



Bi-Annual Construction Monitoring Report - 7

January 2025 - June 2025

SMWSTCTP-AFJ-1NL-EN-RPT-000029 Revision 01
Sydney Metro West – Central Tunnelling Package



ACOUSTICS ADVISOR ENDORSEMENT SYDNEY METRO WEST (SSI 10038)

Review of	Central Tunnelling Package: Bi-Annual Construction Monitoring Report January – June 2025	Reviewed document reference:	AFJV Bi-Annual Construction Monitoring Report – January – June 2025
Prepared by:	██████████ Alternate Acoustics Advisor		SMWSTCTP-AFJ-1NL-EN-RPT-000029 Revision 01 dated 11 August 2025.
Date of issue:	20 August 2025		

As approved Alternate Acoustics Advisor (AA) for the Sydney Metro West project, I reviewed and provided comments on the noise and vibration components of a previous revision of this monitoring report.

Throughout the period of this report, I attended joint monitoring, and I also reviewed and commented on the results of noise and vibration monitoring done by AFJV as it took place. I have a high level of confidence in the noise and vibration results presented in this report from my observations during joint monitoring and the satisfactory responses to my comments on monitoring as it took place.

My comments on this report have been adequately addressed, and I endorse the noise and vibration components of it.

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Metro West Alternate Acoustics Advisor

DOCUMENT APPROVAL

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Revision History

Rev:	Date:	Pages:	By:	Description:
00	30/05/2025	All	Various	Preparation of Bi-annual monitoring report
01	11/08/2025	All	DL/AA	Response to ER and AA comments and amendment of appendix; general update to capture Substantial Completion of CTP construction works.

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COMPLIANCE MATRIX

Condition Reference	Condition Requirement	Reference
C14	The following Construction Monitoring Programs must be prepared in consultation with the relevant government agencies identified for each to compare actual performance of construction of Stage 1 of the CSSI against the performance predicted in the documents listed in Condition A1 of this schedule or in the CEMP: (a) Noise and vibration Monitoring program; consult with EPA, SOPA (in respect of Sydney Olympic Park), Place Management NSW (in respect of The Bays) and Relevant Council(s) (b) Blasting Monitoring program; consult with SOPA (in respect of Sydney Olympic Park), Place Management NSW (in respect of The Bays) and Relevant Council(s) (c) Surface water quality Monitoring program; consult with DPE Water, Relevant Council(s) and Sydney Water (if any Sydney Water assets are impacted) (d) Groundwater Monitoring program; consult with DPE Water and SOPA (in respect of Sydney Olympic Park) Note: The Blasting Construction Monitoring Program is only required to be prepared if blasting is proposed to be conducted during construction.	Section 3 of the Surface Water Monitoring Program (SMWSTCTP-AFJ-1NL-PE-PRG-000001) Section 3 of the Groundwater Monitoring Program (SMWSTCTP-AFJ-1NL-PE-PLN-000006)
C15	Each Construction Monitoring Program must provide: (a) details of baseline data available including the period of baseline monitoring; (b) details of baseline data to be obtained and when; (c) details of all monitoring of the project to be undertaken; (d) the parameters of the project to be monitored; (e) the frequency of monitoring to be undertaken; (f) the location of monitoring; (g) the reporting of monitoring results and analysis results against relevant criteria; (h) details of the methods that will be used to analyse the monitoring data; (i) procedures to identify and implement additional mitigation measures where the results of the monitoring indicated unacceptable project impacts; (j) a consideration of SMART principles; and (k) any consultation to be undertaken in relation to the monitoring programs; and (l) any specific requirements as required by Conditions C16 to C17 of this schedule.	Section 3 of the Noise and Vibration Monitoring Program (SMWSTCTP-AFJ-1NL-NV-PLN-000001) Section 3 of the Surface Water Monitoring Program (SMWSTCTP-AFJ-1NL-PE-PRG-000001) Section 3 of the Groundwater Monitoring Program (SMWSTCTP-AFJ-1NL-PE-PLN-000006)
C16	The Noise and Vibration Construction Monitoring Program and Blasting Construction Monitoring Program must include: (a) noise and vibration monitoring determined in consultation with the AA to confirm the best-achievable construction noise and vibration levels with consideration of all reasonable and feasible mitigation and management measures that will be implemented; (b) for the purposes of (a), noise monitoring must be undertaken during the day, evening and night-time periods and within the first month of work as well as throughout the construction period and cover the range of activities being undertaken at the sites; and (c) a process to undertake real time noise and vibration monitoring. The results of the monitoring must be readily available to the construction team, the Proponent, ER and AA. The Planning Secretary and EPA must be provided with access to the results on request.	Section 3 of the Noise and Vibration Monitoring Program (SMWSTCTP-AFJ-1NL-NV-PLN-000001)

C17	Groundwater Construction Monitoring Program must include: (a) groundwater monitoring networks at each construction excavation site; (b) detail of the location of all monitoring bores with nested sites to monitor both shallow and deep groundwater levels and quality; (c) define the location of saltwater interception monitoring where sentinel groundwater monitoring bores will be installed between the saline sources of the estuary or river and that of the stations or shafts; (d) results from existing monitoring bores; (e) monitoring and gauging of groundwater inflow to the excavations, appropriate trigger action response plan for all predicted groundwater impacts upon each noted neighbouring groundwater system component for each excavation construction site; (f) trigger levels for groundwater quality, salinity and groundwater drawdown in monitoring bores and / or other groundwater users; (g) daily measurement of the amount of water discharged from the water treatment plants; (h) water quality testing of the water discharged from treatment plants; (i) management and mitigation measures and criteria; (j) groundwater inflow to the excavations to enable a full accounting of the groundwater take from the Sydney Basin Central Groundwater Source; and (k) reporting of groundwater gauging at excavations, groundwater monitoring, groundwater trigger events and action responses; and (l) methods for providing the data collected to Sydney Water where discharges are directed to their assets.	Section 3 of the Groundwater Monitoring Program (SMWSTCTP-AFJ-1NL-PE-PLN-000006)
C23	The results of the Construction Monitoring Programs must be submitted to the Planning Secretary, ER and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program. Note: Where a relevant CEMP Sub-plan exists, the relevant Construction Monitoring Program may be incorporated into that CEMP Sub-plan.	This Report

1. INTRODUCTION

This Bi-Annual Construction Monitoring Report (B-ACMR) has been prepared to address Condition of Approval (CoA) C23 of the planning approval for Sydney Metro West – Concept and Stage 1. It presents monitoring data for all works undertaken on the Sydney Metro West Central Tunnelling Package (CTP) during the reporting period from **1st January 2025 to 30th June 2025**. This is the seventh B-ACMR prepared for the CTP.

The report details the results from the construction phase of the monitoring programs, comparing them against established baseline data where available. Given the large volume of noise and vibration data recorded by unattended monitors, representative examples have been included to illustrate monitoring activities during the period. In contrast, all groundwater and surface water data are provided in full. The report primarily focuses on exceedances of required criteria while also presenting results that demonstrate compliance.

In accordance with each Construction Monitoring Program, this report is made available to relevant authorities within 40 business days of the end of the monitoring period.

During this reporting period, CTP has made significant progress, successfully achieving Substantial Completion by the end of June 2025 for all station sites and majority of the tunnelling works. CTP's final Portion handover was achieved 8 July 2025 which is slightly after the end of the reporting period however the bulk of construction works that have the potential to cause environmental impact were substantially complete in the reporting period. AFJV has now finished all construction activities associated with Phase B of the CTP project. This Bi-Annual Monitoring Report marks the completion of all monitoring programs associated with Stage 1 of the CSSI, as outlined in the documents specified in Condition A1 of Schedule 3. As a result, this report serves both as the final revision of the B-ACMR series as well as a close out of the various monitoring programs associated with the project.

2. NOISE AND VIBRATION

The Noise and Vibration Management Plan (NVMP) aims to identify the potential impacts of CTP works on noise and vibration within the local environments surrounding the construction sites. The data presented in the B-ACMR has been prepared in accordance with CoA 16 and 23 of the Project Planning Approval, which requires reporting the results of CTP works to the Planning Secretary, the Environmental Representative (ER) and relevant regulatory agencies.

The report details the results of the construction phase of the NVMP. This report compares the noise and vibration criteria against monitoring data recorded during the reporting period.

All noise and vibration monitoring conducted by AFJV throughout the reporting period was executed in strict compliance with the methodology, calibration requirements and standard stipulated in the Noise and Vibration Monitoring Program (NVMoP).

It is noted that the metric of 'Compliance' identified in the Appendix A Noise Register is a fluid term which refers to a noise monitoring events determination based on several monitoring caveats when assessed against the project approvals, requirements, and licences. However generally, a noise monitoring events 'compliance' is assessed by comparing the following inputs:

- Was NML exceeded during monitoring period?
- Was DNVIS prediction exceeded during monitoring period?
- Was exceedance/s the result of AFJV works?
- Are all reasonable and feasible mitigation measures implemented?
 - o (if 'No' potential NCR to be raised, discuss with Environment Manager)

Implementation of any works specific mitigation measures is also considered when determining a monitoring events compliance.

2.1 MONITORING LOCATIONS

2.1.1 ATTENDED MONITORING

Attended noise monitoring was completed using a handheld sound level meter fixed to a tripod. Noise monitoring was completed as required, generally for verification purposes for noise impacts associated with Out of Hours Works (OOHW), Detailed noise and vibration impact statement (DNVIS) verification and to confirm the A-weighted sound power level (SWL) for plant being used during daytime hours. Attended monitoring results are provided in Appendix A. The LAeq noise levels captured by these monitors include both constructions related activities and extraneous noise sources.

It should be noted that the duration of each monitoring event is 15 minutes unless stated otherwise. On occasion shorter durations of noise monitoring was conducted at source point locations.

No attended vibration monitoring was completed during this reporting period. This has been due to the stage of work at each site noting there was minimal surface works and vibration intensive works were limited to station boxes with nearby unattended vibration monitors active throughout these periods.

2.1.2 UNATTENDED MONITORING

Unattended noise and vibration monitoring throughout this reporting period was undertaken in accordance with CTP's Noise and Vibration Management Plan (NVMP), Noise and Vibration Monitoring Program (NVMoP) and Detailed Noise and Vibration Impact Statement (DNVIS). Monitoring occurred on a 24-hour basis throughout the reporting period using noise and vibration loggers deployed at each of the CTP construction sites to obtain real time data as per CoA C16c. Unattended monitors associated with the project were removed during this reporting period in line with the monitoring program and the Substantial Completion of the respective station box sites. It is noted that on this basis all conditions and monitoring programs associated with noise and vibration are now closed. However, AFJV has and will continue to conduct attended noise monitoring ad hoc for any additional works that are not considered low impact as agreed with the Acoustic Advisor (AA) and results of this monitoring will be provided to the AA for information.

Examples of unattended noise monitoring data for Five Dock, Burwood North, North Strathfield, Sydney Olympic Park and The Bays are provided in Appendix A. The locations of and several examples of real time monitoring set-ups for unattended noise are also provided in Appendix A.

2.2 NOISE AND VIBRATION MONITORING RESULTS

2.2.1 ATTENDED NOISE AND VIBRATION MONITORING

This reporting period saw a significant reduction in the number of attended noise morning events due to the stage of the works and the fact that during the period a number of sites achieved Substantial Completion.

Between January and June 2025, 38 attended noise monitoring events were conducted at various locations near the project's construction sites. Of these events, several readings above NML and/or predicted noise levels were identified. In most cases, non-construction-related activities were observed to be responsible for the elevated noise results. Throughout the reporting period, attended monitoring for OOHW and DNVIS verification monitoring resulted in levels below the relevant NML or in line with predicted values.

2.2.2 UNATTENDED NOISE AND VIBRATION MONITORING

Unattended noise monitor locations and data can be found in Appendix A. Weekly meetings with the environmental team are held to review the data for any anomalies. Despite the meeting, it is difficult to identify the source of all elevated data points considering the significant volume of data collected throughout the reporting period (i.e. 502,000 data points). Unattended monitoring data obtained throughout the monitoring period has been reviewed in weekly meetings and on a case-by-case basis such as in response to complaints or to ensure compliance with OOHW models.

Appendix A provides examples of unattended monitoring data. The data is presented in weekly periods extracted from each month for each site. This includes some public holiday and shut down periods such as New Years Day, Australia Day, Easter Friday and Monday and Anzac Day. These days where no works were conducted provide useful representations of ambient noise not generated by CTP.

All sites associated with CTP have been handed over during the reporting period, signifying the completion of noise and vibration requirements identified in the project conditions and associated monitoring programs. All unattended monitoring equipment have now been removed from site, however AFJV has committed to conduct attended monitoring of works that are not considered to be Low impact work.

Throughout the monitoring period, unattended vibration monitoring was conducted at a number of sites across CTP including Burwood (16 Burton St), Sydney Olympic Park (10 Herb Elliot Drive), Five Dock (110 Great North Rd and Saint Albans Church) and North Strathfield (125 Queen St). It should be noted that all monitors were removed from their respective locations during this reporting period, in line with monitoring programs and achievement of Substantial Completion of the CTP construction works. Further details of monitor removal dates can be found in Appendix A.

Throughout the reporting period, 6 vibration spikes were recorded and investigated. In all cases the spikes were identified to be the result of an AFJV environmental representative attending to the monitor to replace batteries or carry out maintenance. The events were as follows:

- A spike of 13.2mm/s, recorded on 22 January 2025 at the Burwood North vibration unit located in 16 Burton St, Concord.
- A spike of 144mm/s, recorded on 13 January 2025 at the Five Dock vibration unit located at 110 Great North Rd, Five Dock.
- A spike of 270mm/s, recorded on 21 January 2025 at the Five Dock vibration unit located at 110 Great North Rd, Five Dock.
- A spike of 44.7mm/s, recorded on 24 February 2025 at the Five Dock vibration unit located at 110 Great North Rd, Five Dock.
- A spike of 17.3mm/s, recorded on 27 February 2025 at the Burwood North vibration unit located in 16 Burton St, Concord.
- A spike of 270mm/s, recorded on 3rd February 2025 at the Five Dock vibration unit located at St Albans Church, Five Dock.

All other unattended vibration monitoring was recorded below site criteria and was compliant. Several examples of real time unattended vibration monitoring data are provided in Appendix B.

2.2.3 GROUND-BORNE NOISE AND VIBRATION MONITORING

Due to the completion of TBM tunnelling and cross-passage excavation in late 2024, ground-borne noise and vibration (GBN) monitoring) was no longer required. There were no further sources of groundbourne noise and vibration impacts associated with the CTP Works

2.2.4 JOINT NOISE MONITORING

During the reporting period, three joint noise monitoring sessions were conducted around the CTP sites during the evening and night-time periods. No major actions were recorded; however, minor issues were identified by the AA and SM. AFJV responded to all issues and resolved them within an appropriate timeframe, as shown in the table 2-B below.

Table 2-B Summary of joint monitoring events.

<u>Date</u>	<u>Location</u>	<u>Names</u>	<u>DNVIS/ OOHW</u>	<u>Action</u>	<u>AFJV response</u>
20/02/2025	FDK, BWD,NST, SOP	SM, AA	OOHW	No actions raised.	No actions raised.
12/03/2025	FDK, BWD,NST, TBY	SM, AA, ER	OOHW	AFJV to confirm whether the EWP tonal alarm at BWD has been replaced. Noise mats to be installed around bladder pump in FDK station box.	AFJV responded with close out: - EWP tonal alarm replaced with non-tonal squawker - Noise mats installed around bladder pump.
08/04/2025	BWD, FDK	AA	OOHW	No actions raised.	No actions raised.
28/05/2025	All Sites	AA	General CTP OOHW review	A diaphragm pump was identified to be operating without appropriate controls	AFJV installed noise blankets around the pump the following morning. Workers were reminded of their nighttime responsibilities.

2.2.5 PLANT SOUND POWER LEVELS

In accordance with the NVMP, DNVIS and CNVS, AFJV conducted several sound power measurement checks to ensure relevant plant and equipment operating on CTP maintained a sound power level (SWL) within acceptable limits, as defined in Table 13 of the CNVS. In accordance with Section 4 of the CNVS, special attention was given to items of plant with predicted loudness of 105dB(A) or more. Regular noise checks, of all high-risk plant were conducted upon arrival at the site.

Measurements were conducted in line with Australian and ISO standards AS2012–1990, ISO 9614-2 1996, and AS2012–1977, ensuring all plant on site were within allowable sound powers. A full range of results for the period can be found in Appendix A.

The measurements were taken under regular operating conditions, ensuring a realistic representation of noise emissions during day-to-day project activities. In cases where normal operating conditions were impractical, stationary tests at high idle were used, offering a thorough evaluation of sound power levels.

2.2.6 MITIGATION MEASURE IMPLEMENTATION

AFJV acknowledges the requirement to implement reasonable and feasible corrective actions to mitigate elevated Sound Pressure Levels (SPLs). This proactive approach has been implemented throughout the duration of the project to ensure compliance with NML's and predictions, as well as minimise potential impacts on the surrounding community. During this reporting period, examples of implemented mitigations included:

A. Diaphragm pumps at Five Dock and Burwood

- Installation of engineered acoustic shielding diaphragm pumps at both Five Dock and Burwood to mitigate impact from the pumps

Attended noise monitoring trials were conducted to review the effectiveness of the shielding placed on the pumps and found a reduction to NML compliant levels.

By implementing these mitigation measures and conducting regular noise monitoring, AFJV ensured all works operated in compliance with the conditions of approval, effectively completing the monitoring period with no noise or vibration related NCR's.

2.3 NOISE AND VIBRATION COMPLAINTS

A total of 15 environmental related community complaints were received throughout the monitoring period. Of these complaints; 1 was not related to AFJV works, 1 related to dust and air emissions, 1 related to vibration, and 12 related to noise. The majority of complaints resulted from Five Dock shed demolition works during standard construction hours. AFJV ensured appropriate respite hours were being adhered to when necessary.

In all cases, complaints were closed after consultation satisfied the enquiry however in some cases additional respite was offered and additional mitigation installed in the form of noise mats.

2.4 CONCLUSION

Attended and unattended monitoring has occurred throughout the reporting period at each CTP site. Monitoring was completed for various purposes including DNVIS compliance, sound power level checks, verification of out of hours work impacts, and NML compliance monitoring.

The majority of noise observations obtained in the reporting period were identified to be the result of ambient non-AFJV construction related activities. However, levels above the daytime NML were observed during works such as shed demolition and concrete breakback. In all cases of elevated noise, all reasonable and feasible mitigations were implemented, as well as respite for high impact noise works. Throughout the reporting period, all unattended data reviewed was presented to the AA in the form of a weekly report.

Elevated events observed during vibration monitoring at Five Dock and Burwood sites were not related to AFJV works. These spikes were attributed to AFJV swapping vibration monitor batteries and performing maintenance, rather than a result of vibratory works.

As the project has achieved Substantial Completion, the data collected throughout this reporting period (as well as all preceding BACMR's) effectively satisfy the requirements of the Noise and Vibration Monitoring program and Condition C16, marking them closed in-line with the cessation plan outlined in Appendix C of the Noise and Vibration management plan (Rev 15).

3. SURFACE WATER

The Surface Water Monitoring Program (SWMP) was implemented to assess the potential impacts of the CTP works on the quality of local receiving waters. In accordance with Condition C23 of the Project Planning Approval, this report has been prepared to present monitoring data and analysis for submission to the Planning Secretary, Environmental Representative (ER), and relevant regulatory authorities.

This report provides surface water monitoring results collected throughout the biannual reporting period, in line with the requirements of the SWMP. It includes a comparison of monitored water quality data against baseline conditions and the ANZECC guidelines.

As all surface construction activities have now ceased, no further surface water monitoring or reporting is required under the program. Data collected in June 2025 marks the final round of surface water monitoring conducted by AFJV for the CTP Works. This final report therefore represents the conclusion of all surface water quality monitoring commitments for the construction phase of the CTP.

3.1 MONITORING SITES

During the reporting period, surface water quality monitoring was undertaken for dry and wet weather conditions in accordance with SWMP monitoring program. Table 3-A Surface water quality monitoring locations provide a summary of the monitoring locations, and the monitoring location map is included in Appendix D.

Surface water quality was measured at eight locations during the reporting period. DC-U/S location has not been monitored in this reporting period due to water levels being too low to sample. Monitoring locations were identified as being representative of the surrounding receiving waters and sufficient to identify potential project impacts should there be any quality exceedances.

Table 3-A SURFACE WATER MONITORING LOCATIONS

Name	Waterway	Nearest Project Site	Location	Distance From Site to Creek
WB-D/S	White Bay	The Bays	-33.866245°S, 151.180450° E	Immediately adjacent to the site
DC-U/S	Dobroyd Canal / Iron Cove Creek	Five Dock	-33.873828 ° S, 151.128243° E	600m
DC-D/S	Dobroyd Canal / Iron Cove Creek	Five Dock	-33.870604° S, 151.141474° E	600m
SLP-D/S	St Lukes Park Canal	Burwood North	-33.861571°S , 151.113347° E	230m
PC-U/S	Powells Creek	North Strathfield	-33.862145°S, 151.086294° E	350m
PC-D/S	Powells Creek	North Strathfield	-33.852589°S, 151.082359° E	350m
SC-D/S	Saleyards Creek	Sydney Olympic Park	-33.852282°S, 151.081934° E	1km
HC-D/S	Haslams Creek	Sydney Olympic Park	-33.834564°S, 151.075772° E	1km

3.2 SURFACE WATER QUALITY CRITERIA

Chapter 19 (Table 19-6) of the Project EIS identified the following existing water quality conditions relevant to ANSECC indicators in the watercourses near the tunnel alignment and station boxes:

- Haslams Creek: Elevated nutrient concentrations and elevated concentrations of faecal coliforms.
- Saleyards Creek, Powells Creek, St Lukes Park Canal, and Dobroyd Canal/Iron Cove Creek: Low dissolved oxygen levels, elevated nutrient concentrations, elevated heavy metal concentrations, and high turbidity.
- White Bay: Elevated nutrient concentrations, elevated heavy metal concentrations, and high turbidity.

The surface water monitoring results for this reporting period have been compared to the ANSECC guideline for slightly to moderate disturbed aquatic ecosystems and the pre-existing water quality in Table 3-B. The data provides an indication of general waterway health and is utilised in lieu of baseline surface water monitoring data was collected as part of the EIS.

Table 3-B- PRE-EXISTING WATER QUALITY DATA

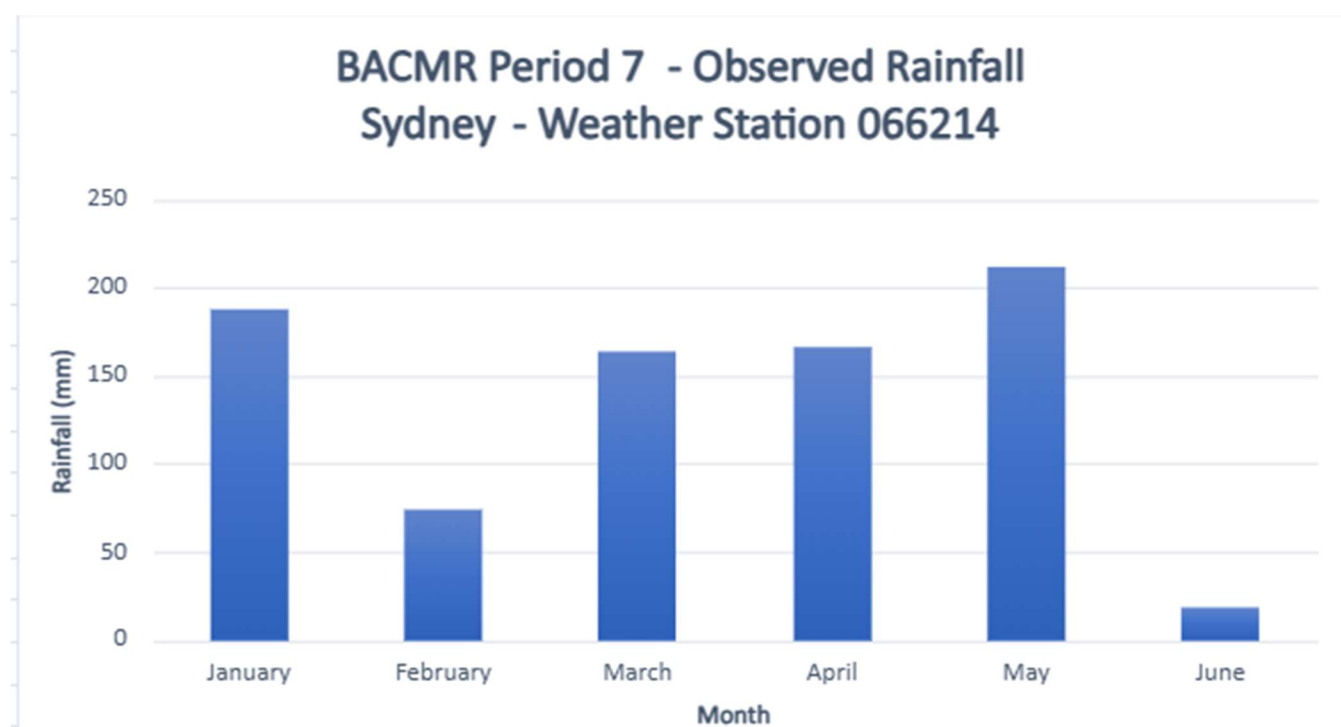
Parameter	ANZECC Guideline ¹	Sal1 (U/S) ³ – Salesyard creek	Sal2 (D/S) ³ - Salesyard creek	Pow1 (U/S) ³ - Powells Creek	Pow2 (D/S) ³ - Powells Creek	SLP2 (D/S) ³ - St Lukes Park Canal	Bar2 (D/S) ³ - Barnwell Park Canal	Dob1 (U/S) ³ - Dobroyd Canal	Dob2 (D/S) ³ - Dobroyd Canal	SW09 Dobroyd Canal ⁴	SW01 Rozelle Bay ⁵
pH	7.0 – 8.5 ²	7.8-9.4	7.5-9.1	7.6-9.5	7.7-9.9	7.8-9.7	7.1-8.2	8.1-9.1	7.0-9.1	7.0 – 8.5	5.6-8.0
Conductivity (uS/cm)	Lowland rivers: 125–2200 µS/cm	126-3744	203-40,823	99-2977	101-36,323	165-4,535	258-30,752	230-1718	260-52,630	42 average	403-541,180
DO (mg/L)	N/a	8.8-15	5.4-14	6.9-13	6.8-16	8.2-14	4.7-10.8	9.0-13	4.4-15	n/a	-0.16-558
DO (%sat)	85-110	107-151	67-151	89-130	75-168	96-161	56-110	106-132	58-159	n/a	n/a
Turbidity (ntu)	0.5 – 10 ²	0-138	5-101	4-501	2-444	0-364	6-48	11-549	2.5-187	n/a	0-52
Oil and grease	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Notes: 1 – ANZECC (2000) – slightly to moderately disturbed aquatic ecosystems, 2 – Guideline value for SE Australian estuaries 3 - Appendix R of the M4 East project EIS 4- WestConnex M4-M5 Link Mainline Tunnels Soil and Surface Water Management Sub-Plan 5- WestConnex Rozelle Interchange Project Soil and Surface Water Management Plan

3.3 RAINFALL DATA

During the reporting period (January to June 2025) 803.6 mm of rainfall was received at Observatory Hill (066214). As presented in Figure 3-A, the highest rainfall received in May 2025 with 211.6 mm whilst the lowest observed in June 2025 with 18.6 mm.

Figure 3-A- Rainfall statistics



3.4 SURFACE WATER QUALITY RESULTS

A review of the water quality data gathered as part of the Project EIS revealed that the watercourses associated with the CTP Project were in poor condition before project commencement, indicative of a highly urbanised system. Consistent with previous reporting periods, surface water data collected during the monitoring period

showed exceedances in Dissolved Oxygen, Electrical Conductivity, Turbidity and pH compared to ANZECC 2000 guidelines for slightly to moderately disturbed aquatic ecosystems. These exceedances were compared with preconstruction values from Table 3-B and the EIS. The comparison found that results were consistent with observations in Chapter 19 of the EIS, particularly section 19.5.2 and Table 19-6, and fell within ranges observed in previous projects. Therefore, it can be concluded that the observed deviations in surface water quality are likely due to pre-existing conditions in the densely populated urban setting, rather than direct impacts from project activities.

Additionally, a comparison of surface water monitoring results (Appendix C) with discharge data from the Water Treatment Plants showed no correlation in the fluctuations of watercourse characteristics.

3.5 FIELD OBSERVATIONS

No abnormal odours, visible turbidity/contamination attributable to AFJV works were identified throughout the reporting period. Appendix C provides a detailed summary of pH, EC (Electrical Conductivity), dissolved oxygen, and turbidity results collected from each water quality sampling location.

Throughout the monitoring events no significant variance in water quality or obvious sediment plumes were observed during sampling.

3.6 CONCLUSION

As outlined in section 3.3, a review of the pre-existing surface water quality data collected from Sydney Metro, Local Councils, University of Western Sydney, and WestConnex M4 East project undertaken as part of the EIS revealed that some of the background levels exceeded the ANSECC (2000) water quality trigger values for slightly to moderately disturbed aquatic ecosystems. When compared with pre-existing data, elevated water quality results obtained by AFJV across the monitoring period fall within expected ranges, with no identifiable analyte trends observed throughout the periods data (see appendix C). Given the significant sprawl of urban development and substantial distance between the project boundary and the surface monitoring points it can be concluded that elevated water quality analyte levels observed across the surface water monitoring data for the period cannot be attributable to the CTP project.

As all surface areas have been sealed since 8th of April 2025 the risk of pollution to waterways surrounding the project due to surface runoff is now considered negligible. It is therefore considered that the results collected throughout this report (and all previous BACMR) effectively satisfies requirements of the Surface water Monitoring program and closes out condition C14 (c).

4. GROUNDWATER

The purpose of the Groundwater Monitoring Program (GWMP) is to identify the potential impacts of the CTP tunnelling works on the local hydrogeological environment specifically with regards to groundwater levels and quality. The data presented in the B-ACMR is prepared in accordance with condition C17 and C23 of the Project Planning Approval, which requires reporting the results of the CTP works to the Planning Secretary, ER and other relevant regulatory agencies.

This report details the results during the construction phase of the GWMP for The Bays, Five Dock, Burwood North, North Strathfield and Sydney Olympic Park. The final ground water monitoring samples were completed in February 2025 in line with the achievement of substantial completion of the CTP Works

Groundwater encountered in excavations for the Project has been treated by water treatment plants (WTP) at The Bays and Burwood North sites during this monitoring period. Since the surface water and ground water from each site is treated through the water treatment plants, the numerous variables, dust suppression in the tunnel, wash down equipment and cleaning in the tunnel, makes calculating the specific amount of groundwater ingress for each site an estimation.

4.1 GROUNDWATER MONITORING LOCATIONS

Throughout the reporting period the groundwater quality of 20 borehole sampling points were assessed. Monitoring and sampling was conducted in line with Section 7.1 of the CEMP which specifies monitoring will be conducted monthly for the first three months of construction and quarterly thereafter. Borehole locations utilised during the reporting period are summarised in Appendix D.

Refer to Table 4-A for a summary of monitoring completed within the reporting period.

Table 4-A- GROUNDWATER MONITORING PERIOD

Site	Ground Disturbance Trigger Date	Construction Monitoring (first 3 months of construction)	Quarterly Monitoring
The Bays	05/04/2022	Round 1: 05/05/2022 Round 2: 25/5/2022 Round 3: 21/06/2022	Round 1: 19/09/2022 Round 2: 12/12/2022 Round 3: 21/03/2023 Round 4: 26/06/2023 Round 5: 20/09/2023 Round 6: 11/12/2023 Round 7: 19/03/2024 Round 8: 11/06/2024 Round 9: 10/09/2024 Round 10: 12/11/2024 Round 11: 18/02/2025
Five Dock	23/05/2022	Round 1: 21/06/2022 Round 2: 18/07/2022 Round 3: 29/08/2022	Round 1: 21/11/2022 Round 2: 21/02/2023 Round 3: 27/06/2023 Round 4: 23/08/2023 Round 5: 21/11/2023 Round 6: 21/02/2024 Round 7: 13/05/2024 Round 8: 12/08/2024 Round 9: 12/11/2024 Round 10: 19/02/2025

Burwood North	1/06/2022	Round 1: 21/06/2022 Round 2: 18/07/2022 Round 3: 29/08/2022	Round 1: 21/11/2022 Round 2: 20/03/2023 Round 3: 19/06/2023 Round 4: 23/08/2023 Round 5: 21/11/2023 Round 6: 21/02/2024 Round 7: 13/05/2024 Round 8: 12/08/2024 Round 9: 12/11/2024 Round 10: 19/02/2025
North Strathfield	09/11/2022	Round 1: 21/03/2023 Round 2: 27/04/2023 Round 3: 30/05/2023 Refer to section 4.2.3	Round 1- 28/08/2023 Round 2: 22/11/2023 Round 3: 21/02/2024 Round 4: 13/05/2024 Round 5: 12/08/2024 Round 6: 12/11/2024 Round 7: 19/02/2025
Sydney Olympic Park	21/06/2022	Round 1: 18/07/2022 Round 2: 29/08/2022 Round 3: 19/09/2022	Round 1: 12/12/2022 Round 2: 21/03/2023 Round 3: 27/06/2023 Round 4: 20/09/2023 Round 5: 12/12/2023 Round 6: 19/03/2024 Round 7: 11/06/2024 Round 8: 10/09/2024 Round 9: 12/11/2024 Round 10: 18/02/2025

4.2 FIELD INVESTIGATION

4.2.1 GROUNDWATER MONITORING METHODOLOGY

To ensure accurate results, the methodology outlined in the Groundwater Monitoring Program for gauging and collecting samples during the monitoring rounds was followed. In cases where it was not possible to pump water from the boreholes due to lack of water or space restrictions on site (for example, physically unable to place equipment), a bailer was used to collect samples. Detailed monitoring methodology is available in Appendix D.

4.2.2 GROUNDWATER SAMPLING AND GAUGING

Groundwater sampling and gauging was conducted at accessible groundwater monitoring wells. Table 4-B outlines the boreholes where sampling attempts were made during the monitoring period. Further explanation on why some boreholes were not sampled is included in table 4-C.

Table 4-B Groundwater Wells Monitored

Site	Borehole number	Quarterly Monitoring 10
Sydney Olympic Park	SMW_BH019	Sampled
	SMW_BH120	Sampled
	SMW_BH126	Sampled
	BH715B	Sampled
	AF_BH36	Sampled
Site	Borehole number	Quarterly Monitoring 11
The Bays	S02d	Sampled
	S02s	Sampled
	S06	Not monitored (Refer to table 4-C)
	AF_CGW1	Not monitored (Refer to table 4-C)
Site	Borehole number	Quarterly Monitoring 10
Burwood	BH046R	Sampled
	BH044	Sampled
Site	Borehole number	Quarterly Monitoring 10
Five Dock	BH051	Sampled
	BH051s	Not monitored (Refer to table 4-C)
	BH050s	Sampled
	BH050	Not monitored (Refer to table 4-C)

Site	Borehole number	Quarterly Monitoring 7
North Strathfield	SMW-BH035s	Sampled
	SMW_BH009	Not monitored (Refer to table 4-C)
	SMW_BH009s	Sampled
	SMW_BH035	Not monitored (Refer to table 4-C)
	SMW_BH038	Sampled

Refer to Appendix D for detailed description of the monitoring conducted. Sampling dates are specified in table 4-A. Due to the staging of stations boxes and therefore disturbance of ground, the “reporting quarter” for each site will vary from site to site based on staging of works.

4.2.3 GROUNDWATER MONITORING WELL STATUS

As detailed in Table 4-B, there were several groundwater monitoring wells that could not be accessed, replaced, or sampled during this monitoring period. The explanation of why these wells were not monitored is listed in Table 4-C below.

Table 4-C Explanation of groundwater wells not monitored

Month (2025)	Site	Borehole number	Comments
Round 10: 19/02/2025	Five Dock	SMW_BH051s	The monitoring well had no water to sample.
Round 10: 19/02/2025	Five Dock	SMW_BH050	The monitoring well had no water to sample.
Round 7: 19/02/2025	North Strathfield	SMW_BH009	During the sampling operation conducted in the month of August 2023, an incident occurred wherein the bailer became lodged within the well, which possesses a depth of approximately 40m. Despite efforts, the bailer proved unretrievable, leading to the decision to sever the rope from the surface. As a consequence of this unforeseen circumstance, the monitoring well remains inaccessible for sampling.
Round 7: 19/02/2025	North Strathfield	SMW_BH035 SMW_BH035s	The monitoring well had no water to sample.
Round 11: 18/02/2025	The Bays	S54	The borehole couldn't be monitored as the casing is bent making it impossible to feed the pump/bailer through the casing.
Round 11: 18/02/2025	The Bays	S06	The monitoring well had no water to sample.
Round 11: 18/02/2025	The Bays	AF_CGW1	The monitoring well had no water to sample.

4.2.4 FIELD OBSERVATIONS

During sampling and gauging, no odours were noted. Additionally, no visual sign of contamination (such as a sheen) was observed during sampling. Refer to Appendix D for a detailed summary of pH and EC (Electrical Conductivity), DO (dissolved oxygen), redox, turbidity, each borehole sampled during the monitoring period.

4.3 GROUNDWATER WATER QUALITY

The Groundwater Monitoring Program was implemented to assess potential impacts of the construction activities on local groundwater quality and chemistry. Monitoring was conducted in accordance with the requirements of the Groundwater Monitoring Program (GWMoP).

For the purpose of transparency and the adequate representation of potential analyte trends observed, all borehole water quality monitoring data for the duration of the project will be presented in this report's findings. Table 4-D will only speak to results collected from this reporting period to ensure consistency with previous reports. Data collected has been assessed against baseline groundwater conditions and relevant guideline values to identify any potential changes associated with construction activities.

Groundwater monitoring during this period indicated no significant or sustained impacts on groundwater quality or levels attributable to the CTP works. Observations remained consistent with historical baseline data, and any short-term fluctuations were considered within the range of natural variability.

In line with the cessation of construction activities, no further groundwater monitoring or reporting will be conducted or is required.

The final round of groundwater monitoring was conducted in February 2025, marking the conclusion of AFJV's groundwater monitoring responsibilities for the project noting that majority of excavation associated with the CTP Works was completed in 2024 with some final minor areas completed in early 2025. This report therefore represents the final submission of groundwater quality data for the construction phase of the CTP.

4.3.1 TRIGGER VALUES

A set of trigger values was developed on a site-by-site basis following the below steps:

- If result below LOR (Limit of reporting), the trigger value is set at:
 - LOR x 10 (if LOR is more than 10x > screening levels);
 - LOR (if LOR is less than 10x screening levels)
- For result with detects:
 - If data does not support statistics applied maximum plus 20%, also note where the maximum already exceeds screening levels (The 20% represents the standard field/lab error we apply in normal QA/QC (Quality Assurance/Quality Control)).

If there is an exceedance of a Trigger Value, the following next steps may be considered:

- Review Site data for the well with the exceedance.
- Data for that well should be tracked for long-term trends after the next sampling period;
- If the next sampling round also exceeds, increased frequency of sampling is warranted to evaluate the longer-term trend; and
- If increasing trends are identified, further site-specific assessment should be conducted that can include review of hydrogeologic information, trends and as well as assessment of risks to quality of water.

4.3.2 LABORATORY RESULTS ANALYSIS

Throughout this monitoring period all groundwater laboratory results were assessed against the determined trigger values, which can be found in appendix D. A summary of exceedances identified across CTP are outlined in table 4-D.

Table 4-D Identified exceedances of Groundwater trigger values in this reporting period.

Site	Borehole	Month	Analyte
The Bays	S_02d	February	TRH C15 - C28, TRH C29 - C36, Total +ve TRH (C10-C36), TRH >C16 - C34, Total +ve TRH (>C10-C40),
	S_02s	February	Fluoranthene, Chrysene, Benzo(b,j,k)fluoranthene, Benzo(a)pyrene, Benzo(g,h,i)perylene, Total +ve PAH's
Five Dock	SMW_BH051	February	Boron-Dissolved, Boron-Total, Antimony-Total
	SMW_BH050s	February	Boron-Dissolved, Barium-Dissolved, Boron-Total, Barium-Total
North Strathfield	SMW_BH046R	February	Bicarbonate Alkalinity as CaCO ₃ , Boron-Dissolved, Copper-Dissolved, Cobalt-Dissolved, Zinc-Dissolved, Boron-Total, Cobalt-Total
	SMW_BH044	February	Total +ve TRH (C10-C36), TRH >C16 - C34, Total +ve TRH (>C10-C40), Total +ve PAH's, Perfluorooctanesulfonic acid PFOS
	SMW_BH009S	February	No Exceedances
	SMW_B H038	February	Amonia -Total Arsenic – Total
	SMW_BH120	February	Cobalt-Dissolved
Olympic Park	SMW_BH126	February	Bicarbonate Alkalinity as CaCO ₃ , Total Alkalinity as CaCO ₃ , Benzene, Chlorobenzene, n-propyl benzene, Sec-butyl benzene, TRH C6 - C9, TRH C6 - C10, TRH C6 - C10 less BTEX (F1), Benzene, Perfluorononanoic acid, Boron-Dissolved, Chromium-Dissolved, Boron-Total,
	AF_BH36	February	Cobalt-Dissolved, Manganese-Dissolved, Beryllium-Total, Copper-Total, Manganese-Total
	SMW_BH019	February	No Exceedance
Tunnel Alignment	BH_715B	February	Cadmium-Dissolved, Cobalt-Dissolved, Manganese-Dissolved, Zinc-Dissolved, Cadmium-Total, Copper-Total, Cobalt-Total, Lead-Total, Antimony-Total, Selenium-Total, Tin-Total, Zinc-Total

Fluctuations in water chemistry were observed throughout this reporting period but after a thorough analysis, no meaningful trends in analyte concentrations were observed. Analysis included dissolved sodium and chloride which is used as an indicator of saltwater ingress due to groundwater.

The groundwater monitoring program specifies that a management response will be initiated under the following conditions:

- The EC or water quality data continuously exceeds the trigger value over three consecutive monitoring periods, showing a rising trend.
- The EC or water quality data exceeds the trigger value by more than 100% at any time.

Below is the analysis of each case that triggered the management response detailed above (This includes results of this reporting period and previous ones to evaluate the mid-term trends). Refer to Appendix D for trend graphs. Note that the reference to “D” and “S” indicate deep and shallow boreholes respectively.

S_02d and S_02s:

Located adjacent to the White Bay power station, well S02_s recorded isolated exceedances. Noting that construction activities in this area have now ceased, there is no indication of a correlation between site activities and these exceedances. Monitoring point S02d recorded exceedances in Total Recoverable Hydrocarbons (TRH) across several fractions (C10–C36, C15–C28, >C16–C34, and >C10–C40) throughout the monitoring period. No upward trend was observed in any of the data. These results are considered typical for a densely urbanised area, and none of the exceedances surpassed the 100% trigger value.

SMW_BH051:

At BH051, three isolated exceedances were recorded, none of which exceeded the 100% trigger value for the respective analytes.

SMW_BH050s:

At BH_050s, Boron and Barium (both total and dissolved) exceeded trigger values in the last four sampling rounds. However, no upward trend was observed, and concentrations have remained stable.

SMW_BH046R:

At BH046R, exceedances were detected in Boron-Dissolved, Barium-Dissolved, Boron-Total, Barium-Total, Bicarbonate Alkalinity as CaCO₃, Boron-Dissolved, Copper-Dissolved, Cobalt-Dissolved, Zinc-Dissolved, Boron-Total, Cobalt-Total. In all cases no observable trend could be identified in cases where exceedances were detected in more than one round of monitoring. In cases where a one-off exceedance was detected, there was no correlation with AFJV's activities as construction activities in the White Bay vicinity had ceased prior to the monitoring round.

