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Our Reference: 60628825-599

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Monthly report on sulphate concentrations in surface and groundwater at Tara Mines TSF – February 2024

Background

The Tara Mines' Tailing Storage Facility (TSF) monitoring system has been operating since 1996 to collect relevant water quality data at strategic locations in the immediate area. The system aims to act as an advance warning system for any potential pollution incidents to local landowners or water users and to ensure compliance with IEL P0516-04 and the Water Framework Directive (WFD). Sulphate is the main substance associated with contamination from the TSF and is used as the key parameter for evaluating water quality trends. Therefore, emphasis is placed in this report on the observed concentrations of sulphate.

As part of the *Remediation Action Plan for Randalstown Tailings Management Facility at Tara Mines* (AECOM, 2021), compliance points for sulphate were established at OB13, OB20, BR14 and T8 for the protection of the River Blackwater, and at BR14 for the bedrock aquifer, and trigger and intervention values set. The sulphate concentrations presented below are compared with these values.

Summary

The sulphate concentrations in surface and groundwater at the TSF in February 2024 have been reviewed and compared to the previous month's concentrations, to the overall year to date and to trigger/ intervention values, as well as groundwater levels. A series of hydrographs and comparative plots are provided in Appendices A to L. The following bullet points provide a summary:

In February 2024:

- Average sulphate concentrations in the superficial deposits (185mg/l) have decreased from the previous month (206mg/l) and have decreased significantly compared to January 2023 (276mg/l). All sulphate concentrations have remained below the trigger and intervention values.
- Average sulphate concentrations in the bedrock (210mg/l) have decreased marginally from the previous month (228mg/l) and are slightly higher than February 2023 (194mg/l). While all sulphate concentrations have remained below the trigger and intervention values, sulphate concentrations at BR14 (1,335mg/l) remain close to reaching the trigger value (1,600mg/l) but has decreased slightly from the previous month (1,413mg/l).
- Average concentrations in surface water (29mg/l) have slightly decreased compared to the previous month (33mg/l) and are lower than in February 2023 (46mg/l). All sulphate concentrations have remained below the trigger and intervention values.

- The monthly rainfall total of 82mm, was 10mm more than in the previous month (72mm) and higher than the recorded rainfall in February 2023 of 17mm.
- Groundwater levels in the superficial deposits have generally remained the same, with some locations showing a slight increase (OB02, OB05, OB11, OB20, OB22, OB24, OB26) and a few showing a decrease (OB03, OB13, OB27) compared to the previous month. Groundwater levels in the bedrock have generally remained the same, with some locations showing a slight increase (BR04, BR05, BR16, BR23, BR24, BR25) and a few showing a decrease (BR02, BR03, BR06) compared to the previous month.
- The groundwater level contours display a similar pattern compared to the previous months, with groundwater flow directions remaining towards the southwest and the River Blackwater, with the exception of groundwater levels at OB13/ BR6 which showed an increase since the two months.
- The modelled groundwater sulphate contours display a similar spatial pattern to the previous month, and a reduced footprint of concentrations exceeding the Threshold Value (187.5mg/l) compared to February 2023. The modelled contours suggest that there is a temporal fluctuating pattern, which is most likely related to rainfall and abstraction for mine dewatering.

Action required:

- Continued monthly monitoring and monthly reporting.
- No further intervention actions required.

