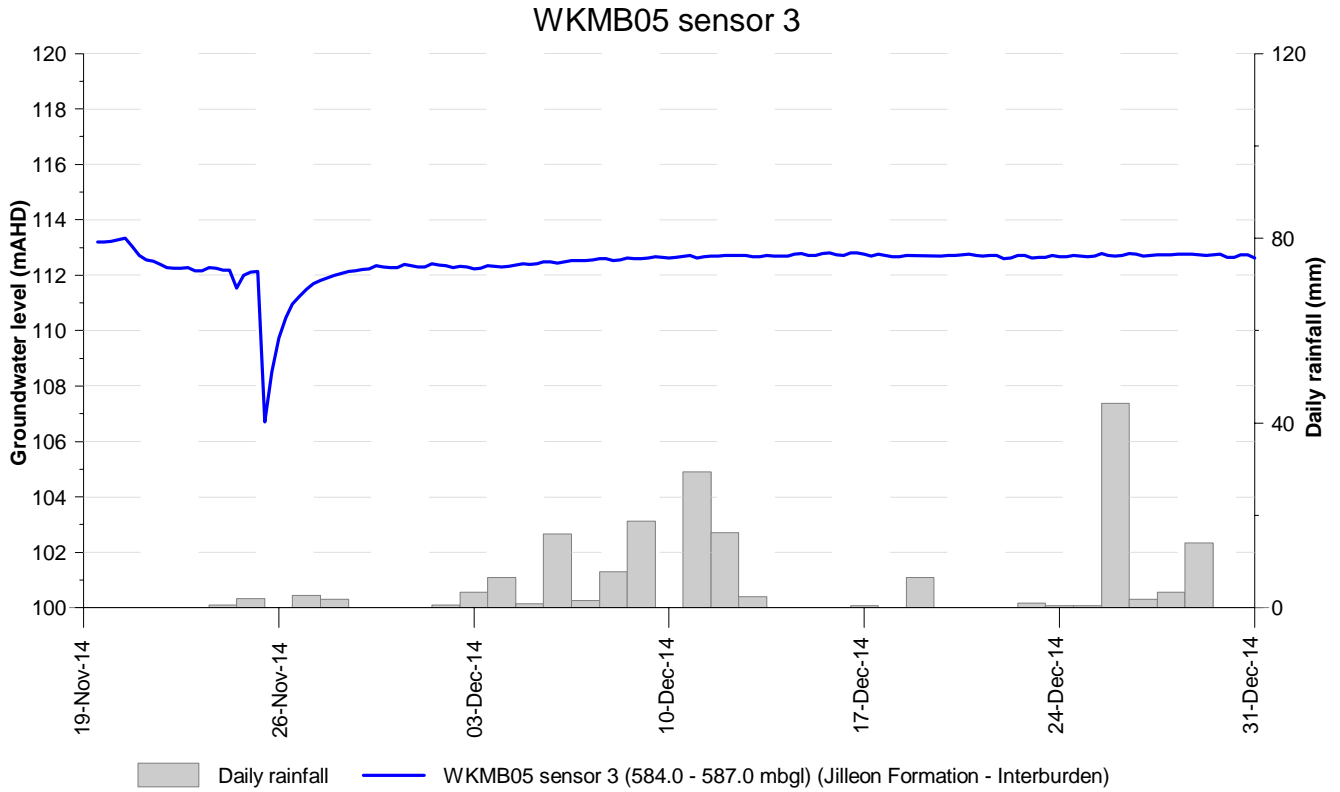


Figure A.33: WKMB05 sensors 3 and 4

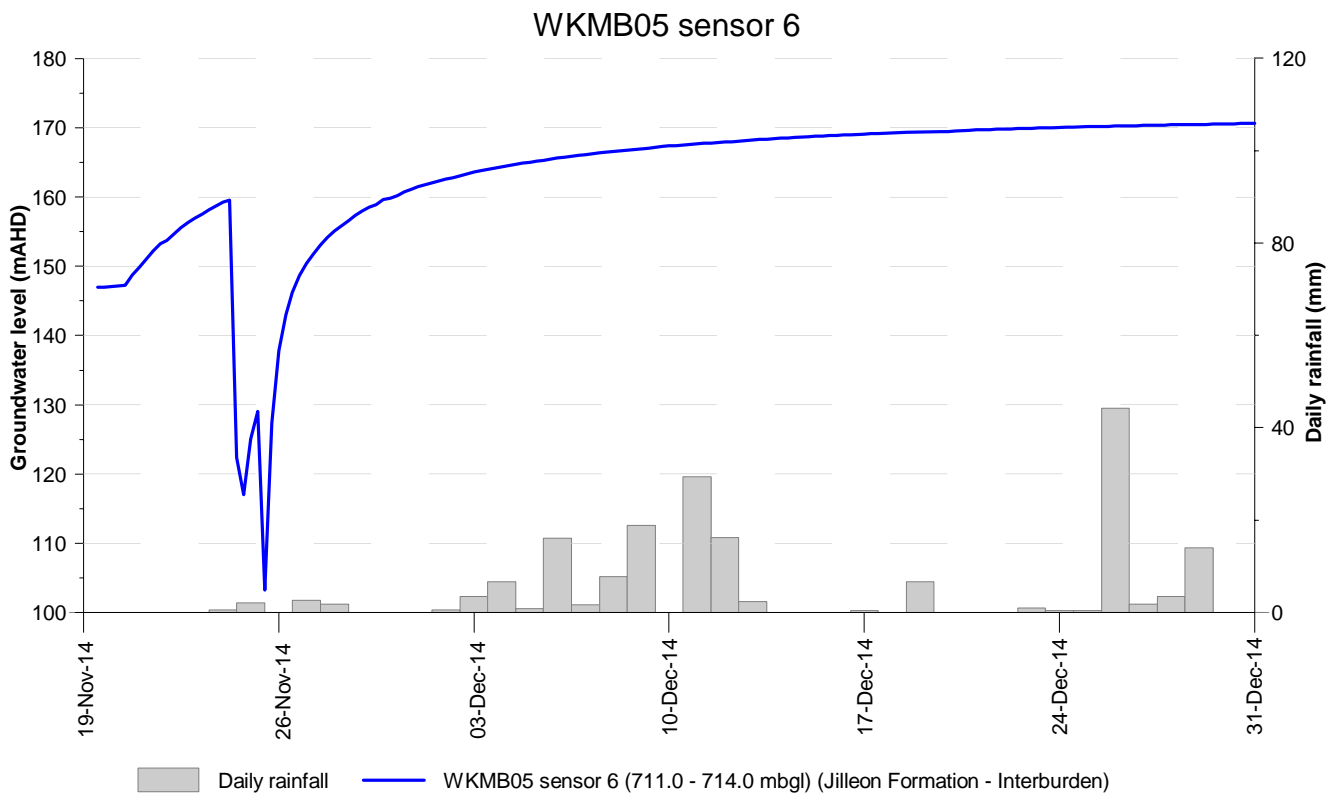
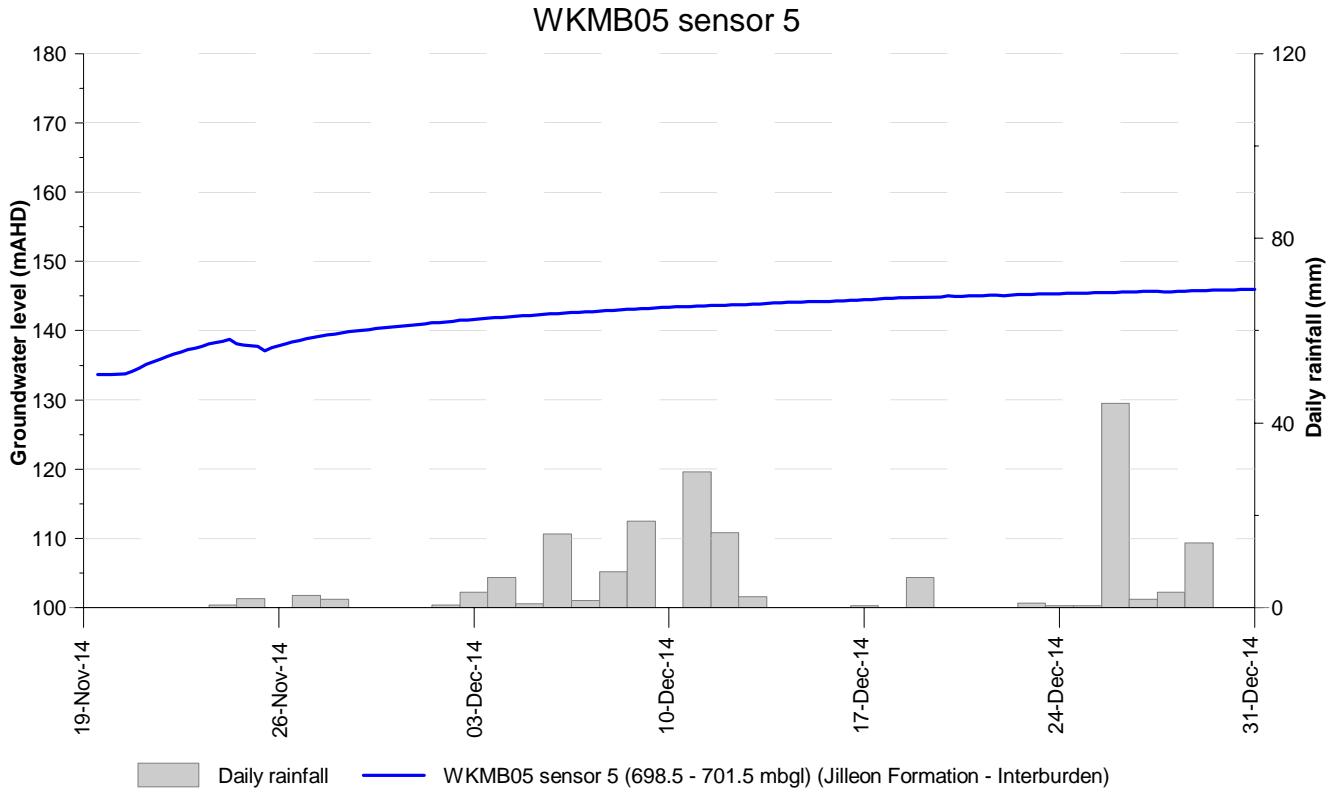


Figure A.34: WKMB05 sensors 5 and 6

Table 1 - Shallow gas monitoring

TGMB01			
Date/Time	Dip (mBGL)	GW level (mAHD)	Methane (% LEL)
3/12/2013 9:30	not dipped	n/a	0
11/03/2014 15:05	DRY	DRY	0
10/06/2014 14:20	DRY	DRY	0
4/09/2014 10:50	DRY	DRY	0
4/12/2014 13:30	DRY	DRY	0

	GL (mAHD)	TOC (mAHD)
TGMB01	133.66	134.43
TGMB02	133.83	134.63

TGMB02			
Date/Time	Dip (mBGL)	GW level (mAHD)	Methane (% LEL)
3/12/2013 9:30	not dipped	n/a	0
11/03/2014 15:05	DRY	DRY	0
10/06/2014 14:20	DRY	DRY	0
4/09/2014 10:50	DRY	DRY	0
4/12/2014 13:30	DRY	DRY	0