SMW_BH044:

At BH044, exceedances were recorded for Total +ve TRH (C10–C36), TRH >C16–C34, Total +ve TRH (>C10–C40), Total +ve PAHs, and Perfluorooctanesulfonic acid (PFOS). TRH >C16–C34 and Total +ve PAHs in three consecutive monitoring rounds. In both cases, no upward trend was observed, and concentrations have decreased compared to the previous round.

SMW_BH038:

At BH038, a one-off exceedance in ammonia and arsenic was detected, but no correlation with construction activities can be determined.

SMW_BH120:

At SMW_BH120, a continued exceedance in dissolved cobalt has been observed. Concentrations have remained stable, with no evident upward trend.

SMW_BH126:

At SMW_BH126, exceedances were recorded for Bicarbonate Alkalinity as CaCO₃, Total Alkalinity as CaCO₃, Benzene, Chlorobenzene, n-Propylbenzene, Sec-Butylbenzene, TRH C6–C9, TRH C6–C10, TRH C6–C10 less BTEX (F1), Perfluorononanoic acid, Dissolved Boron, Dissolved Chromium, and Total Boron. All exceedances were isolated events, with no upward trend observed. No correlation with construction activities can be established.

AF_BH36:

At BH36, exceedances were recorded for Dissolved Cobalt, Dissolved Manganese, Total Beryllium, Total Copper, and Total Manganese. For Cobalt, Manganese, Beryllium, and Copper, exceedances were observed across three consecutive monitoring events. However, no upward trend has been identified, and no direct correlation with construction activities can be established.

4.4 GROUNDWATER LEVELS

Apart from the data gathered during field investigations, live dataloggers were installed in boreholes across the CTP station boxes and tunnel alignment. This data was monitored by engineers and survey teams to assess observable drawdowns to ensure they are within the expected levels. Groundwater levels were also reviewed as part of the permit to excavate documentation throughout the excavation phase of the project (which concluded in 2024). The information in this report was collated in consultation with respective engineering teams who provided input into the conclusions drawn from groundwater levels data. As excavation of the CTP Works has now ceased, datalogging groundwater monitoring has also now ceased in consultation with AFJVs designers (ie monitoring results were provided to AFJVs designer to confirm results showed stabilisation prior to cessation of monitoring- this was done station by station and by tunnel 'section'). It is important to note that the datalogger analysis has been analysed as a "whole of life" data set rather than specific to the reporting

period of this BACMR.

During the reporting period, groundwater levels in the boreholes located along the project station boxes exhibited minimal variance. It is noted that a majority of station box-based data loggers were taken offline at the conclusion of December 2024, as this marked the conclusion of BACMR 6 as well as 12 months since the completion of the relevant station box excavations. As noted in BACMR 6, the majority of boreholes displayed stabilisation for a period of 6 months or more. This is with exception to loggers located at North Strathfield which were monitoring until February 2025 and loggers on tunnel alignment which were monitoring for a further 6 months until May 2025 due to the significant fluctuations in levels observed in previous reporting periods. A full suite of datalogger results can be found in Appendix D.

Data retrieved from water well loggers located along the tunnel alignment historically observed fluctuations during the immediate passing of TBMs or fluctuation resulting from cross passage works. In the previous reporting period, considerable fluctuation in groundwater levels were observed in the boreholes immediately adjacent to XP34 (BH 26.15, Bh26.30 and BH26.42). These boreholes remained stable until cross passage 34 was effectively sealed in early February at which point the associated bore holes quickly recharged. As per the water quality monitoring results outlined in section 4.3. No evidence of saltwater ingress was observed.

BH37, BH715B and BH710 were also identified to show some degree of fluctuation in previous periods. An additional “manual dip” sample was taken in May 2025 to ensure no significant fluctuation had been observed since the loggers were decommissioning after the last formal monitoring round in February 2025. In all cases the dip sample displayed levels similar to that last observed by the data logger in February 2025. It is noted that the final data point received from the BH715B log was an error created by the dip test interfering with the barometric data logger. The cessation of monitoring at these locations was supported by AFJVs designers as part of the overall close out of instrumentation and monitoring across the CTP Works as described above.

Refer to Appendix D for a summary of all groundwater level data compiled during the reporting period.

Table 4-E shows the boreholes that utilised dataloggers over the reporting period.

Table 4-E Live datalogger boreholes

LIVE DATALOGGER BOREHOLES					
TBM Alignment Water Levels	THE BAYS	FIVE DOCK	BURWOOD	NORTH STRATHFIELD	SYDNEY OLYMPIC PARK
AF_BH26.15 AF_BH26.30 AF_BH26.42 AF_BH30.15 AF_BH30.30 AF_BH30.48 AF_BH36 AF_BH36s AF_BH37 AF_BH37s SMW_BH710_v SMW_ENV715B_w	No live dataloggers from July 2024 onwards.	SMW_BH050_s SMW_BH050_w SMW_BH051_s SMW_BH051_w R248_3103_BH141 R248_3103_BH141A	BH1326 SMW_BH044w SMW_BH046s BH1333 BH1336 BH714_s BH714_w SMW_BHCINT01 SMW_BHCINT03	SMW_BH009_s SMW_BH009_w SMW_BH035_s SMW_BH035_w SMW_BH038_w	SMW_BH019_w SMW_BH120_W SMW_ENV714_W

Technical paper 7 of the Project EIS identified that the tunnel alignment passes within 500 metres of groundwater-dependent ecosystems (terrestrial vegetation) in the suburbs of Westmead, Parramatta, Clyde, Silverwater, and Sydney Olympic Park. However, the temporary drawdown detected near Cross Passage 34, located between Burwood North and Five Dock Station Boxes, does not have a groundwater-dependent ecosystem in its vicinity so no impact is expected to GDEs due to tunnel excavation.

4.5 WATER TREATMENT PLANTS

During the reporting period, two Water Treatment Plants were in operation, one at The Bays and one at Burwood North. Offsite discharge at Burwood North recommenced on 20 January 2025 after undergoing an extended maintenance period. Prior to the recommissioning of Burwood WTP, discharge water quality was sampled on several occasions to ensure compliance with the project EPL discharge criteria. A full suite of WTP discharge data can be found in Appendix E.

Any exceedances of EPL criteria identified in sampling is depicted in Table 4-F along with corrective actions taken to improve water quality. Refer to Appendix E for water quality sampling results.

Table 4-F corrective actions for WTP elevated concentrations

Site	Analyte	Corrective action for elevated concentration
The Bays	Nitrogen total	Ongoing maintenance includes backwashing the IEP65 filters every 2-3 days, weekly backwashing of the GAC filters, and fortnightly backwashing of the IX filters. Regular jar testing is conducted to adjust coagulant dosing, and weekly cleaning and calibration of probes is performed on the WTP. Following the EPL Variation, sample results received show full compliance with the new EPL discharge criteria.
	Phosphorus total	
Burwood North	Iron	Following the exceedance in iron for the sample result collected on 9 January 2025, Backwashing of the IEP65, GAC and IX filters was conducted. Subsequent sample results have been compliant to AFJV EPL Burwood discharge criteria. Backwashing and water treatment is ongoing to maintain water treatment plant compliance.

The performance of the WTP's is continually monitored. Appropriate maintenance is consistently conducted to ensure the discharge concentrations are within the established limits in the EPL Condition L2.

Average daily discharge totals vary depending on production, groundwater ingress and rainfall quantities. The cumulative discharge from The Bays and Burwood North plants is depicted below in Figures 4-A and 4-B. The cumulative discharge is representative of the reporting period only and is not representative of discharge prior to January 2025. The Burwood North WTP has not discharged since 29 May 2025.

Figure 4-A - Six-month cumulative discharge for The Bays' WTP

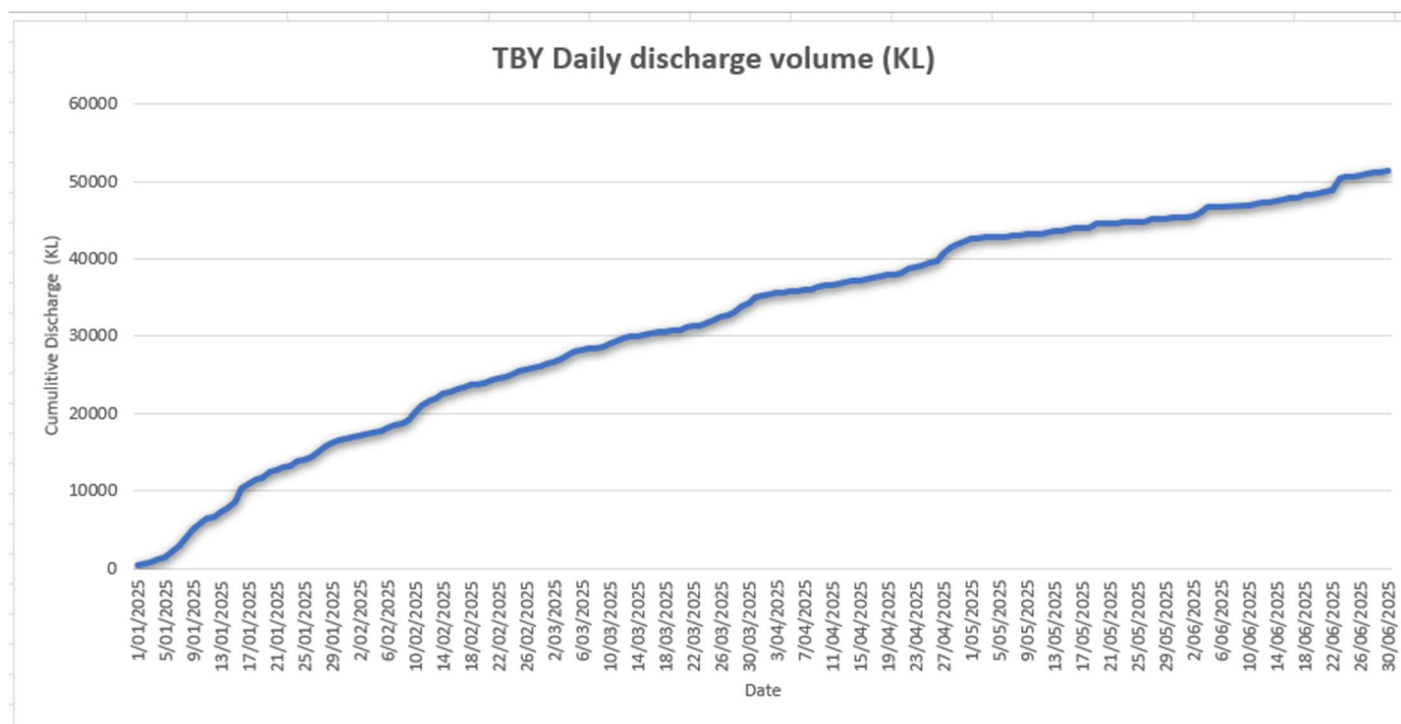
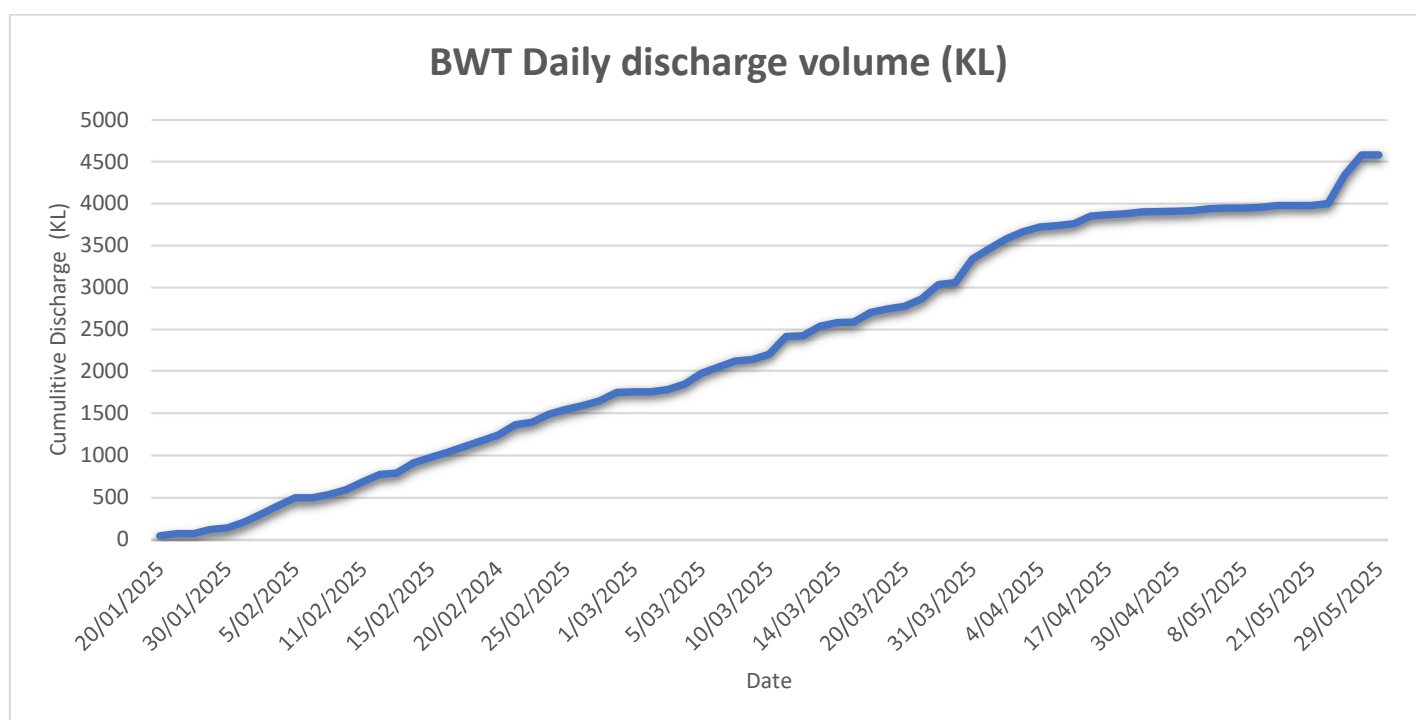


Figure 4-B - Six-month cumulative discharge Burwood WTP



4.6 CONCLUSION

As discussed in section 4.3 of this report, analysis of water quality across multiple boreholes during the reporting period identified some fluctuation and volatility in analyte concentrations. No meaningful overarching trends were observed, with all variation of analyte levels coinciding with the heterogeneous contamination patterns anticipated by the EIS.

Localised groundwater contamination was observed at several monitoring locations during the reporting period, with exceedances of trigger values detected. In BH120, dissolved cobalt concentrations frequently exceeded

the trigger value between September 2023 and February 2025. Concentrations showed some evidence of minor fluctuation throughout the construction period however no notable construction related impact could be identified due to the lack of observable trend.

Similarly, borehole AFBH36 recorded multiple analyte exceedances, particularly for total and dissolved manganese, cobalt, beryllium, copper, nickel, and iron. Elevated concentrations were detected consistently throughout the groundwater monitoring program, with the highest exceedances observed for total manganese and total iron. These results align with predictions in the Environmental Impact Statement (EIS) that excavation-induced groundwater drawdown could mobilise naturally occurring metals from soils and geological formations.

Notably, while elevated concentrations persisted into the February 2025 monitoring round, no new or continuing trends were identified following the cessation of tunnelling and excavation activities, indicating that these results are reflective of background groundwater water quality in the surroundings areas.

Overall, the observed water quality impacts align with the EIS predictions and were primarily localised and temporary, driven by excavation and tunnelling activities. The project's primary mitigation, the Water Treatment Plant, effectively managed potentially contaminated water ingress, ensuring any elevation in analyte levels observed over the reporting period was mitigating from mobilising into the broader environment.

Special attention was given to analytes like sodium and chloride, which were identified to indicative of saltwater intrusion, a key indicator of significant and continued project-related drawdown. No identifiable trend was observed in the results or field observations collected by AFJV. Consequently, based on AFJV's extensive groundwater monitoring, exceedances identified during the period reflect pre-existing conditions rather than sustained groundwater drawdown or other construction related impacts.

Data loggers analysed across the CTP station boxes and tunnel alignment confirmed that the groundwater levels remained consistent with estimated drawdown outlined in Sydney Metro West – EIS Technical Paper 7 – Hydrology. Throughout the reporting period, the groundwater levels in the boreholes situated along the project alignment and station boxes displayed stabilisation or recharge to pre-construction levels by February 2025. All excavation including TBM tunnelling, cross passage excavation and station box excavation was completed by early February 2025 (noting majority was completed before the end of 2024) and, as such, the risk of any further groundwater drawdown is now considered negligible. Throughout the construction period, there has been no trends or correlation that have been identified between groundwater fluctuations and groundwater water quality or salinity. In any case, the groundwater level and groundwater quality monitoring that has been undertaken throughout the CTP Works is considered to satisfy the requirements of Planning Approval Condition C17

Monitoring of water treatment plants detected minor exceedances of organic compounds, nutrients, and metals. Exceedances were minor and unlikely to cause a measurable impact to the receiving environment and waterways. Corrective actions such as increasing backwashing frequency were implemented in response to the observed exceedances.

In conclusion, the data collected throughout the reporting period confirms that surface and groundwater quality fluctuations observed during the construction phase were temporary, localised, and consistent with the predictions outlined in the EIS. All groundwater and surface water levels demonstrating a return to pre-existing conditions, indicating the effectiveness of project mitigation measures such as the Water Treatment Plant.

The environmental risks associated with the construction of the CTP Works have been effectively managed. As a result, all monitoring obligations under the surface water and groundwater monitoring programs for the CTP Works have now been fulfilled, and these programs are formally concluded.

APPENDIX A - NOISE MONITORING

Date	Time	Attended/Unattended	Site	Purpose	OOHWS	Source location	Monitoring location	Works	NCA	Period	NMML Level dB	Model Prediction (LAeq) dB	LAeq dB	LA90 dB	LAmax dB	NMML exceeded?	Exceed model prediction?	Compliant with ICNG	Mitigation measures implemented?	LAeq After MM implementation	Prediction Exceedance AFJV related?	Works Compliant?	Notes	Instrumentation Details	Calibration Validity	Report Link (Field Sheet)
16/01/2025	07:47pm - 08:01pm	Attended	The Bays	DNVIS Verification	N/A	Station box	1 Batty St, Rozelle	Saw Cutter inside the station box	NCA21	Evening	48	48	58.1	55.1	70.2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	During the monitoring, the wind speed was high, around 23 km/h, which prevented the monitor from accurately capturing the noise level of AFJV works. However, the saw cutter was audible in front of 1 Batty St, Rozelle. Noise monitoring needs to be conducted again to accurately identify the noise level of the saw cutter.	Rion NL-42	7/05/2025	20250116-Attended-TBY-DNVIS-01
20/01/2025	08:53pm - 09:07pm	Attended	The Bays	DNVIS Verification	N/A	Station box	1 Batty St, Rozelle	Saw Cutter inside the station box	NCA21	Evening	48	48	51.4	47.9	68	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The recorded noise was a result of multiple sources. The construction noise level was 48 dBA, with cars and traffic being the dominant noise sources.	Rion NL-42	7/05/2025	20250120-Attended-TBY-DNVIS-01
21/01/2025	08:20pm - 08:34pm	Attended	The Bays	DNVIS Verification	N/A	Station box	35 Hornsey St, Rozelle	Saw Cutter inside the station box	NCA21	Evening	52	52	54.1	50.6	70.8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The recorded noise resulted from multiple sources. The construction noise level was inaudible, with cars and traffic on Victoria Road being the dominant noise sources. Additionally, it had been raining prior to the monitoring, making the road wet. This caused the noise from car wheels during movement to increase the overall traffic noise. The LAeq was 54.1 dBA, and the LA90 was 50.6 dBA, which is lower than the NMML level for the evening period.	Rion NL-42	7/05/2025	20250121-Attended-DNVIS-TBY-01
21/01/2025	09:00pm - 09:14pm	Attended	The Bays	DNVIS Verification	N/A	Station box	1 Batty St, Rozelle	Saw Cutter inside the station box	NCA21	Evening	48	48	50.8	47.1	64.7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The recorded noise was a result of multiple sources. The construction noise level was 48 dBA, with cars and traffic being the dominant noise source.	Rion NL-42	7/05/2025	20250121-Attended-DNVIS-TBY-02
21/01/2025	10:32pm - 10:46pm	Attended	Five Dock	OOHW Verification	455	Station box	4 Garfield St, FDK	100T mobile crane, EWP, semi-truck	NCA14	Night	38	56	63	53.4	83.6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The construction activities were audible, and the noise level of the construction works was 53 dBA. The dominant noise sources were windy weather, cars, and pedestrians.	Rion NL-42	7/05/2025	20250122-Attended-OOHW-FDK-01
22/01/2025	10:55pm - 11:09pm	Attended	The Bays	DNVIS Verification	N/A	Station box	35 Hornsey St, Rozelle	Saw Cutter inside the station box	NCA21	Night	44	44	48.9	44.3	71.5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Even though the wind speed was 20km/h, the noise level was 48.9 dBA with LA90 44.3 dBA. The construction noise level was inaudible during the noise monitoring period.	Rion NL-42	7/05/2025	20250122-Attended-TBY-DNVIS-01
22/01/2025	09:32pm - 09:46pm	Attended	North Strathfield	OOHW Verification	466	Station box	125 Queen St, NST	Truck, 30T Excavator	NCA11	Evening	52	69	71.2	60.1	96.2	Yes	Yes	Yes	Yes	N/A	No	Yes	During the noise monitoring period, the truck was parked on Queen St, and the excavator was off. Then, the 30T excavator was used for the noise monitoring period.	Rion NL-42	7/05/2025	20250122-Attended-NST-OOHW-01
28/01/2025	11:12pm - 11:26pm	Attended	The Bays	DNVIS Verification	N/A	Station box	1 Batty St, Rozelle	Saw Cutter inside the station box	NCA21	Evening	40	40	52	49.6	82.3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The recorded noise was a result of multiple sources. The construction noise level was 48 dBA due to other noise sources and windy weather, the noise level of the construction works could not be identified. However, the noise from the construction works was barely audible. dBA, with cars and traffic being the dominant noise sources.	Rion NL-42	7/05/2025	20250128-Attended-TBY-DNVIS-01
28/01/2025	09:41pm - 09:55pm	Attended	Burwood	OOHW Verification	451	Station Box	1A LOFTUS ST, CONCORD	Excavator, electric saw cutter, hand tools	NCA12	Evening	48	48	64.7	52.6	78.2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The noise level was low due to the use of an electric saw cutter, as well as the excavator being used for a short time, around four minutes. The construction noise level was around 62-66 dBA. The dominant noise source was traffic on Paramatta Rd.	Rion NL-42	7/05/2025	20250128-Attended-OOHW-BWD-01
28/01/2025	08:50pm - 09:04pm	Attended	Sydney Olympic Park	OOHW Verification	454	Station box	2C Figue Dr, SOP	Forklift, Bobcat, Franna	NCA08	Evening	53	53	58	48.4	76.5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Construction activities were inaudible; however, cars, pedestrians, and windy weather were the dominant sources of noise.	Rion NL-42	7/05/2025	20250128-Attended-SOP-OOHW-01
30/01/2025	08:50pm - 09:04pm	Attended	Burwood	OOHW Verification	451	Burwood Rd	28 Burton St, CONCORD	Excavator, electric saw cutter, hand tools	NCA12	Evening	48	48	68.1	60	90.3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The excavator was used during the noise monitoring period, and the noise level for the work was around 64-66 dBA, while the Lmax was recorded due to traffic on Burwood Rd.	Rion NL-42	7/05/2025	20250130-Attended-BWD-OOHW-01
30/01/2025	10:34pm - 10:48pm	Attended	The Bays	DNVIS Verification	N/A	Station box	1 Batty St, Rozelle	Saw Cutter inside the station box	NCA21	Night	40	40	53.7	52.3	69.2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Due to other noise sources and windy weather, the noise level of the construction works could not be identified. However, the noise from the construction works was inaudible. Additionally, the shipment loading was in operation with a noise level of 53 dBA during the noise monitoring period, making it difficult to identify the noise level of the construction works.	Rion NL-42	7/05/2025	20250130-Attended-TBY-DNVIS-01
31/01/2025	10:33pm - 10:47pm	Attended	The Bays	DNVIS Verification	N/A	Station box	1 Batty St, Rozelle	Saw Cutter inside the station box	NCA21	Night	40	40	53.8	52.7	57.7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The dominant noise source was the shipment loading during the noise monitoring period. The noise level for the construction works was inaudible.	Rion NL-42	7/05/2025	20250131-Attended-DNVIS-TBY-01
3/02/2025	10:00pm - 10:14pm	Attended	Burwood	OOHW Verification	451	Burwood Rd	4 Burwood Rd, CONCORD	Excavator, electric saw cutter, hand tools	NCA12	Night	47	47	70.7	60.7	86.8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The rechargeable saw cutter was used during the noise monitoring period, and the noise level for the work was around 67-68 dBA, while the Lmax was recorded due to traffic on Burwood Rd.	Rion NL-42	7/05/2025	20250203-Attended-OOHW-BWD-01
4/02/2025	09:38pm - 09:52pm	Attended	Burwood	OOHW Verification	451	Burwood Rd	4 Burwood Rd, CONCORD	Excavator, electric saw cutter, hand tools	NCA12	Night	47	47	71.7	64.8	83.8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The rechargeable saw cutter was used during the noise monitoring period, and the noise level for the work was around 66-71 dBA, while the Lmax was recorded due to traffic on Burwood Rd.	Rion NL-42	7/05/2025	20250204-Attended-BWD-OOHW-01
5/02/2025	11:00pm - 11:14pm	Attended	North Strathfield	OOHW Verification	450	Station box	146 Concord Rd, NST	Truck, 30T Excavator	NCA11	Night	44	80	79.2	58.3	108.8	Yes	No	Yes	Yes	N/A	No	Yes	During the noise monitoring period, the excavator and hand tools were in use. The noise from construction works was 66 dBA, while the dominant noise source was traffic on Concord Rd. During the monitoring, the excavator was idle. Lmax, while the dominant noise source was traffic on Concord Rd. During the monitoring, the excavator was idle. Lmax, while the dominant noise source was traffic and pedestrians during the noise monitoring period. The noise level for the construction works were 48 dBA.	Rion NL-42	7/05/2025	20250205-Attended-DNVIS-TBY-01
6/02/2025	08:43pm - 09:07pm	Attended	The Bays	DNVIS Verification	N/A	Station box	1 Batty St, Rozelle	Hammering inside the station box	NCA21	Evening	48	48	50.9	47.8	63.8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	During the noise monitoring period, hand tools only was in use. The noise from construction works was inaudible, while the dominant noise source was traffic on Concord Rd.	Rion NL-42	7/05/2025	20250206-Attended-DNVIS-TBY-01
6/02/2025	09:43pm - 09:23pm	Attended	North Strathfield	OOHW Verification	450	Station box	144 Concord Rd, NST	Hand tools	NCA11	Evening	52	84	71.6	59.4	92.6	Yes	No	Yes	Yes	N/A	No	Yes	The dominant noise source was traffic and pedestrians during the noise monitoring period. The noise level for the construction works were 48 dBA.	Rion NL-42	7/05/2025	20250206-Attended-OOHW-NST-01
7/02/2025	09:08pm - 09:22pm	Attended	The Bays	DNVIS Verification	N/A	Station box	1 Batty St, Rozelle	Hammering inside the station box	NCA21	Evening	48	48	52.3	49.8	70.8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The dominant noise source was traffic and pedestrians during the noise monitoring period. The noise level for the construction works were 48 dBA.	Rion NL-42	7/05/2025	20250207-Attended-DNVIS-TBY-01
7/02/2025	08:31pm - 08:45pm	Attended	Sydney Olympic Park	OOHW Verification	459	Station box	2C Figue Dr, SOP	One Agi	NCA08	Evening	53	53	57.6	48.4	76.7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	One agitator truck was discharging during the noise monitoring period. The noise from this activity was inaudible, while the dominant noise source was traffic on Fietze Drive.	Rion NL-42	7/05/2025	20250207-Attended-SOP-OOHW-01
13/02/2025	10:24pm - 10:38pm	Attended	Sydney Olympic Park	OOHW Verification	459	Station box	2C Figue Dr, SOP	One Agi	NCA08	Night	51	51	56.2	44.8	78.1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	One agitator truck was discharging during the noise monitoring period. The noise from this activity was inaudible, while the dominant noise source was traffic on Fietze Drive.	Rion NL-42	7/05/2025	20250213-Attended-SOP-OOHW-01
14/02/2025	09:15pm - 09:29pm	Attended	The Bays	DNVIS Verification	N/A	Station box	1 Batty St, Rozelle	Hammering inside the station box	NCA21	Evening	48	48	48.8	47	63.8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The dominant noise source was traffic and pedestrians during the noise monitoring period. The noise level for the construction works were inaudible.	Rion NL-42	7/05/2025	20250214-Attended-DNVIS-TBY-01
17/02/2025	08:05pm - 08:19pm	Attended	North Strathfield	OOHW Verification	450	Queen St	125 Queen St, NST	Hand tools, Saw cutter	NCA11	Evening	52	93	71.9	52.7	89.4	Yes	No	Yes	Yes	N/A	No	Yes	During the noise monitoring period, hand tools and a rechargeable saw cutter were in use. The noise from construction works was 68 dBA, which was the dominant noise source during the monitoring period. The saw cutter was used for on.	Rion NL-42	7/05/2025	20250217-Attended-OOHW-NST-01
20/02/2025	10:44pm - 10:58pm	Attended	Sydney Olympic Park	OOHW Verification	459	Station box	2C Figue Dr, SOP	One Agi	NCA08	Night	51	51	54.1	47.2	72.9	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The agitator truck was discharging during the noise monitoring period, while the dominant noise source was traffic on Paramatta Rd.	Rion NL-42	7/05/2025	20250220-Attended-OOHW-SOP-01
21/02/2025	09:32pm - 09:46pm	Attended	Burwood	OOHW Verification	472	Station box	1A LOFTUS ST, CONCORD	Generator	NCA12	Evening	48	48	58.1	50.8	73.9	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The generator was inaudible during the noise monitoring period, while the dominant noise source was traffic on Paramatta Rd.	Rion NL-42	7/05/2025	20250221-Attended-OOHW-BWD-01
25/02/2025	09:47pm - 10:01pm	Attended	Burwood	OOHW Verification	451	Station box	1A LOFTUS ST, CONCORD	Excavator, saw cutter, hand tools and truck	NCA12	Evening	48	56	63.7	50.2	86.7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Noise from construction works was 51-54 dBA while the dominant noise source was traffic on Paramatta Rd. during the noise monitoring, one excavator and rechargeable saw cutter been used.	Rion NL-42	7/05/2025	20250225-Attended-BWD-OOHW-01
25/02/2025	11:27pm - 11:42pm	Attended	Burwood	DNVIS Verification	N/A	Station box	6 Burton Street	Excavator, bogie truck	NCA12	Jay (Standard)	53	53	52.3	46.2	64.8	No	No	Yes	Yes	Yes	Yes	Yes	During the noise monitoring period, the noise level for the 30T excavator was 67 dBA, while other sources of noise, such as traffic (67 dBA) and bins (68 dBA), were also recorded. The noise monitoring was conducted during the daytime to identify the noise levels associated with AFJV works.	Svan958AG (Sn 95903)	8/04/2026	20250225-Attended-DNVIS-BWD-02
26/02/2025	11:00pm - 11:14pm	Attended	Five Dock	OOHW Verification	465	Great North Rd, FDK	110 Great North Rd, FDK	300T mobile crane, 2 truck	NCA14	Night	43	60	71.6	53.5	94.9	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The construction activities were audible, and the noise level of the construction works was 55 dBA. The dominant noise sources were cars, cars, and pedestrians.	Rion NL-42	7/05/2026	20250226-Attended-OOHW-FDK-01
28/02/2025	09:00pm - 09:15pm	Attended	The Bays	DNVIS Verification	N/A	Station box	1 Batty St, Rozelle	Crane, excavator operation, spoil load out	NCA21	Evening	48	48	62	51.2	90.9	Yes	Yes	Yes	Yes	Yes	Yes	Yes	The dominant noise source was traffic and pedestrians during the noise monitoring period. The noise level for the construction works were inaudible.	Rion NL-42	7/05/2025	20250228-Attended-DNVIS-TBY-01
4/03/2025	09:53pm - 10:06pm	Attended	Burwood	OOHW Verification	451	Paramatta Rd	4 Burwood Rd, CONCORD	Excavator, electric saw cutter, hand tools	NCA12	Night	47	89	70.4	61.9	85	Yes	No	Yes	Yes	Yes	Yes	Yes	The rechargeable saw cutter was used during the noise monitoring period, and the noise level for the work was around 61-64 dBA, while the Lmax was recorded due to traffic on Burwood Rd.	Rion NL-42	7/05/2025	20250304-Attended-OOHW-BWD-01
6/03/2025	09:15pm - 09:29pm	Attended	Burwood	OOHW Verification	451	Paramatta Rd	4 Burwood Rd, CONCORD	Excavator, electric saw cutter, hand tools	NCA12	Evening	48	89	70.2	64.2	87.8	Yes	No	Yes	Yes	Yes	Yes	Yes	Due to the location of the work, construction activities were inaudible during the monitoring period in front of 4 Burwood Rd, Concord. The dominant noise source was traffic on Paramatta Rd.	Rion NL-42	7/05/2025	20250306-Attended-OOHW-BWD-01
10/03/2025	09:09pm - 09:23pm	Attended	North Strathfield	OOHW Verification	409	Queen St	25 Beronge St, NST	Hand tools, Franna	NCA11	Evening	52	78	59.9	49.3	73.1	Yes	No	Yes	Yes	N/A	No	Yes	During the noise monitoring period, Franna was in use delivering plate. The noise of the Franna was 61 dBA while the dominant noise source was traffic on Queen St.	Rion NL-42	7/05/2025	20250310-Attended-OOHW-NST-01
11/03/2025	09:05pm - 09:19pm	Attended	Burwood	OOHW Verification	405	Burwood Rd	28 Burton St, CONCORD	Excavator, saw cutter, hand tools	NCA12	Evening	48	78	74	60.9	87	Yes	No	Yes	Yes	Yes	Yes	Yes	Construction activities were the dominant noise source. However, AFJV has provided alternative accommodation (AA). The noise level of the construction works was around 67-75 dBA.	Rion NL-42	7/05/2025	20250311-Attended-OOHW-BWD-01
13/03/2025	09:25pm - 09:43pm	Attended	Burwood	OOHW Verification	451	Paramatta Rd	1 Loftus St, CONCORD	Excavator, electric saw cutter, hand tools	NCA12	Evening	48	84	59.3	53	72	Yes	No	Yes	Yes	Yes	Yes	Yes	During the noise monitoring, construction noise was inaudible while the dominant noise source was traffic on Paramatta Rd.	Rion NL-42	7/05/2025	20250313-Attended-OOHW-BWD-01
31/03/2025	3:23pm - 3:38pm	Attended	Burwood	Spot Check	N/A	Station box	16 Burton St, Concord	Defect rectification, WTP operation	NCA12	Jay (Standard)	53	48	52.9	46.1	67.2	No	Yes	Yes	Yes	N/A	No	Yes	During the monitoring event no construction works were audible. Noise observed was predominantly attributed to local traffic on Burton Street and pedestrians nearby. Burwood Rd and Paramatta Road were also major contributors to the noise profile.	Svantek 971	8/04/2025	20250331-Attended-OOHW-BWD-01
1/04/2025	12:05pm - 12:20pm	Attended	Burwood	Spot Check	N/A	Station box	16 Burton St, Concord	Defect rectification, WTP operation	NCA12	Jay (Standard)	53	48	53.6	46.6	70.1	Yes	Yes	Yes	Yes	N/A	No	Yes	No AFJV related works were audible during this monitoring event.	Svantek 971	8/04/2025	20250401-Attended-OOHW-BWD-01
3/04/2025	10:10am - 10:25am	Attended	Burwood	Spot Check	N/A	Station box and surface works	16 Burton St, Concord	Asphalting works, Defect rectification, WTP operation	NCA12	Jay (Standard)	53	48	61.6	54.4	83.7	Yes	Yes	Yes	Yes	N/A	N/A	Yes	During the monitoring event construction works were audible. Noise observed was predominantly the result of nearby asphalting. Local traffic on Burton Street and pedestrians nearby also made up a considerable contribution to the noise profile.	Rion NL-42	7/05/2025	Noise Monitoring Report Sheet 20250403-01.docx

APPENDIX A (i) – ATTENDED NOISE MONITORING REGISTER & FIELD SHEET EXAMPLES

Noise Monitoring Report

Project:	Sydney Metro West – Central Tunnelling Package			Report No.	20250207-SOP-01			
Site:	SOP			Monitoring type:	Attended ☒ Unattended			
Data collected by:	Osamah Naji			Date:	07/02/2025			
Purpose of monitoring:	DNVIS Verification	☐	OOHW#: 459	Time:	Start: 08:31pm End: 08:45pm			
	OOHW Permit Verification	☒						
	Complaint Response	☐						
Construction noise source and description of activity:					Monitoring location/s:	NCA	NML (dB)	Prediction (dB)
Drop pipe activity (one Agi)					2C Figtree Dr. SOP	8	53	53
Meteorological conditions								
Temperature (°C):	21			Cloud cover (%):	30			
Wind (km/hr and direction)	13			Rainfall:	No			
Instrumentation details (include serial number):	Rion NL-42			Calibration valid until:	07/05/2025			
				Field Calibrated?	YES ☒ NO			
Assessment of light spill:	No Issue							
Instrumentation and method:								
Tripod 1.5-meter Height, Rion NL-42								
15 minutes								
Attended OOHV verification, nearest residential receiver								
Results summary:								
(i)	Was NML exceeded during monitoring period?					YES ☒	NO ☐	
(ii)	Was DNVIS prediction exceeded during monitoring period?					YES ☒	NO ☐	
(iii)	Was exceedance/s the result of AFJV works?					YES ☐	NO ☒	
(iv)	Are all reasonable and feasible mitigation measures implemented? (if 'No' potential NCR to be raised, discuss with Environment Manager)					YES ☒	NO ☐	
If answered yes to (iii) please indicate what mitigation measures have been proactively implemented? Also add examples of other mitigation measures observed during monitoring.								

- 1) All plant movement alarms are to be non-tonal, as per project policy.
- 2) Noise-emitting plants should be directed away from sensitive receivers where possible.
- 3) Plant and equipment should be switched off when not in use.
- 4) The workforce induction will include a particular emphasis on positive behavioural practices, such as avoiding unnecessary shouting or loud radios on-site, and maintaining low voice communication.
- 5) Sequencing of construction activities should prioritize minimizing noise impacts on neighbouring residents and the local community, especially during late hours of the night.

Results summary description: (ie, including dominant noise sources, contribution of project activities, non-construction related sources, highest noise source, etc.):

One agitator truck was discharging during the noise monitoring period. The noise from this activity was inaudible, while the dominant noise source was traffic on Figtree Drive.



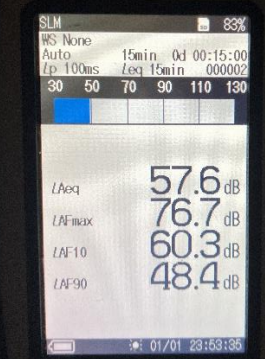
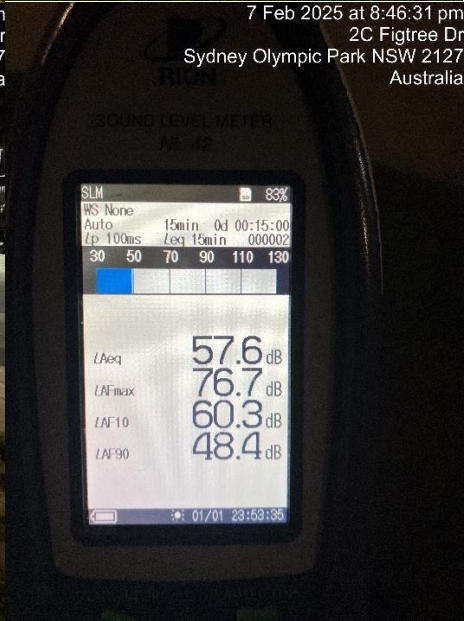
SoP

8:31-8:45 Pm

7/2/25

osama

Location	Time	Observations	LAeq dBA	LA10 dBA	LA90 dBA	LAmx dBA
EC	8:31	58-6 Cars				
Fire	8:32	66-1 Traffic				
Dr	8:33	73-8 airplane				
SoP	8:34	59-2 Car				
	8:35	49.4 Peleteria				
	8:36	60-8 Car				
	8:37	49.9 Peleteria	57.6	60.3	48.4	76.7
	8:38	58.2 Peleteria				
	8:39	68-9 Cars				
	8:40	46-1 Peleteria				
	8:41	54.2 Car				
	8:42	64.9 Traffic				
	8:43	48.5 windy weather				
	8:44	46.2 Cars away				
	8:45	61.7 Cars				





Attachment A: Monitoring, work locations & photos



Monitoring Location



Work Location



Site location

Noise Monitoring Report

Project:	Sydney Metro West – Central Tunnelling Package			Report No.	20250121-FDK-01		
Site:	FDK			Monitoring type:	Attended ☒ Unattended ☐		
Data collected by:	Osamah Naji			Date:	21/01/2025		
Purpose of monitoring:	DNVIS Verification		OOHW#: 455	Time:	Start: 10:32pm End: 10:46pm		
	OOHW Permit Verification						
	Complaint Response						
Construction noise source and description of activity:				Monitoring location/s:	NCA	NML (dB)	Prediction (dB)
100T Mobile crane, semi-truck, EWP				4 Garfield St, FDK	14	38	56
Meteorological conditions							
Temperature (°C):	22			Cloud cover (%):	40		
Wind (km/hr and direction):	4			Rainfall:	No		
Instrumentation details (include serial number):	Rion NL-42 C36211			Calibration valid until:	07/05/2025		
				Field Calibrated?	YES ☒ NO ☐		
Assessment of light spill:							
Instrumentation and method:							
Tripod 1.5-meter Height, Rion NL-42 15 minutes Attended DNVIS verification, nearest residential receiver							
Results summary:							
(i)	Was NML exceeded during monitoring period?					YES ☒	NO ☐
(ii)	Was DNVIS prediction exceeded during monitoring period?					YES ☒	NO ☐
(iii)	Was exceedance/s the result of AFJV works?					YES ☐	NO ☒
(iv)	Are all reasonable and feasible mitigation measures implemented? (if 'No' potential NCR to be raised, discuss with Environment Manager)					YES ☒	NO ☐
If answered yes to (iii) please indicate what mitigation measures have been proactively implemented? Also add examples of other mitigation measures observed during monitoring.							

- 1) Booster and conveyor belts are to be turned off when the TBM stops excavation.
- 2) All plant movement alarms are to be non-tonal, as per project policy.
- 3) Noise-emitting plants should be directed away from sensitive receivers where possible.
- 4) Plant and equipment should be switched off when not in use.
- 5) The workforce induction will include a particular emphasis on positive behavioural practices, such as avoiding unnecessary shouting or loud radios on-site, and maintaining low voice communication.
- 6) Sequencing of construction activities should prioritize minimizing noise impacts on neighboring residents and the local community, especially during late hours of the night.
- 7) Workers should be briefed at pre-start to ensure they do not make unnecessary noise.