Yours sincerely,

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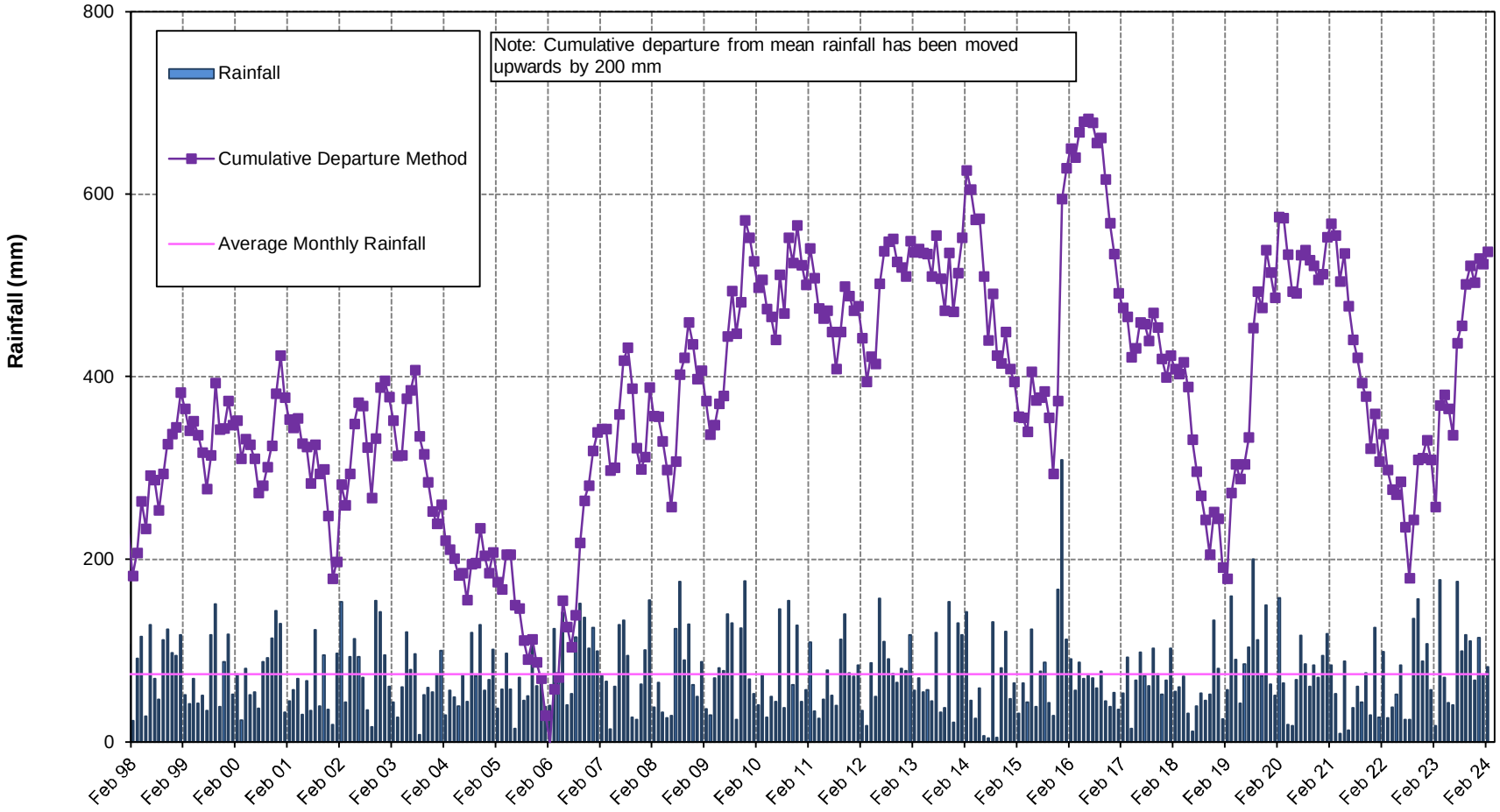
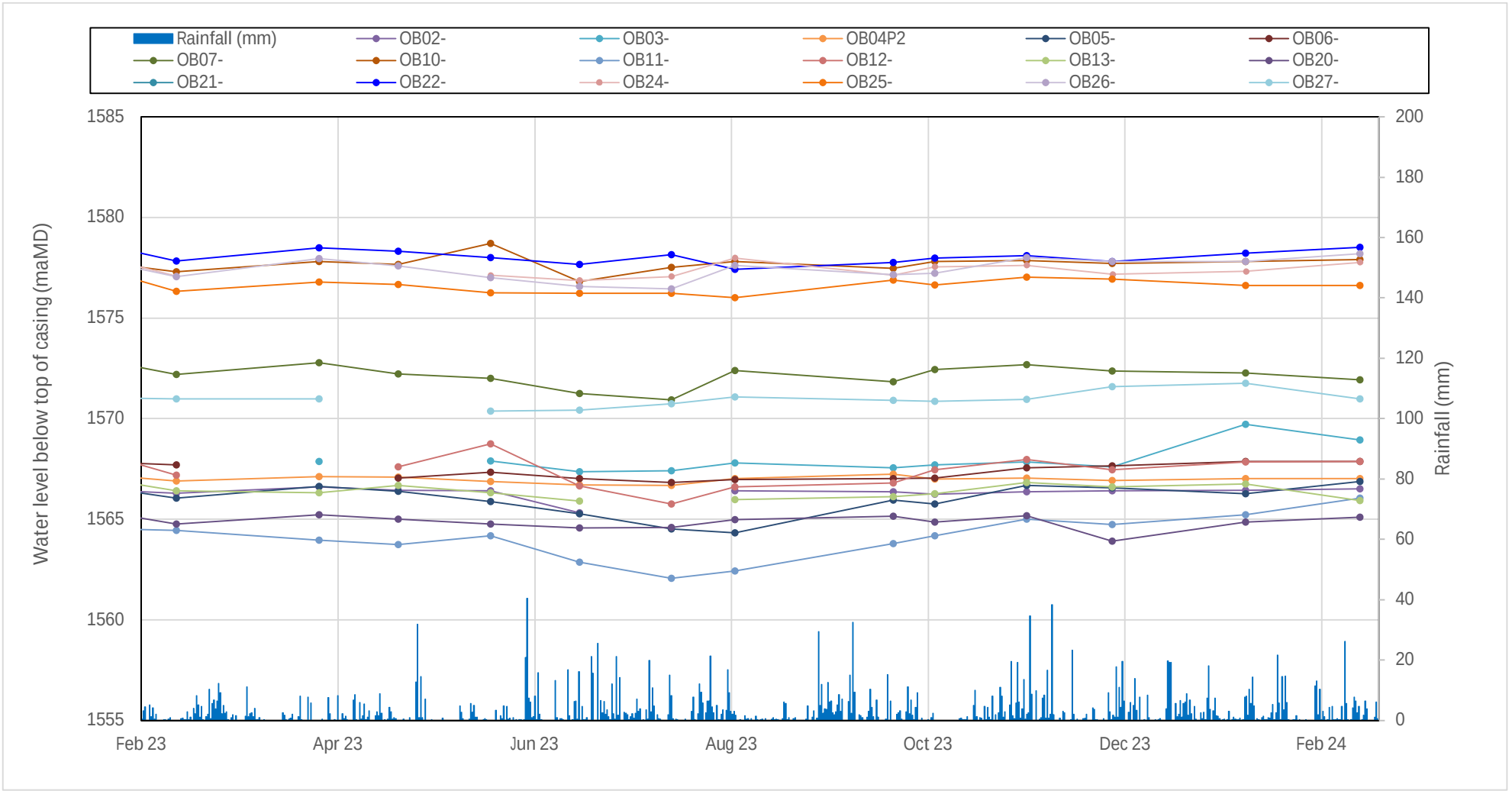
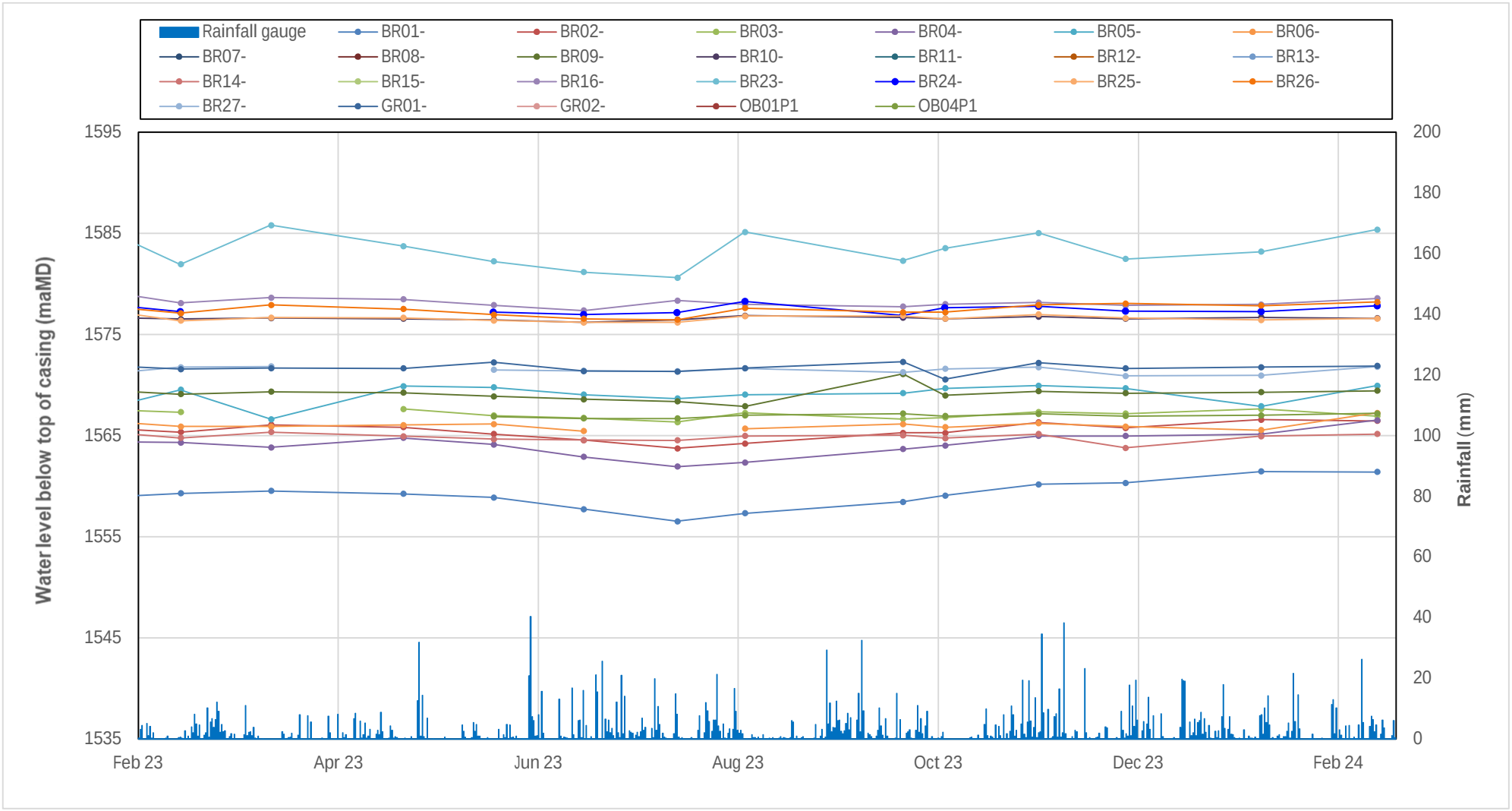
Appendix A Rainfall - long-term data for Tara Mines (1998 to February 2024)