Results summary description: (ie, including dominant noise sources, contribution of project activities, non-construction related sources, highest noise source, etc.):

The construction activities were audible, and the noise level of the construction works was 53 dBA. The dominant noise sources were cars, cars, and pedestrians.

10:32-10:46 Pm

21/1/25

Osameh

Location	Time	Observations	LAeq dBA	LA10 dBA	LA90 dBA	LAmx dBA
4	10:32	52.4 Crane + car				
Garfield	10:33	53.6 Crane				
st	10:34	51.9 Crane				
FDK	10:35	59.2 Crane + car				
	10:36	54.2 " Car				
	10:37	56.7 Trolley	63	56.7	51.4	83.6
	10:38	52.4 Car				
	10:39	83.6 airplane				
	10:40	51.2 Pedestrian				
	10:41	66.6 Car				
	10:42	53.3 Crane + car				
	10:43	59.1 Trolley				
	10:44	64.9 BUS on GNR				
	10:45	53.9 Crane + car				
	10:46	54.5 " + Car on GNR.				



Attachment A: Monitoring, work locations & photos



-  Monitoring Location
-  Work Location
-  Station box location.

Noise Monitoring Report

Project:	Sydney Metro West – Central Tunnelling Package			Report No.	20250122-NST-01			
Site:	NST			Monitoring type:	Attended ☒ Unattended ☐			
Data collected by:	Osamah Naji			Date:	22/01/2025			
Purpose of monitoring:	DNVIS Verification	☐	OOHW#: 460	Time:	Start: 09:32 pm End: 09:46pm			
	OOHW Permit Verification	☒						
	Complaint Response	☐						
Construction noise source and description of activity:					Monitoring location/s:	NCA	NML (dB)	Prediction (dB)
Truck, 30T Excavator					125 Queen St, NST	11	52	69
Meteorological conditions								
Temperature (°C):	22			Cloud cover (%):	30			
Wind (km/hr and direction):	20			Rainfall:	No			
Instrumentation details (include serial number):	Rion NL-42			Calibration valid until:	07/05/2025			
				Field Calibrated?	YES ☒ NO ☐			
Assessment of light spill:	No Issue							
Instrumentation and method:								
Tripod 1.5-meter Height, Rion NL-42								
15 minutes								
Attended OOHV verification, nearest residential receiver								
Results summary:								
(i)	Was NML exceeded during monitoring period?					YES ☒	NO ☐	
(ii)	Was DNVIS prediction exceeded during monitoring period?					YES ☒	NO ☐	
(iii)	Was exceedance/s the result of AFJV works?					YES ☐	NO ☒	
(iv)	Are all reasonable and feasible mitigation measures implemented? (if 'No' potential NCR to be raised, discuss with Environment Manager)					YES ☒	NO ☐	
If answered yes to (iii) please indicate what mitigation measures have been proactively implemented? Also add examples of other mitigation measures observed during monitoring.								

- 1) All plant movement alarms are to be non-tonal, as per project policy.
- 2) Noise-emitting plants should be directed away from sensitive receivers where possible.
- 3) Plant and equipment should be switched off when not in use.
- 4) The workforce induction will include a particular emphasis on positive behavioural practices, such as avoiding unnecessary shouting or loud radios on-site, and maintaining low voice communication.
- 5) Sequencing of construction activities should prioritize minimizing noise impacts on neighbouring residents and the local community, especially during late hours of the night.

Results summary description: (ie, including dominant noise sources, contribution of project activities, non-construction related sources, highest noise source, etc.):

During the noise monitoring period, the truck was parked on Queen St, and the excavator was off. Then, the 30T excavator was driven onto the flat truck to be delivered. The activity took around 20 minutes to complete, and the noise level of AFJV's work was 62 dBA.



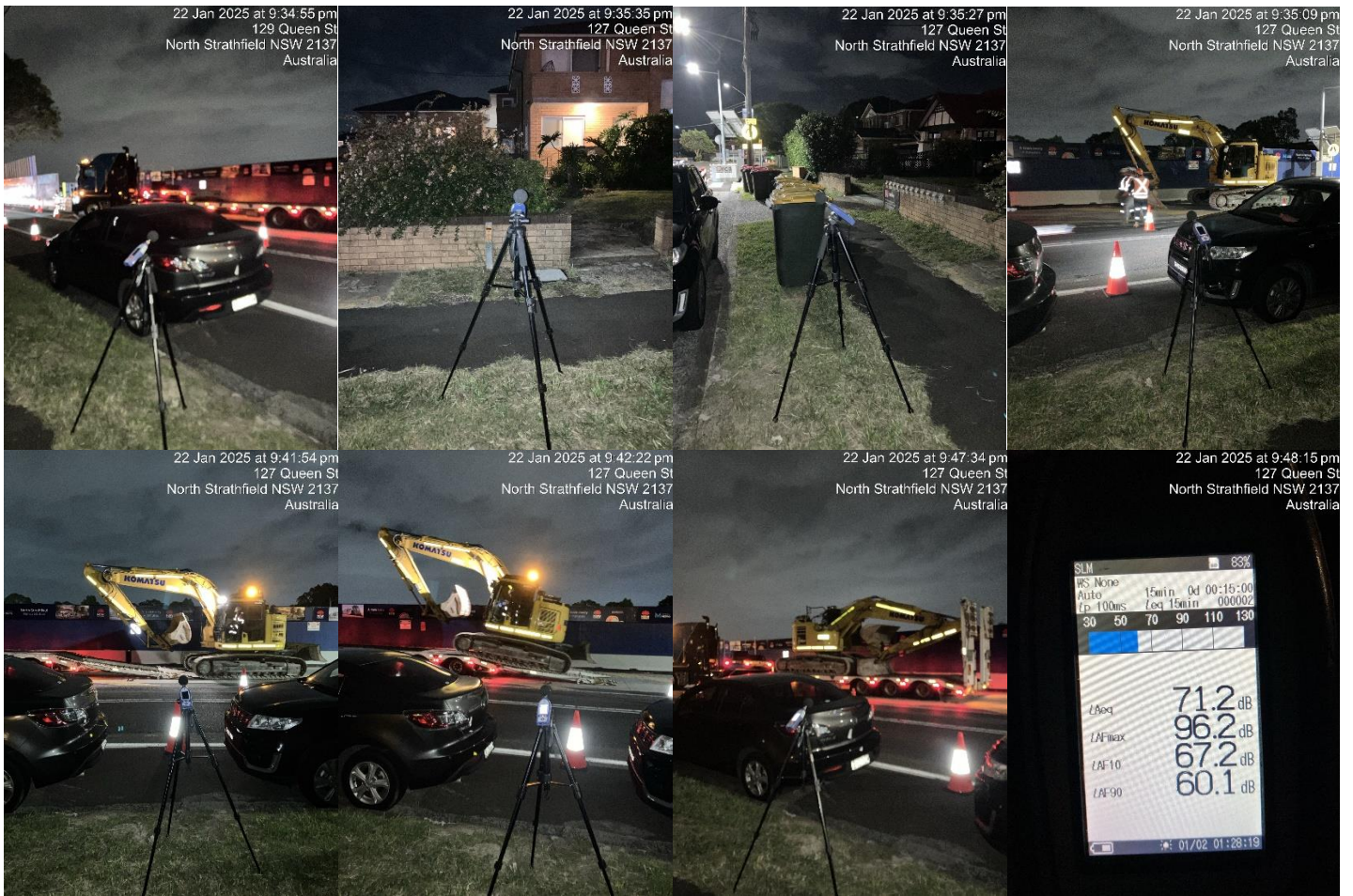
NST

9:32-9:46 PM
22/1/25

osamah

Location	Time	Observations	LAeq dBA	LA10 dBA	LA90 dBA	LAmx dBA
125	9:32	61.2 Truck + Traffic				
Queen	9:33	83.5 Truck & airplane				
	9:34	68.4 Truck + Traffic				
	9:35	66.1 " "				
	9:36	62.3 Truck + Traffic				
	9:37	61.2 Truck + Traffic				
	9:38	59.9 Traffic + Truck	74.2	67.2	60.1	96.2
	9:39	66.6 Truck + excavator				
	9:40	67.1 " " + Traffic				
	9:41	65.6 " " "				
	9:42	63.3 Truck + Traffic + Truck				
	9:43	62.4 Truck + Traffic				
	9:43	62.1 " "				
	9:44	60.4 Truck + Traffic				
	9:45	59.9 Truck + Traffic				
	9:46	60.7 " "				

Attachment A: Monitoring, work locations & photos





-  Monitoring Location
-  Work Location
-  Site location

Noise Monitoring Report

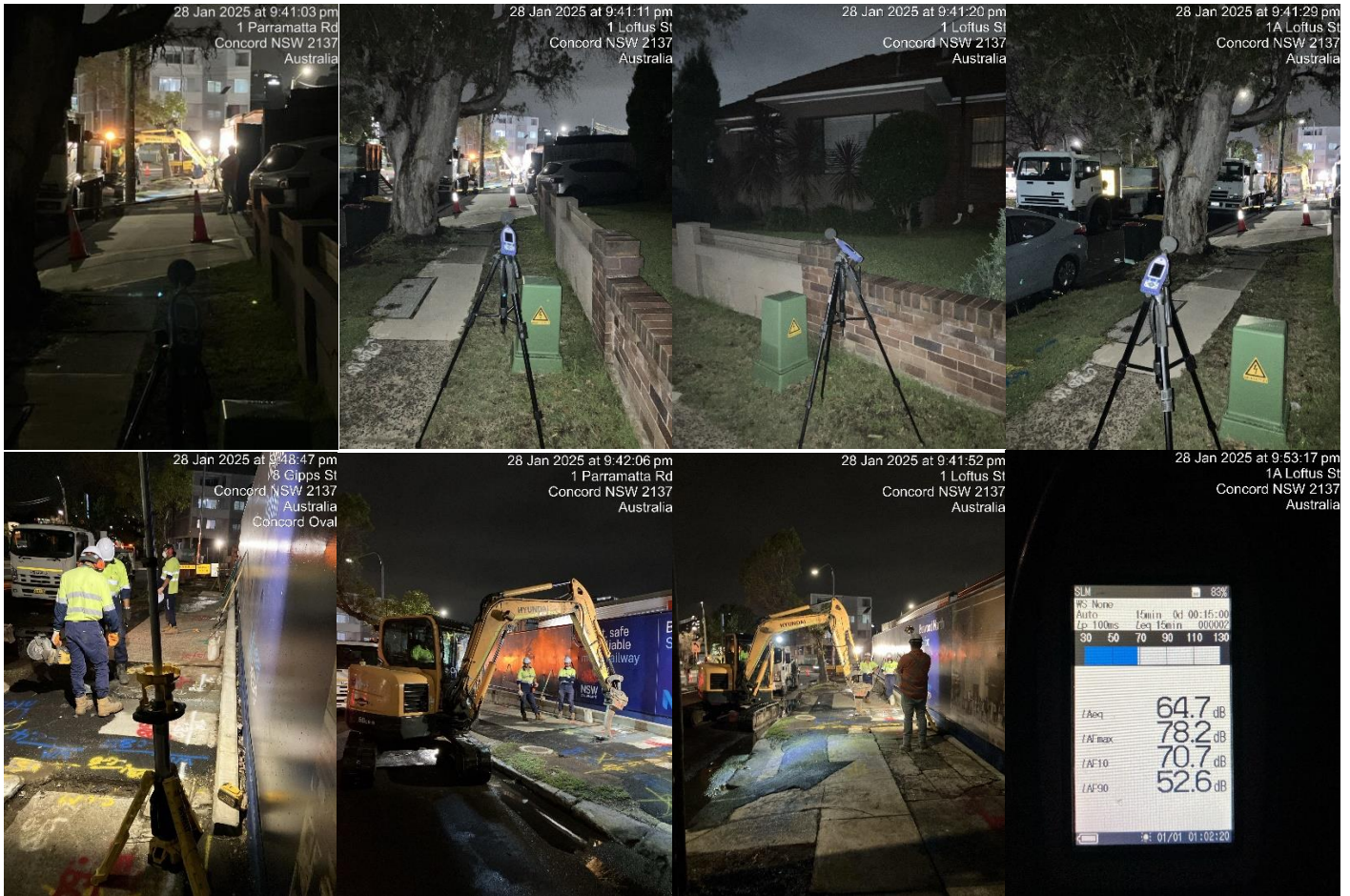
Project:	Sydney Metro West – Central Tunnelling Package			Report No.	20250128-BWD-01		
Site:	BWD			Monitoring type:	Attended ☒ Unattended ☐		
Data collected by:	Osamah Naji			Date:	28/01/2025		
Purpose of monitoring:	DNVIS Verification	☐	OOHW#: 451	Time:	Start: 09:41pm End: 09:55pm		
	OOHW Permit Verification	☒					
	Complaint Response	☐					
Construction noise source and description of activity:				Monitoring location/s:	NCA	NML (dB)	Prediction (dB)
Excavator, Electric saw cutter, hand tools.				1a Loftus St, Concord	12	47	90
Meteorological conditions							
Temperature (°C):	18			Cloud cover (%):	70		
Wind (km/hr and direction):	11			Rainfall:	No		
Instrumentation details (include serial number):	Rion NL-42			Calibration valid until:	07/05/2025		
				Field Calibrated?	YES ☒ NO ☐		
Assessment of light spill:	No Issue						
Instrumentation and method:							
Tripod 1.5-meter Height, Rion NL-42							
15 minutes							
Attended OOHV verification, nearest residential receiver							
Results summary:							
(i)	Was NML exceeded during monitoring period?				YES ☒	NO ☐	
(ii)	Was DNVIS prediction exceeded during monitoring period?				YES ☐	NO ☒	
(iii)	Was exceedance/s the result of AFJV works?				YES ☐	NO ☒	
(iv)	Are all reasonable and feasible mitigation measures implemented? (if 'No' potential NCR to be raised, discuss with Environment Manager)				YES ☒	NO ☐	
If answered yes to (iii) please indicate what mitigation measures have been proactively implemented? Also add examples of other mitigation measures observed during monitoring.							

1. Works restricted to the work zone identified in the noise assessment.
2. Works and plant selection have been selected to reduce impact on residents as far as reasonably practicable.
3. Additional mitigation such as noise mats and enclosures will be employed around noisy equipment where practicable.
4. Noise monitoring at sensitive receptors will be used to confirm noise impacts predicted during modelling. Work will be undertaken to reduce impacts should thresholds look set to be exceeded.
5. The workforce induction will include particular emphasis on positive behavioural practices such as avoiding unnecessary shouting or loud radios on site.
6. Priority has been given to the use of quieter and less vibration-emitting construction methods and plant alternatives where feasible and reasonable.
7. The noise levels of the plant and equipment will meet the maximum noise requirements of the CNVS.
8. Noise-emitting plant to be directed away from sensitive receivers where possible and the stationary plant will be located behind a structure or enclosed if practicable.
9. All plant movement alarms are to be non-tonal as per project policy.
10. Plant & equipment to be switched off when not in use.

Results summary description: (ie, including dominant noise sources, contribution of project activities, non-construction related sources, highest noise source, etc.):

The noise level was low due to the use of an electric saw cutter, as well as the excavator being used for a short time, around four minutes. The construction noise level was around 62-66 dBA. The dominant noise source was traffic on Parramatta Rd.

Location	Time	Observations	LAeq dBA	LA10 dBA	LA90 dBA	LAmx dBA
1A	9:41	67-4 Saw Demo + Traffic				
Laffus st	9:42	64-3 electric saw Demo + Traffic				
BWD	9:43	65-9 ~ ~ ~ ~				
	9:44	65-3 excavator + Traffic				
	9:45	66-2 excavator + Traffic				
	9:46	52-3 Traffic + Pedestrian	64.7	70.7	72.2 52.6	52.6 78.2
	9:47	55-3 ~ ~				
	9:48	66-7 Cars				
	9:49	70-5 bike				
	9:50	65-2 electric saw Demo				
	9:51	63-9 ~ ~ ~				
	9:52	70-1 electric saw Demo + Traffic				
	9:53	55-1 Traffic				
	9:54	59-2 Cars				
	9:55	68-3 electric saw Demo + Traffic				



Attachment A: Monitoring, work locations & photos



Monitoring Location



Site Area



Working Location

Noise Monitoring Report

Project:	Sydney Metro West – Central Tunnelling Package			Report No.	20250228-TBY-01																				
Site:	TBY			Monitoring type:	Attended ☒ Unattended																				
Data collected by:	Osamah Naji			Date:	28/02/2025																				
Purpose of monitoring:	DNVIS Verification	☒	OOHW#:	Time:	Start: 09:00pm End: 09:14pm																				
	OOHW Permit Verification	☐																							
	Complaint Response	☐																							
<table border="1"> <thead> <tr> <th>Construction noise source and description of activity:</th> <th>Monitoring location/s:</th> <th>NCA</th> <th>NML (dB)</th> <th>Prediction (dB)</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Excavator and crane</td> <td>1 Batty St, Rozelle</td> <td>21</td> <td>48</td> <td>48</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>								Construction noise source and description of activity:	Monitoring location/s:	NCA	NML (dB)	Prediction (dB)	Excavator and crane	1 Batty St, Rozelle	21	48	48								
Construction noise source and description of activity:	Monitoring location/s:	NCA	NML (dB)	Prediction (dB)																					
Excavator and crane	1 Batty St, Rozelle	21	48	48																					
Meteorological conditions																									
Temperature (°C):	23			Cloud cover (%):	40																				
Wind (km/hr and direction)	10			Rainfall:	No																				
Instrumentation details (include serial number):	Rion NL-42			Calibration valid until:	07/05/2025																				
				Field Calibrated?	YES ☒ NO																				
Assessment of light spill:	No Issue																								
Instrumentation and method:																									
Tripod 1.5-meter Height, Rion NL-42 15 minutes Attended DNVIS verification, nearest residential receiver																									
Results summary:																									
(i)		Was NML exceeded during monitoring period?			YES ☒		NO ☐																		
(ii)		Was DNVIS prediction exceeded during monitoring period?			YES ☒		NO ☐																		
(iii)		Was exceedance/s the result of AFJV works?			YES ☐		NO ☒																		
(iv)		Are all reasonable and feasible mitigation measures implemented? (if 'No' potential NCR to be raised, discuss with Environment Manager)			YES ☒		NO ☐																		
If answered yes to (iii) please indicate what mitigation measures have been proactively implemented? Also add examples of other mitigation measures observed during monitoring.																									

- 1) All plant movement alarms are to be non-tonal, as per project policy.
- 2) Noise-emitting plants should be directed away from sensitive receivers where possible.
- 3) Plant and equipment should be switched off when not in use.
- 4) The workforce induction will include a particular emphasis on positive behavioural practices, such as avoiding unnecessary shouting or loud radios on-site, and maintaining low voice communication.
- 5) Sequencing of construction activities should prioritize minimizing noise impacts on neighbouring residents and the local community, especially during late hours of the night.

Results summary description: (ie, including dominant noise sources, contribution of project activities, non-construction related sources, highest noise source, etc.):

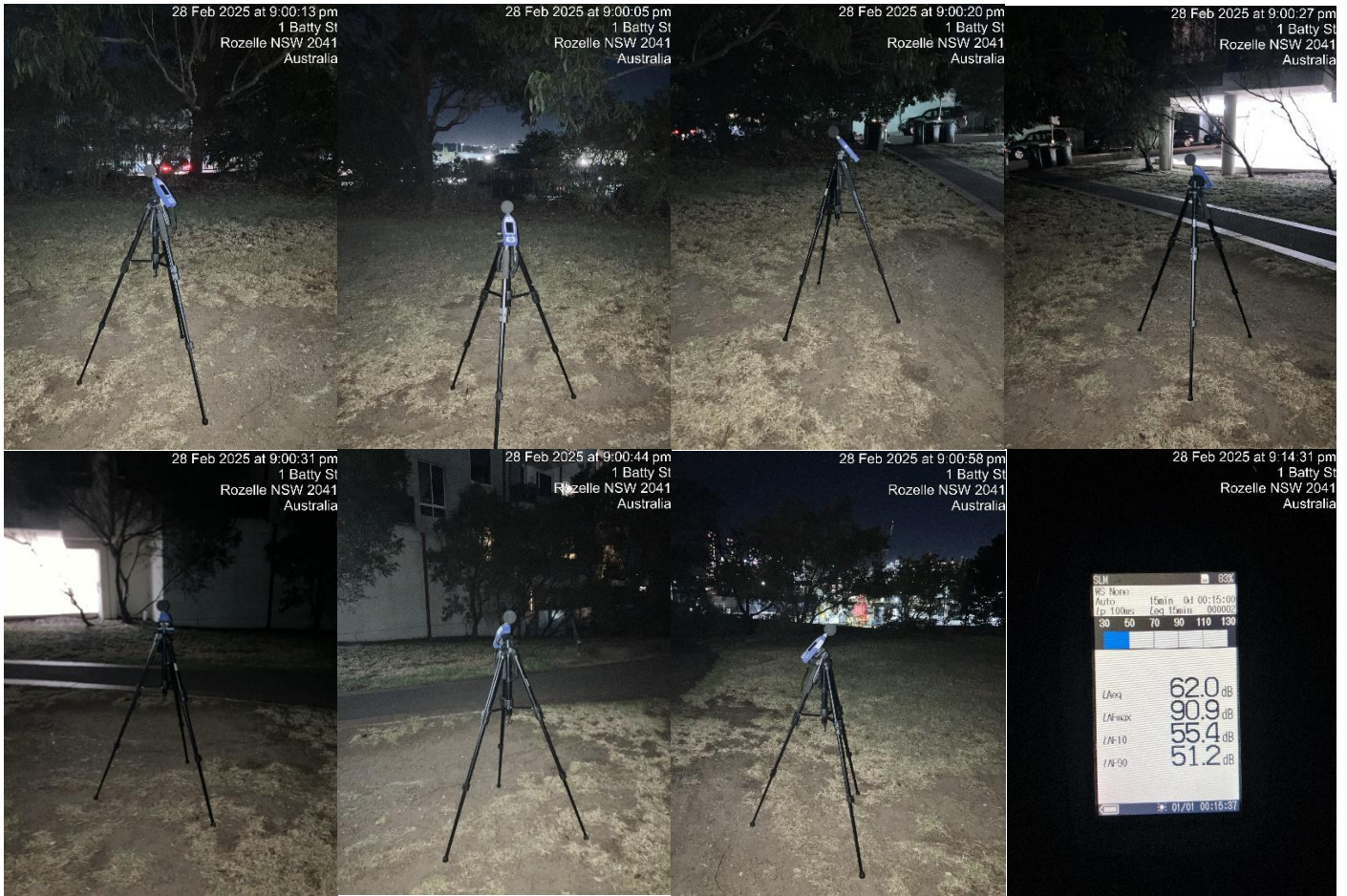
The dominant noise source was traffic and pedestrians during the noise monitoring period. The noise level for the construction works were inaudible.

9:00-9:14 PM

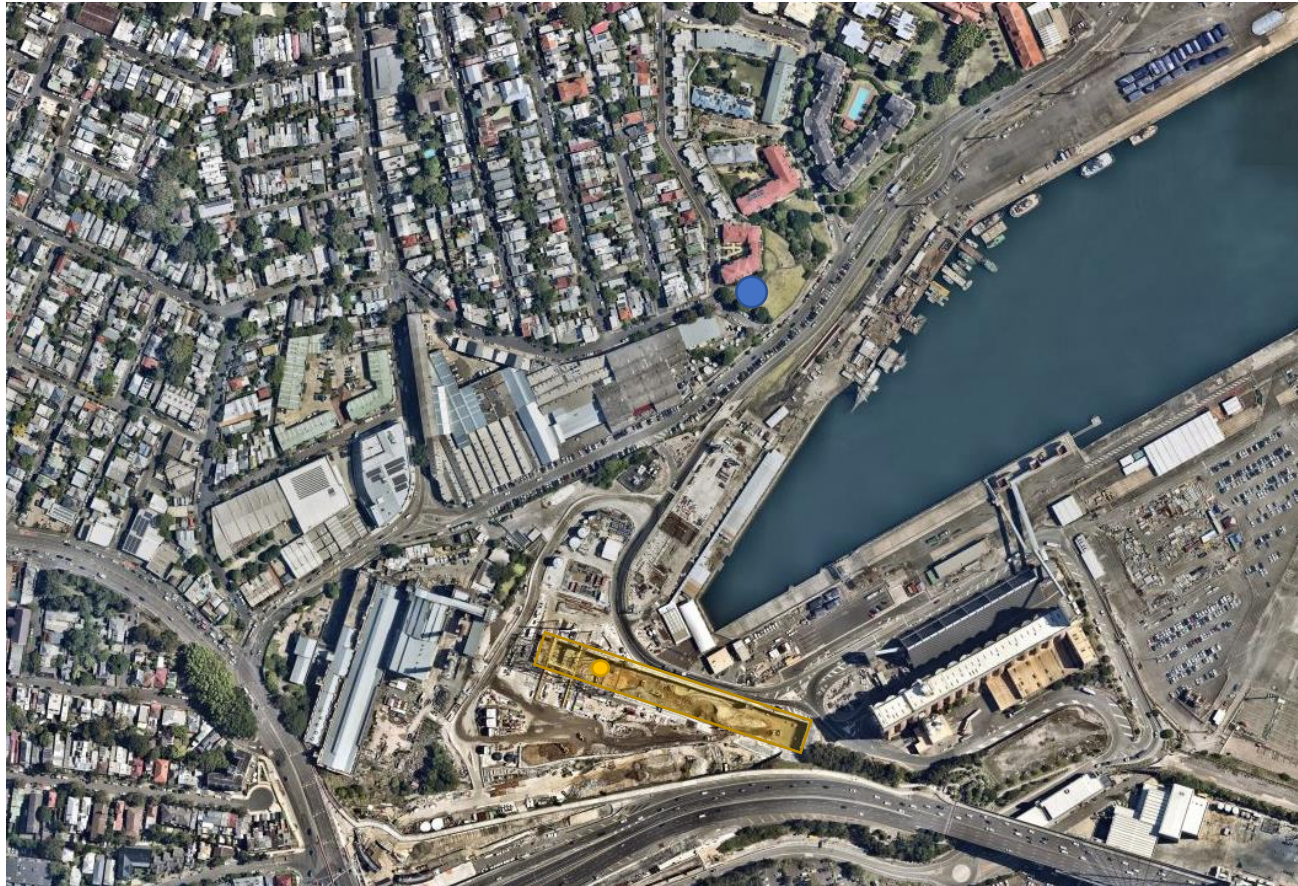
28/2/25

osamah

Location	Time	Observations	LAeq dBA	LA10 dBA	LA90 dBA	LAmx dBA
1	9:00	53.3 Peelabon				
Buffy	9:01	60.2 airplane				
st	9:02	51.5 Peelabon				
TBy	9:03	55.6 windy weather				
	9:04	51.1 Peelabon				
	9:05	53.7 Cars away				
	9:06	51.4 " "	62	55.4	51.2	90.9
	9:07	59.2 car				
	9:08	75.1 dog				
	9:09	51.6 cars away				
	9:10	52.2 Peelabon				
	9:11	56.9 car				
		Peelabon				
	9:12	50.9 car				
	9:13	54.1				
	9:14	51.2 cars away				



Attachment A: Monitoring, work locations & photos



 Monitoring Location

 Work Location

 Site location



Attended Noise Monitoring Rion-42- 110 Great North Rd, FDK



Attended Noise Monitoring Rion-42- 4 1a Loftus St, Concord

20 Feb 2025 at 10:46:07 pm
2C Figtree Dr
Sydney Olympic Park NSW 2127
Australia



Attended Noise Monitoring Rion-42- 2C Figtree Dr. SOP

17 Feb 2025 at 8:05:37 pm
127 Queen St
North Strathfield NSW 2137
Australia



Attended Noise Monitoring Rion-42- 123 Queen Street, NST



Attended Noise Monitoring Rion-42- 1 Batty St, Rozelle

APPENDIX A (ii) – SOUND POWER LEVELS

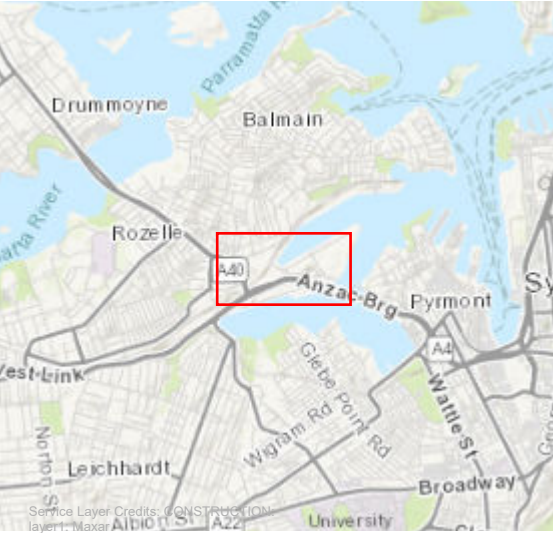
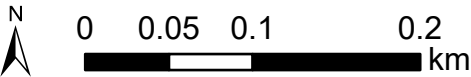
Location	Plant	Monitored SWL (dB(A))	Compliant with CNVS Table 13	Date
<i>BWD</i>	Generator	91	Not listed	20/02/2025
<i>TBY</i>	24t excavator	74	Yes	25/02/2025
<i>FDK</i>	Concrete Pump	79	Yes	3/03/2025
<i>TBY</i>	Jackhammer	87	Yes	20/03/2025
<i>TBY</i>	Concrete Saw	103	Yes	21/03/2025
<i>BWD</i>	Vibratory Roller	81	Yes	31/03/2025

APPENDIX A (iii) – UNATTENDED NOISE MONITORING RESULTS



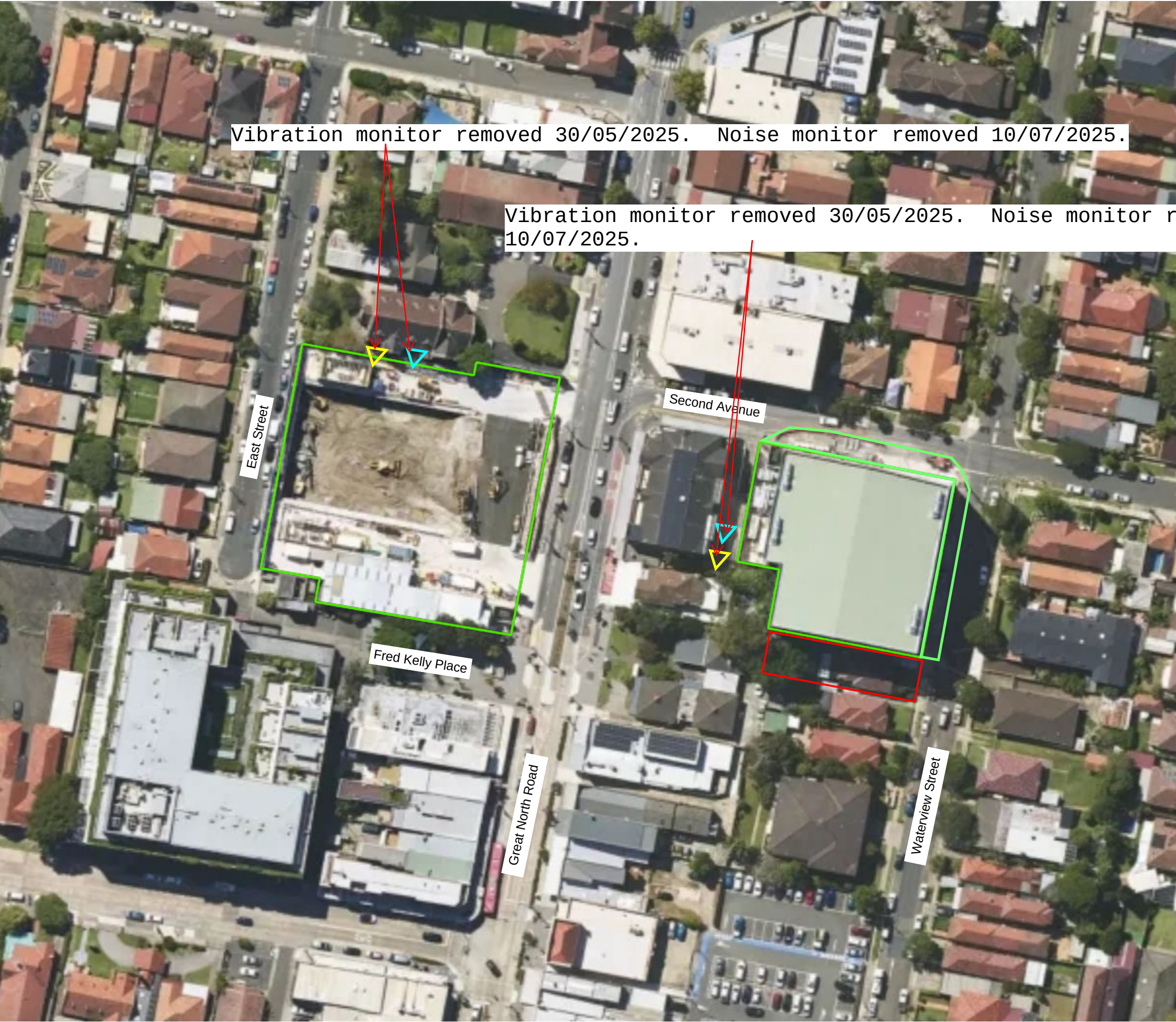
Sydney Metro West - CTP

- The Bays
- Shared access areas
- Ancillary facility location
- Indicative location of unattended noise monitor



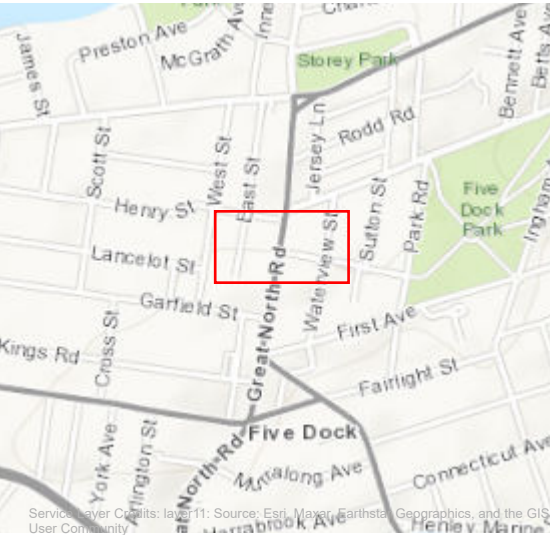
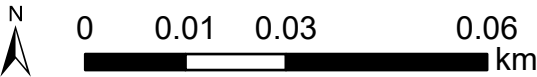
This map is shown for reference purposes only. Acciona Ferrovia JV provides this information "as is" with the understanding that it is not guaranteed to be accurate, correct or complete and conclusions drawn from such information are the responsibility of the user. While every effort is made to ensure the information displayed is as accurate and current as possible, Acciona Ferrovia JV will not be held responsible for any loss, damage or inconvenience caused as a result of reliance on such information or data.





Sydney Metro West - CTP

- Five Dock
- Ancillary facility location
- Indicative location of unattended noise monitor
- Indicative location of unattended vibration monitor



Map Creation Date: 6/9/2023

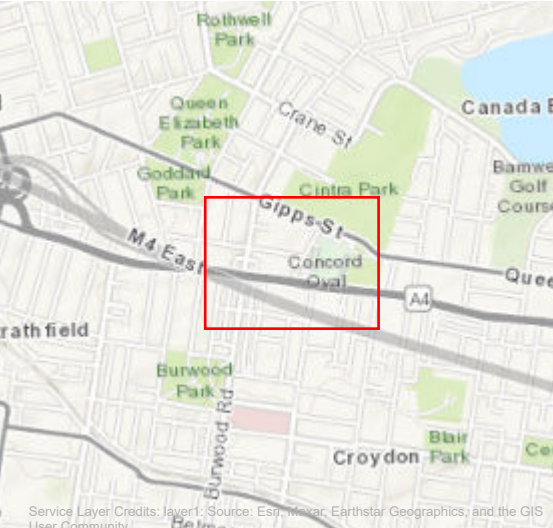
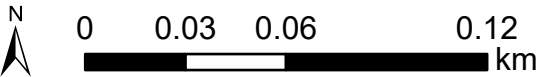
This map is shown for reference purposes only. Acciona Ferrovia JV provides this information "as is" with the understanding that it is not guaranteed to be accurate, correct or complete and conclusions drawn from such information are the responsibility of the user. While every effort is made to ensure the information displayed is as accurate and current as possible, Acciona Ferrovia JV will not be held responsible for any loss, damage or inconvenience caused as a result of reliance on such information or data.





Sydney Metro West - CTP

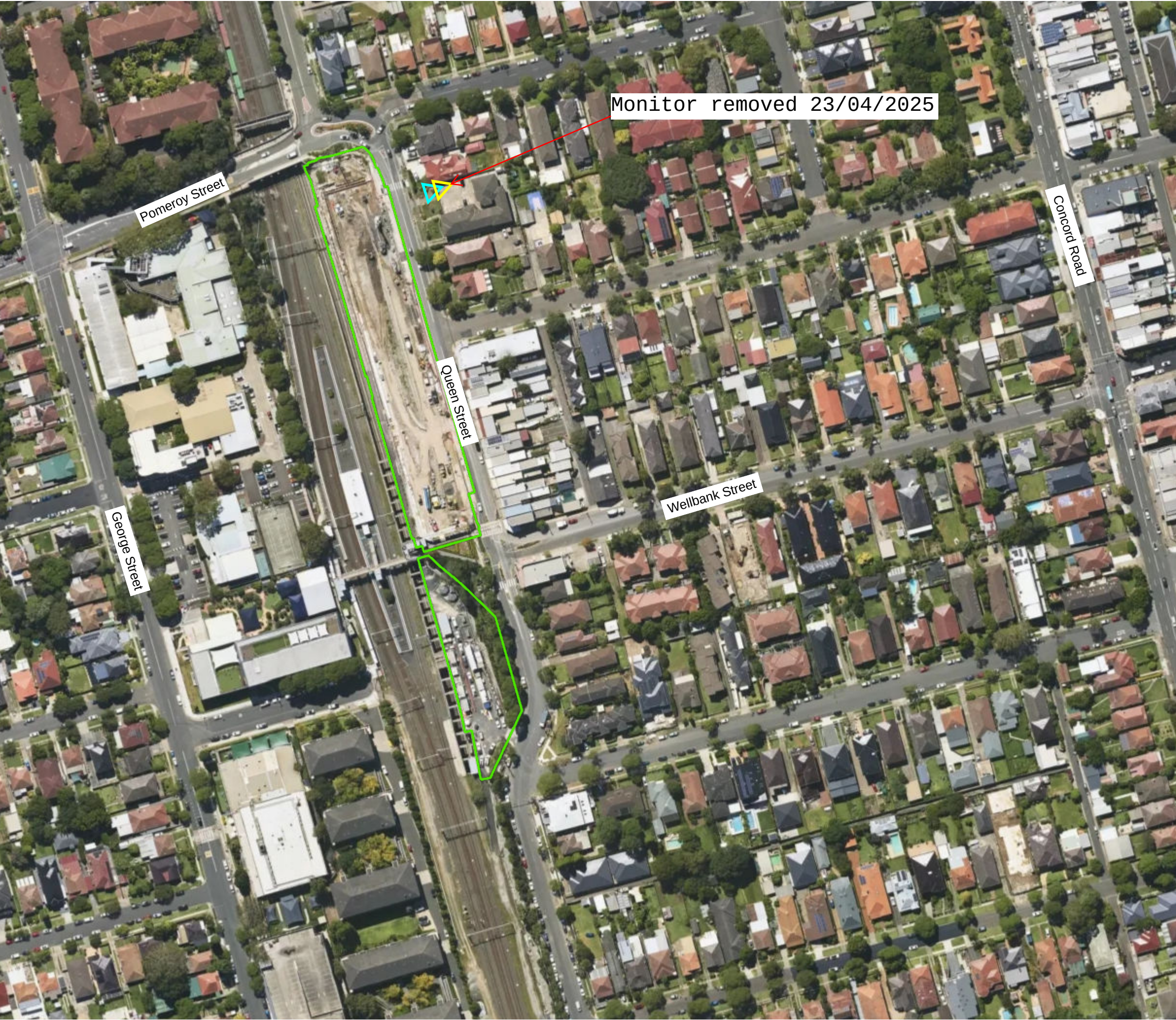
- Burwood North
- Indicative location of unattended noise monitor
- Indicative location of unattended vibration monitor



Map Creation Date: 6/9/2023

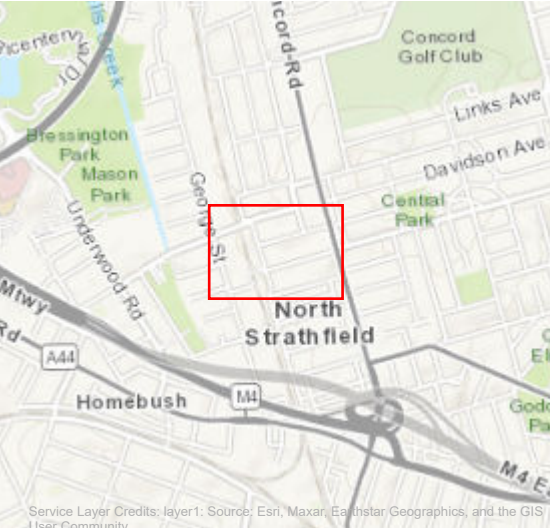
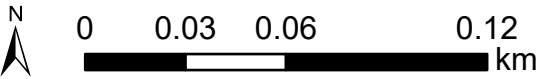
This map is shown for reference purposes only. Acciona Ferrovia JV provides this information "as is" with the understanding that it is not guaranteed to be accurate, correct or complete and conclusions drawn from such information are the responsibility of the user. While every effort is made to ensure the information displayed is as accurate and current as possible, Acciona Ferrovia JV will not be held responsible for any loss, damage or inconvenience caused as a result of reliance on such information or data.





ArcGIS Web Map

- North Strathfield
- Indicative location of unattended noise monitor
- Indicative location of unattended vibration monitor



Map Creation Date: 5/30/2023

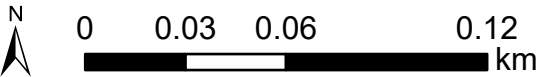
This map is shown for reference purposes only. Acciona Ferrovia JV provides this information "as is" with the understanding that it is not guaranteed to be accurate, correct or complete and conclusions drawn from such information are the responsibility of the user. While every effort is made to ensure the information displayed is as accurate and current as possible, Acciona Ferrovia JV will not be held responsible for any loss, damage or inconvenience caused as a result of reliance on such information or data.