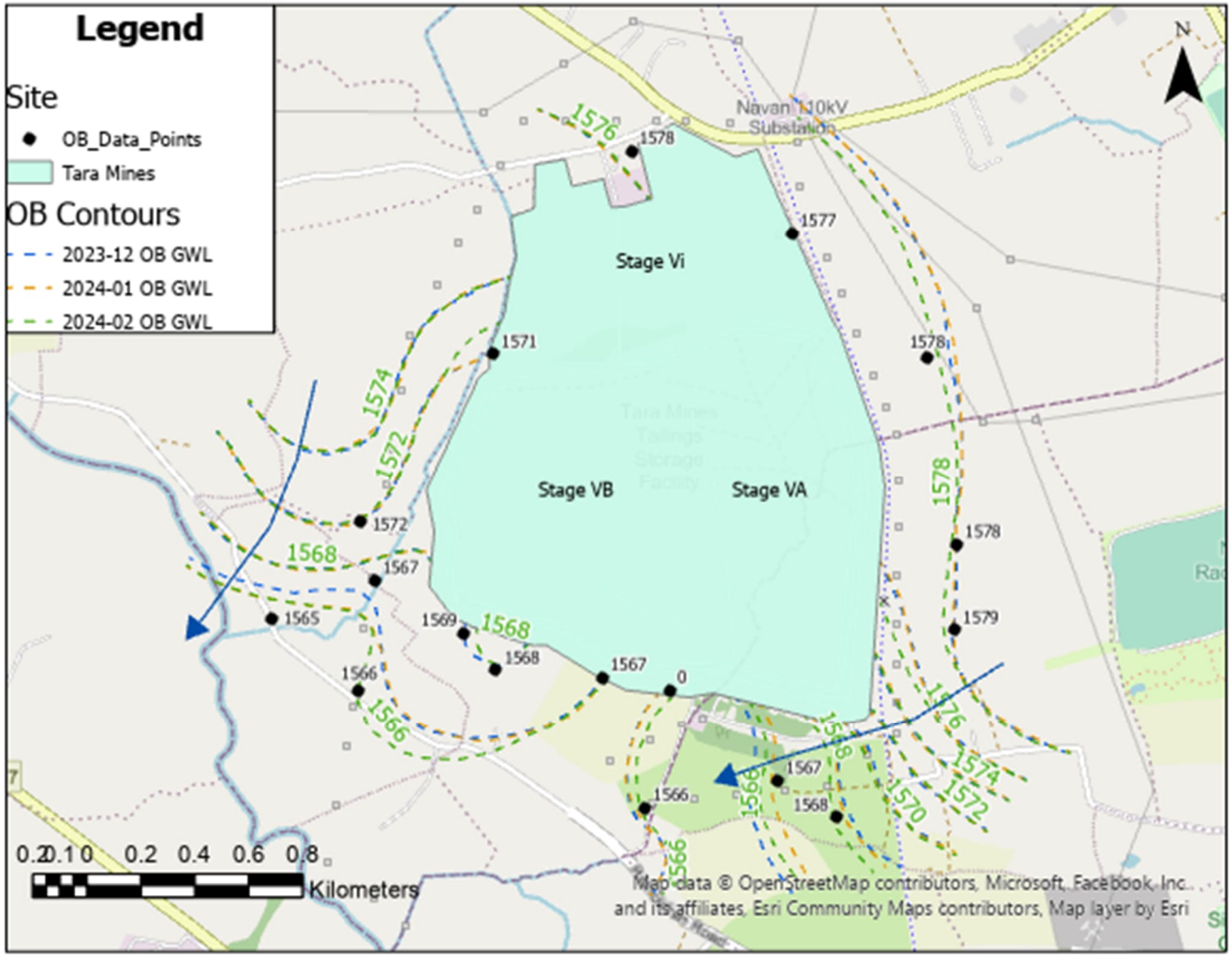
Appendix B Groundwater - superficial deposits level hydrographs (February 2023 –February 2024)



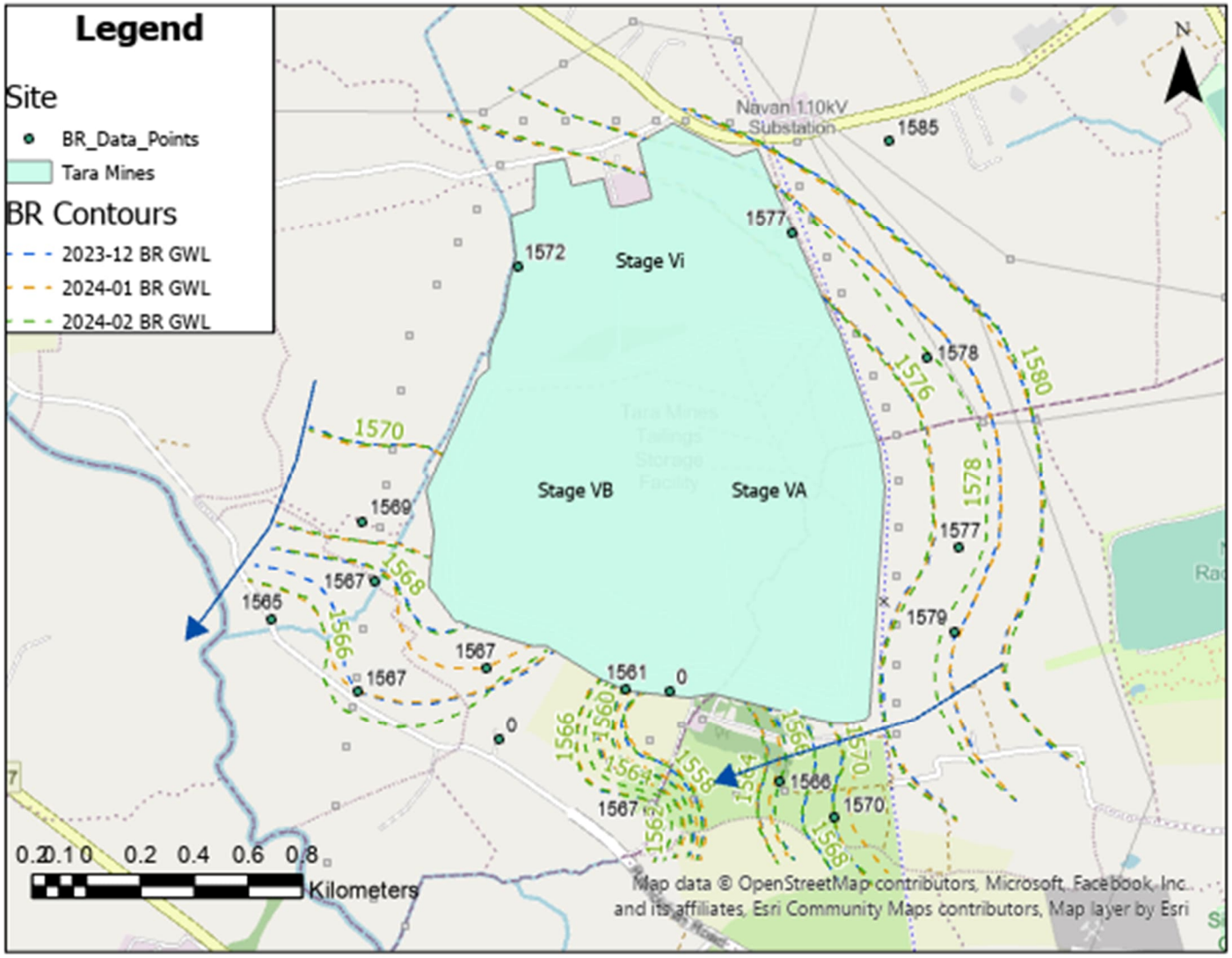
Appendix C Groundwater - bedrock level hydrographs (February 2023 –February 2024)