Sydney Metro West - CTP

-  Olympic Park
-  Indicative location of unattended noise monitor
-  Indicative location of unattended vibration monitor

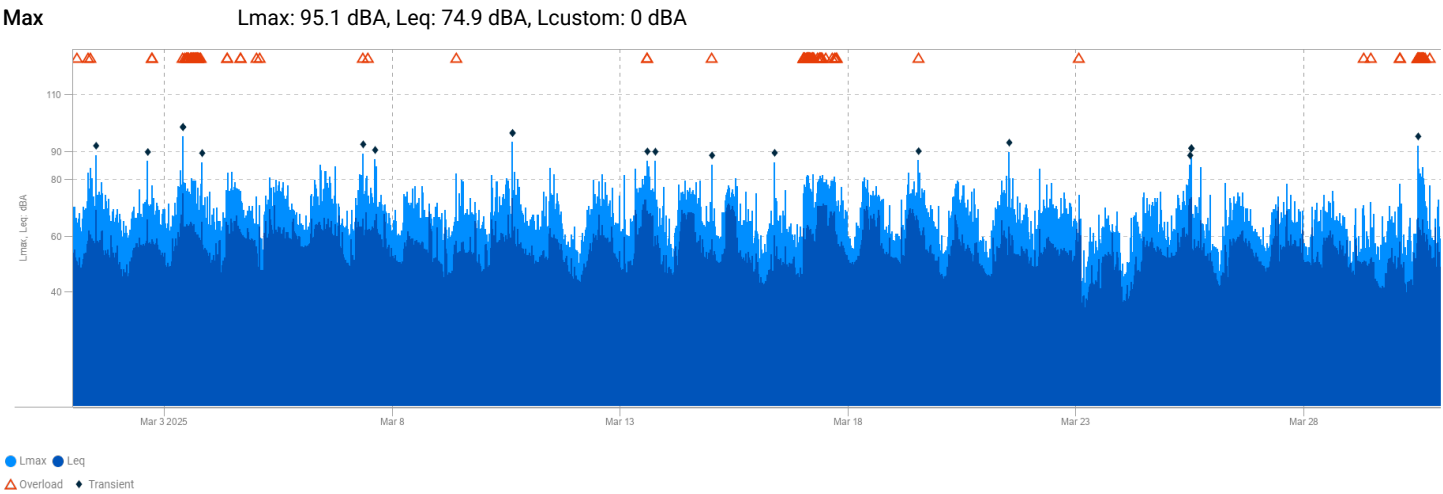


Map Creation Date: 6/9/2023

This map is shown for reference purposes only. Acciona Ferrovia JV provides this information "as is" with the understanding that it is not guaranteed to be accurate, correct or complete and conclusions drawn from such information are the responsibility of the user. While every effort is made to ensure the information displayed is as accurate and current as possible, Acciona Ferrovia JV will not be held responsible for any loss, damage or inconvenience caused as a result of reliance on such information or data.

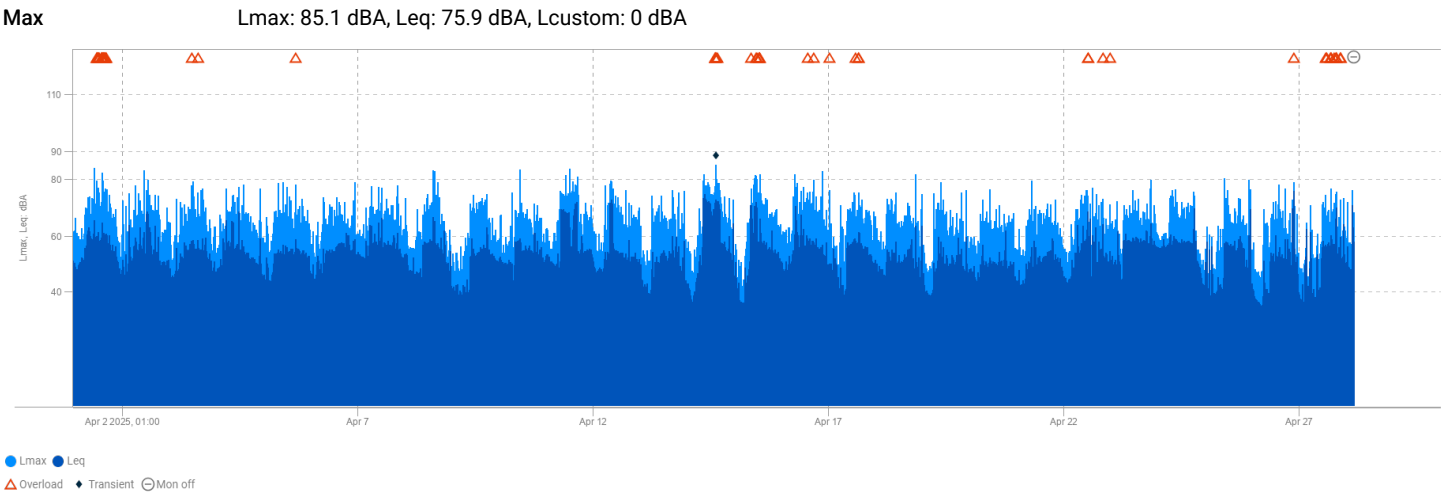


Project	TBY
Project maintainer	-
Time frame	2025-03-01 00:00 - 2025-03-31 00:00 (Australia/Sydney)
Measuring point	N7 TBY
Description	Rear of 2 Mansfield St, Rozelle
Sensor type	S50
Sensor serial no.	14625
Master(s) serial no.	108059
Latest calibration	2024-08-07
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High



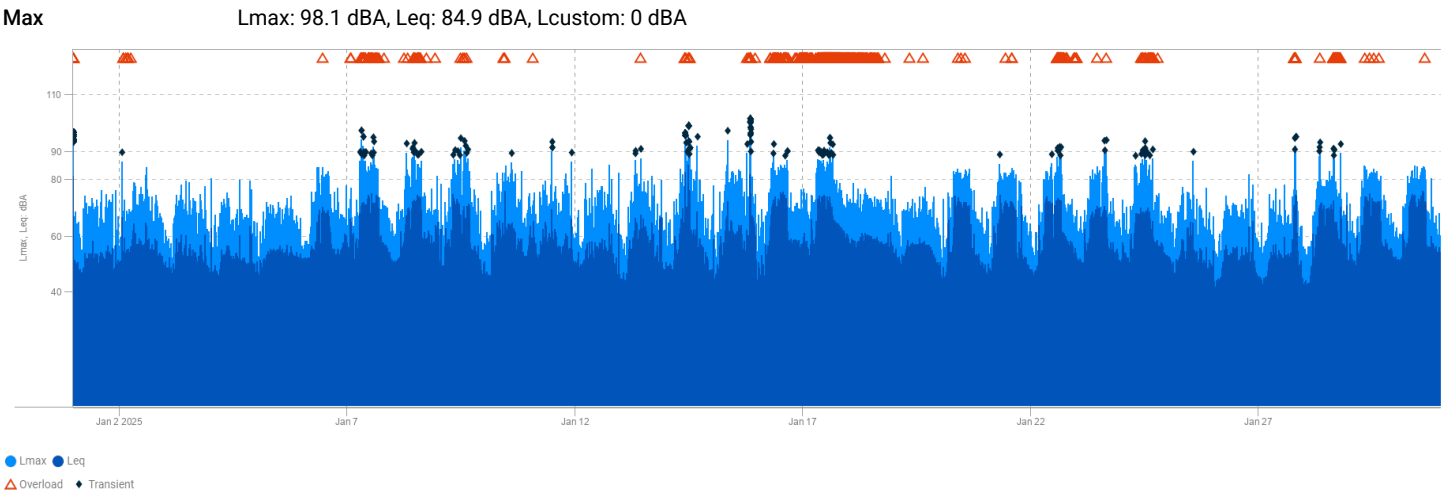
X-span	2025-03-01 00:00 - 2025-03-31 00:00		
Y-span	Lmax: 36.8 - 95.1 dBA, Leq: 32.3 - 74.9 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	95.1 dBA	74.9 dBA	0 dBA
Date	2025-03-03	2025-03-03	2025-05-29
Time	09:41:00	09:41:00	16:10:55

Project	TBY
Project maintainer	-
Time frame	2025-04-01 00:00 - 2025-04-30 00:00 (Australia/Sydney)
Measuring point	N7 TBY
Description	Rear of 2 Mansfield St, Rozelle
Sensor type	S50
Sensor serial no.	14625
Master(s) serial no.	108059
Latest calibration	2024-08-07
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High



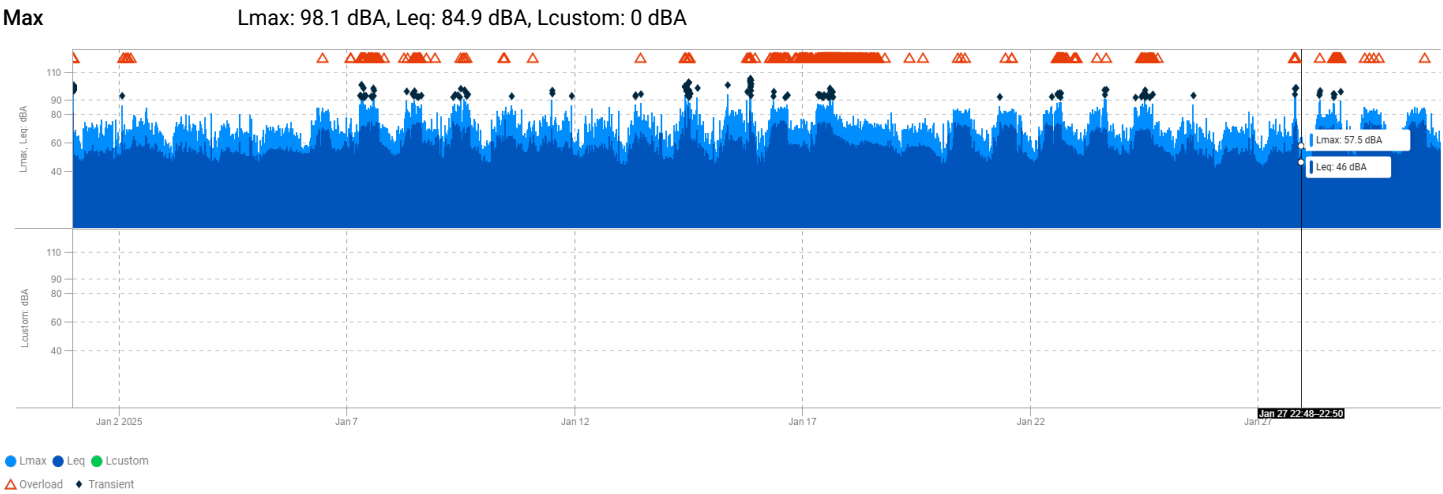
X-span	2025-04-01 00:00 - 2025-04-30 00:00		
Y-span	Lmax: 32.6 - 85.1 dBA, Leq: 28.8 - 75.9 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	85.1 dBA	75.9 dBA	0 dBA
Date	2025-04-14	2025-04-26	2025-05-29
Time	14:35:00	21:31:00	16:11:28

Project	TBY
Project maintainer	-
Time frame	2025-01-01 00:00 - 2025-01-31 00:00 (Australia/Sydney)
Measuring point	N7
Description	Rear of 2 Mansfield Street, Rozelle
Sensor type	S50
Sensor serial no.	14625
Master(s) serial no.	108059
Latest calibration	2024-08-07
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High



X-span	2025-01-01 00:00 - 2025-01-31 00:00		
Y-span	Lmax: 43.1 - 98.1 dBA, Leq: 39.5 - 84.9 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	98.1 dBA	84.9 dBA	0 dBA
Date	2025-01-15	2025-01-14	2025-05-29
Time	20:31:00	12:07:00	16:08:08

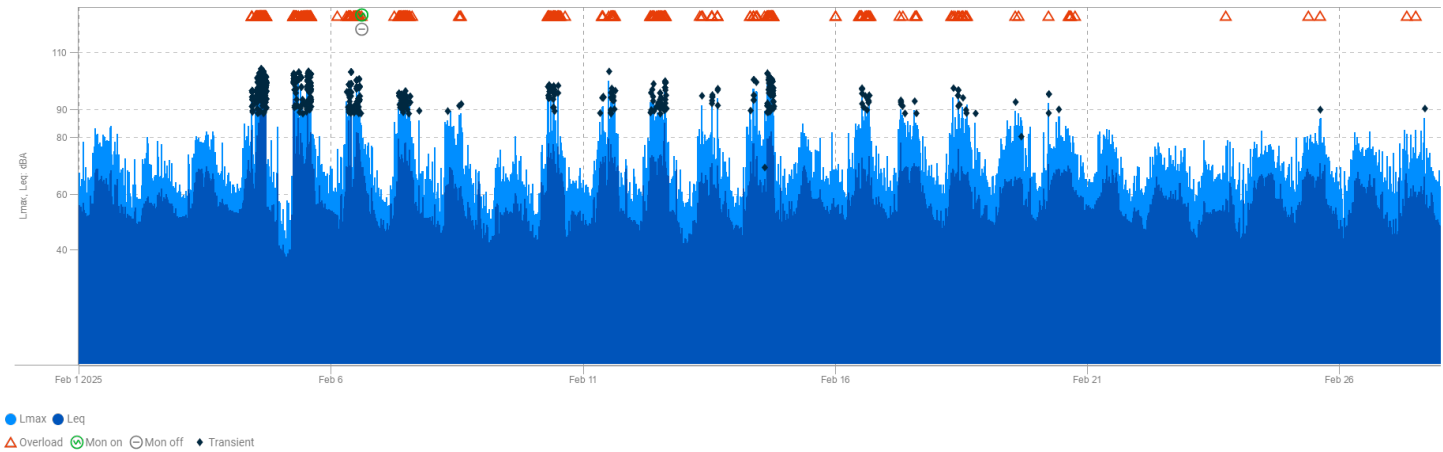
Project	TBY
Project maintainer	-
Time frame	2025-01-01 00:00 - 2025-01-31 00:00 (Australia/Sydney)
Measuring point	N7 TBY
Description	Rear of 2 Mansfield St, Rozelle
Sensor type	S50
Sensor serial no.	14625
Master(s) serial no.	108059
Latest calibration	2024-08-07
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High



X-span	2025-01-01 00:00 - 2025-01-31 00:00		
Y-span	Lmax: 43.1 - 98.1 dBA, Leq: 39.5 - 84.9 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	98.1 dBA	84.9 dBA	0 dBA
Date	2025-01-15	2025-01-14	2025-05-29
Time	20:31:00	12:07:00	16:08:08

Project	TBY
Project maintainer	-
Time frame	2025-02-01 00:00 - 2025-02-28 00:00 (Australia/Sydney)
Measuring point	N7 TBY
Description	Rear of 2 Mansfield St, Rozelle
Sensor type	S50
Sensor serial no.	14625
Master(s) serial no.	108059
Latest calibration	2024-08-07
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High

Max Lmax: 100.8 dBA, Leq: 95.5 dBA, Lcustom: 0 dBA



X-span	2025-02-01 00:00 - 2025-02-28 00:00		
Y-span	Lmax: 36.5 - 100.8 dBA, Leq: 33.5 - 95.5 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	100.8 dBA	95.5 dBA	0 dBA
Date	2025-02-04	2025-02-04	2025-05-29
Time	14:43:00	14:43:00	16:10:28

Project

FDK

Project maintainer

-

Time frame

2025-05-26 12:13 - 2025-05-30 08:41 (Australia/Sydney)

Measuring point

FDK_1

Description

110 Great North Rd

Sensor type

S50

Sensor serial no.

14176

Master(s) serial no.

107964

Latest calibration

2024-08-07

Standard

(01) Lmax + Leq 20-95 dBA Fast

Unit

dBA

Quantity

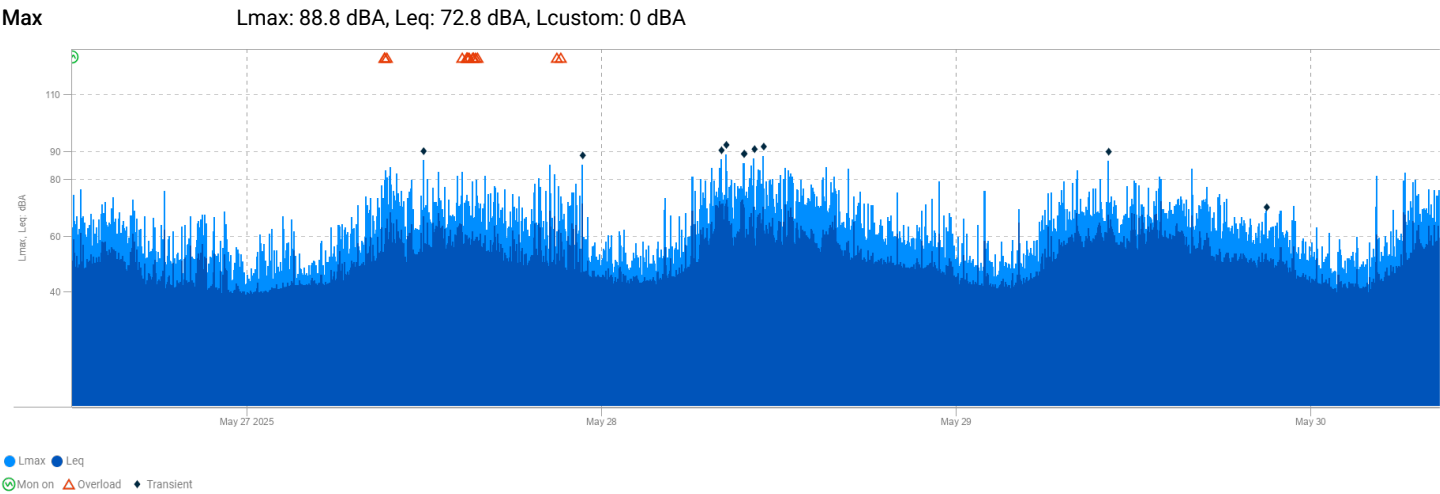
Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation

Interval time

2 minutes

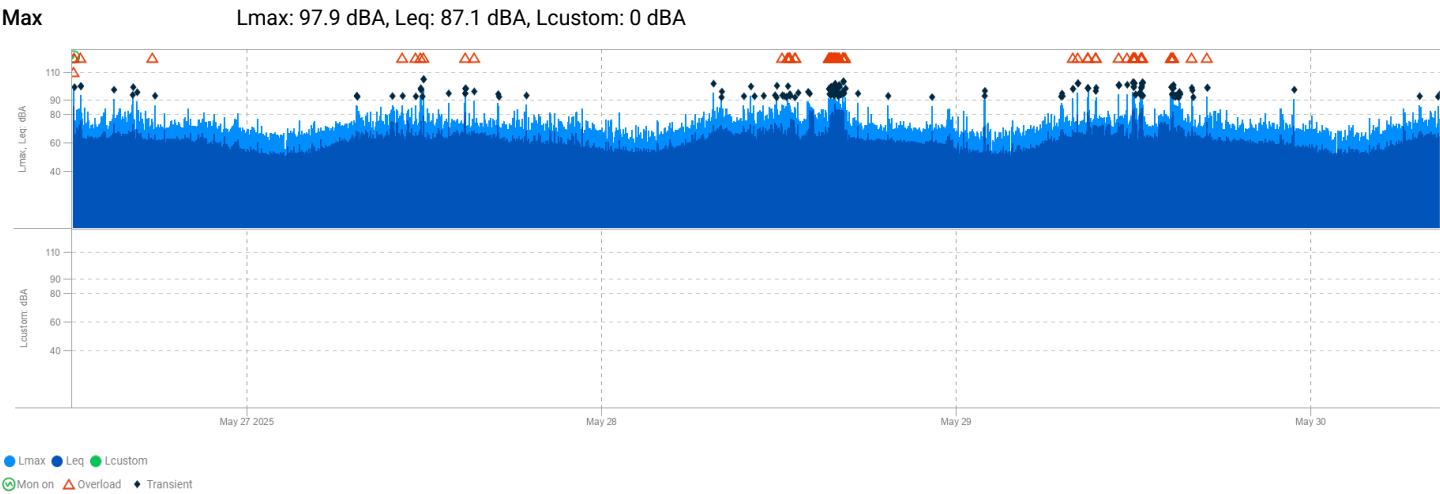
Table threshold

High



X-span	2025-05-26 12:13 - 2025-05-30 08:41		
Y-span	Lmax: 40.5 - 88.8 dBA, Leq: 38.3 - 72.8 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	88.8 dBA	72.8 dBA	0 dBA
Date	2025-05-28	2025-05-28	2025-05-30
Time	08:27:00	08:29:00	09:30:39

Project	FDK
Project maintainer	-
Time frame	2025-05-26 12:13 - 2025-05-30 08:41 (Australia/Sydney)
Measuring point	FDK_4
Description	St Albans Church noise
Sensor type	S50
Sensor serial no.	14157
Master(s) serial no.	107963
Latest calibration	2024-08-19
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High

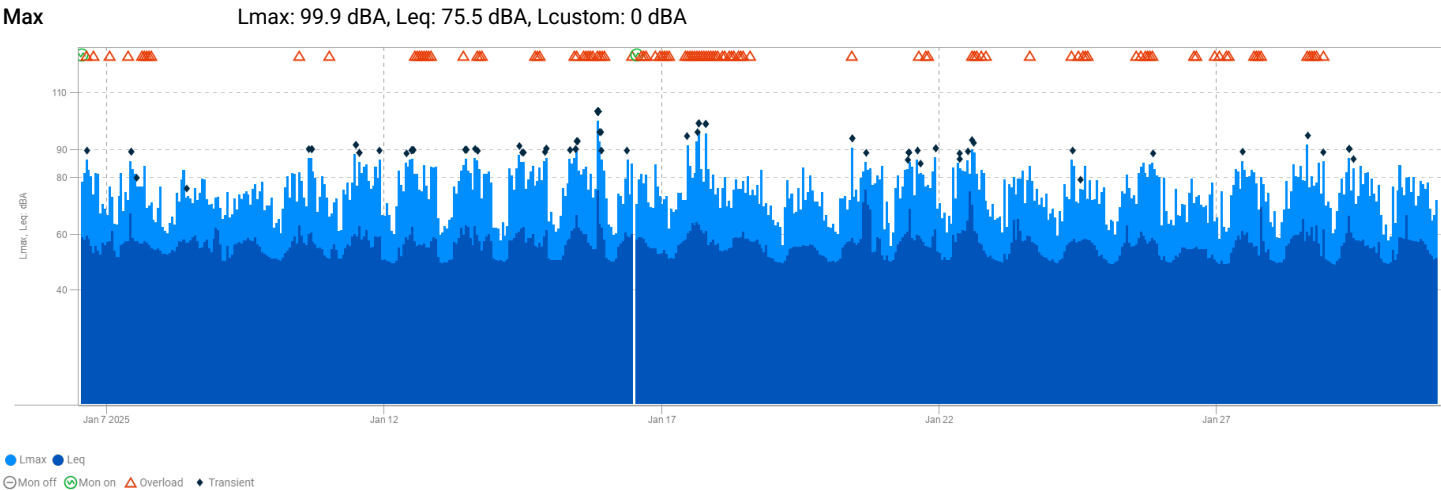


X-span	2025-05-26 12:13 - 2025-05-30 08:41		
Y-span	Lmax: 50.9 - 97.9 dBA, Leq: 49.6 - 87.1 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	97.9 dBA	87.1 dBA	0 dBA
Date	2025-05-27	2025-05-28	2025-05-30
Time	11:59:00	15:49:00	09:30:39

Project FDK
Project maintainer -
Time frame 2025-01-06 12:04 - 2025-01-31 00:55 (Australia/Sydney)

NB!
Chart data is aggregated by 1 hour.

Measuring point FDK_1
Description 110 Great North Rd
Sensor type S50
Sensor serial no. 14176
Master(s) serial no. 107964
Latest calibration 2024-08-07
Aggregate max
Standard (01) Lmax + Leq 20-95 dBA Fast
Unit dBA
Quantity Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time 2 minutes
Aggregated time 1 hour
Table threshold High



X-span 2025-01-06 12:04 - 2025-01-31 00:55
Y-span Lmax: 55.6 - 99.9 dBA, Leq: 48.55 - 75.5 dBA, Lcustom: 0 - 0 dBA

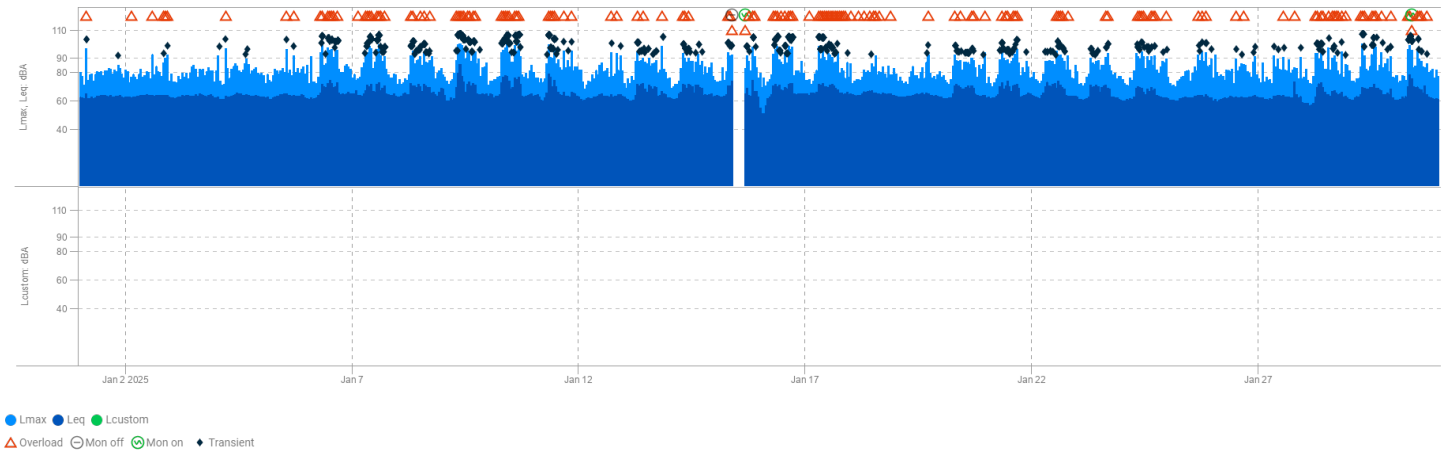
	Lmax	Leq	Lcustom
Max	99.9 dBA	75.5 dBA	0 dBA
Date	2025-01-15	2025-01-20	2025-05-29
Time	20:30:00	16:30:00	16:20:36

Project FDK
Project maintainer -
Time frame 2025-01-06 12:04 - 2025-01-31 00:55 (Australia/Sydney)

NB!
Chart data is aggregated by 1 hour.

Measuring point FDK_4
Description St Albans Church noise
Sensor type S50
Sensor serial no. 14157
Master(s) serial no. 107963
Latest calibration 2024-08-19
Aggregate max
Standard (01) Lmax + Leq 20-95 dBA Fast
Unit dBA
Quantity Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time 2 minutes
Aggregated time 1 hour
Table threshold High

Max Lmax: 100.1 dBA, Leq: 85.52 dBA, Lcustom: 0 dBA

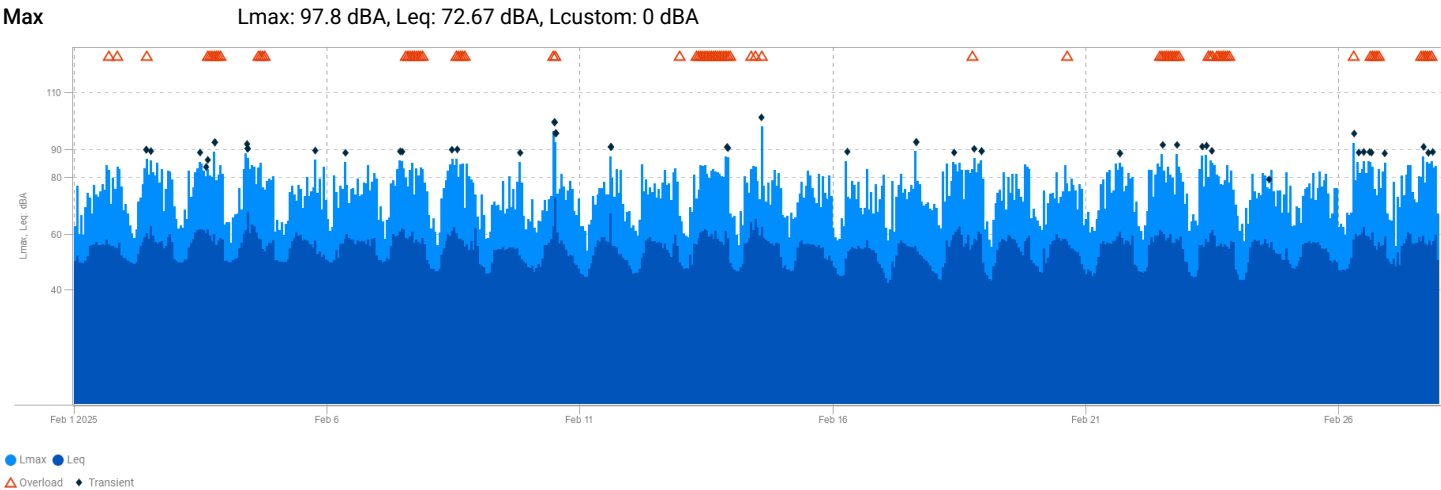


X-span 2025-01-06 12:04 - 2025-01-31 00:55
Y-span Lmax: 68.3 - 100.1 dBA, Leq: 50.42 - 85.52 dBA, Lcustom: 0 - 0 dBA

	Lmax	Leq	Lcustom
Max	100.1 dBA	85.52 dBA	0 dBA
Date	2025-01-29	2025-01-09	2025-05-29
Time	07:30:00	09:30:00	16:20:36

Project	FDK
Project maintainer	-
Time frame	2025-02-01 00:00 - 2025-02-28 00:00 (Australia/Sydney)
Measuring point	FDK_1
Description	110 Great North Rd
Sensor type	S50
Sensor serial no.	14176
Master(s) serial no.	107964
Latest calibration	2024-08-07
Aggregate	max
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Aggregated time	1 hour
Table threshold	High

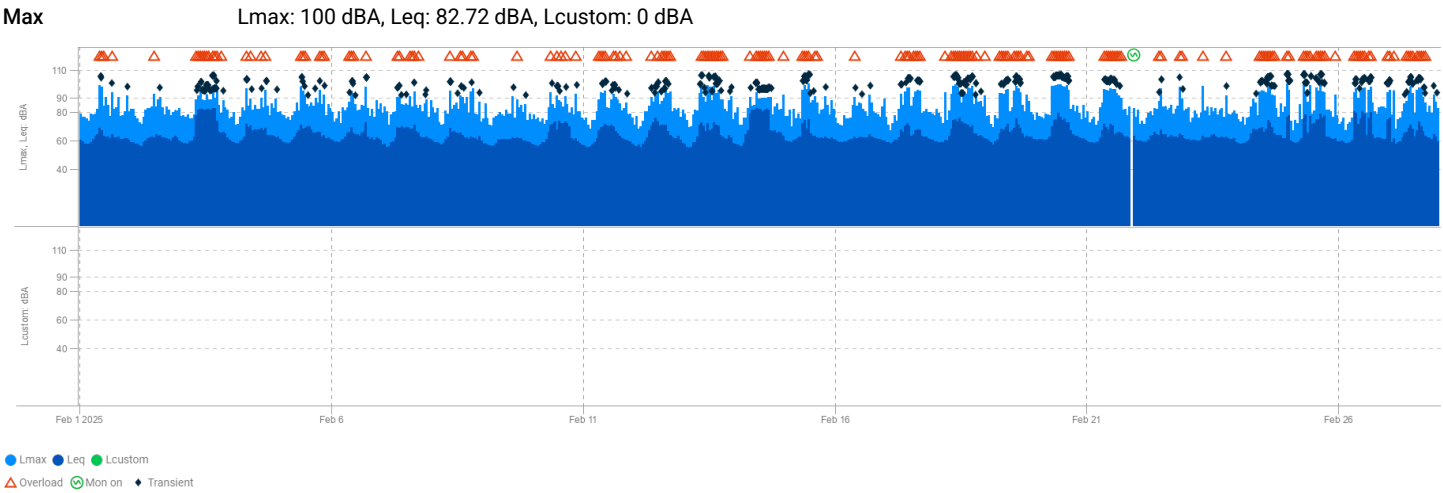
NB!
Chart data is aggregated by 1 hour.



X-span	2025-02-01 00:00 - 2025-02-28 00:00		
Y-span	Lmax: 54 - 97.8 dBA, Leq: 42.24 - 72.67 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	97.8 dBA	72.67 dBA	0 dBA
Date	2025-02-14	2025-02-10	2025-05-29
Time	14:30:00	12:30:00	16:15:04

Project	FDK
Project maintainer	-
Time frame	2025-02-01 00:00 - 2025-02-28 00:00 (Australia/Sydney)
Measuring point	FDK_4
Description	St Albans Church noise
Sensor type	S50
Sensor serial no.	14157
Master(s) serial no.	107963
Latest calibration	2024-08-19
Aggregate	max
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Aggregated time	1 hour
Table threshold	High

NB!
Chart data is aggregated by 1 hour.



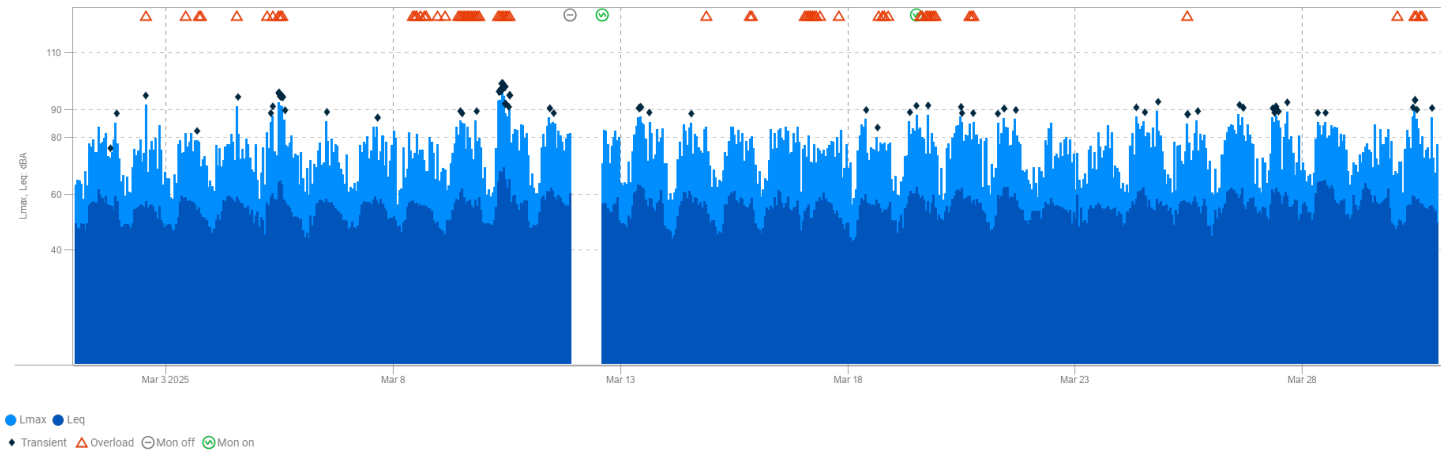
X-span	2025-02-01 00:00 - 2025-02-28 00:00		
Y-span	Lmax: 67 - 100 dBA, Leq: 54.83 - 82.72 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	100 dBA	82.72 dBA	0 dBA
Date	2025-02-24	2025-02-03	2025-05-29
Time	23:30:00	15:30:00	16:15:04

Project FDK
Project maintainer -
Time frame 2025-02-28 22:59 - 2025-03-31 01:00 (Australia/Sydney)

NB!
Chart data is aggregated by 1 hour.

Measuring point FDK_1
Description 110 Great North Rd
Sensor type S50
Sensor serial no. 14176
Master(s) serial no. 107964
Latest calibration 2024-08-07
Aggregate max
Standard (01) Lmax + Leq 20-95 dBA Fast
Unit dBA
Quantity Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time 2 minutes
Aggregated time 1 hour
Table threshold High

Max Lmax: 95.6 dBA, Leq: 69.26 dBA, Lcustom: 0 dBA



X-span 2025-02-28 22:59 - 2025-03-31 01:00
Y-span Lmax: 56.1 - 95.6 dBA, Leq: 42.49 - 69.26 dBA, Lcustom: 0 - 0 dBA

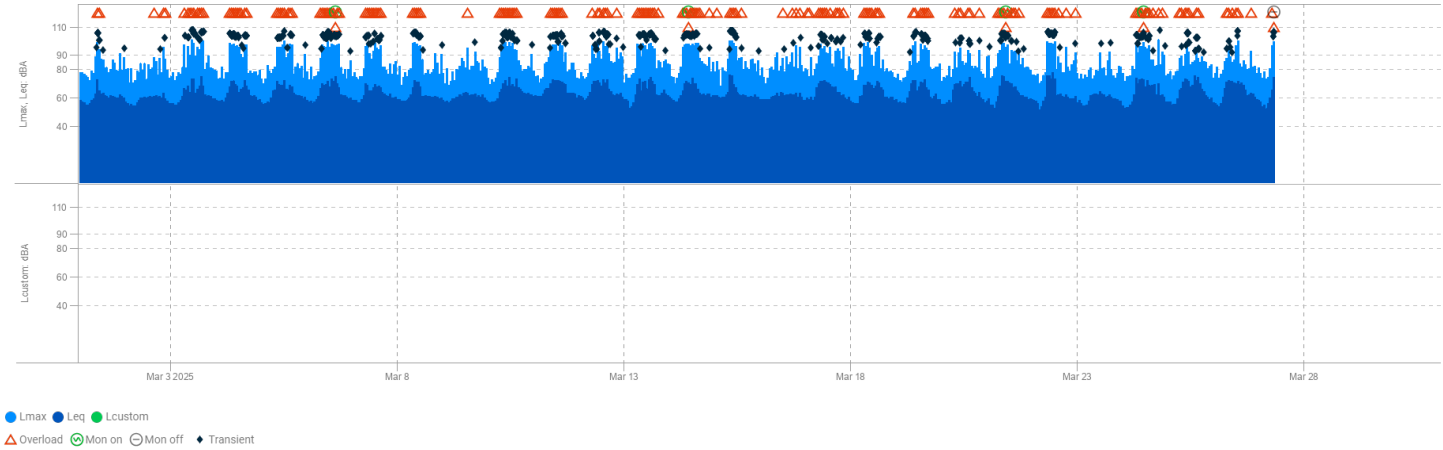
	Lmax	Leq	Lcustom
Max	95.6 dBA	69.26 dBA	0 dBA
Date	2025-03-10	2025-03-10	2025-05-29
Time	09:30:00	10:30:00	16:17:24

Project FDK
Project maintainer -
Time frame 2025-02-28 22:59 - 2025-03-31 01:00 (Australia/Sydney)

NB!
Chart data is aggregated by 1 hour.

Measuring point FDK_4
Description St Albans Church noise
Sensor type S50
Sensor serial no. 14157
Master(s) serial no. 107963
Latest calibration 2024-08-19
Aggregate max
Standard (01) Lmax + Leq 20-95 dBA Fast
Unit dBA
Quantity Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time 2 minutes
Aggregated time 1 hour
Table threshold High

Max Lmax: 100.8 dBA, Leq: 77.43 dBA, Lcustom: 0 dBA

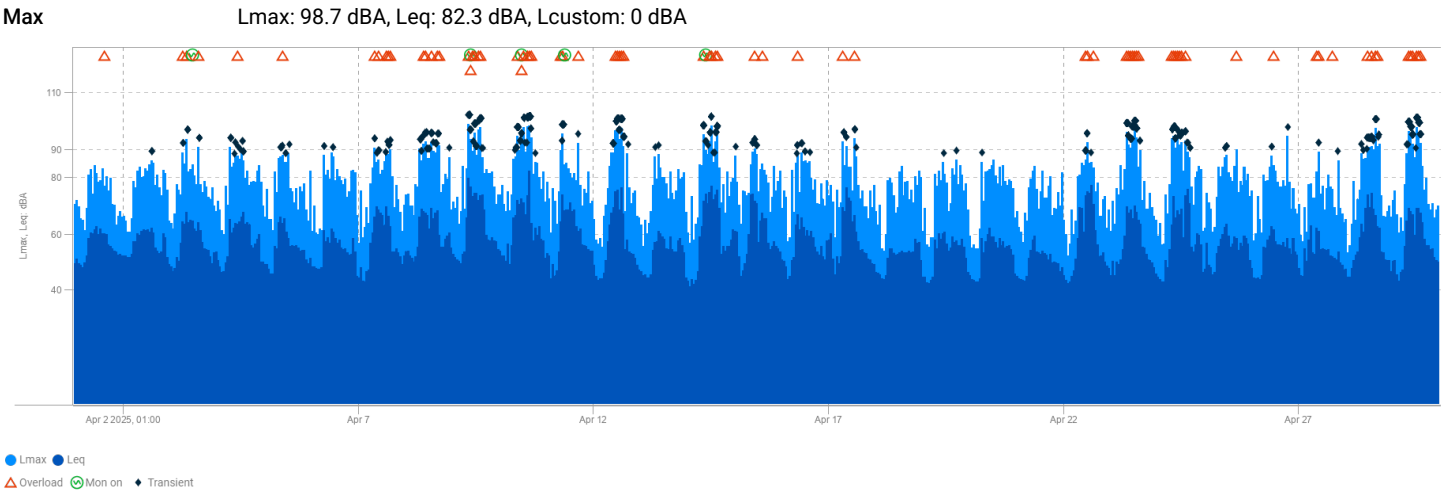


X-span 2025-02-28 22:59 - 2025-03-31 01:00
Y-span Lmax: 68.3 - 100.8 dBA, Leq: 51.18 - 77.43 dBA, Lcustom: 0 - 0 dBA

	Lmax	Leq	Lcustom
Max	100.8 dBA	77.43 dBA	0 dBA
Date	2025-03-03	2025-03-22	2025-05-29
Time	11:30:00	11:30:00	16:17:24

Project	FDK
Project maintainer	-
Time frame	2025-04-01 00:00 - 2025-04-30 00:00 (Australia/Sydney)
Measuring point	FDK_1
Description	110 Great North Rd
Sensor type	S50
Sensor serial no.	14176
Master(s) serial no.	107964
Latest calibration	2024-08-07
Aggregate	max
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Aggregated time	1 hour
Table threshold	High

NB!
Chart data is aggregated by 1 hour.



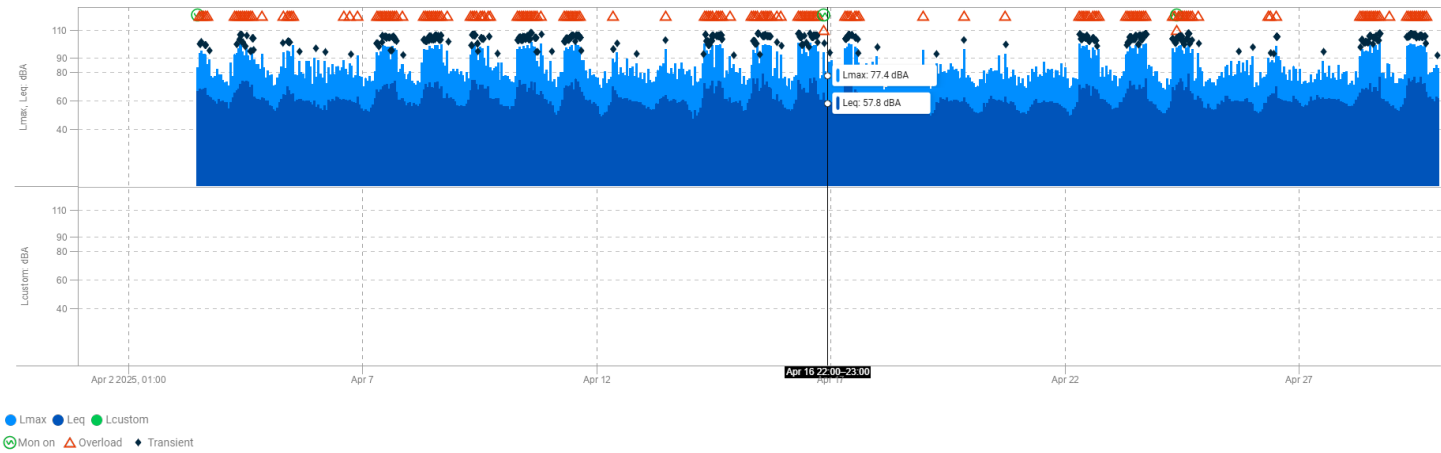
X-span	2025-04-01 00:00 - 2025-04-30 00:00		
Y-span	Lmax: 52.2 - 98.7 dBA, Leq: 41.16 - 82.3 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	98.7 dBA	82.3 dBA	0 dBA
Date	2025-04-09	2025-04-10	2025-05-29
Time	08:30:00	15:30:00	16:21:23

Project FDK
Project maintainer -
Time frame 2025-04-01 00:00 - 2025-04-30 00:00 (Australia/Sydney)

NB!
Chart data is aggregated by 1 hour.