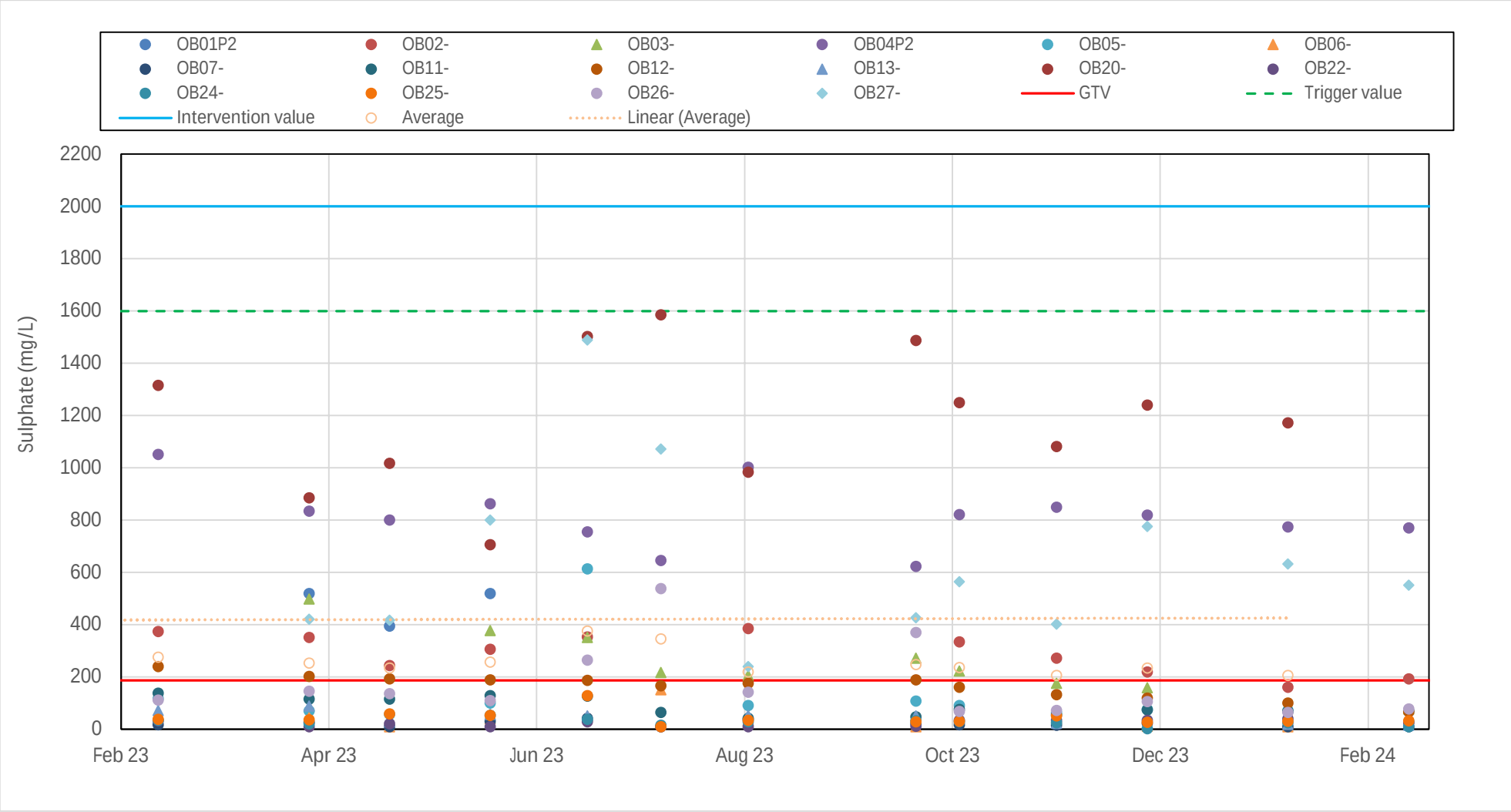
Appendix D Groundwater - superficial deposits level contouring (December 2023, January 2024 and February 2024)