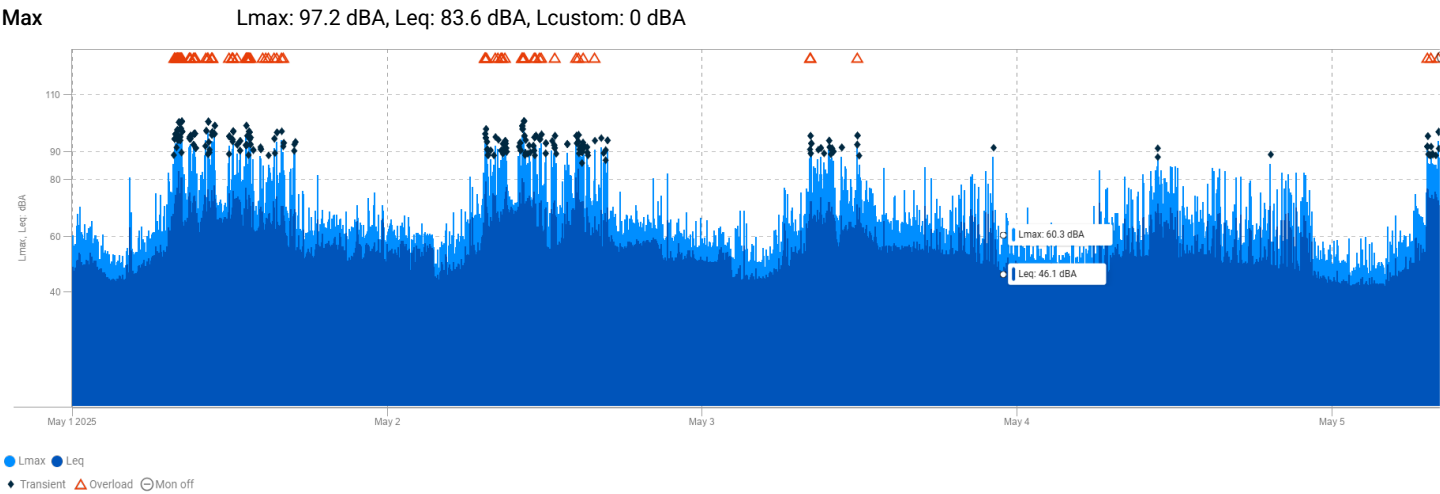
Measuring point FDK_4
Description St Albans Church noise
Sensor type S50
Sensor serial no. 14157
Master(s) serial no. 107963
Latest calibration 2024-08-19
Aggregate max
Standard (01) Lmax + Leq 20-95 dBA Fast
Unit dBA
Quantity Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time 2 minutes
Aggregated time 1 hour
Table threshold High

Max Lmax: 100.9 dBA, Leq: 78.92 dBA, Lcustom: 0 dBA



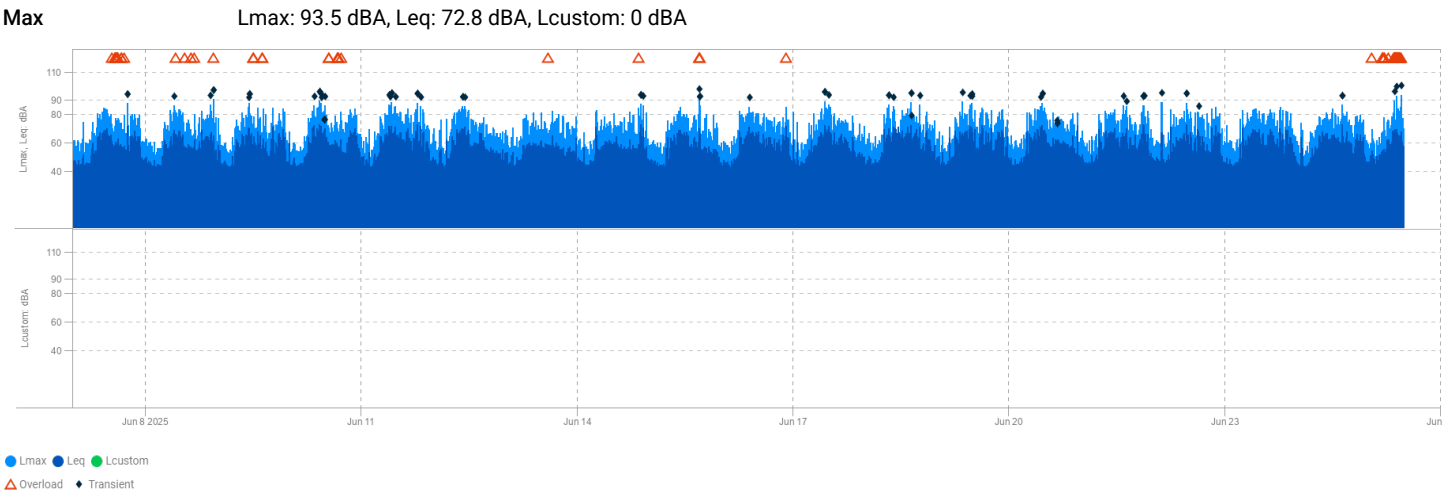
X-span 2025-04-01 00:00 - 2025-04-30 00:00
Y-span Lmax: 67.4 - 100.9 dBA, Leq: 46.8 - 78.92 dBA, Lcustom: 0 - 0 dBA
Lmax 100.9 dBA
Leq 78.92 dBA
Lcustom 0 dBA
Date 2025-04-10 2025-04-15 2025-05-29
Time 14:30:00 13:30:00 16:21:23

Project	FDK
Project maintainer	-
Time frame	2025-04-30 23:59 - 2025-05-05 08:12 (Australia/Sydney)
Measuring point	FDK_1
Description	110 Great North Rd
Sensor type	S50
Sensor serial no.	14176
Master(s) serial no.	107964
Latest calibration	2024-08-07
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High



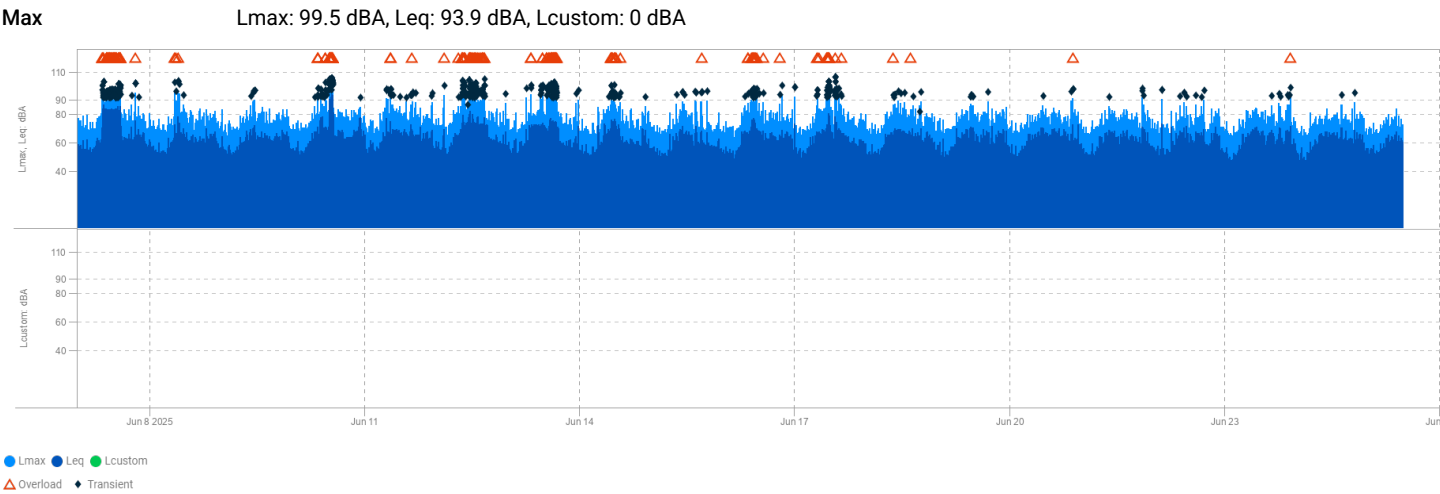
X-span	2025-04-30 23:59 - 2025-05-05 08:12		
Y-span	Lmax: 43 - 97.2 dBA, Leq: 41.3 - 83.6 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	97.2 dBA	83.6 dBA	0 dBA
Date	2025-05-02	2025-05-02	2025-05-29
Time	10:25:00	14:35:00	16:22:00

Project	FDK
Project maintainer	-
Time frame	2025-06-07 00:00 - 2025-06-26 00:00 (Australia/Sydney)
Measuring point	FDK_1
Description	110 Great North Rd
Sensor type	S50
Sensor serial no.	14176
Master(s) serial no.	107964
Latest calibration	2024-08-07
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High



X-span	2025-06-07 00:00 - 2025-06-26 00:00		
Y-span	Lmax: 40.5 - 93.5 dBA, Leq: 38.3 - 72.8 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	93.5 dBA	72.8 dBA	0 dBA
Date	2025-06-25	2025-06-21	2025-06-25
Time	11:01:00	20:57:00	12:28:31

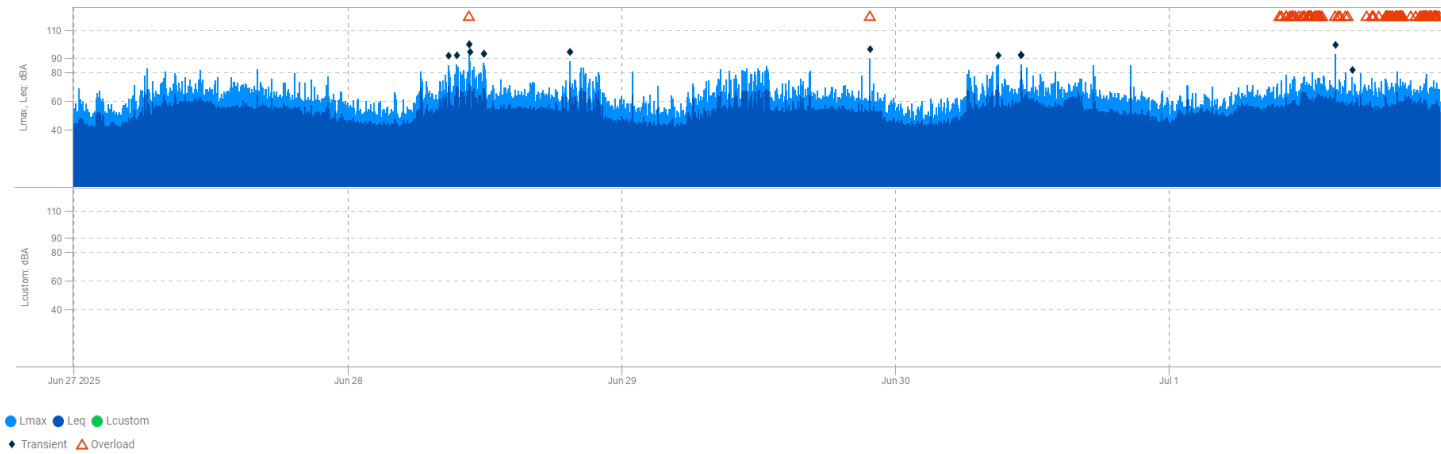
Project	FDK
Project maintainer	-
Time frame	2025-06-07 00:00 - 2025-06-26 00:00 (Australia/Sydney)
Measuring point	FDK_4
Description	St Albans Church noise
Sensor type	S50
Sensor serial no.	14157
Master(s) serial no.	107963
Latest calibration	2024-08-19
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High



X-span	2025-06-07 00:00 - 2025-06-26 00:00		
Y-span	Lmax: 36.8 - 99.5 dBA, Leq: 33.5 - 93.9 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	99.5 dBA	93.9 dBA	0 dBA
Date	2025-06-17	2025-06-10	2025-06-25
Time	13:45:00	13:17:00	12:28:31

Project	FDK
Project maintainer	-
Time frame	2025-06-27 00:00 - 2025-07-01 23:45 (Australia/Sydney)
Measuring point	FDK_1
Description	110 Great North Rd
Sensor type	S50
Sensor serial no.	14176
Master(s) serial no.	107964
Latest calibration	2024-08-07
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High

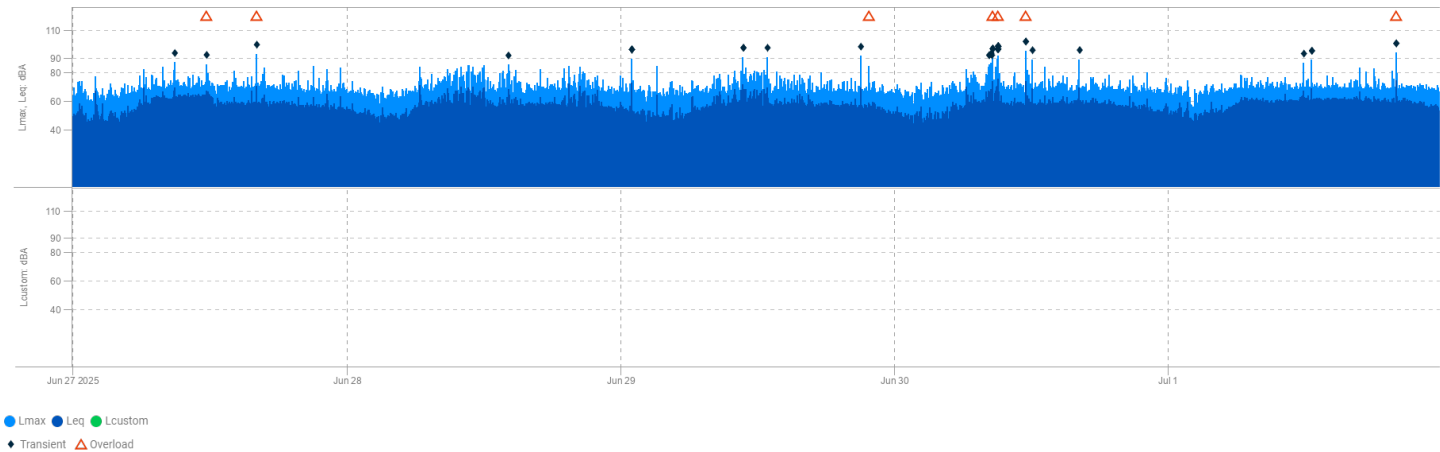
MaxLmax: 93 dBA, Leq: 80.7 dBA, Lcustom: 0 dBA



X-span	2025-06-27 00:00 - 2025-07-01 23:45		
Y-span	Lmax: 42.3 - 93 dBA, Leq: 39.7 - 80.7 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	93 dBA	80.7 dBA	0 dBA
Date	2025-06-28	2025-06-30	2025-07-02
Time	10:39:00	11:01:00	09:32:27

Project	FDK
Project maintainer	-
Time frame	2025-06-27 00:00 - 2025-07-01 23:45 (Australia/Sydney)
Measuring point	FDK_4
Description	St Albans Church noise
Sensor type	S50
Sensor serial no.	14157
Master(s) serial no.	107963
Latest calibration	2024-08-19
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High

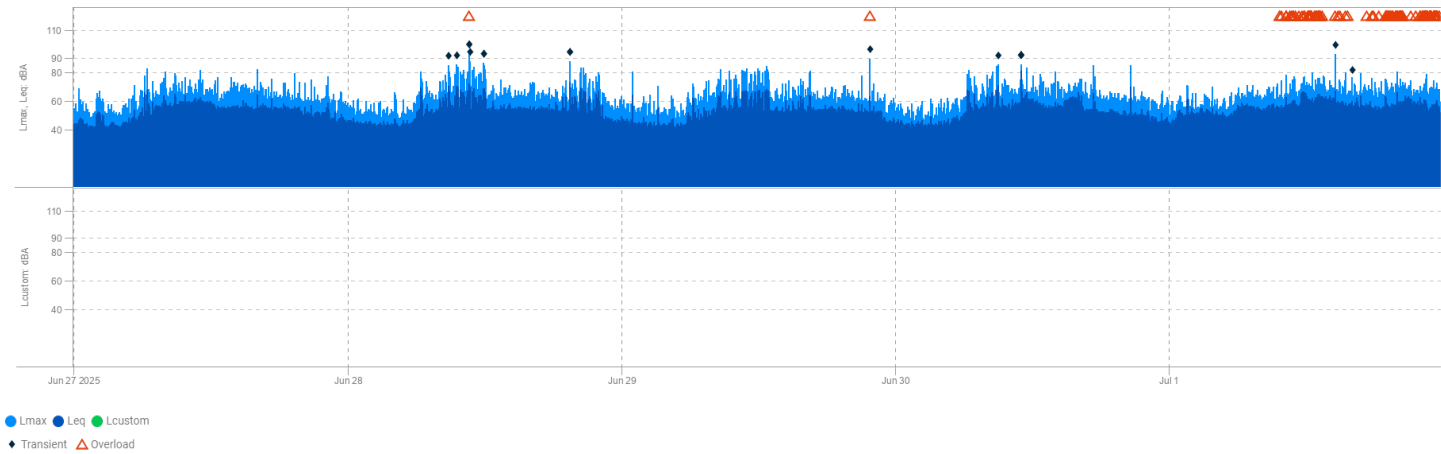
Max Lmax: 95 dBA, Leq: 75.3 dBA, Lcustom: 0 dBA



X-span	2025-06-27 00:00 - 2025-07-01 23:45		
Y-span	Lmax: 39.4 - 95 dBA, Leq: 36 - 75.3 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	95 dBA	75.3 dBA	0 dBA
Date	2025-06-30	2025-06-30	2025-07-02
Time	11:31:00	09:05:00	09:32:27

Project	FDK
Project maintainer	-
Time frame	2025-06-27 00:00 - 2025-07-01 23:45 (Australia/Sydney)
Measuring point	FDK_1
Description	110 Great North Rd
Sensor type	S50
Sensor serial no.	14176
Master(s) serial no.	107964
Latest calibration	2024-08-07
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High

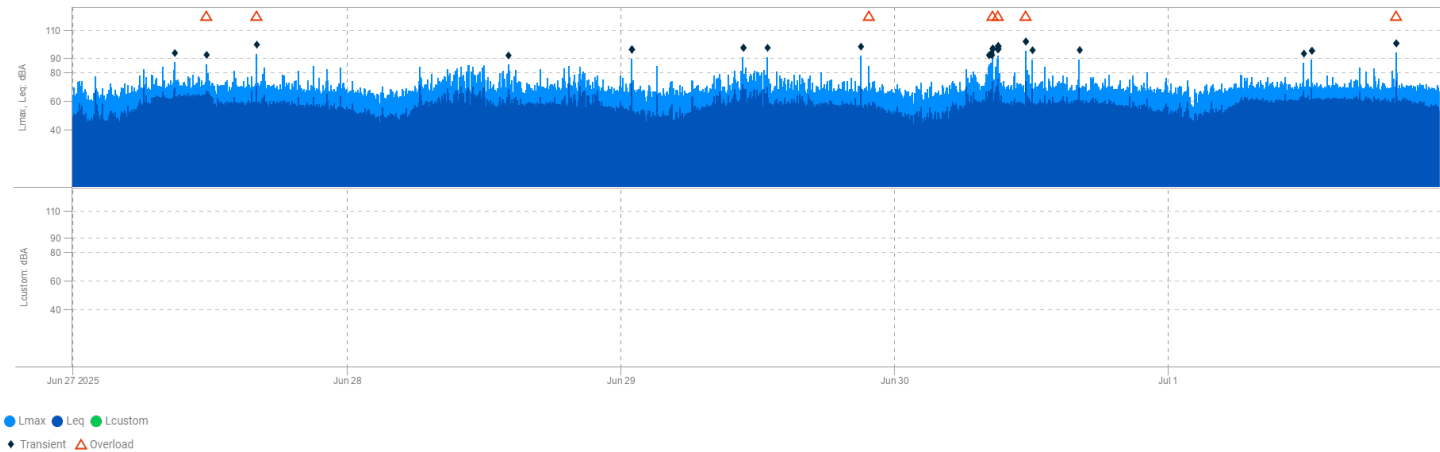
MaxLmax: 93 dBA, Leq: 80.7 dBA, Lcustom: 0 dBA



X-span	2025-06-27 00:00 - 2025-07-01 23:45		
Y-span	Lmax: 42.3 - 93 dBA, Leq: 39.7 - 80.7 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	93 dBA	80.7 dBA	0 dBA
Date	2025-06-28	2025-06-30	2025-07-02
Time	10:39:00	11:01:00	09:32:27

Project	FDK
Project maintainer	-
Time frame	2025-06-27 00:00 - 2025-07-01 23:45 (Australia/Sydney)
Measuring point	FDK_4
Description	St Albans Church noise
Sensor type	S50
Sensor serial no.	14157
Master(s) serial no.	107963
Latest calibration	2024-08-19
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High

Max Lmax: 95 dBA, Leq: 75.3 dBA, Lcustom: 0 dBA

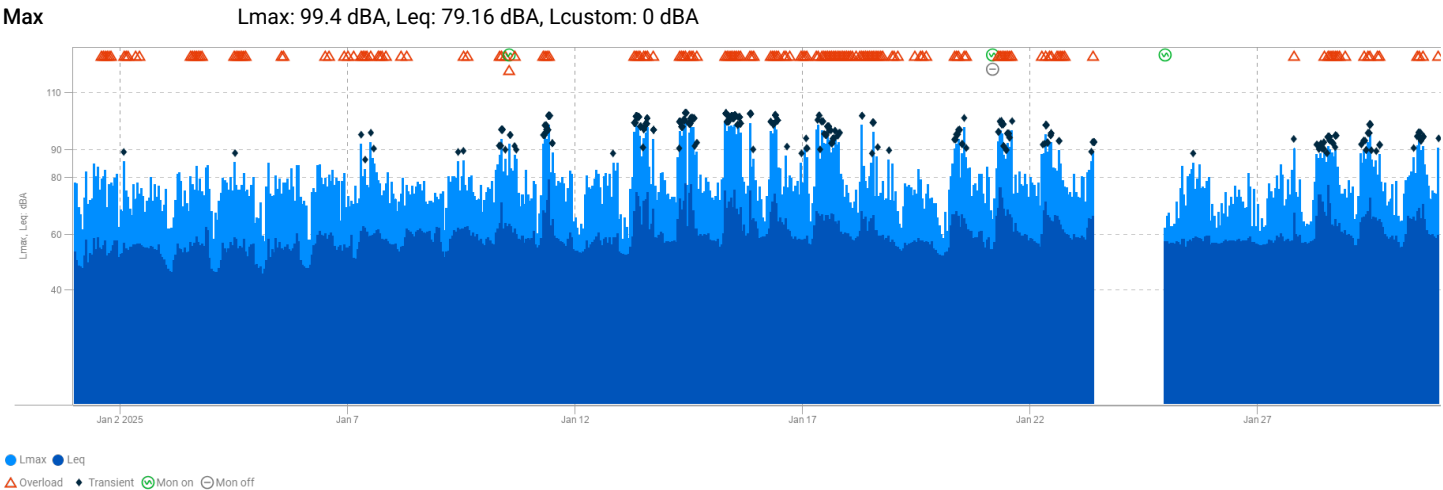


X-span	2025-06-27 00:00 - 2025-07-01 23:45		
Y-span	Lmax: 39.4 - 95 dBA, Leq: 36 - 75.3 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	95 dBA	75.3 dBA	0 dBA
Date	2025-06-30	2025-06-30	2025-07-02
Time	11:31:00	09:05:00	09:32:27

Project BWD
Project maintainer -
Time frame 2025-01-01 00:00 - 2025-01-31 00:00 (Australia/Sydney)

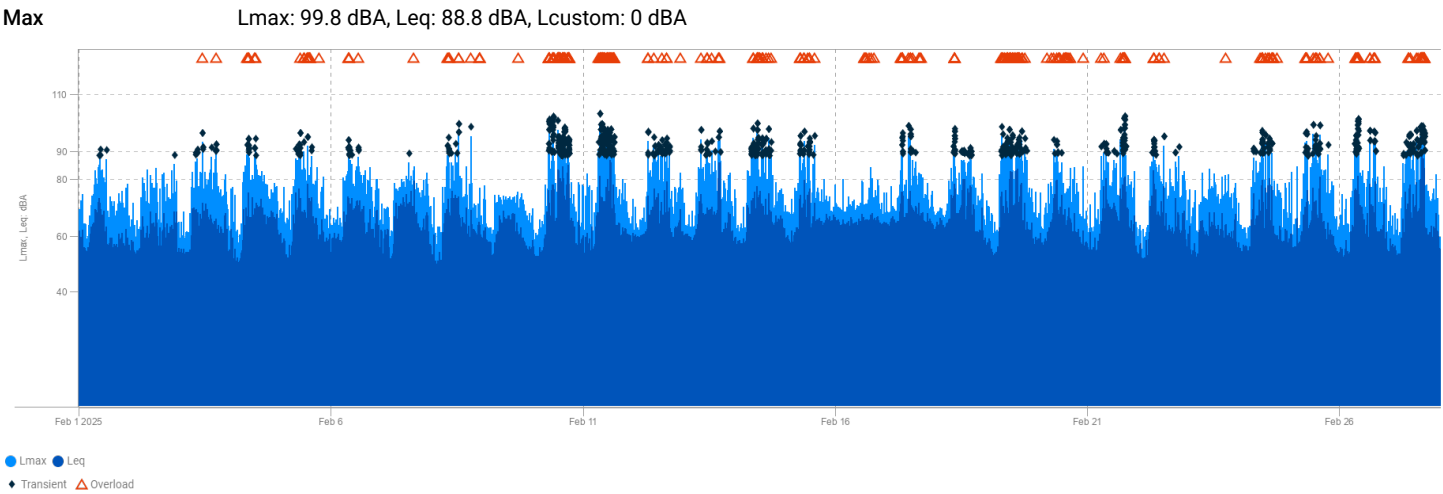
Measuring point BWD_1
Description 16 Burton St Noise
Sensor type S50
Sensor serial no. 14085
Master(s) serial no. 108062
Latest calibration 2024-08-07
Aggregate max
Standard (01) Lmax + Leq 20-95 dBA Fast
Unit dBA
Quantity Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time 2 minutes
Aggregated time 1 hour
Table threshold High

NB!
Chart data is aggregated by 1 hour.



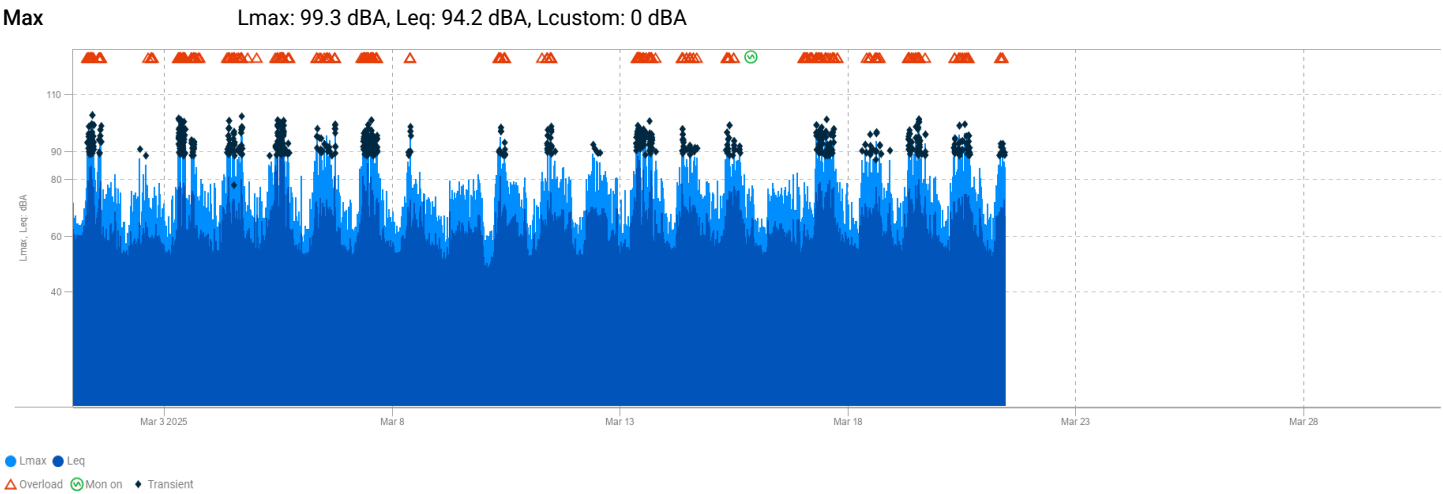
X-span	2025-01-01 00:00 - 2025-01-31 00:00		
Y-span	Lmax: 57.2 - 99.4 dBA, Leq: 45.57 - 79.16 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	99.4 dBA	79.16 dBA	0 dBA
Date	2025-01-14	2025-01-11	2025-05-29
Time	10:30:00	10:30:00	16:23:47

Project	BWD
Project maintainer	-
Time frame	2025-02-01 00:00 - 2025-02-28 00:00 (Australia/Sydney)
Measuring point	BWD_1
Description	16 Burton St Noise
Sensor type	S50
Sensor serial no.	14085
Master(s) serial no.	108062
Latest calibration	2024-08-07
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High



X-span	2025-02-01 00:00 - 2025-02-28 00:00		
Y-span	Lmax: 50.6 - 99.8 dBA, Leq: 46.5 - 88.8 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	99.8 dBA	88.8 dBA	0 dBA
Date	2025-02-11	2025-02-27	2025-05-29
Time	08:07:00	15:15:00	16:24:45

Project	BWD
Project maintainer	-
Time frame	2025-03-01 00:00 - 2025-03-31 00:00 (Australia/Sydney)
Measuring point	BWD_1
Description	16 Burton St Noise
Sensor type	S50
Sensor serial no.	14085
Master(s) serial no.	108062
Latest calibration	2024-08-07
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High



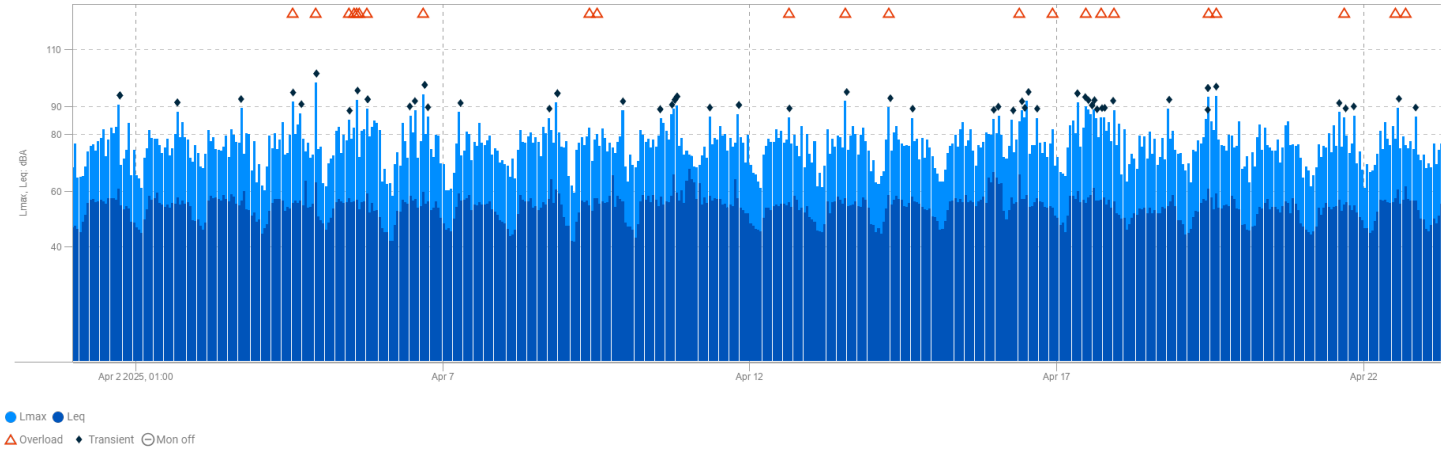
X-span	2025-03-01 00:00 - 2025-03-31 00:00		
Y-span	Lmax: 48.9 - 99.3 dBA, Leq: 43.6 - 94.2 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	99.3 dBA	94.2 dBA	0 dBA
Date	2025-03-01	2025-03-05	2025-05-29
Time	09:57:00	14:41:00	16:26:01

Project NST
Project maintainer -
Time frame 2025-04-01 00:40 - 2025-04-23 05:56 (Australia/Sydney)

NB!
Chart data is aggregated by 1 hour.

Measuring point NST_1
Description NST S50 #14084
Sensor type S50
Sensor serial no. 14084
Master(s) serial no. 108061
Latest calibration 2024-08-07
Aggregate max
Standard (01) Lmax + Leq 20-95 dBA Fast
Unit dBA
Quantity Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time 2 minutes
Aggregated time 1 hour
Table threshold High

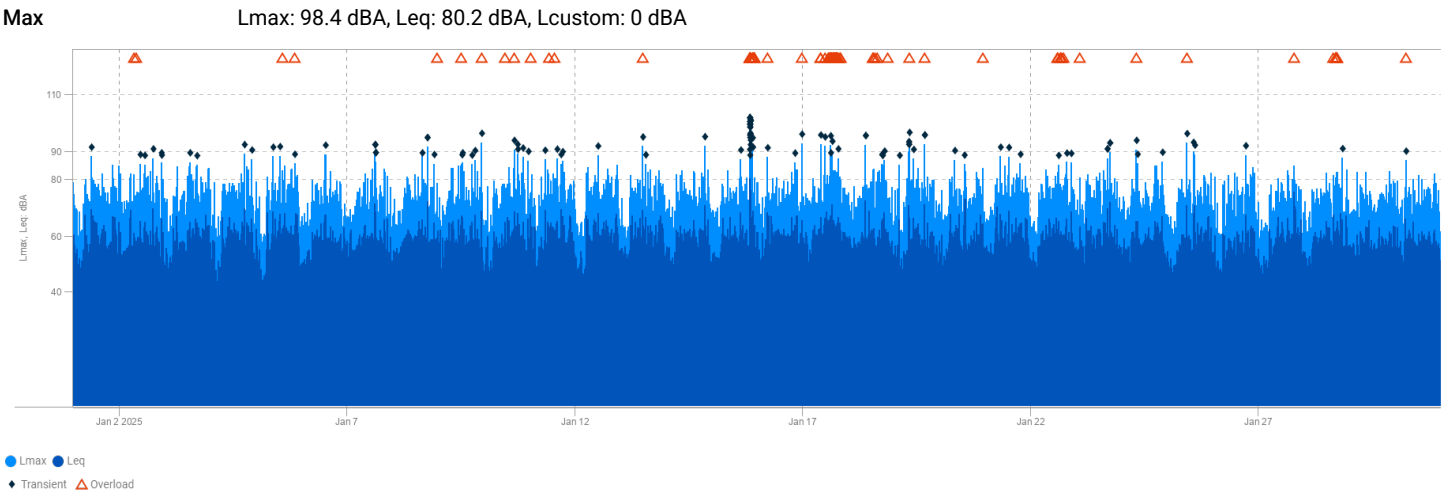
Max Lmax: 98.1 dBA, Leq: 67.55 dBA, Lcustom: 0 dBA



X-span 2025-04-01 00:40 - 2025-04-23 05:56
Y-span Lmax: 58.3 - 98.1 dBA, Leq: 41.58 - 67.55 dBA, Lcustom: 0 - 0 dBA

	Lmax	Leq	Lcustom
Max	98.1 dBA	67.55 dBA	0 dBA
Date	2025-04-04	2025-04-11	2025-05-29
Time	23:30:00	00:30:00	16:31:06

Project	NST
Project maintainer	-
Time frame	2025-01-01 00:00 - 2025-01-31 00:00 (Australia/Sydney)
Measuring point	NST_1
Description	NST S50 #14084
Sensor type	S50
Sensor serial no.	14084
Master(s) serial no.	108061
Latest calibration	2024-08-07
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Table threshold	High

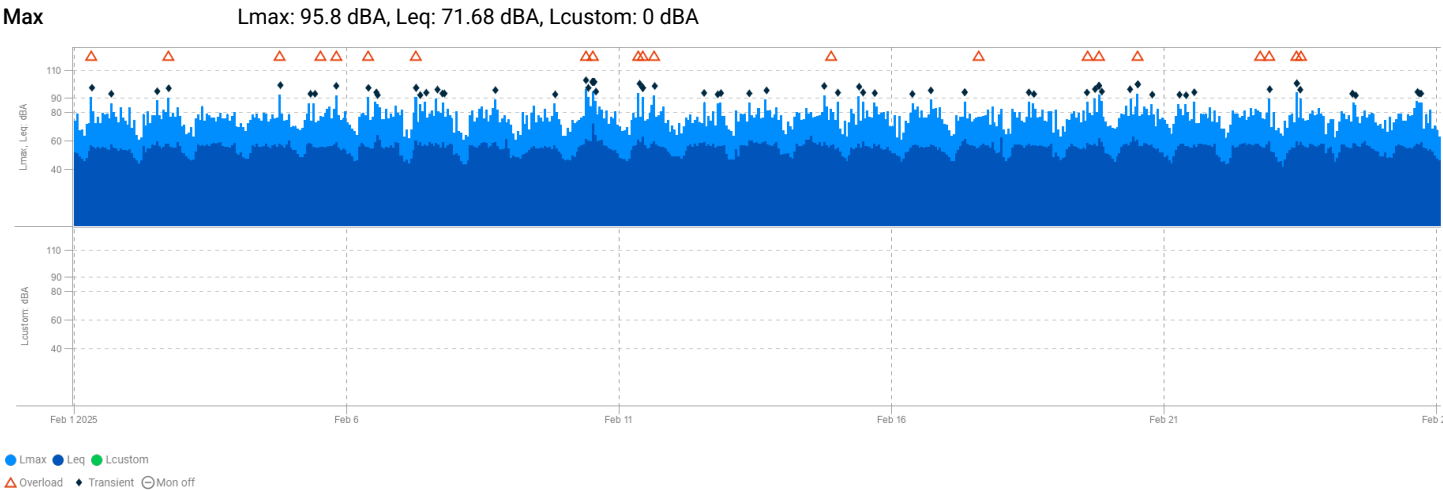


X-span	2025-01-01 00:00 - 2025-01-31 00:00		
Y-span	Lmax: 38.7 - 98.4 dBA, Leq: 32.2 - 80.2 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	98.4 dBA	80.2 dBA	0 dBA
Date	2025-01-15	2025-01-15	2025-05-29
Time	20:23:00	20:23:00	16:31:25

Project NST
Project maintainer -
Time frame 2025-01-31 23:30 - 2025-02-26 01:45 (Australia/Sydney)

Measuring point NST_1
Description NST S50 #14084
Sensor type S50
Sensor serial no. 14084
Master(s) serial no. 108061
Latest calibration 2024-08-07
Aggregate max
Standard (01) Lmax + Leq 20-95 dBA Fast
Unit dBA
Quantity Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time 2 minutes
Aggregated time 1 hour
Table threshold High

NB!
Chart data is aggregated by 1 hour.

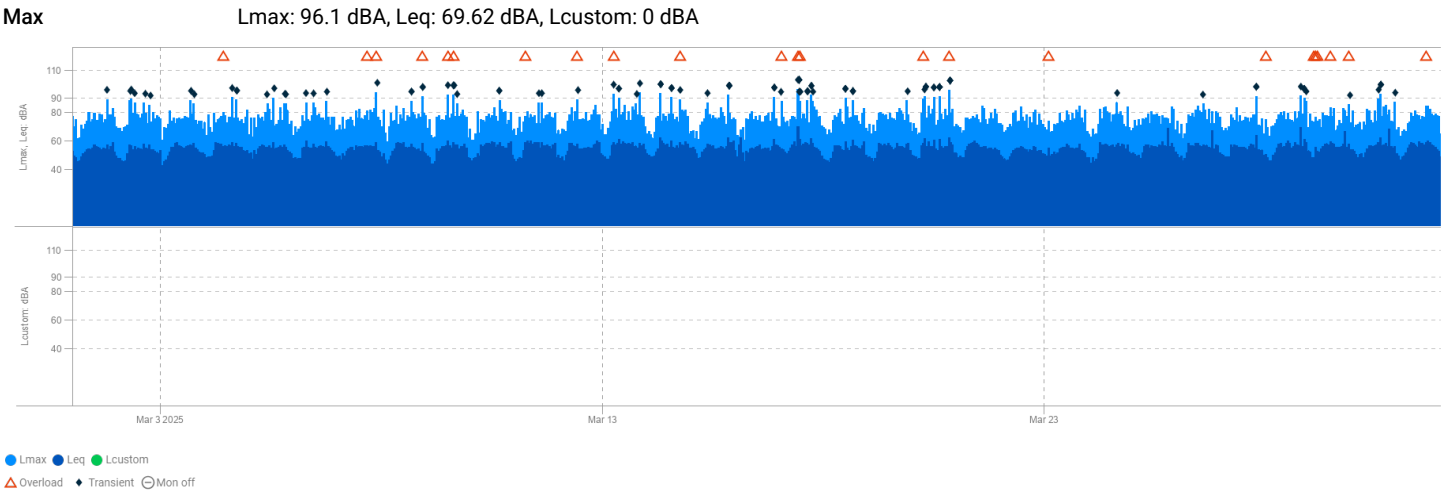


X-span	2025-01-31 23:30 - 2025-02-26 01:45		
Y-span	Lmax: 60 - 95.8 dBA, Leq: 40.95 - 71.68 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	95.8 dBA	71.68 dBA	0 dBA
Date	2025-02-10	2025-02-10	2025-05-29
Time	09:30:00	12:30:00	16:30:05

Project	NST
Project maintainer	-
Time frame	2025-03-01 00:55 - 2025-03-31 23:03 (Australia/Sydney)
Measuring point	NST_1
Description	NST S50 #14084
Sensor type	S50
Sensor serial no.	14084
Master(s) serial no.	108061
Latest calibration	2024-08-07
Aggregate	max
Standard	(01) Lmax + Leq 20-95 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	2 minutes
Aggregated time	1 hour
Table threshold	High

NB!

Chart data is aggregated by 1 hour.