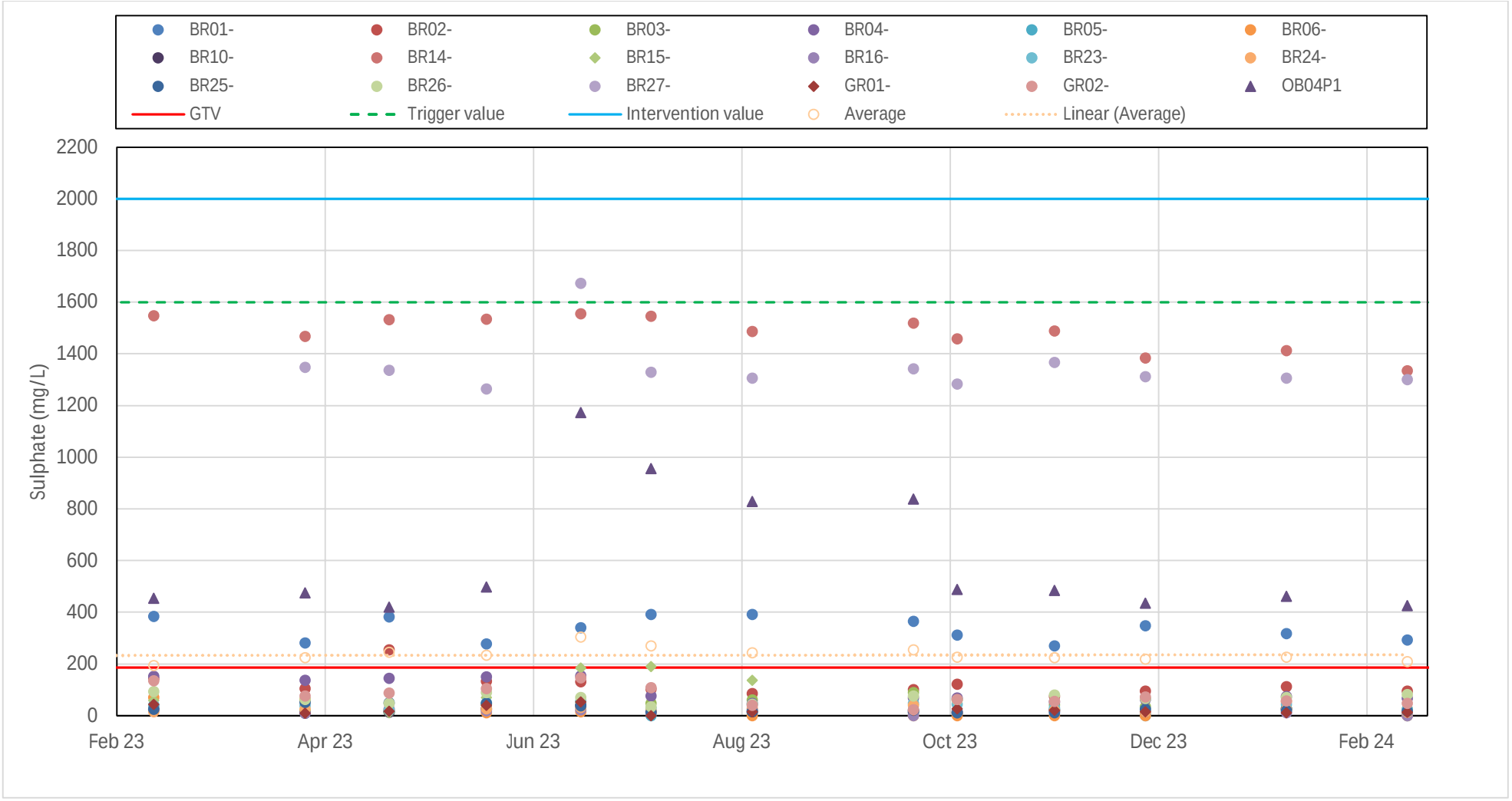
Appendix E Groundwater – bedrock level contouring (December 2023, January 2024, and February 2024)



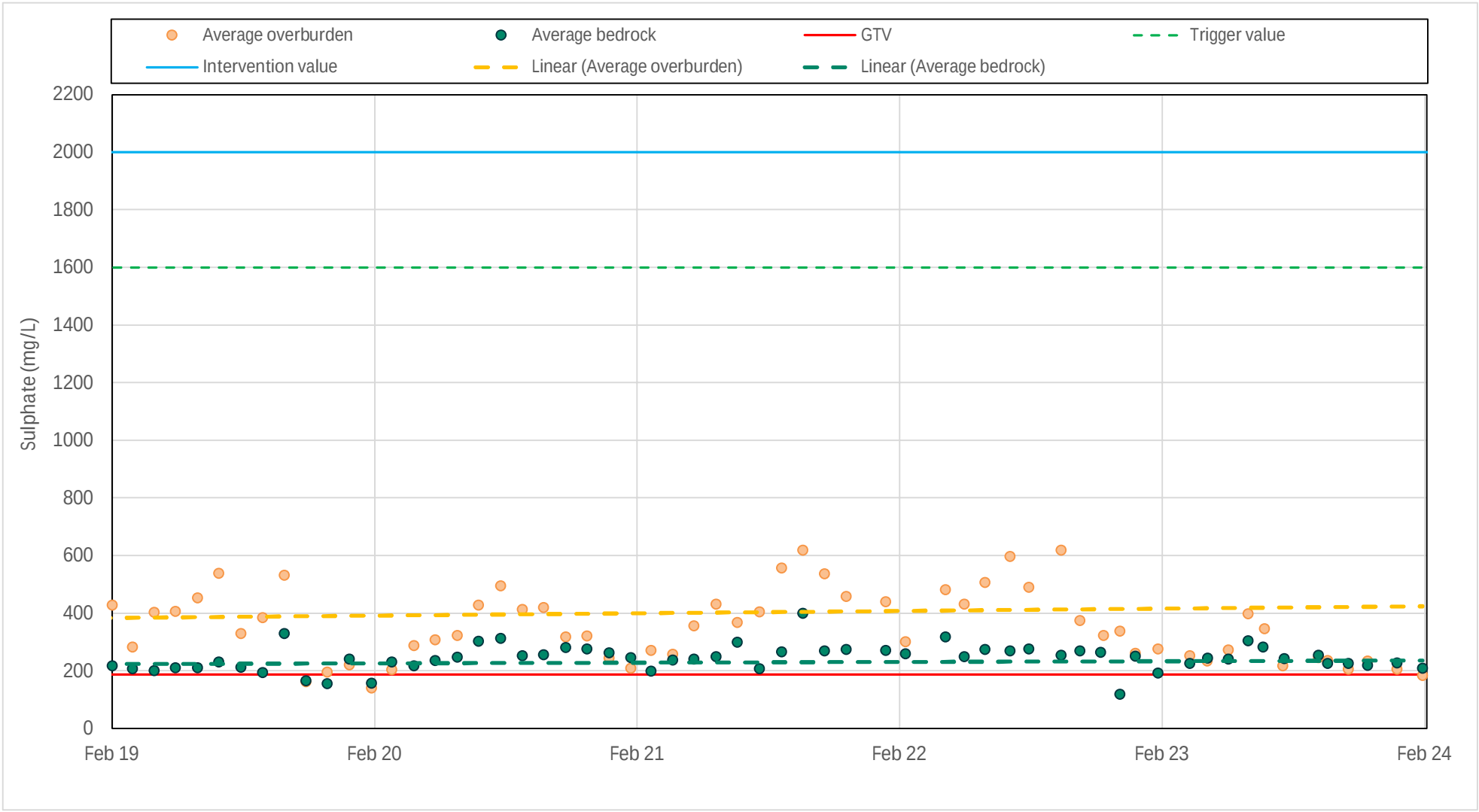
Appendix F Groundwater - comparison of superficial deposits monthly sulphate concentrations to trigger and intervention values (February 2023 – February 2024)