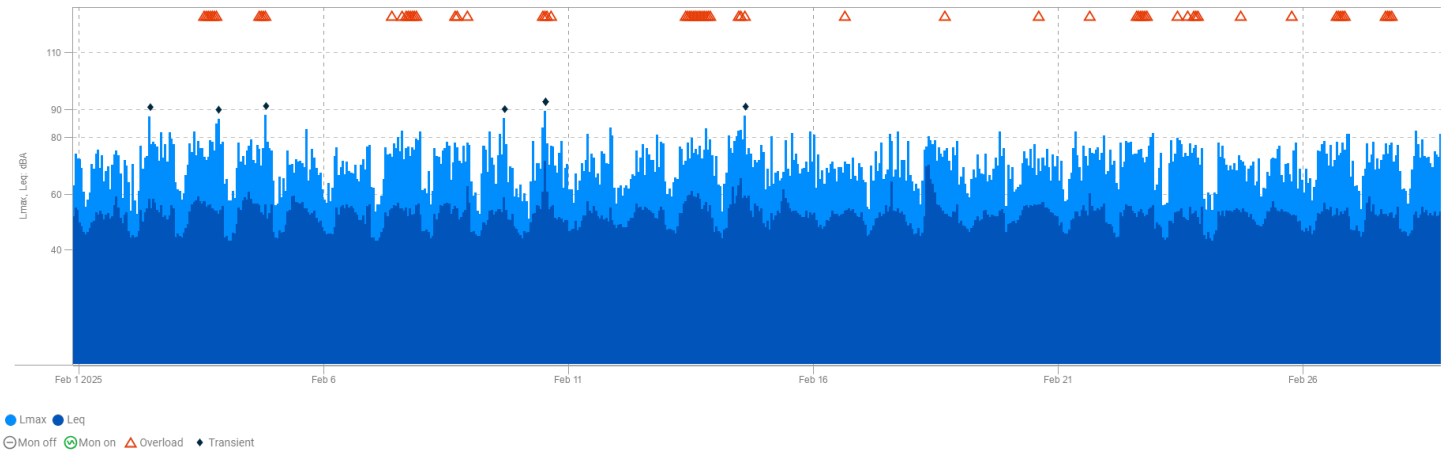
X-span	2025-03-01 00:55 - 2025-03-31 23:03		
Y-span	Lmax: 59.3 - 96.1 dBA, Leq: 42.22 - 69.62 dBA, Lcustom: 0 - 0 dBA		
	Lmax	Leq	Lcustom
Max	96.1 dBA	69.62 dBA	0 dBA
Date	2025-03-17	2025-03-17	2025-05-29
Time	10:30:00	10:30:00	16:30:46

Project SOP
Project maintainer -
Time frame 2025-01-31 21:15 - 2025-02-28 19:09 (Australia/Sydney)

NB!
Chart data is aggregated by 1 hour.

Measuring point N1 #14624
Description Second floor balcony Pullman Hotel
Sensor type S50
Sensor serial no. 14624
Master(s) serial no. 108060
Latest calibration 2024-08-14
Aggregate max
Standard (01) Lmax + Leq 20-95 dBA Fast
Unit dBA
Quantity Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time 2 minutes
Aggregated time 1 hour
Table threshold High

Max Lmax: 89.2 dBA, Leq: 71.65 dBA, Lcustom: 0 dBA



X-span 2025-01-31 21:15 - 2025-02-28 19:09
Y-span Lmax: 51.3 - 89.2 dBA, Leq: 42.96 - 71.65 dBA, Lcustom: 0 - 0 dBA

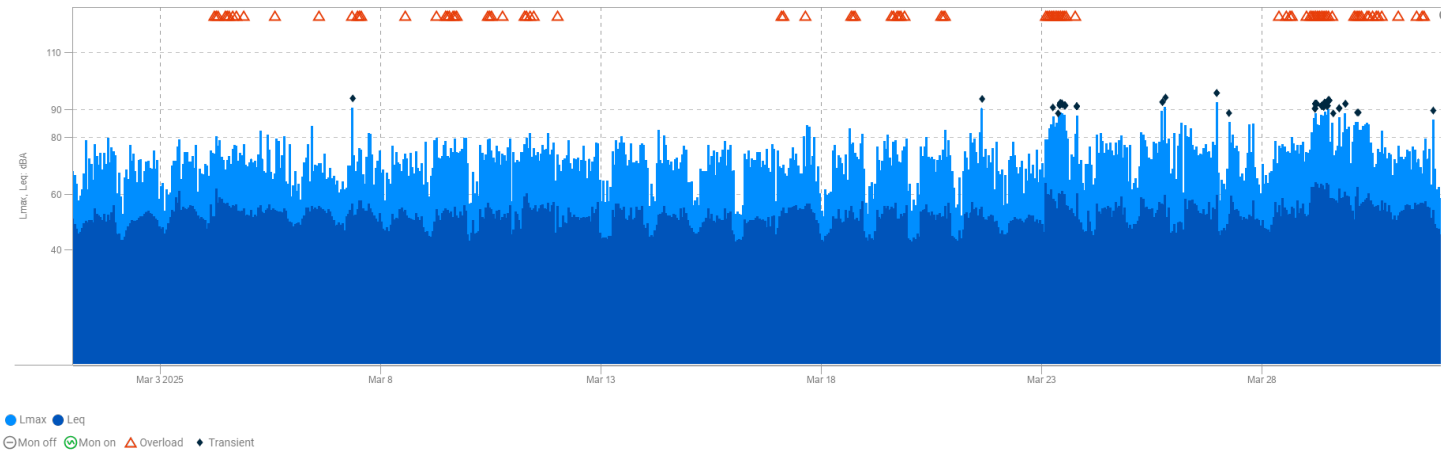
	Lmax	Leq	Lcustom
Max	89.2 dBA	71.65 dBA	0 dBA
Date	2025-02-10	2025-02-10	2025-05-30
Time	12:30:00	12:30:00	09:20:11

Project SOP
Project maintainer -
Time frame 2025-03-01 00:30 - 2025-04-01 01:14 (Australia/Sydney)

NB!
Chart data is aggregated by 1 hour.

Measuring point N1 #14624
Description Second floor balcony Pullman Hotel
Sensor type S50
Sensor serial no. 14624
Master(s) serial no. 108060
Latest calibration 2024-08-14
Aggregate max
Standard (01) Lmax + Leq 20-95 dBA Fast
Unit dBA
Quantity Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time 2 minutes
Aggregated time 1 hour
Table threshold High

Max Lmax: 92.3 dBA, Leq: 64.08 dBA, Lcustom: 0 dBA



X-span 2025-03-01 00:30 - 2025-04-01 01:14
Y-span Lmax: 52.1 - 92.3 dBA, Leq: 42.8 - 64.08 dBA, Lcustom: 0 - 0 dBA

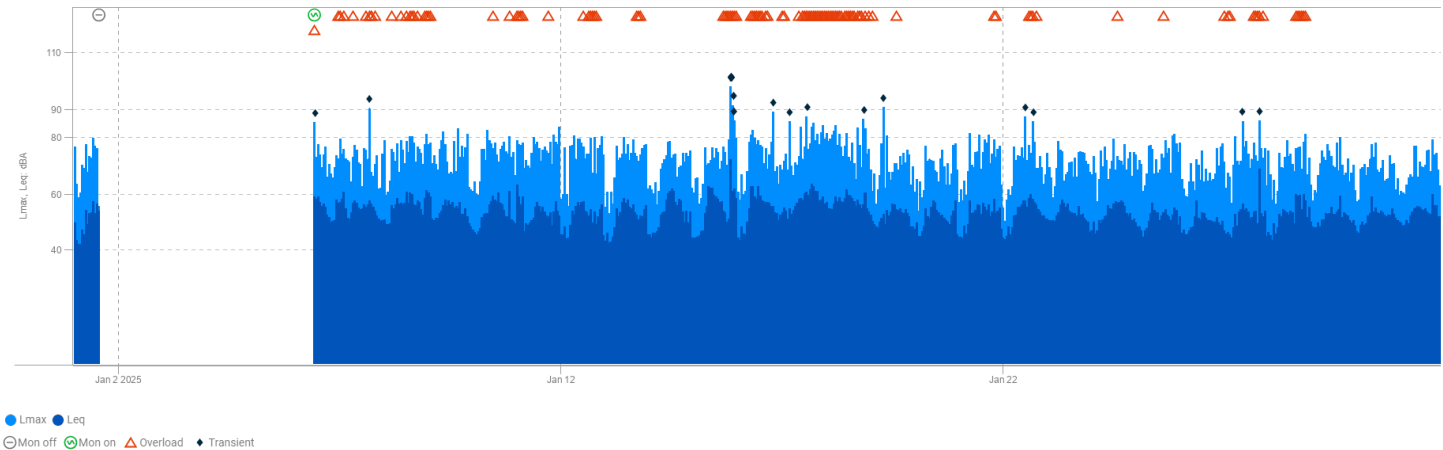
	Lmax	Leq	Lcustom
Max	92.3 dBA	64.08 dBA	0 dBA
Date	2025-03-26	2025-03-29	2025-05-30
Time	23:30:00	05:30:00	09:20:51

Project SOP
Project maintainer -
Time frame 2024-12-31 23:30 - 2025-01-31 21:35 (Australia/Sydney)

NB!
Chart data is aggregated by 1 hour.

Measuring point N1 #14624
Description Second floor balcony Pullman Hotel
Sensor type S50
Sensor serial no. 14624
Master(s) serial no. 108060
Latest calibration 2024-08-14
Aggregate max
Standard (01) Lmax + Leq 20-95 dBA Fast
Unit dBA
Quantity Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time 2 minutes
Aggregated time 1 hour
Table threshold High

Max Lmax: 97.8 dBA, Leq: 72.06 dBA, Lcustom: 0 dBA



X-span 2024-12-31 23:30 - 2025-01-31 21:35
Y-span Lmax: 50.1 - 97.8 dBA, Leq: 41.97 - 72.06 dBA, Lcustom: 0 - 0 dBA

	Lmax	Leq	Lcustom
Max	97.8 dBA	72.06 dBA	0 dBA
Date	2025-01-15	2025-01-15	2025-05-30
Time	20:30:00	20:30:00	09:19:43

APPENDIX A (iv) – CALIBRATION RECORDS

CERTIFICATE OF CALIBRATION

CERTIFICATE No: **C39654**

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Pulsar

Type No: 106

Serial No: 70390

Class: 2

Owner: Ferrovial York Joint Venture
7 Figtree Drive
Newington NSW 2127

Tests Performed: Measured Output Pressure level, Frequency & Distortion

Comments: See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure 1014 hPa ± 1 hPa

Temperature 25 °C $\pm 1^\circ$ C

Relative Humidity 53 % $\pm 5\%$

Date of Receipt : 03/05/2024

Date of Calibration : 07/05/2024

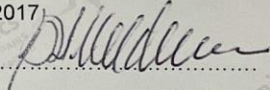
Date of Issue : 08/05/2024

Acu-Vib Test AVP02 (Calibrators)

Procedure: Test Method: AS IEC 60942 - 2017

CHECKED BY: 

AUTHORISED
SIGNATURE:


Bruce Medrum

Accredited for compliance with ISO/IEC 17025 - Calibration

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.


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Accredited Laboratory
No. 9262
Acoustic and Vibration
Measurements

The Calibrator described in this report has been tested to the requirements of the standard IEC 60942-[Ed 4]:2017-11.

The tests described in Annex B of the standard (Periodic tests) were carried out under the environmental conditions listed above to the following clauses:

Clause Test description

- B4.6 Sound Pressure Level
(By comparison with a reference calibrator).
- B4.7 Frequency
(By measurement with a calibrated frequency meter).
- B4.8 Total distortion and noise.
(By measurement with a calibrated Noise and Distortion meter).

Notes:

1. The calibrator was calibrated with the main axis vertical and facing down.
2. No corrections have been made for atmospheric pressure,

Parameter	Pre-Adj	Adj Y/N	Output: (dB re 20 µPa)	Frequency (Hz)	THD&N (%)
Level:	94.48	Y	94.01 dB	1000.30 Hz	0.89 %
Uncertainty			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

Parameter	Class 1		Class 2	
Nominal Frequency	250 Hz	1 kHz	250 Hz	1 kHz
Output dB SPL	0.25 dB	0.25 dB	0.40 dB	0.40 dB
Frequency Hz	0.7 % (1.75 Hz)	0.7 % (7 Hz)	1.7 % (4.25 Hz)	1.7 % (17 Hz)
THD&N	2.5 %	2.5 %	3.0 %	3.0 %

Tolerance limits from AS/IEC60942 (edition 4)

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CERTIFICATE OF CALIBRATION

CERTIFICATE No: **SLM39651**

EQUIPMENT TESTED: Sound Level Meter

Manufacturer: Rion
Type No: NL-42
Mic. Type: UC-52
Pre-Amp. Type: NH-24

Serial No: 00145400
Serial No: 149905
Serial No: 35296

Owner: Ferrovia York Joint Venture
7 Figtree Drive
Newington NSW 2127

Tests Performed: IEC 61672-3:2013

Comments: All Tests passed for Class 2. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	1015 hPa ± 1 hPa	Date of Receipt :	03/05/2024
Temperature	25 °C ± 1 °C	Date of Calibration :	07/05/2024
Relative Humidity	53 % ± 5 %	Date of Issue :	08/05/2024

Acu-Vib Test Procedure: AVP10 (SLM) based on IEC 61672-3

CHECKED BY:

AUTHORISED

SIGNATURE:

Bruce Meldrum

Accredited for compliance with ISO/IEC 17025 - Calibration

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The performance characteristics listed below were tested. The tests are based on the relevant clauses of IEC 61672-3:2013

Tests Performed:	Clause	Result
Absolute Calibration	10	Pass
Acoustical Frequency Weighting	12	Pass
Self-Generated Noise	11.1	Observed
Electrical Noise	11.2	Observed
Long Term Stability	15	Pass
Electrical Frequency Weightings	13	Pass
Frequency and Time Weightings	14	Pass
Reference Level Linearity	16	Pass
Range Level Linearity	17	Not Applicable
Toneburst	18	Pass
Peak C Sound Level	19	Pass
Overload Indicator	20	Pass
High Level Stability	21	Pass

Statement of Compliance: The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:-2013, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:-2013 because evidence was not publically available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 2 specifications in IEC 61672-1:-2013 and because the periodic tests of IEC 61672-3:-2013 cover only a limited subset of the specifications in IEC 61672-1:-2013.

A full technical report is available on request.

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C39361

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek

Type No: SV 31

Serial No: 31892

Class: 1

Owner: Ferrovia York Joint Venture

7 Figtree Drive

Newington, NSW 2127

Tests Performed: Measured Output Pressure level, Frequency & Distortion

Comments: See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure 996 hPa ± 1 hPa

Temperature 24 $^{\circ}\text{C} \pm 1^{\circ}\text{C}$

Relative Humidity 49 % $\pm 5\%$

Date of Receipt : 03/04/2024

Date of Calibration : 08/04/2024

Date of Issue : 08/04/2024

Acu-Vib Test AVP02 (Calibrators)

Procedure: Test Method: AS IEC 60942 - 2017

CHECKED BY:

AUTHORISED

SIGNATURE:

Hein Soc

Accredited for compliance with ISO/IEC 17025 - Calibration

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.


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CERTIFICATE OF CALIBRATION

CERTIFICATE NO: **SLM39359**

EQUIPMENT TESTED: Sound Level Meter

Manufacturer: Svantek
Type No: SVAN 971 Serial No: 34933
Mic. Type: ACO 7052E Serial No: 56008
Pre-Amp. Type: SV18 Serial No: 33351

Owner: Ferrovia York Joint Venture
7 Figtree Drive
Newington, NSW 2127

Tests Performed: IEC 61672-3:2013

Comments: All Tests passed for Class 1. (See overleaf for details)

CONDITIONS OF TEST:

Ambient Pressure	997 hPa ± 1 hPa	Date of Receipt :	03/04/2024
Temperature	25 °C ± 1 ° C	Date of Calibration :	08/04/2024
Relative Humidity	50 % ± 5 %	Date of Issue :	08/04/2024

Acu-Vib Test Procedure: AVP10 (SLM) based on IEC 61672-3

CHECKED BY:

AUTHORISED

SIGNATURE:

Acin Soc

Accredited for compliance with ISO/IEC 17025 - Calibration
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.
The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.


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Measurements

APPENDIX B - VIBRATION MONITORING REGISTER

Vibration Monitoring Register

Date	Time	Site	Conducted by	Attended/ Unattended	Type/Model number	Serial No.	Calibration due	Duration of monitoring	Source location	Measurement location	Distance to source (m)	Works being undertaken	PPV Preferred Criteria (mm/s)	PPV (mm/s)	Frequency (Hz)	VDV Preferred Criteria (m/s ^{1.75})	Vibration Dose Value (VDV m/s ^{1.75})	Below criteria (Y/N)	Comments
01-31/01/2025	12am-12pm	Burwood North	Osamah Naji	Unattended	V12	33770	25/07/2024	31 days	BWD North shaft	16 Burton St, Concord	5	BWD South shaft excavation	7.5	13.2	N/A	N/A	N/A	No	On 22/01/2025 at 12:00:00, the data exceedance limits (Trans(T) 12mm/s- Hz N/A) is attributed to the replacement of the battery by the Environmental representative.
01-31/01/2025	12am-12pm	Five Dock	Osamah Naji	Unattended	V12	106845	26/07/2025	31 days	FDK East	110 GNR	1	Tunneling work, excavation and spoil loadout	7.5	270	26	N/A	N/A	No	On 21/01/2025 at 10:36:00, the data exceedance limits (Trans(T) 170mm/s- Hz 26) is attributed to the replacement of the battery by the Environmental representative.
01-31/01/2025	12am-12pm	Five Dock	Osamah Naji	Unattended	V12	33730	25/07/2025	31 days	FDK East	St Albans Church	3	TBM Maintenance & Spoil loadout	7.5	0.85	266	N/A	N/A	Y	No exceedance recorded.
01-31/01/2025	12am-12pm	N Strathfield	Osamah Naji	Unattended	V12	33720	25/07/2025	31 days	N Strathfield Site	125 Queens st, N Strathfield	5	Rocking hammering 250T crane excavation	7.5	0.6	138	N/A	N/A	Y	No exceedance recorded.
01-31/01/2025	12am-12pm	SOP	Osamah Naji	Unattended	C22	106848	26/04/2025	31 days	SOP site	10 Herb Elliot Dr, SOP	5	Concrete pours, spoil loadout works	7.5	1.95	341	N/A	N/A	Y	No exceedance recorded.
01-28/02/2025	12am-12pm	Burwood North	Osamah Naji	Unattended	V12	33770	25/07/2025	28 days	BWD North shaft	16 Burton St, Concord	5	BWD South shaft excavation	7.5	17.3	N/A	N/A	N/A	No	On 27/02/2025 at 17:00:00, the data exceedance limits (Long (X) 17.3mm/s- Hz N/A) is attributed to the replacement of the battery by the Environmental representative.
01-28/02/2025	12am-12pm	Five Dock	Osamah Naji	Unattended	V12	106845	26/07/2025	28 days	FDK East	110 GNR	1	Tunneling work, excavation and spoil loadout	7.5	84.3	2.5	N/A	N/A	No	On 01/02/2025 at 14:30:00, the data exceedance limits (Trans(T) 84.3mm/s- Hz 2.5) is attributed to the replacement of the battery by the Environmental representative.
01-28/02/2025	12am-12pm	Five Dock	Osamah Naji	Unattended	V12	33730	25/07/2025	28 days	FDK East	St Albans Church	3	TBM Maintenance & Spoil loadout	7.5	1	266	N/A	N/A	Y	No exceedance recorded.
01-28/02/2025	12am-12pm	N Strathfield	Osamah Naji	Unattended	V12	33720	25/07/2025	28 days	N Strathfield Site	125 Queens st, N Strathfield	5	Rocking hammering 250T crane excavation	7.5	4.65	137	N/A	N/A	Y	No exceedance recorded.
01-28/02/2025	12am-12pm	SOP	Osamah Naji	Unattended	C22	106848	26/04/2025	28 days	SOP site	10 Herb Elliot Dr, SOP	5	Concrete pours, spoil loadout works	7.5	34.7	3.8	N/A	N/A	Y	On 14/02/2025 at 14:48:00, the data exceedance limits (Trans(T) 8.4mm/s- Hz 293) is attributed to the replacement of the battery by the Environmental representative.
01-21/03/2025	12am-12pm	Burwood North	kelvin Nmerreole	Unattended	V12	33770	25/07/2025	21 days	BWD North shaft	16 Burton St, Concord	1	Site demobilisation	7.5	20.5	293	N/A	N/A	N	On 13/03/2025 at 9:03, the data exceedance limits (Long (X) 21.8mm/s- Hz N/A) is attributed to demolition of the acoustic shed plinth with is approx. 2m from the monitoring location. Residents were notified for the work.
01-31/03/2025	12am-12pm	Five Dock	kelvin Nmerreole	Unattended	V12	107963	25/07/2025	31 days	FDK East	St Albans Church	3	Station box works and site demobilisation	7.5	258	2.5	N/A	N/A	N	On 25/03/2025 at 11:39:00, the data exceedance limits (Trans(T) 258mm/s- Hz 2.5) is attributed to the replacement of the battery by the Environmental representative.
01-31/03/2025	12am-12pm	Five Dock	kelvin Nmerreole	Unattended	V12	107964	25/07/2025	31 days	FDK West	110 GNR	10	Station box works and site demobilisation	7.5	0.25	228	N/A	N/A	Y	Missing data from 28 to 31 March due to low battery.
01-30/04/2025	12am-12pm	Five Dock	David Lamb	Unattended	V12	107963	25/07/2025	30 days	FDK East	St Albans Church	3	Station box works and site demobilisation	7.5	0.35	1	N/A	N/A	Y	No exceedance recorded.
01-30/04/2025	12am-12pm	Five Dock	David Lamb	Unattended	V12	107964	25/07/2025	30 days	FDK West	110 GNR	10	Station box works and site demobilisation	7.5	1	97.5	N/A	N/A	Y	No exceedance recorded.
01-30/05/2025	12am-12pm	Five Dock	David Lamb	Unattended	V12	107963	25/07/2025	30 days	FDK East	St Albans Church	3	Station box works and site demobilisation	7.5	0.25	0.5	N/A	N/A	Y	No exceedance recorded.
01-30/05/2025	12am-12pm	Five Dock	David Lamb	Unattended	V12	107964	25/07/2025	30 days	FDK West	110 GNR	10	Station box works and site demobilisation	7.5	11.3	17	N/A	N/A	N	Elevated result identified at 9:01PM on the 29/05/2025. Outlier likely due to localised disruption. No AFPV works occurring at this time.

AFJV Central Tunnel Package

Vibration Monitoring Event Report

Monitoring Information			
Test Location	Queen St, NST	Unsound heritage structure	YES ☐ NO ☒
Works Monitoring	NST Site	Distance between geophone and works (m)	5m
Conducted by	Osamah Naji	Attended monitoring	YES ☐ NO ☒
Date/s	01.01.2025 – 31.01.2025		
Instrumentation & Test Procedure			
Instrument	Sigicom V12		
Calibrator	Sigicom		
Calibration Date	25/07/2023	Calibration Due	25/07/2025
Monitor Serial #	V12- 33720		

Preferred Criteria (circle criteria relevant to monitoring event)						
	Reinforced or framed structures	Unreinforced or light framed structures	Heritage structurally sound	Heritage structurally unsound	Residential human comfort Day	Residential human comfort Night
Peak Particle Velocity (PPV mm/s)	25	7.5	7.5	2.5	-	-
Vibration Dose Value (VDV m/s ^{1.75})	-	-	-	-	0.4	0.26

Monitoring Results						
Start Time	00:00		Duration		31 Days	
Trigger value (mm/s)	5mm/s		# of vibration triggers		0	
	Trans (y)		Vert (z)		Long (x)	
	Value	Freq (Hz)	Value	Freq (Hz)	Value	Freq (Hz)
Peak Particle Velocity (PPV mm/s)	0.3	128	0.6	128	0.55	33.5
Vibration Dose Value (VDV mm/s ^{1.75})	-	-	-	-	-	-
Below preferred criteria?			YES ☒ NO ☐ If "NO", provide explanation and corrective actions taken in next section			

AFJV Central Tunnel Package

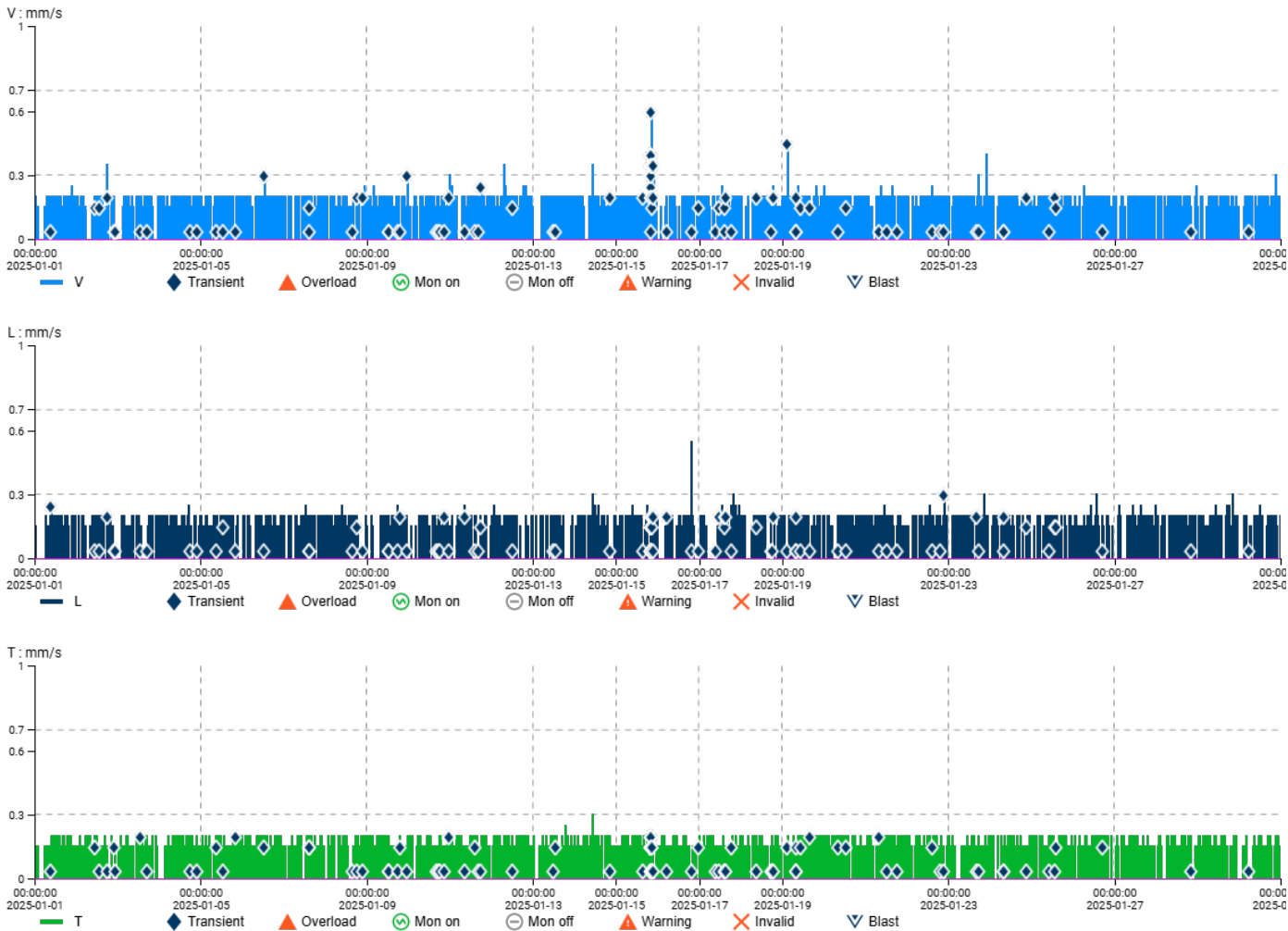
Notes and Diagram/Map, Photos and Graphs

Geophones located inside 125 Queen St, against building wall.



Project NST
Project maintainer -
Time frame 2025-01-01 00:00 - 2025-01-31 00:00 (Australia/Sydney)

NST_2 #33720, NST V12, V12, Serial number: 33720, Calibrated: 2023-07-25, true



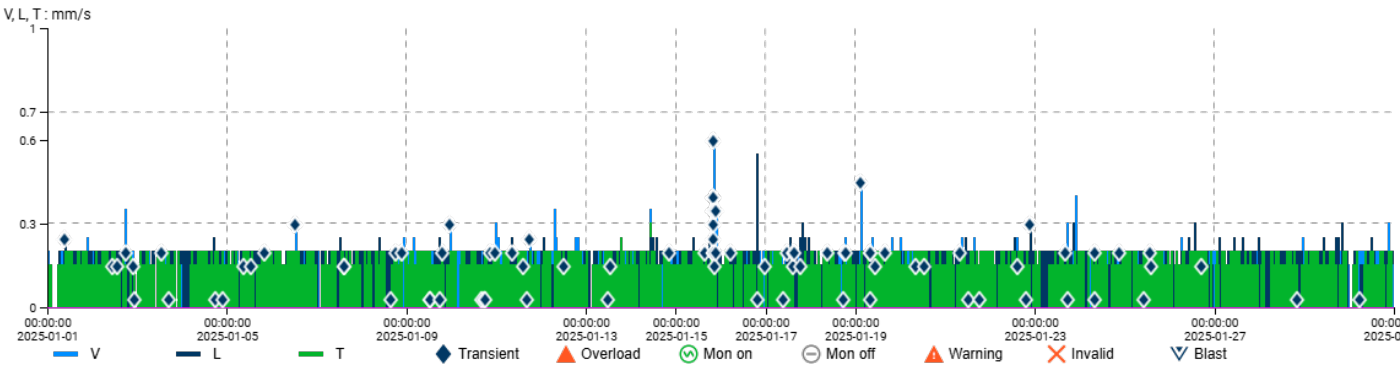
X-span 2025-01-01 00:00 - 2025-01-31 00:00
Y-span V, L, T : mm/s: 0 - 1

	V	L	T
Max	0.6 mm/s	0.55 mm/s	0.3 mm/s
Date	2025-01-15	2025-01-16	2025-01-14
Time	20:38:00	19:14:00	10:04:00
Hz	128	33.5	128

Project NST
Project maintainer -
Time frame 2025-01-01 00:00 - 2025-01-31 00:00 (Australia/Sydney)

Measuring point NST_2 #33720
Description NST V12
Sensor type V12
Sensor serial no. 33720
Master(s) serial no. 108061
Latest calibration 2023-07-25
Standard (18) DIN4150-3 + Freq 250 mm/s 1-315Hz
Unit mm/s
Quantity Velocity
Interval time 2 minutes

Max V: 0.6 mm/s, L: 0.55 mm/s, T: 0.3 mm/s



X-span 2025-01-01 00:00 - 2025-01-31 00:00
Y-span V, L, T : mm/s: 0 - 1

	V	L	T
Max	0.6 mm/s	0.55 mm/s	0.3 mm/s
Date	2025-01-15	2025-01-16	2025-01-14
Time	20:38:00	19:14:00	10:04:00

AFJV Central Tunnel Package

Vibration Monitoring Event Report

Monitoring Information			
Test Location	10 Herb Elliot Dr. SOP	Unsound heritage structure	YES ☐ NO ☒
Works Monitoring	SOP Site	Distance between geophone and works (m)	5m
Conducted by	Osamah Naji	Attended monitoring	YES ☐ NO ☒
Date/s	01.01.2025 – 31.01.2025		
Instrumentation & Test Procedure			
Instrument	Sigicom C22		
Calibrator	Sigicom		
Calibration Date	26/04/2023	Calibration Due	26/04/2025
Monitor Serial #	C22-106848		

Preferred Criteria (circle criteria relevant to monitoring event)						
	Reinforced or framed structures	Unreinforced or light framed structures	Heritage structurally sound	Heritage structurally unsound	Residential human comfort Day	Residential human comfort Night
Peak Particle Velocity (PPV mm/s)	25	7.5	7.5	2.5	-	-
Vibration Dose Value (VDV m/s ^{1.75})	-	-	-	-	0.4	0.26

Monitoring Results						
Start Time	00:00		Duration		31 Days	
Trigger value (mm/s)	5mm/s		# of vibration triggers		0	
	Trans (y)		Vert (z)		Long (x)	
	Value	Freq (Hz)	Value	Freq (Hz)	Value	Freq (Hz)
Peak Particle Velocity (PPV mm/s)	1.95	341	1.8	34.7	0.6	410
Vibration Dose Value (VDV mm/s ^{1.75})	-	-	-	-	-	-
Below preferred criteria?			YES ☒ NO ☐ If "NO", provide explanation and corrective actions taken in next section			

AFJV Central Tunnel Package

Notes and Diagram/Map, Photos and Graphs



Project SOP
Project maintainer -
Time frame 2025-01-01 00:00 - 2025-01-31 00:00 (Australia/Sydney)

NB!
Chart data is aggregated by 4 minutes.

SOP, 10 Herb Elliot Dr (basement), C22, Serial number: 106848, Calibrated: 2023-04-26,



X-span 2025-01-01 00:00 - 2025-01-31 00:00
Y-span V, L, T : mm/s: 0 - 2

	V	L	T
Max	1.8 mm/s	0.6 mm/s	1.95 mm/s
Date	2025-01-28	2025-01-22	2025-01-22
Time	11:04:00	15:44:00	15:44:00
Hz	34.7	410	341

Interval report

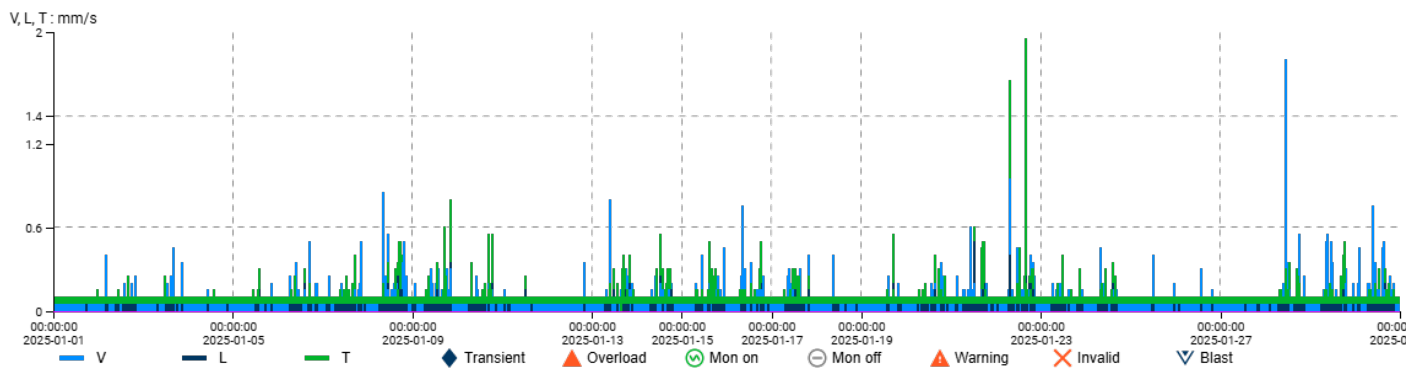
Project SOP
Project maintainer -
Time frame 2025-01-01 00:00 - 2025-01-31 00:00 (Australia/Sydney)

NB!

Chart data is aggregated by 4 minutes.

Measuring point SOP
Description 10 Herb Elliot Dr (basement)
Sensor type C22
Sensor serial no. 106848
Master(s) serial no. 106848
Latest calibration 2023-04-26
Aggregate max
Standard (18A) DIN4150-3 Anlage 250mm/s 1-315Hz
Unit mm/s
Quantity Velocity
Interval time 2 minutes
Frequency weighting OFF
Aggregated time 4 minutes

Max V: 1.8 mm/s, L: 0.6 mm/s, T: 1.95 mm/s



X-span 2025-01-01 00:00 - 2025-01-31 00:00

Y-span V, L, T : mm/s: 0 - 2

	V	L	T
Max	1.8 mm/s	0.6 mm/s	1.95 mm/s
Date	2025-01-28	2025-01-22	2025-01-22
Time	11:04:00	15:44:00	15:44:00

AFJV Central Tunnel Package

Vibration Monitoring Event Report

Monitoring Information			
Test Location	ST Albans Church, FDK	Unsound heritage structure	YES ☐ NO ☒
Works Monitoring	FDK East	Distance between geophone and works (m)	3m
Conducted by	Osamah Naji	Attended monitoring	YES ☐ NO ☒
Date/s	01.01.2025 – 31.01.2025		
Instrumentation & Test Procedure			
Instrument	Sigicom V22		
Calibrator	Sigicom		
Calibration Date	25/07/2023	Calibration Due	25/07/2025
Monitor Serial #	V12 33730		

Preferred Criteria (circle criteria relevant to monitoring event)						
	Reinforced or framed structures	Unreinforced or light framed structures	Heritage structurally sound	Heritage structurally unsound	Residential human comfort Day	Residential human comfort Night
Peak Particle Velocity (PPV mm/s)	25	7.5	7.5	2.5	-	-
Vibration Dose Value (VDV m/s ^{1.75})	-	-	-	-	0.4	0.26

Monitoring Results						
Start Time	00:00		Duration		31 Days	
Trigger value (mm/s)	5mm/s		# of vibration triggers		0	
	Trans (y)		Vert (z)		Long (x)	
	Value	Freq (Hz)	Value	Freq (Hz)	Value	Freq (Hz)
Peak Particle Velocity (PPV mm/s)	0.45	228	0.85	256	0.7	256
Vibration Dose Value (VDV mm/s ^{1.75})	-	-	-	-	-	-
Below preferred criteria?			YES ☒ NO ☐ If "NO", provide explanation and corrective actions taken in next section			

AFJV Central Tunnel Package

Notes and Diagram/Map, Photos and Graphs

Geophones located inside St Albans Church against wall.



Project FDK
Project maintainer -
Time frame 2025-01-01 00:00 - 2025-01-31 00:00 (Australia/Sydney)

FDK_2, 110 Great North Rd, V12, Serial number: 33760, Calibrated: 2023-07-26, true



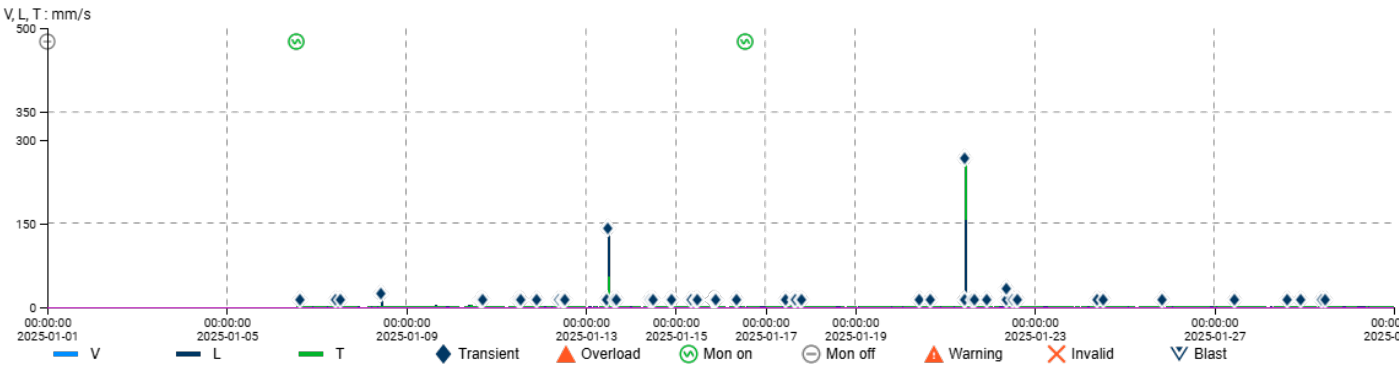
X-span 2025-01-01 00:00 - 2025-01-31 00:00
Y-span V, L, T : mm/s: 0 - 500

	V	L	T
Max		155 mm/s	270 mm/s
Date	-	2025-01-21	2025-01-21
Time	-	10:36:00	10:36:00
Hz		4	26

Project FDK
Project maintainer -
Time frame 2025-01-01 00:00 - 2025-01-31 00:00 (Australia/Sydney)

Measuring point FDK_2
Description 110 Great North Rd
Sensor type V12
Sensor serial no. 33760
Master(s) serial no. 107964
Latest calibration 2023-07-26
Standard (18) DIN4150-3 + Freq 250 mm/s 1-315Hz
Unit mm/s
Quantity Velocity
Interval time 2 minutes

Max V: null, L: 155 mm/s, T: 270 mm/s



X-span 2025-01-01 00:00 - 2025-01-31 00:00
Y-span V, L, T : mm/s: 0 - 500

	V	L	T
Max		155 mm/s	270 mm/s
Date	-	2025-01-21	2025-01-21
Time	-	10:36:00	10:36:00

AFJV Central Tunnel Package

Vibration Monitoring Event Report

Monitoring Information			
Test Location	16 Burton St, Concord	Unsound heritage structure	YES ☐ NO ☒
Works Monitoring	BWD North shaft excavation including excavator	Distance between geophone and works (m)	5m
Conducted by	Osamah Naji	Attended monitoring	YES ☐ NO ☒
Date/s	01.02.2025 – 28.02.2025		
Instrumentation & Test Procedure			
Instrument	Sigicom V12		
Calibrator	Sigicom		
Calibration Date	25/07/2023	Calibration Due	25/07/2025
Monitor Serial #	V12 – 33770		

Preferred Criteria (circle criteria relevant to monitoring event)						
	Reinforced or framed structures	Unreinforced or light framed structures	Heritage structurally sound	Heritage structurally unsound	Residential human comfort Day	Residential human comfort Night
Peak Particle Velocity (PPV mm/s)	25	7.5	7.5	2.5	-	-
Vibration Dose Value (VDV m/s ^{1.75})	-	-	-	-	0.4	0.26

Monitoring Results						
Start Time	00:00		Duration		28 Days	
Trigger value (mm/s)	5mm/s		# of vibration triggers		0	
	Trans (y)		Vert (z)		Long (x)	
	Value	Freq (Hz)	Value	Freq (Hz)	Value	Freq (Hz)
Peak Particle Velocity (PPV mm/s)	13.5	N/A	16.3	N/A	17.3	N/A
Vibration Dose Value (VDV mm/s ^{1.75})	-	-	-	-	-	-
Below preferred criteria?			YES ☐ NO ☒ If "NO", provide explanation and corrective actions taken in next section			

AFJV Central Tunnel Package

Notes and Diagram/Map, Photos and Graphs

Geophones located inside 16 Burton St against house wall.

On 27/02/2025 at 17:00:00, the data exceedance limits (Long (X) 17.3mm/s- Hz N/A) is attributed to the replacement of the battery by the Environmental representative.



Project BWD
Project maintainer -
Time frame 2025-02-01 00:00 - 2025-02-28 00:00 (Australia/Sydney)

NB!
Chart data is aggregated by 1 hour.

BWD_2, 16 Burton St, V12, Serial number: 33770, Calibrated: 2023-07-25, true



X-span 2025-02-01 00:00 - 2025-02-28 00:00

Y-span V, L, T : mm/s: 0 - 20

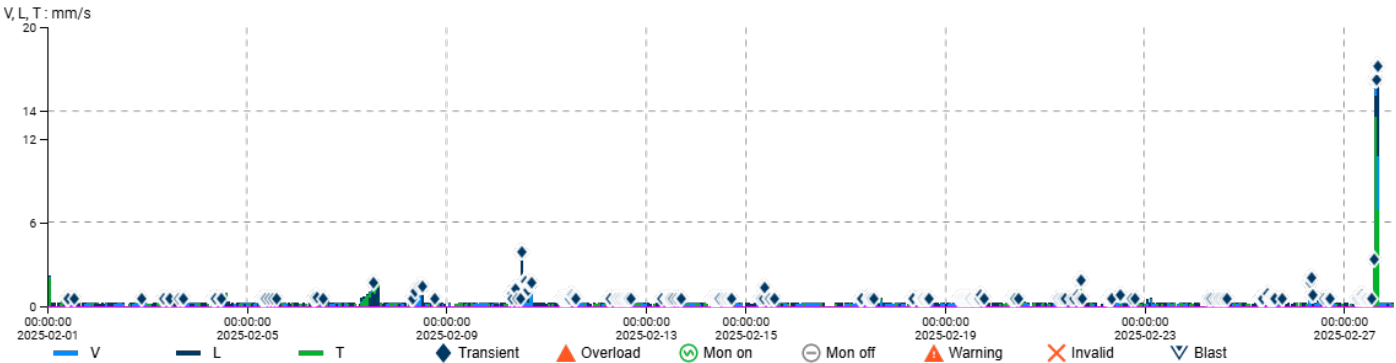
	V	L	T
Max	16.3 mm/s	17.3 mm/s	13.5 mm/s
Date	2025-02-27	2025-02-27	2025-02-27
Time	16:00:00	17:00:00	16:00:00
Hz			

Project BWD
Project maintainer -
Time frame 2025-02-01 00:00 - 2025-02-28 00:00 (Australia/Sydney)

NB!
Chart data is aggregated by 1 hour.