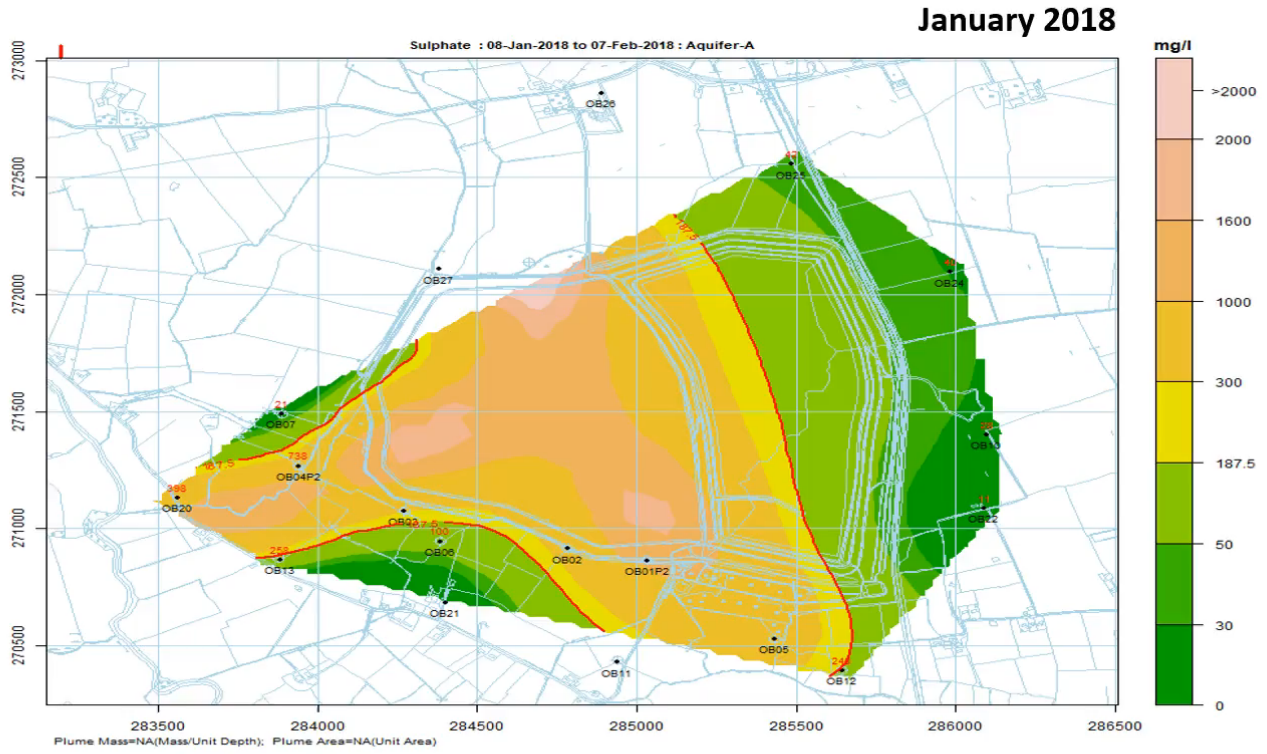
Appendix G Groundwater - comparison of bedrock monthly sulphate concentrations to trigger and intervention values (February 2023 – February 2024)



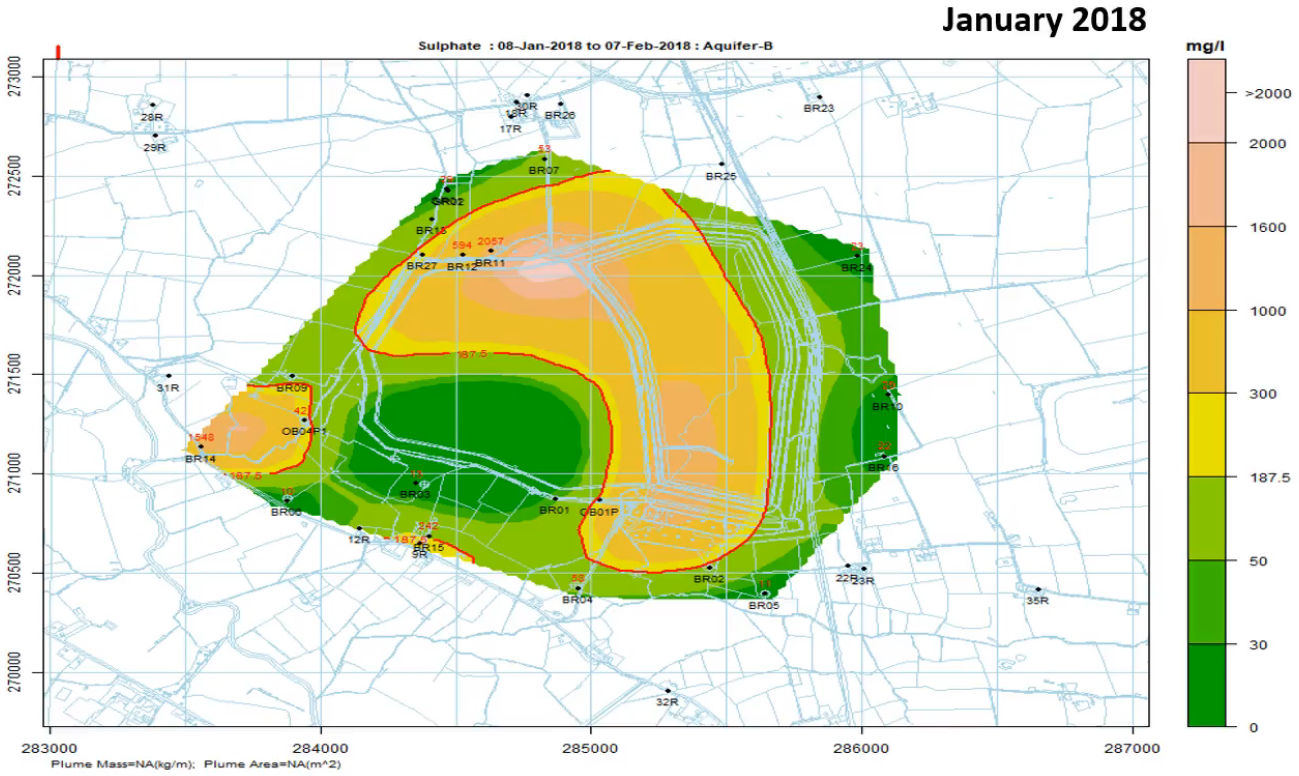
Appendix H Groundwater - long term trend analysis of monthly sulphate concentrations (previous 5 years – February 2024)


Average overburden
Average bedrock
GTV
Trigger value
Intervention value
Linear (Average overburden)
Linear (Average bedrock)
Sulphate (mg/L)
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
Feb 19
Feb 20
Feb 21
Feb 22
Feb 23
Feb 24

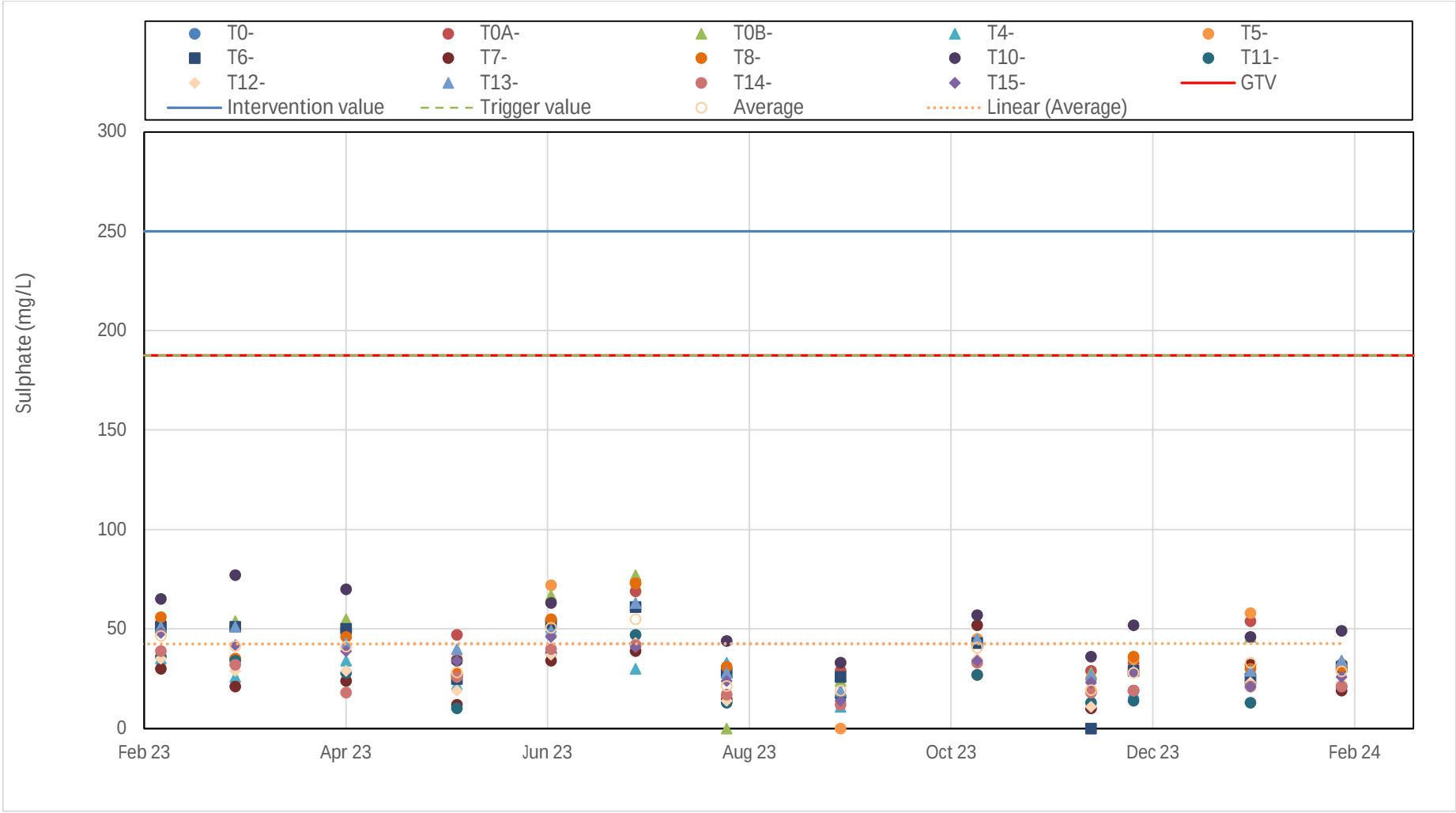
Appendix I Groundwater - contouring of monthly sulphate concentrations in superficial deposits (previous 5 years - February 2024)



Appendix J Groundwater - contouring of monthly sulphate concentrations in bedrock (previous 5 years – February 2024)



Appendix K Surface water - comparison of monthly sulphate concentrations to trigger and intervention values (February 2023 – February 2024)



Appendix L Surface water - long term trend analysis of monthly sulphate concentrations (previous 5 years – February 2024)