Measuring point BWD_2
Description 16 Burton St
Sensor type V12
Sensor serial no. 33770
Master(s) serial no. 108062
Latest calibration 2023-07-25
Aggregate max
Standard (18) DIN4150-3 + Freq 250 mm/s 1-315Hz
Unit mm/s
Quantity Velocity
Interval time 2 minutes
Aggregated time 1 hour

Max V: 16.3 mm/s, L: 17.3 mm/s, T: 13.5 mm/s



X-span 2025-02-01 00:00 - 2025-02-28 00:00
Y-span V, L, T : mm/s: 0 - 20

	V	L	T
Max	16.3 mm/s	17.3 mm/s	13.5 mm/s
Date	2025-02-27	2025-02-27	2025-02-27
Time	16:00:00	17:00:00	16:00:00

AFJV Central Tunnel Package

Vibration Monitoring Event Report

Monitoring Information			
Test Location	110 Great North Rd, FDK	Unsound heritage structure	YES ☐ NO ☒
Works Monitoring	FDK East	Distance between geophone and works (m)	1m
Conducted by	Osamah Naji	Attended monitoring	YES ☐ NO ☒
Date/s	01.02.2025 – 28.02.2025		
Instrumentation & Test Procedure			
Instrument	Sigicom V12		
Calibrator	Sigicom		
Calibration Date	26/07/2023	Calibration Due	26/07/2025
Monitor Serial #	V12 33760		

Preferred Criteria (circle criteria relevant to monitoring event)						
	Reinforced or framed structures	Unreinforced or light framed structures	Heritage structurally sound	Heritage structurally unsound	Residential human comfort Day	Residential human comfort Night
Peak Particle Velocity (PPV mm/s)	25	7.5	7.5	2.5	-	-
Vibration Dose Value (VDV m/s ^{1.75})	-	-	-	-	0.4	0.26

Monitoring Results						
Start Time	00:00		Duration		28 Days	
Trigger value (mm/s)	5mm/s		# of vibration triggers		0	
	Trans (y)		Vert (z)		Long (x)	
	Value	Freq (Hz)	Value	Freq (Hz)	Value	Freq (Hz)
Peak Particle Velocity (PPV mm/s)	84.3	2.5	N/A	N/A	31.8	18.5
Vibration Dose Value (VDV mm/s ^{1.75})	-	-	-	-	-	-
Below preferred criteria?			YES ☐ NO ☒ If "NO", provide explanation and corrective actions taken in next section			

AFJV Central Tunnel Package

Notes and Diagram/Map, Photos and Graphs

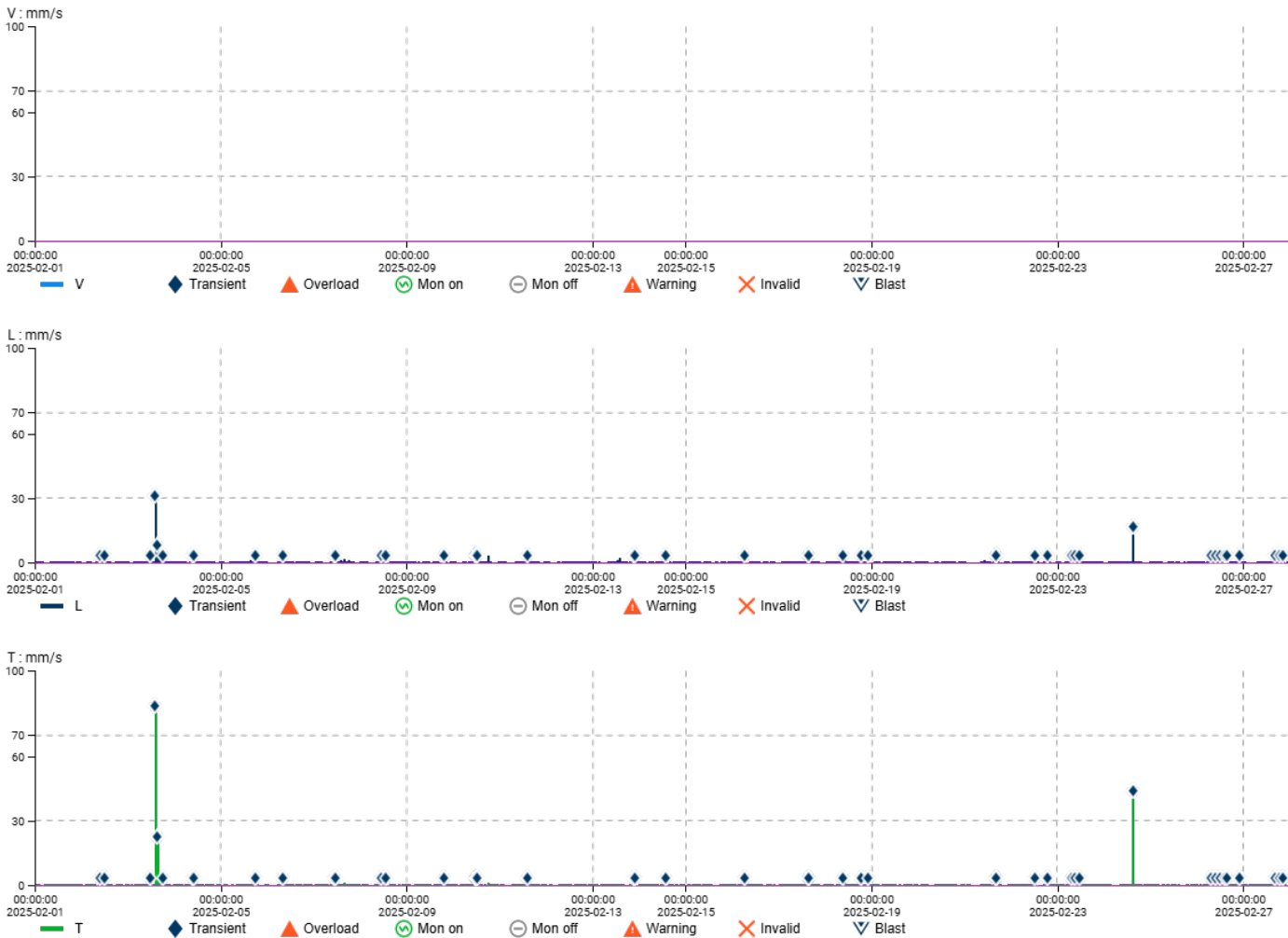
Geophones located inside 110 Great N Rd building against wall.

On 03/02/2025 at 14:30:00, the data exceedance limits (Trans(T) 84.3mm/s- Hz 2.5) is attributed to the replacement of the battery by the Environmental representative.



Project FDK
Project maintainer -
Time frame 2025-02-01 00:00 - 2025-02-28 00:00 (Australia/Sydney)

FDK_2, 110 Great North Rd, V12, Serial number: 33760, Calibrated: 2023-07-26, true



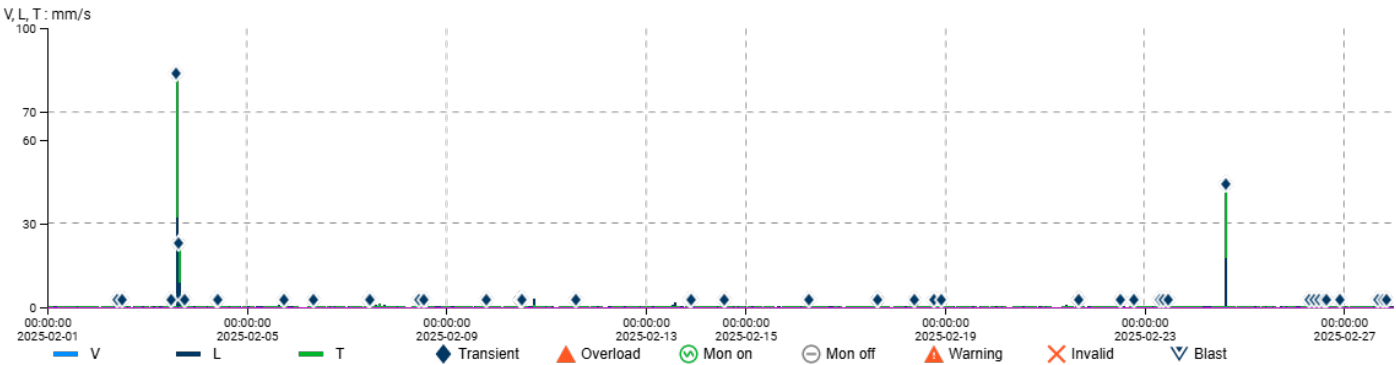
X-span 2025-02-01 00:00 - 2025-02-28 00:00
Y-span V, L, T : mm/s: 0 - 100

	V	L	T
Max		31.8 mm/s	84.3 mm/s
Date	-	2025-02-03	2025-02-03
Time	-	14:30:00	14:30:00
Hz		18.5	2.5

Project FDK
Project maintainer -
Time frame 2025-02-01 00:00 - 2025-02-28 00:00 (Australia/Sydney)

Measuring point FDK_2
Description 110 Great North Rd
Sensor type V12
Sensor serial no. 33760
Master(s) serial no. 107964
Latest calibration 2023-07-26
Standard (18) DIN4150-3 + Freq 250 mm/s 1-315Hz
Unit mm/s
Quantity Velocity
Interval time 2 minutes

Max V: null, L: 31.8 mm/s, T: 84.3 mm/s



X-span 2025-02-01 00:00 - 2025-02-28 00:00
Y-span V, L, T : mm/s: 0 - 100

	V	L	T
Max		31.8 mm/s	84.3 mm/s
Date	-	2025-02-03	2025-02-03
Time	-	14:30:00	14:30:00

APPENDIX C - SURFACE WATER MONITORING

Sydney Metro West - Central Tunnelling Package
Surface Water Monitoring

TABLE 6-4 PELIMINARY TRIGGER VALUES TO MAINTAIN WATER QUALITY OBJECTIVES

Receiving watercourse type (WGO)	Turbidity	pH	Dissolved Oxygen	Oil and grease	Electrical conductivity/Salinity
Aquatic Ecosystem (Estuaries)	0.5–10 NTU	7.0-8.5	80-110%	None visible on surface	Lowland rivers: 125–2200 µS/cm

Rev: 00	Last Updated:	10/06/2025
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LEGEND	
	Preliminary Trigger Value Exceedance

SW Monitoring ID	Waterway Name	Coordinates	Date	Person (Undertaking Measurements)	Sample Time	Monitoring Category	pH	Temp (degrees)	DO (mg/L)	DO (%)	Field Measurement			Visual Inspection (Oil & Grease)	Current Weather Conditions	Rainfall in last 24hrs Sydney (Observatory Hill) (mm)	Rainfall in last 24hrs ydney Olympic Park AWS (Archery Centre) (mm)
											Electrical Conductivity (mS/cm)	Electrical Conductivity (µS/cm)	Turbidity (NTU)				
WB-D/s	White Bay	-33.866245° S, 151.180450° E	15/01/2025	Kelvin Christian	1:13 PM	Monthly Monitoring	7.97	27.42	3.62	56	49.3	49,300	0	Clear water	Sunny	0	0
DC-D/S	Dobroyd Canal / Iron Cove Creek	-33.870604° S, 151.141474° E	15/01/2025	Kelvin Christian	12:51 PM	Monthly Monitoring	7.69	29.37	4.37	69.5	49	49,000	8.1	Low turbidity	Sunny	0	0
DC-US	Dobroyd Canal / Iron Cove Creek	-33.873828 ° S, 151.128243° E	15/01/2025	Kelvin Christian	12:37 PM	Monthly Monitoring	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Mild turbidity	Sunny	0	0
SLP-D/S	St Lukes Park Canal	-33.861571° S , 151.113347° E	15/01/2025	Kelvin Christian	12:27 PM	Monthly Monitoring	7.72	28.99	3.21	47.1	31.8	31800	4.7	Low turbidity	Sunny	0	0
PC-U/S	Powells Creek	-33.862145° S, 151.086294° E	15/01/2025	Kelvin Christian	12:11 PM	Monthly Monitoring	8.94	28.32	5.87	76.3	1.27	12,700	6.7	Algae present in the flowing water. Low turbidity	Sunny	0	0
PC-D/S	Powells Creek	-33.852589° S, 151.082359° E	15/01/2025	Kelvin Christian	11:52 AM	Monthly Monitoring	7.42	29.53	2.7	55	33.3	33,300	6.5	Low turbidity	Sunny	0	0
SC-D/S	Saleyards Creek	-33.852282° S, 151.081934° E	15/01/2025	Kelvin Christian	11:57 AM	Monthly Monitoring	7.25	28.84	2.55	37.5	32.3	32,300	8.9	Low turbidity	Sunny	0	0
HC-D/S	Haslams Creek	-33.834564° S, 151.075772° E	15/01/2025	Kelvin Christian	11:34 AM	Monthly Monitoring	7.74	27.22	6.87	102.5	41.9	41,900	8.3	Low turbidity	Sunny	0	0
WB-D/s	White Bay	-33.866245° S, 151.180450° E	11/02/2025	Kelvin Christian	3:04 PM	Monthly Monitoring	7.81	25.26	6.56	94	44.8	44,800	0	Clear water	Sunny	0.2	0.2
DC-D/S	Dobroyd Canal / Iron Cove Creek	-33.870604° S, 151.141474° E	11/02/2025	Kelvin Christian	2:44 PM	Monthly Monitoring	7.7	26.31	1	92.3	35.9	35,900	0	Low turbidity	Sunny	0.2	0.2
DC-US	Dobroyd Canal / Iron Cove Creek	-33.873828 ° S, 151.128243° E	11/02/2025	Kelvin Christian	2:34 PM	Monthly Monitoring	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Clear water	Sunny	0.2	0.2
SLP-D/S	St Lukes Park Canal	-33.861571° S , 151.113347° E	11/02/2025	Kelvin Christian	2:26 PM	Monthly Monitoring	8.88	27.07	7.2	91.4	3.49	3490	0	Clear water	Sunny	0.2	0.2
PC-U/S	Powells Creek	-33.862145° S, 151.086294° E	11/02/2025	Kelvin Christian	2:09 PM	Monthly Monitoring	9.02	25.5	8	97.9	0.769	769	44.7	Mild Turbidity	Sunny	0.2	0.2
PC-D/S	Powells Creek	-33.852589° S, 151.082359° E	11/02/2025	Kelvin Christian	1:54 PM	Monthly Monitoring	8.06	27.81	6.3	81.5	5.41	5,410	64.1	Mild Turbidity	Sunny	0.2	0.2
SC-D/S	Saleyards Creek	-33.852282° S, 151.081934° E	11/02/2025	Kelvin Christian	1:59 PM	Monthly Monitoring	8.12	27.14	6.54	83.8	6.37	6,370	156	High Turbidity	Sunny	0.2	0.2
HC-D/S	Haslams Creek	-33.834564° S, 151.075772° E	11/02/2025	Kelvin Christian	1:37 PM	Monthly Monitoring	7.45	24.14	12.21	153.7	16.5	16,500	0	Clear water	Sunny	0.2	0.2
WB-D/s	White Bay	-33.866245° S, 151.180450° E	12/03/2025	Kelvin Christian	11:39 AM	Post-Rainfall Monitoring	7.64	23.91	13.1	186.2	48.5	48,500	0	Clear water	Cloudy	9.4	3
DC-D/S	Dobroyd Canal / Iron Cove Creek	-33.870604° S, 151.141474° E	12/03/2025	Kelvin Christian	11:12 AM	Post-Rainfall Monitoring	7.75	23.98	7.67	96.7	17.6	17,600	0	Clear water	Cloudy	9.4	3
DC-US	Dobroyd Canal / Iron Cove Creek	-33.873828 ° S, 151.128243° E	12/03/2025	Kelvin Christian	11:00 AM	Post-Rainfall Monitoring	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Clear water	Cloudy	9.4	3
SLP-D/S	St Lukes Park Canal	-33.861571° S , 151.113347° E	12/03/2025	Kelvin Christian	10:49 AM	Post-Rainfall Monitoring	7.41	23.4	8	109	40.4	40400	0	Clear water	Cloudy	9.4	3
PC-U/S	Powells Creek	-33.862145° S, 151.086294° E	12/03/2025	Kelvin Christian	10:34 AM	Post-Rainfall Monitoring	8.46	22.59	8.74	101.3	0.695	695	124	Mild Turbidity	Cloudy	9.4	3
PC-D/S	Powells Creek	-33.852589° S, 151.082359° E	12/03/2025	Kelvin Christian	10:20 AM	Post-Rainfall Monitoring	7.63	22.67	8.82	104.4	6.93	6,930	0	Mild Turbidity	Cloudy	9.4	3
SC-D/S	Saleyards Creek	-33.852282° S, 151.081934° E	12/03/2025	Kelvin Christian	10:16 AM	Post-Rainfall Monitoring	7.89	22.82	8.87	104.8	5.29	5,290	0	Clear water	Cloudy	9.4	3
HC-D/S	Haslams Creek	-33.834564° S, 151.075772° E	12/03/2025	Kelvin Christian	9:59 AM	Post-Rainfall Monitoring	7.6	23.54	8.58	119.5	45.2	45,200	0	Clear water	Cloudy	9.4	3
WB-D/s	White Bay	-33.866245° S, 151.180450° E	10/04/2025	Kelvin Christian	12:18 PM	Monthly Monitoring	7.56	22.79	7	98	49.4	49,400	0	Clear water	Mild Clouds	0	0.2
DC-D/S	Dobroyd Canal / Iron Cove Creek	-33.870604° S, 151.141474° E	10/04/2025	Kelvin Christian	11:57 AM	Monthly Monitoring	7.48	22.2	8.62	114.3	39.1	39,100	0	Clear water	Mild Clouds	0	0.2
DC-US	Dobroyd Canal / Iron Cove Creek	-33.873828 ° S, 151.128243° E	10/04/2025	Kelvin Christian	11:46 AM	Monthly Monitoring	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Clear water	Mild Clouds	0	0.2
SLP-D/S	St Lukes Park Canal	-33.861571° S , 151.113347° E	10/04/2025	Kelvin Christian	11:37 AM	Monthly Monitoring	7.38	22.85	7.3	97.7	38.5	38500	0	Clear water	Mild Clouds	0	0.2
PC-U/S	Powells Creek	-33.862145° S, 151.086294° E	10/04/2025	Kelvin Christian	11:21 AM	Monthly Monitoring	7.31	21.12	9.06	102.4	1.45	1,450	0	Clear water	Mild Clouds	0	0.2
PC-D/S	Powells Creek	-33.852589° S, 151.082359° E	10/04/2025	Kelvin Christian	11:12 AM	Monthly Monitoring	7.25	21.37	8.26	103.4	28.5	28,500	0	Clear water	Mild Clouds	0	0.2
SC-D/S	Saleyards Creek	-33.852282° S, 151.081934° E	10/04/2025	Kelvin Christian	11:10 AM	Monthly Monitoring	7.17	21.99	7.88	101.8	33.7	33,700	0	Clear water	Mild Clouds	0	0.2
HC-D/S	Haslams Creek	-33.834564° S, 151.075772° E	10/04/2025	Kelvin Christian	10:53 AM	Monthly Monitoring	7.03	21.38	9.1	120.5	42.4	42,400	0	Clear water	Mild Clouds	0	0.2
WB-D/s	White Bay	-33.866245° S, 151.180450° E	7/05/2025	David Lamb	9:05 AM	Post-Rainfall Monitoring	7.58	21.75	7.42	101.1	49.1	49,100	0	Clear water	Mild Clouds	0.2	0.2
DC-D/S	Dobroyd Canal / Iron Cove Creek	-33.870604° S, 151.141474° E	7/05/2025	David Lamb	9:27 AM	Post-Rainfall Monitoring	7.62	21.35	8.19	110.6	38.7	38,700	0	Clear water	Mild Clouds	0.2	0.2
DC-US	Dobroyd Canal / Iron Cove Creek	-33.873828 ° S, 151.128243° E	7/05/2025	David Lamb	9:36 AM	Post-Rainfall Monitoring	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Clear water	Mild Clouds	0.2	0.2
SLP-D/S	St Lukes Park Canal	-33.861571° S , 151.113347° E	7/05/2025	David Lamb	9:49 AM	Post-Rainfall Monitoring	7.45	21.69	7.41	99.3	37.2	37200	0	Clear water	Mild Clouds	0.2	0.2
PC-U/S	Powells Creek	-33.862145° S, 151.086294° E	7/05/2025	David Lamb	10:03 AM	Post-Rainfall Monitoring	7.36	20.85	9.34	106.2	1.68	1,680	48.6	Mild Turbidity	Mild Clouds	0.2	0.2
PC-D/S	Powells Creek	-33.852589° S, 151.082359° E	7/05/2025	David Lamb	10:20 AM	Post-Rainfall Monitoring	7.29	21.22	8.11	101.7	27.4	27,400	70.6	Mild Turbidity	Mild Clouds	0.2	0.2
SC-D/S	Saleyards Creek	-33.852282° S, 151.081934° E	7/05/2025	David Lamb	10:16 AM	Post-Rainfall Monitoring	7.21	21.54	7.76	99.5	31.8	31,800	216	High Turbidity	Mild Clouds	0.2	0.2
HC-D/S	Haslams Creek	-33.834564° S, 151.075772° E	7/05/2025	David Lamb	10:35 AM	Post-Rainfall Monitoring	7.05	21.18	9.34	121.2	43.8	43,800	0	Clear water	Mild Clouds	0.2	0.2
WB-D/s	White Bay	-33.866245° S, 151.180450° E	10/06/2025	David Lamb	9:49 AM	Monthly Monitoring	7.43	16.1	11.64	138	33.8	33,800	0.8	Clear water	Clear	0	0
DC-D/S	Dobroyd Canal / Iron Cove Creek	-33.870604° S, 151.141474° E	10/06/2025	David Lamb	10:09 AM	Monthly Monitoring	6.85	13.91	14.81	165.1	30	30,000	4.7	Clear water	Clear	0	0
DC-US	Dobroyd Canal / Iron Cove Creek	-33.873828 ° S, 151.128243° E	10/06/2025	David Lamb	10:32 AM	Monthly Monitoring	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Clear water	Clear	0	0
SLP-D/S	St Lukes Park Canal	-33.861571° S , 151.113347° E	10/06/2025	David Lamb	10:33 AM	Monthly Monitoring	6.77	14.57	13.05	147	29.3	29300	4.6	Clear water	Clear	0	0
PC-U/S	Powells Creek	-33.862145° S, 151.086294° E	10/06/2025	David Lamb	10:47 AM	Monthly Monitoring	7.28	13.35	11.48	113.8	1.11	1,110	9.8	Clear water	Clear	0	0
PC-D/S	Powells Creek	-33.852589° S, 151.082359° E	10/06/2025	David Lamb	10:48 AM	Monthly Monitoring	6.45	16.06	11.42	120.8	21.5	21,500	4.7	Clear water	Clear	0	0
SC-D/S	Saleyards Creek	-33.852282° S, 151.081934° E	10/06/2025	David Lamb	10:55 AM	Monthly Monitoring	6.4	13.78	10.26	110.7	22.8	22,800	5.6	Clear water	Clear	0	0
HC-D/S	Haslams Creek	-33.834564° S, 151.075772° E	10/06/2025	David Lamb	10:57 AM	Monthly Monitoring	6.28	14.42	13.01	145.9	28.9	28,900	3.8	Clear water	Clear	0	0

APPENDIX D - GROUNDWATER MONITORING

7.1 OVERVIEW

The methodology for monitoring groundwater for the project includes:

- Assessment of groundwater level (measurement and datalogger download)
- Assessment of groundwater salinity as EC (datalogger download)
- Assessment of groundwater quality at key locations
- Assessment of WTP discharge water quality (grab samples for lab analysis and field measurements)
- Assessment of groundwater inflows (pump flow meter data)
- Implementation of quality control plan including appropriate chain-of-custody for laboratory analysis and provision of appropriate documentation.

Groundwater monitoring is to be undertaken by suitably qualified personnel at all times.

Groundwater monitoring will be undertaken in accordance with the following monitoring regime:

- Baseline monitoring will be gathered from all bores for at least two consecutive months prior to construction commencing that will interact with groundwater
- Construction monitoring will occur monthly for the first three months of construction and then quarterly thereafter
- Construction monitoring will occur at smaller intervals where the Revised Groundwater Modelling Report indicates it is required
- Continuous groundwater level and EC monitoring will only occur where recommended by the Revised Groundwater Modelling Report
- WTP discharge monitoring is outlined in Section 7.5
- Groundwater inflow monitoring is outlined in Section 7.6.

7.2 MANUAL GROUNDWATER LEVEL MEASUREMENTS

Groundwater monitoring will be overseen by personnel with appropriate qualifications and experience. Trained field personnel will complete monitoring rounds using appropriate personal protective equipment (PPE) and monitoring equipment.

The static groundwater level will be measured and recorded at each standpipe groundwater monitoring bore using an electronic groundwater level dip meter (dipper) to verify the continuous data recorded by dataloggers. The level (to the nearest millimetre) will be referenced to a known (and consistent) surveyed point at the top of the bore casing (mTOC). This measurement will be corrected to mAHD using survey data. Recorded groundwater level will be tabulated in both metres below top of bore casing (mBTC) and mAHD.

The base of the bore will be measured and recorded periodically by lowering the dipper to the base of the bore until it touches the bottom, where possible.

7.3 CONTINUOUS GROUNDWATER LEVEL AND QUALITY (EC) MEASUREMENTS

Groundwater level (as pressure) and EC will be measured automatically by calibrated dataloggers at key monitoring locations and VWP (pore pressure only). Continuous data (recorded every 6 hours) will be periodically validated by manual measurements. Continuous groundwater level and EC monitoring will only occur in those bores where recommended in the Revised Groundwater Modelling Report, otherwise they will be monitored quarterly.

Groundwater level/pressure measurement will be converted to mAHD using calibration coefficients, installation data, and survey data. Spreadsheets will be maintained detailing the conversion and converted groundwater level measurement.

The dataloggers will be downloaded quarterly. Dataloggers will be checked and maintained as necessary before being re-calibrated and then returned to the monitoring bore at a known depth below the top of casing.

7.4 MANUAL GROUNDWATER QUALITY SAMPLING

Groundwater quality sampling will be carried out by suitably qualified personnel at all times, in accordance with AS/NZS 5667.11:1998, and will follow these general principles:

- Sampling equipment should not change the water quality in any way; particular effort should be made to avoid cross contamination between bores and sampling equipment
- Sufficient water should be removed to ensure the sample is newly derived from the aquifer itself rather than from water that sits in the bore
- Methods of collection and storage in bottles and transportation to the laboratory should suit the type of analysis required.

Groundwater sampling may produce a potentially large volume of purged water. This water will be captured in containers and treated in the construction WTP's or disposed of in accordance with the Waste Management Plan. To avoid large volumes of purged water, low-flow monitoring is recommended where possible. Passive sampling or no-purge sampling may be suitable in some of the monitoring bores, however, these sampling methods will only be carried out where recommended by the subject matter expert.



Sydney Metro West - CTP

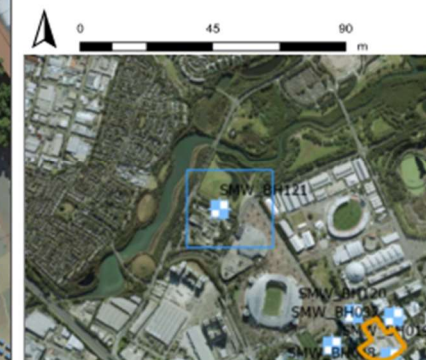
Tunnel North West of SOP

Legend

Site boundary



Groundwater well



This map is shown for reference purposes only. Acciona Ferrovial JV provides this information "as is" with the understanding that it is not guaranteed to be accurate, correct or complete and conclusions drawn from such information are the responsibility of the user. While every effort is made to ensure the information displayed is as accurate and current as possible, Acciona Ferrovial JV will not be held responsible for any loss, damage or inconvenience caused as a result of reliance on such information or data.





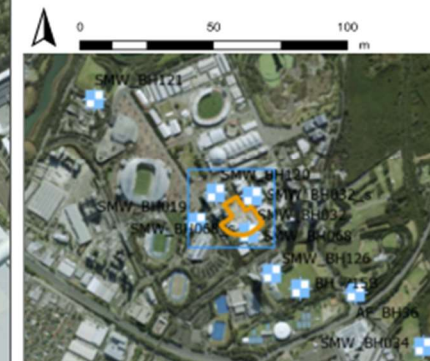
Sydney Metro West - CTP

Sydney Olympic Park

Legend

Site boundary

Groundwater well



This map is shown for reference purposes only. Acciona Perovial JV provides this information "as is" with the understanding that it is not guaranteed to be accurate, correct or complete and conclusions drawn from such information are the responsibility of the user. While every effort is made to ensure the information displayed is as accurate and current as possible, Acciona Perovial JV will not be held responsible for any loss, damage or inconvenience caused as a result of reliance on such information or data.

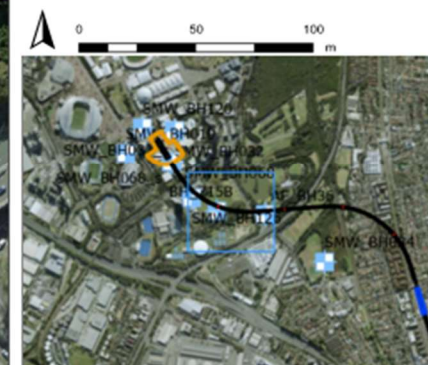




Sydney Metro West - CTP Tunnel - Sydney Olympic Park to Nort...

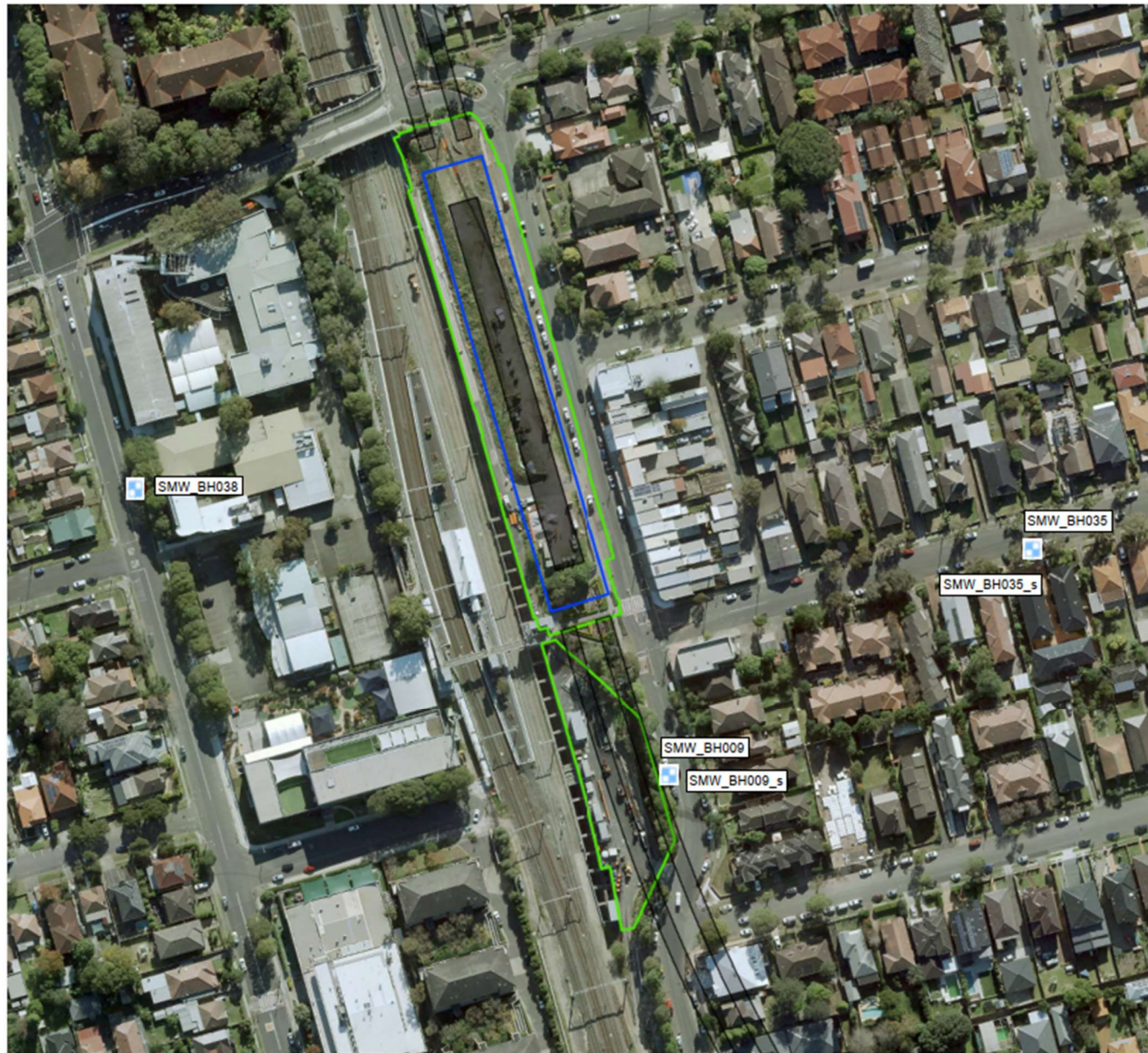
Legend

- Site boundary
- Groundwater well



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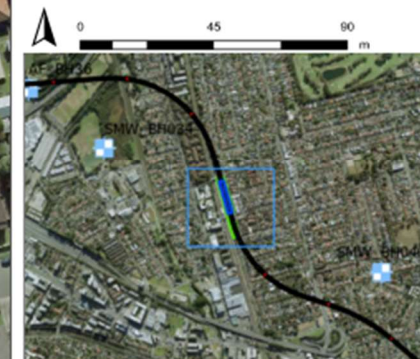
Sydney Metro West - CTP

North Strathfield

Legend

Site boundary

Groundwater well



This map is shown for reference purposes only. Acciona Ferrovial JV provides this information "as is" with the understanding that it is not guaranteed to be accurate, correct or complete and conclusions drawn from such information are the responsibility of the user. While every effort is made to ensure the information displayed is as accurate and current as possible, Acciona Ferrovial JV will not be held responsible for any loss, damage or inconvenience caused as a result of reliance on such information or data.





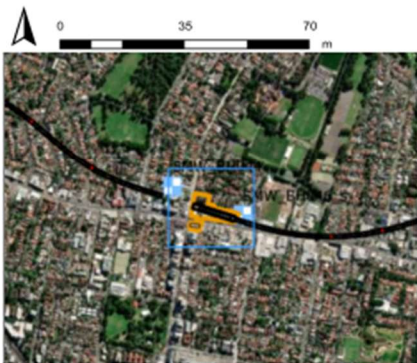
Sydney Metro West - CTP

Burwood North

Legend

Site boundary

Groundwater well



This map is shown for reference purposes only. Acciona Ferrovial JV provides this information "as is" with the understanding that it is not guaranteed to be accurate, correct or complete and conclusions drawn from such information are the responsibility of the user. While every effort is made to ensure the information displayed is as accurate and current as possible, Acciona Ferrovial JV will not be held responsible for any loss, damage or inconvenience caused as a result of reliance on such information or data.





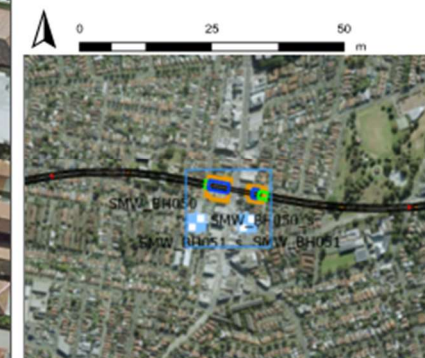
Sydney Metro West - CTP

Five Dock

Legend

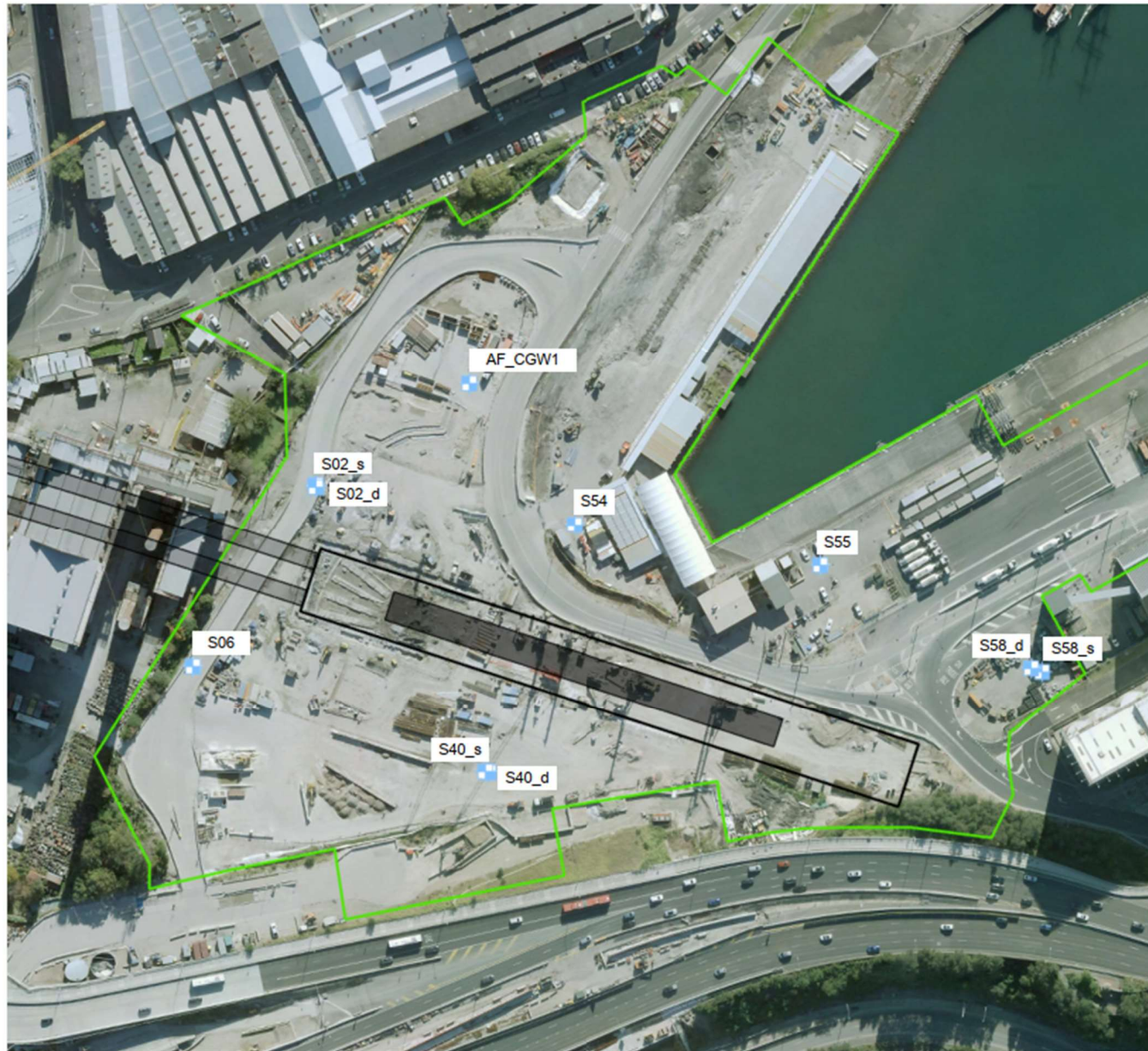
Site boundary

Groundwater well



This map is shown for reference purposes only. Acciona Ferrovial JV provides this information "as is" with the understanding that it is not guaranteed to be accurate, correct or complete and conclusions drawn from such information are the responsibility of the user. While every effort is made to ensure the information displayed is as accurate and current as possible, Acciona Ferrovial JV will not be held responsible for any loss, damage or inconvenience caused as a result of reliance on such information or data.



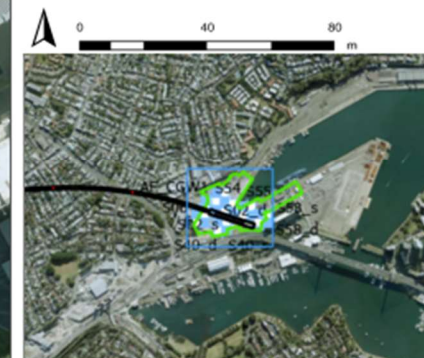


Sydney Metro West - CTP

The Bays

Legend

- Site boundary
- Groundwater well



This map is shown for reference purposes only. Acciona Ferrovial JV provides this information "as is" with the understanding that it is not guaranteed to be accurate, correct or complete and conclusions drawn from such information are the responsibility of the user. While every effort is made to ensure the information displayed is as accurate and current as possible, Acciona Ferrovial JV will not be held responsible for any loss, damage or inconvenience caused as a result of reliance on such information or data.



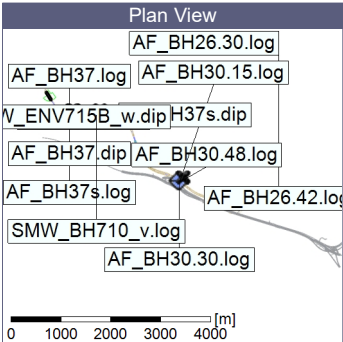




Project: Kronos MetroCTP
Construction: TBM Alignment Water Levels
Location:



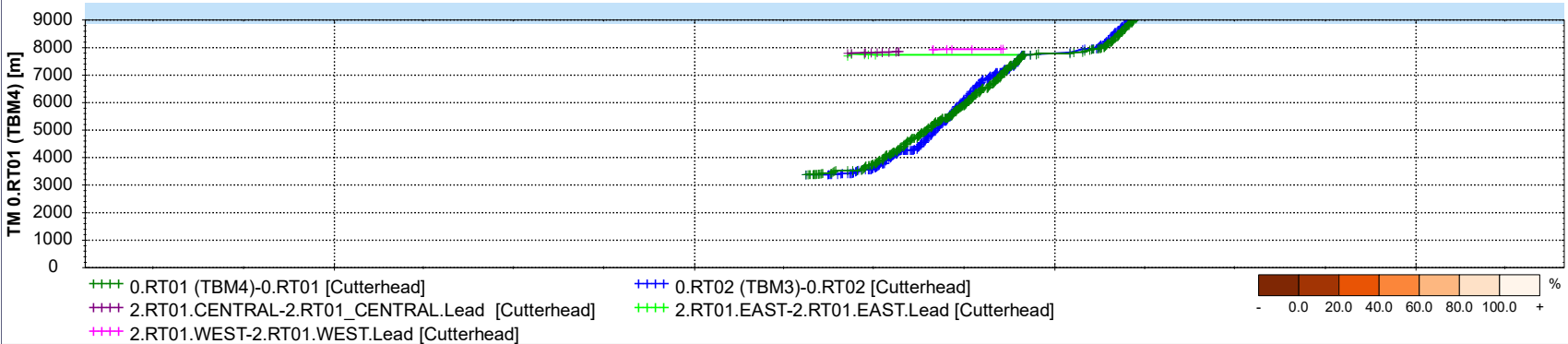
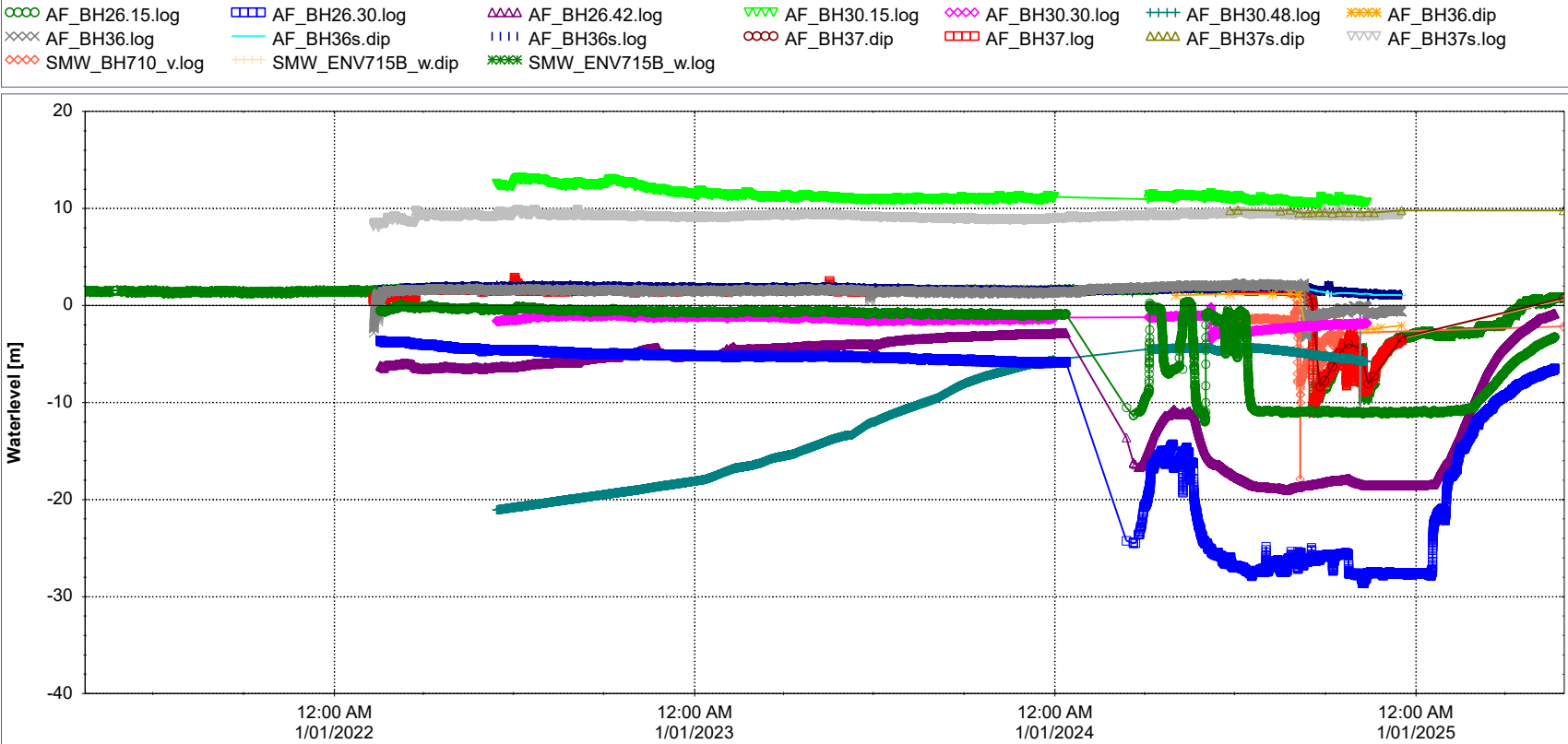
23/04/2021
30/05/2025



- New zero measurements
- SMW_ENV715B_w.log
23/04/2021 10:00 AM
 - SMW_ENV715B_w.dip
25/07/2022 12:59 PM
 - SMW_BH710_v.log
28/06/2024 8:00 AM
 - AF_BH37s.log
9/02/2022 2:10 PM
 - AF_BH37s.dip
26/06/2024 10:35 AM
 - AF_BH37.log
9/02/2022 2:15 PM
 - AF_BH37.dip
26/06/2024 10:32 AM

- Remarks
- 12/06/2024 AF_BH30.48.log
duplicate measurement
 - 12/06/2024 AF_BH30.48.log
duplicate measurement
 - 12/06/2024 AF_BH30.48.log
duplicate measurement
 - 12/06/2024 AF_BH30.48.log
duplicate measurement
 - 12/06/2024 AF_BH30.48.log
duplicate measurement
 - 12/06/2024 AF_BH30.48.log
duplicate measurement
 - 12/06/2024 AF_BH30.48.log
duplicate measurement
 - 12/06/2024 AF_BH30.48.log
duplicate measurement
 - 12/06/2024 AF_BH30.48.log
duplicate measurement
 - 12/06/2024 AF_BH30.48.log
duplicate measurement
 - 12/06/2024 AF_BH30.48.log
duplicate measurement

Water Level - Time Related Diagram

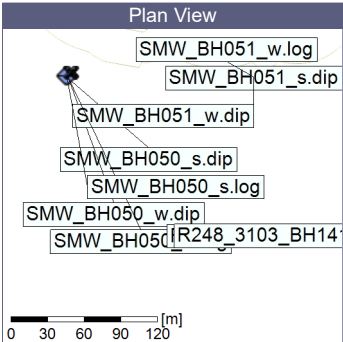




Project: Kronos MetroCTP
Construction: FDK Water Levels
Location:



8/08/2018
9/12/2024



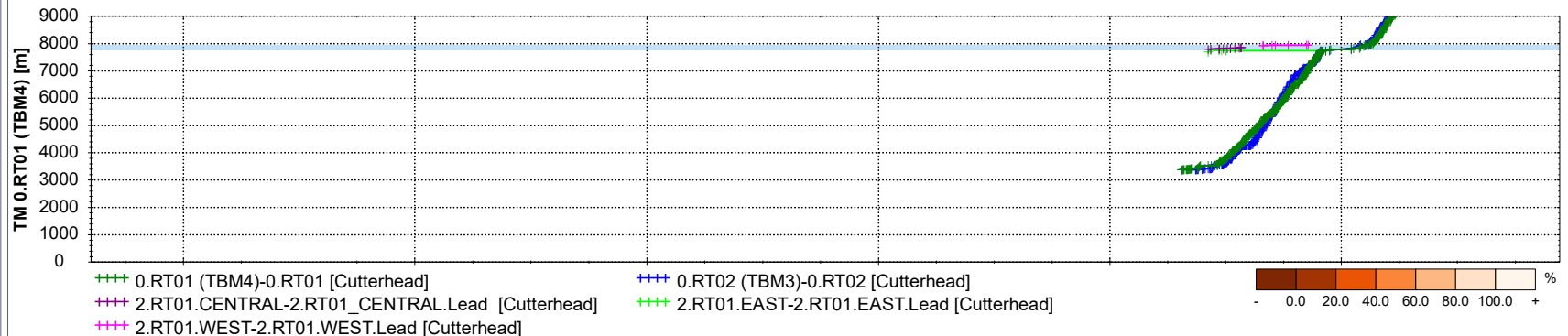
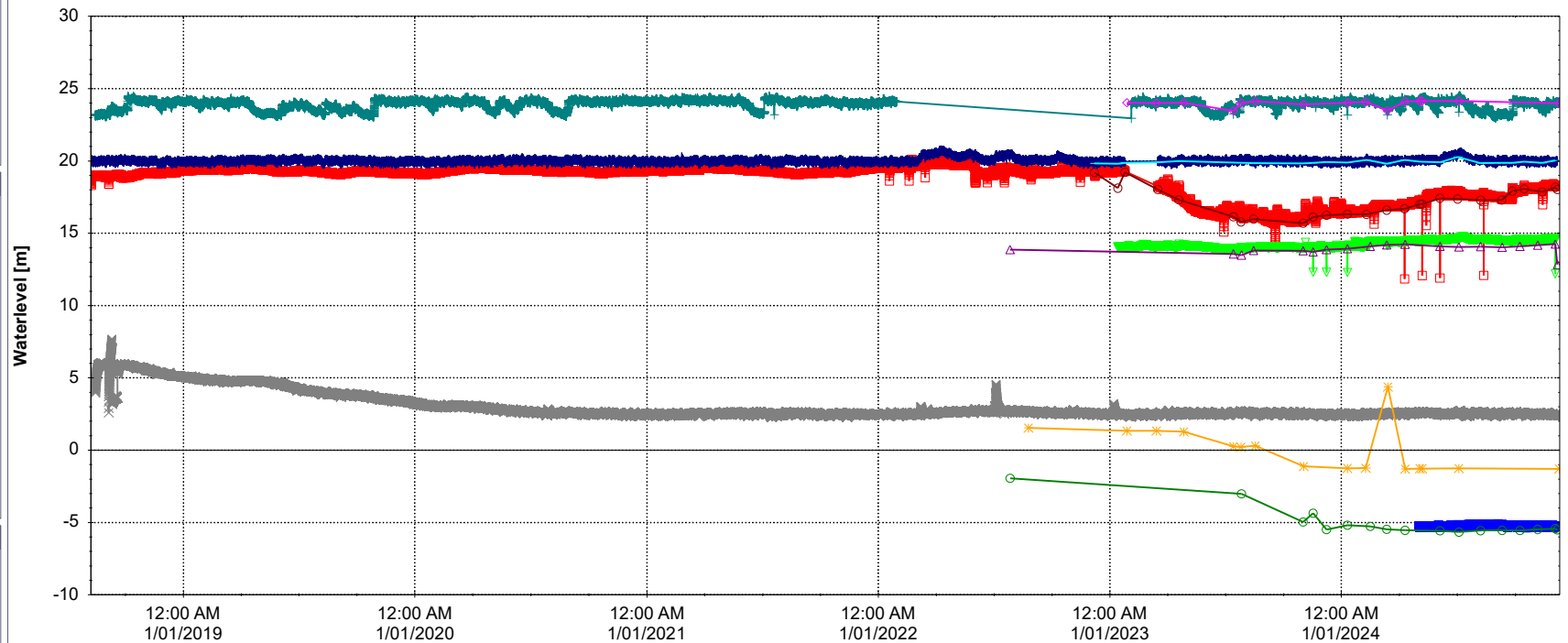
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- SMW_BH051_w.log
8/08/2018 7:00 PM
 - SMW_BH051_w.dip
7/12/2022 9:38 AM
 - SMW_BH051_s.log
8/08/2018 9:00 AM
 - SMW_BH051_s.dip
7/12/2022 9:42 AM
 - SMW_BH050_w.log
15/08/2018 11:00 AM
 - SMW_BH050_w.dip
25/08/2022 12:41 PM
 - SMW_BH050_s.log
15/08/2018 9:00 AM
 - ...

- Remarks
- 12/06/2024
R248_3103_BH141A.log
duplicate measurement
 - 12/06/2024
R248_3103_BH141A.log
duplicate measurement
 - 12/06/2024
R248_3103_BH141A.log
duplicate measurement
 - 12/06/2024
R248_3103_BH141A.log
duplicate measurement
 - 12/06/2024
R248_3103_BH141A.log
duplicate measurement
 - 12/06/2024
R248_3103_BH141A.log
duplicate measurement
 - ...

Water Level - Time Related Diagram

Legend:

- R248_3103_BH141.dip
- R248_3103_BH141.log
- △ R248_3103_BH141A.dip
- ▽ R248_3103_BH141A.log
- ◇ SMW_BH050_s.dip
- ◇ SMW_BH050_s.log
- ◇ SMW_BH051_w.dip
- ◇ SMW_BH051_w.log
- × SMW_BH050_w.dip
- × SMW_BH050_w.log
- SMW_BH051_s.dip
- SMW_BH051_s.log

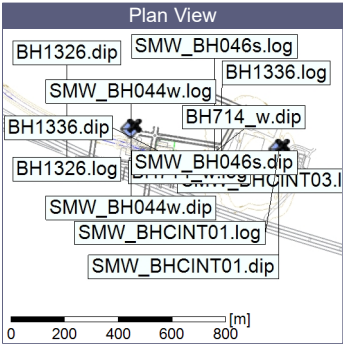




Project: Kronos MetroCTP
Construction: BUR Water Levels
Location:



24/09/2018
6/12/2024

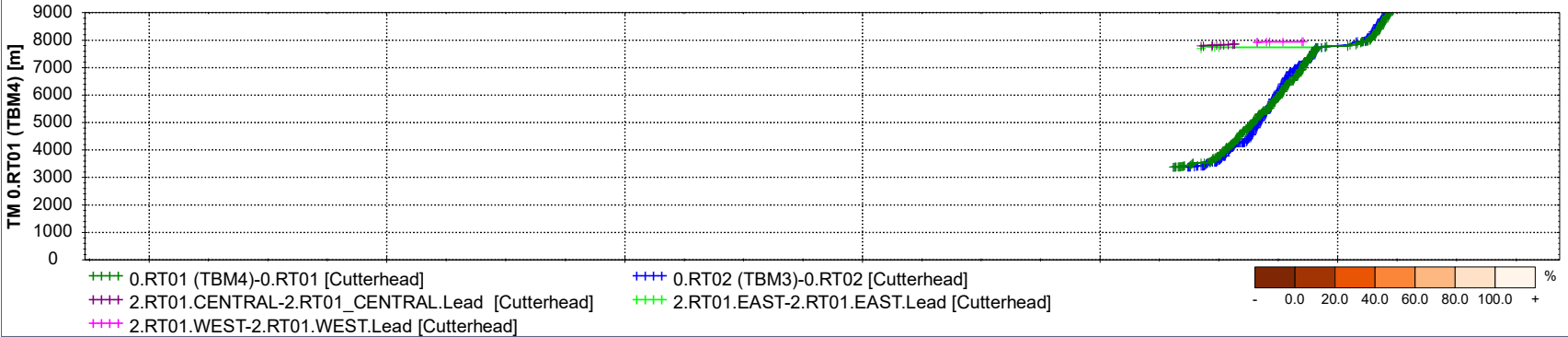
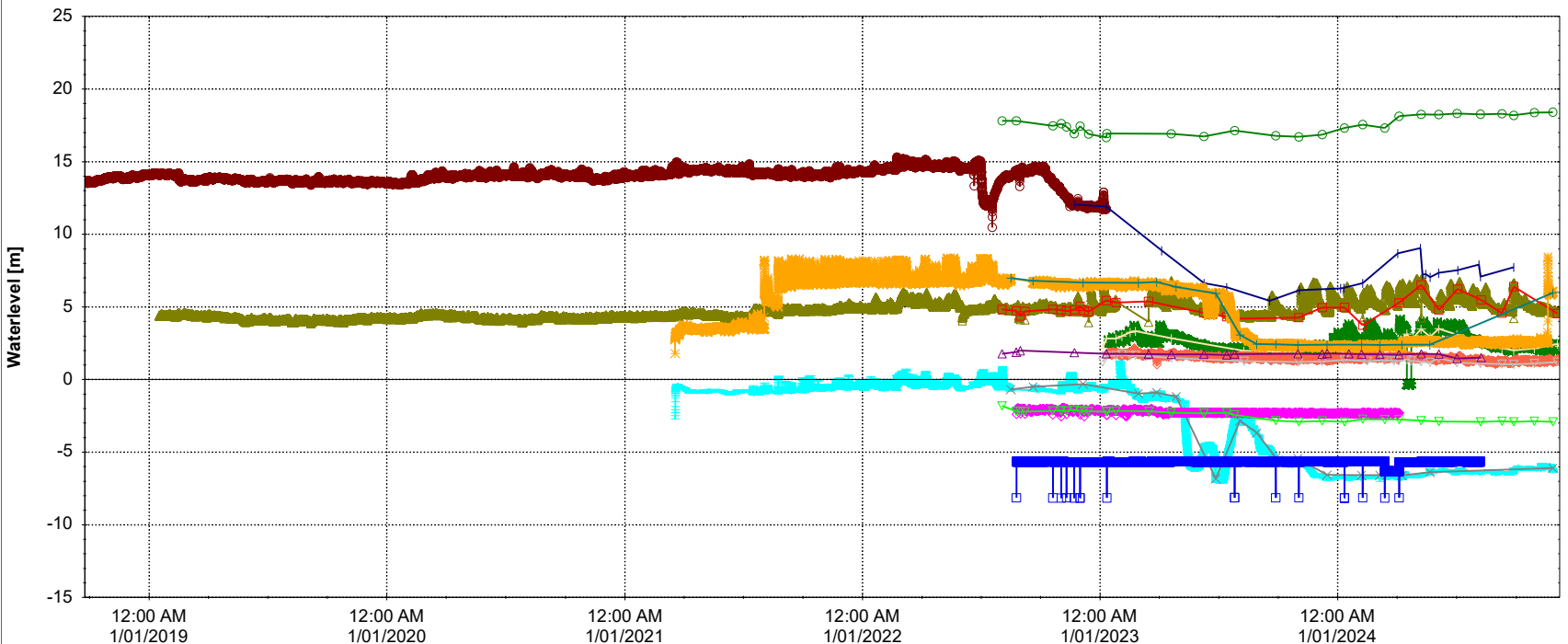


- New zero measurements
- SMW_BHCINT03.log
13/01/2023 5:10 PM
 - SMW_BHCINT03.dip
5/01/2023 9:00 AM
 - SMW_BHCINT01.log
13/01/2023 3:55 PM
 - SMW_BHCINT01.dip
5/01/2023 8:50 AM
 - SMW_BH046s.log
16/01/2019 12:00 PM
 - SMW_BH046s.dip
3/08/2022 8:00 AM
 - SMW_BH044w.log
24/09/2018 8:00 AM

- Remarks
- 12/06/2024
SMW_BHCINT01.log duplicate measurement
 - 12/06/2024
SMW_BHCINT03.log duplicate measurement
 - 12/06/2024
SMW_BHCINT01.log duplicate measurement
 - 12/06/2024
SMW_BHCINT03.log duplicate measurement
 - 12/06/2024
SMW_BHCINT01.log duplicate measurement
 - 12/06/2024
SMW_BHCINT03.log duplicate measurement

Water Level - Time Related Diagram

- | | | | | | | |
|----------------------|----------------------|----------------------|--------------------|--------------------|--------------------|----------------------|
| ○○○ BH1326.dip | □□□ BH1326.log | △△△ BH1333.dip | ▽▽▽ BH1336.dip | ◇◇◇ BH1336.log | +++ BH714_s.dip | *** BH714_s.log |
| ××× BH714_w.dip | — BH714_w.log | SMW_BH044w.dip | ○○○ SMW_BH044w.log | □□□ SMW_BH046s.dip | △△△ SMW_BH046s.log | ▽▽▽ SMW_BHCINT01.dip |
| ◇◇◇ SMW_BHCINT01.log | +++ SMW_BHCINT03.dip | *** SMW_BHCINT03.log | | | | |

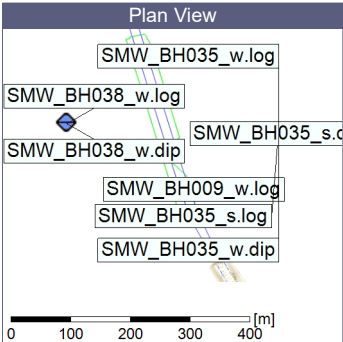




Project: Kronos MetroCTP
Construction: NST Water Levels
Location:



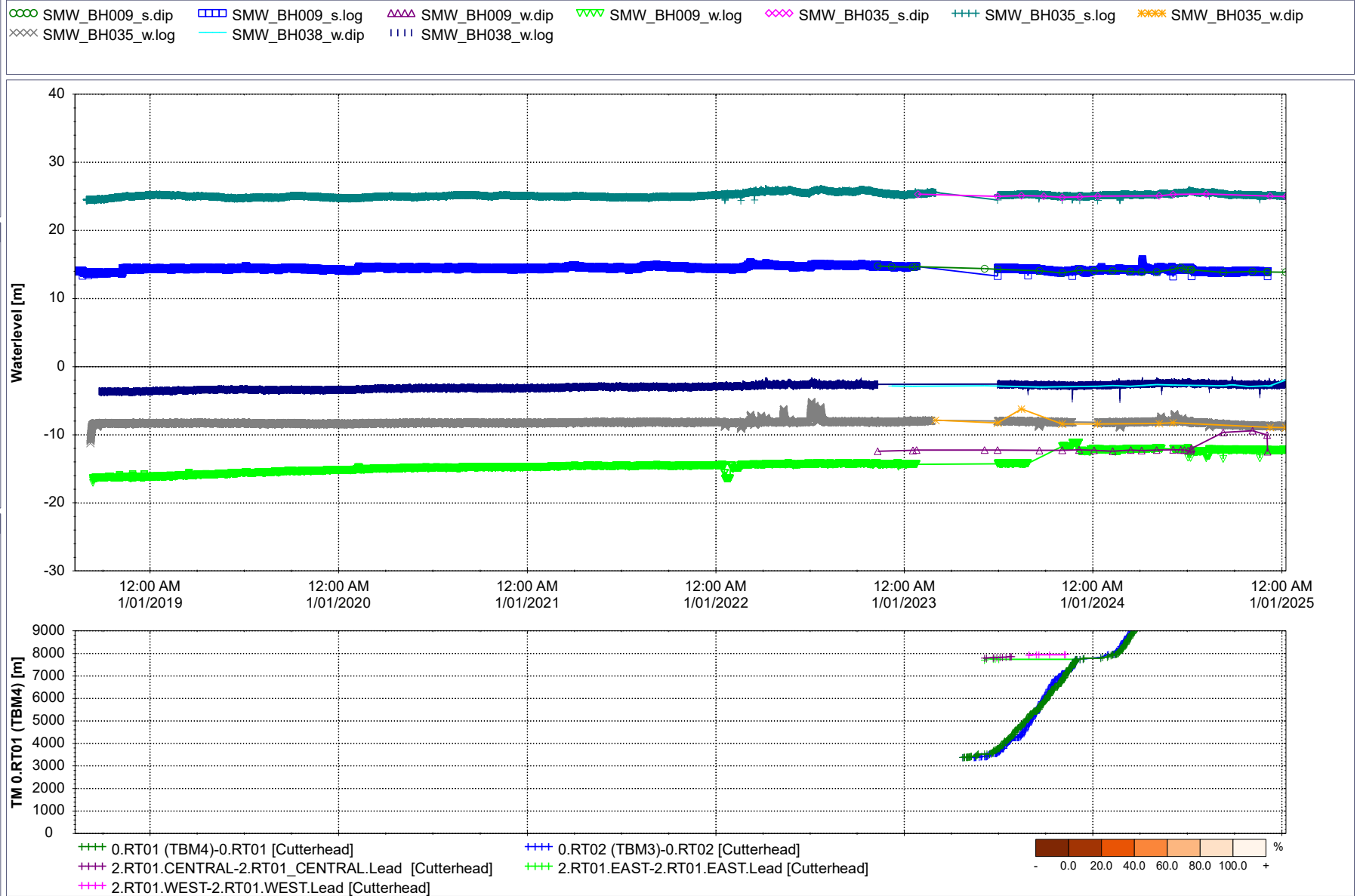
8/08/2018
8/01/2025



- New zero measurements
- SMW_BH038_w.log
24/09/2018 8:00 AM
 - SMW_BH038_w.dip
7/12/2022 10:53 AM
 - SMW_BH035_w.log
7/09/2018 2:00 PM
 - SMW_BH035_w.dip
2/03/2023 1:35 PM
 - SMW_BH035_s.log
30/08/2018 1:00 PM
 - SMW_BH035_s.dip
27/01/2023 3:19 PM
 - SMW_BH009_w.log
12/09/2018 12:00 PM

- Remarks
- 12/06/2024 SMW_BH035_w.log
duplicate measurement
 - 12/06/2024 SMW_BH035_w.log
duplicate measurement
 - 12/06/2024 SMW_BH035_w.log
duplicate measurement
 - 12/06/2024 SMW_BH035_w.log
duplicate measurement
 - 12/06/2024 SMW_BH035_w.log
duplicate measurement
 - 12/06/2024 SMW_BH035_w.log
duplicate measurement
 - 12/06/2024 SMW_BH035_w.log
duplicate measurement
 - 12/06/2024 SMW_BH035_w.log
duplicate measurement
 - 12/06/2024 SMW_BH035_w.log
duplicate measurement
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duplicate measurement
 - 12/06/2024 SMW_BH035_w.log
duplicate measurement

Water Level - Time Related Diagram

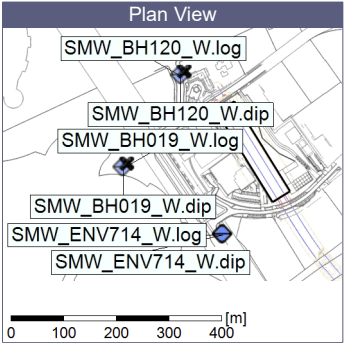




Project: Kronos MetroCTP
Construction: SOP Water Levels
Location:



12/11/2018
4/12/2024

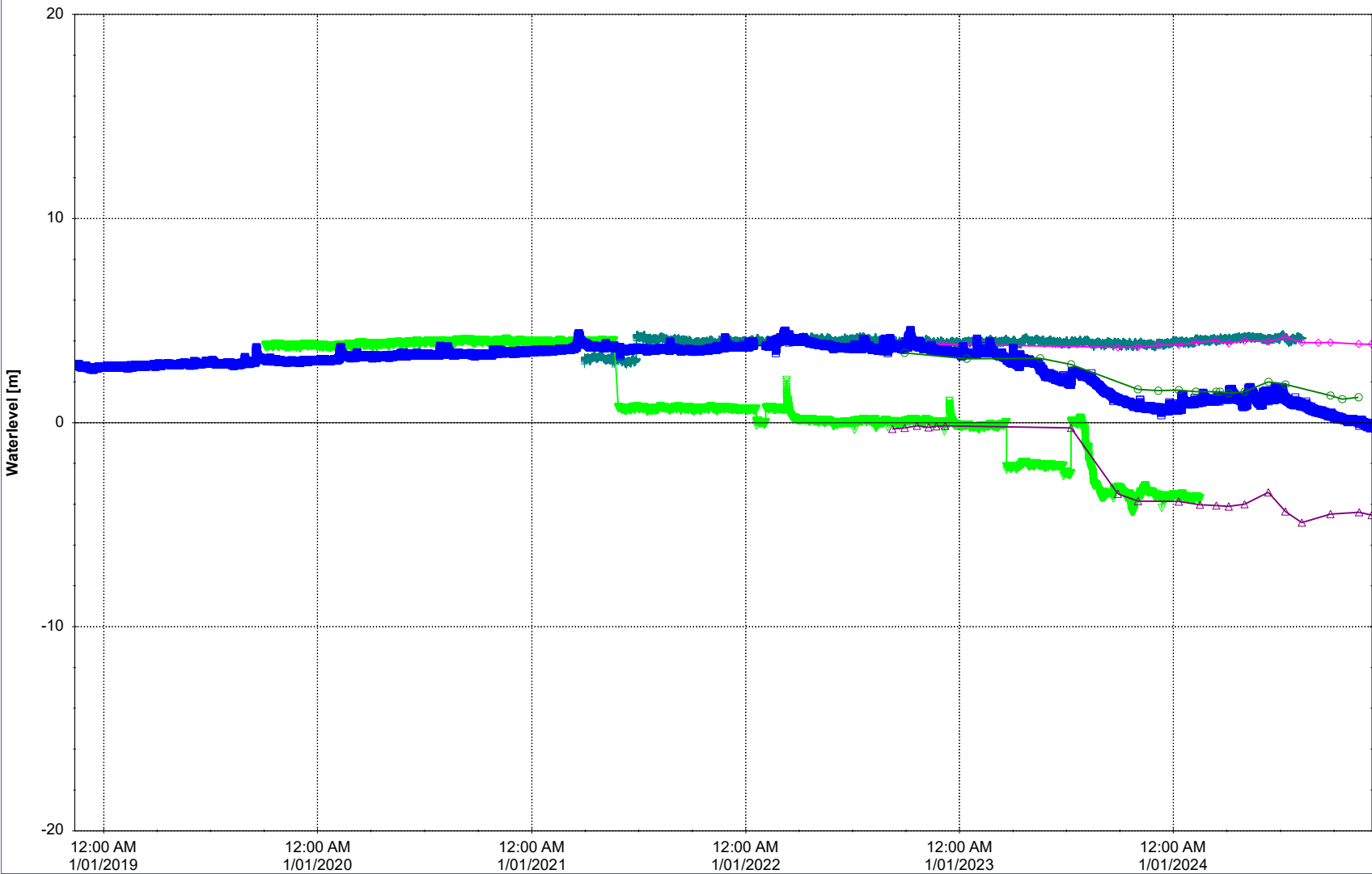


- New zero measurements
- SMW_ENV714_W.log
31/03/2021 8:00 PM
 - SMW_ENV714_W.dip
8/09/2022 12:20 PM
 - SMW_BH120_W.log
4/10/2019 7:00 AM
 - SMW_BH120_W.dip
8/09/2022 11:13 AM
 - SMW_BH019_W.log
12/11/2018 10:00 AM
 - SMW_BH019_W.dip
29/09/2022 8:36 AM

- Remarks
- 12/06/2024
SMW_ENV714_W.log duplicate measurement
 - 12/06/2024 SMW_BH019_W.dip
duplicate measurement
 - 12/06/2024 SMW_BH019_W.dip
duplicate measurement
 - 12/06/2024 SMW_BH120_W.dip
duplicate measurement
 - 12/06/2024 SMW_BH120_W.dip
duplicate measurement
 - 12/06/2024
SMW_ENV714_W.dip duplicate measurement

Water Level - Time Related Diagram

○○○ SMW_BH019_W.dip □□□ SMW_BH019_W.log ▲▲▲ SMW_BH120_W.dip ▼▼▼ SMW_BH120_W.log ◇◇◇ SMW_ENV714_W.dip +++ SMW_ENV714_W.log



Month	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27	Nov-27	Dec-27	Jan-28	Feb-28	Mar-28	Apr-28	May-28	Jun-28	Jul-28	Aug-28	Sep-28	Oct-28	Nov-28	Dec-28	Jan-29	Feb-29	Mar-29	Apr-29	May-29	Jun-29	Jul-29	Aug-29	Sep-29	Oct-29	Nov-29	Dec-29	Jan-30	Feb-30	Mar-30	Apr-30	May-30	Jun-30	Jul-30	Aug-30	Sep-30	Oct-30	Nov-30	Dec-30	Jan-31	Feb-31	Mar-31	Apr-31	May-31	Jun-31	Jul-31	Aug-31	Sep-31	Oct-31	Nov-31	Dec-31	Jan-32	Feb-32	Mar-32	Apr-32	May-32	Jun-32	Jul-32	Aug-32	Sep-32	Oct-32	Nov-32	Dec-32	Jan-33	Feb-33	Mar-33	Apr-33	May-33	Jun-33	Jul-33	Aug-33	Sep-33	Oct-33	Nov-33	Dec-33	Jan-34	Feb-34	Mar-34	Apr-34	May-34	Jun-34	Jul-34	Aug-34	Sep-34	Oct-34	Nov-34	Dec-34	Jan-35	Feb-35	Mar-35	Apr-35	May-35	Jun-35	Jul-35	Aug-35	Sep-35	Oct-35	Nov-35	Dec-35	Jan-36	Feb-36	Mar-36	Apr-36	May-36	Jun-36	Jul-36	Aug-36	Sep-36	Oct-36	Nov-36	Dec-36	Jan-37	Feb-37	Mar-37	Apr-37	May-37	Jun-37	Jul-37	Aug-37	Sep-37	Oct-37	Nov-37	Dec-37	Jan-38	Feb-38	Mar-38	Apr-38	May-38	Jun-38	Jul-38	Aug-38	Sep-38	Oct-38	Nov-38	Dec-38	Jan-39	Feb-39	Mar-39	Apr-39	May-39	Jun-39	Jul-39	Aug-39	Sep-39	Oct-39	Nov-39	Dec-39	Jan-40	Feb-40	Mar-40	Apr-40	May-40	Jun-40	Jul-40	Aug-40	Sep-40	Oct-40	Nov-40	Dec-40	Jan-41	Feb-41	Mar-41	Apr-41	May-41	Jun-41	Jul-41	Aug-41	Sep-41	Oct-41	Nov-41	Dec-41	Jan-42	Feb-42	Mar-42	Apr-42	May-42	Jun-42	Jul-42	Aug-42	Sep-42	Oct-42	Nov-42	Dec-42	Jan-43	Feb-43	Mar-43	Apr-43	May-43	Jun-43	Jul-43	Aug-43	Sep-43	Oct-43	Nov-43	Dec-43	Jan-44	Feb-44	Mar-44	Apr-44	May-44	Jun-44	Jul-44	Aug-44	Sep-44	Oct-44	Nov-44	Dec-44	Jan-45	Feb-45	Mar-45	Apr-45	May-45	Jun-45	Jul-45	Aug-45	Sep-45	Oct-45	Nov-45	Dec-45	Jan-46	Feb-46	Mar-46	Apr-46	May-46	Jun-46	Jul-46	Aug-46	Sep-46	Oct-46	Nov-46	Dec-46	Jan-47	Feb-47	Mar-47	Apr-47	May-47	Jun-47	Jul-47	Aug-47	Sep-47	Oct-47	Nov-47	Dec-47	Jan-48	Feb-48	Mar-48	Apr-48	May-48	Jun-48	Jul-48	Aug-48	Sep-48	Oct-48	Nov-48	Dec-48	Jan-49	Feb-49	Mar-49	Apr-49	May-49	Jun-49	Jul-49	Aug-49	Sep-49	Oct-49	Nov-49	Dec-49	Jan-50	Feb-50	Mar-50	Apr-50	May-50	Jun-50	Jul-50	Aug-50	Sep-50	Oct-50	Nov-50	Dec-50	Jan-51	Feb-51	Mar-51	Apr-51	May-51	Jun-51	Jul-51	Aug-51	Sep-51	Oct-51	Nov-51	Dec-51	Jan-52	Feb-52	Mar-52	Apr-52	May-52	Jun-52	Jul-52	Aug-52	Sep-52	Oct-52	Nov-52	Dec-52	Jan-53	Feb-53	Mar-53	Apr-53	May-53	Jun-53	Jul-53	Aug-53	Sep-53	Oct-53	Nov-53	Dec-53	Jan-54	Feb-54	Mar-54	Apr-54	May-54	Jun-54	Jul-54	Aug-54	Sep-54	Oct-54	Nov-54	Dec-54	Jan-55	Feb-55	Mar-55	Apr-55	May-55	Jun-55	Jul-55	Aug-55	Sep-55	Oct-55	Nov-55	Dec-55	Jan-56	Feb-56	Mar-56	Apr-56	May-56	Jun-56	Jul-56	Aug-56	Sep-56	Oct-56	Nov-56	Dec-56	Jan-57	Feb-57	Mar-57	Apr-57	May-57	Jun-57	Jul-57	Aug-57	Sep-57	Oct-57	Nov-57	Dec-57	Jan-58	Feb-58	Mar-58	Apr-58	May-58	Jun-58	Jul-58	Aug-58	Sep-58	Oct-58	Nov-58	Dec-58	Jan-59	Feb-59	Mar-59	Apr-59	May-59	Jun-59	Jul-59	Aug-59	Sep-59	Oct-59	Nov-59	Dec-59	Jan-60	Feb-60	Mar-60	Apr-60	May-60	Jun-60	Jul-60	Aug-60	Sep-60	Oct-60	Nov-60	Dec-60	Jan-61	Feb-61	Mar-61	Apr-61	May-61	Jun-61	Jul-61	Aug-61	Sep-61	Oct-61	Nov-61	Dec-61	Jan-62	Feb-62	Mar-62	Apr-62	May-62	Jun-62	Jul-62	Aug-62	Sep-62	Oct-62	Nov-62	Dec-62	Jan-63	Feb-63	Mar-63	Apr-63	May-63	Jun-63	Jul-63	Aug-63	Sep-63	Oct-63	Nov-63	Dec-63	Jan-64	Feb-64	Mar-64	Apr-64	May-64	Jun-64	Jul-64	Aug-64	Sep-64	Oct-64	Nov-64	Dec-64	Jan-65	Feb-65	Mar-65	Apr-65	May-65	Jun-65	Jul-65	Aug-65	Sep-65	Oct-65	Nov-65	Dec-65	Jan-66	Feb-66	Mar-66	Apr-66	May-66	Jun-66	Jul-66	Aug-66	Sep-66	Oct-66	Nov-66	Dec-66	Jan-67	Feb-67	Mar-67	Apr-67	May-67	Jun-67	Jul-67	Aug-67	Sep-67	Oct-67	Nov-67	Dec-67	Jan-68	Feb-68	Mar-68	Apr-68	May-68	Jun-68	Jul-68	Aug-68	Sep-68	Oct-68	Nov-68	Dec-68	Jan-69	Feb-69	Mar-69	Apr-69	May-69	Jun-69	Jul-69	Aug-69	Sep-69	Oct-69	Nov-69	Dec-69	Jan-70	Feb-70	Mar-70	Apr-70	May-70	Jun-70	Jul-70	Aug-70	Sep-70	Oct-70	Nov-70	Dec-70	Jan-71	Feb-71	Mar-71	Apr-71	May-71	Jun-71	Jul-71	Aug-71	Sep-71	Oct-71	Nov-71	Dec-71	Jan-72	Feb-72	Mar-72	Apr-72	May-72	Jun-72	Jul-72	Aug-72	Sep-72	Oct-72	Nov-72	Dec-72	Jan-73	Feb-73	Mar-73	Apr-73	May-73	Jun-73	Jul-73	Aug-73	Sep-73	Oct-73	Nov-73	Dec-73	Jan-74	Feb-74	Mar-74	Apr-74	May-74	Jun-74	Jul-74	Aug-74	Sep-74	Oct-74	Nov-74	Dec-74	Jan-75	Feb-75	Mar-75	Apr-75	May-75	Jun-75	Jul-75	Aug-75	Sep-75	Oct-75	Nov-75	Dec-75	Jan-76	Feb-76	Mar-76	Apr-76	May-76	Jun-76	Jul-76	Aug-76	Sep-76	Oct-76	Nov-76	Dec-76	Jan-77	Feb-77	Mar-77	Apr-77	May-77	Jun-77	Jul-77	Aug-77	Sep-77	Oct-77	Nov-77	Dec-77	Jan-78	Feb-78	Mar-78	Apr-78	May-78	Jun-78	Jul-78	Aug-78	Sep-78	Oct-78	Nov-78	Dec-78	Jan-79	Feb-79	Mar-79	Apr-79	May-79	Jun-79	Jul-79	Aug-79	Sep-79	Oct-79	Nov-79	Dec-79	Jan-80	Feb-80	Mar-80	Apr-80	May-80	Jun-80	Jul-80	Aug-80	Sep-80	Oct-80	Nov-80	Dec-80	Jan-81	Feb-81	Mar-81	Apr-81	May-81	Jun-81	Jul-81	Aug-81	Sep-81	Oct-81	Nov-81	Dec-81	Jan-82	Feb-82	Mar-82	Apr-82	May-82	Jun-82	Jul-82	Aug-82	Sep-82	Oct-82	Nov-82	Dec-82	Jan-83	Feb-83	Mar-83	Apr-83	May-83	Jun-83	Jul-83	Aug-83	Sep-83	Oct-83	Nov-83	Dec-83	Jan-84	Feb-84	Mar-84	Apr-84	May-84	Jun-84	Jul-84	Aug-84	Sep-84	Oct-84	Nov-84	Dec-84	Jan-85	Feb-85	Mar-85	Apr-85	May-85	Jun-85	Jul-85	Aug-85	Sep-85	Oct-85	Nov-85	Dec-85	Jan-86	Feb-86	Mar-86	Apr-86	May-86	Jun-86	Jul-86	Aug-86	Sep-86	Oct-86	Nov-86	Dec-86	Jan-87	Feb-87	Mar-87	Apr-87	May-87	Jun-87	Jul-87	Aug-87	Sep-87	Oct-87	Nov-87	Dec-87	Jan-88	Feb-88	Mar-88	Apr-88	May-88	Jun-88	Jul-88	Aug-88	Sep-88	Oct-88	Nov-88	Dec-88	Jan-89	Feb-89	Mar-89	Apr-89	May-89	Jun-89	Jul-89	Aug-89	Sep-89	Oct-89	Nov-89	Dec-89	Jan-90	Feb-90	Mar-90	Apr-90	May-90	Jun-90	Jul-90	Aug-90	Sep-90	Oct-90	Nov-90	Dec-90	Jan-91	Feb-91	Mar-91	Apr-91	May-91	Jun-91	Jul-91	Aug-91	Sep-91	Oct-91	Nov-91	Dec-91	Jan-92	Feb-92	Mar-92	Apr-92	May-92	Jun-92	Jul-92	Aug-92	Sep-92	Oct-92	Nov-92	Dec-92	Jan-93	Feb-93	Mar-93	Apr-93	May-93	Jun-93	Jul-93	Aug-93	Sep-93	Oct-93	Nov-93	Dec-93	Jan-94	Feb-94	Mar-94	Apr-94	May-94	Jun-94	Jul-94	Aug-94	Sep-94	Oct-94	Nov-94	Dec-94	Jan-95	Feb-95	Mar-95	Apr-95	May-95	Jun-95	Jul-95	Aug-95	Sep-95	Oct-95	Nov-95	Dec-95	Jan-96	Feb-96	Mar-96	Apr-96	May-96	Jun-96	Jul-96	Aug-96	Sep-96	Oct-96	Nov-96	Dec-96	Jan-97	Feb-97	Mar-97	Apr-97	May-97	Jun-97	Jul-97	Aug-97	Sep-97	Oct-97	Nov-97	Dec-97	Jan-98	Feb-98	Mar-98	Apr-98	May-98	Jun-98	Jul-98	Aug-98	Sep-98	Oct-98	Nov-98	Dec-98	Jan-99	Feb-99	Mar-99	Apr-99	May-99	Jun-99	Jul-99	Aug-99	Sep-99	Oct-99	Nov-99	Dec-99	Jan-00	Feb-00	Mar-00	Apr-00	May-00	Jun-00	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00	Jan-01	Feb-01	Mar-01	Apr-01	May-01	Jun-01	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01	Jan-02	Feb-02	Mar-02	Apr-02	May-02	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	Aug-05	Sep-05	Oct-05	Nov-05	Dec-05	Jan-06	Feb-06	Mar-06	Apr-06	May-06	Jun-06	Jul-06	Aug-06	Sep-06	Oct-06	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27	Nov-27	Dec-27	Jan-28	Feb-28	Mar-28	Apr-28	May-28	Jun-28	Jul-28	Aug-28	Sep-28	Oct-28	Nov-28	Dec-28	Jan-29	Feb-29	Mar-29	Apr-29	May-29	Jun-29	Jul-29	Aug-29	Sep-29	Oct-29	Nov-29	Dec-29	Jan-30	Feb-30	Mar-30	Apr-30	May-30	Jun-30	Jul-30	Aug-30	Sep-30	Oct-30	Nov-30	Dec-30	Jan-31	Feb-31	Mar-31	Apr-31	May-31	Jun-31	Jul-31	Aug-31	Sep-31	Oct-31	Nov-31	Dec-31	Jan-32	Feb-32	Mar-32	Apr-32	May-32	Jun-32	Jul-32	Aug-32	Sep-32	Oct-32	Nov-32	Dec-32	Jan-33	Feb-33	Mar-33	Apr-33	May-33	Jun-33	Jul-33	Aug-33	Sep-33	Oct-33	Nov-33	Dec-33	Jan-34	Feb-34	Mar-34	Apr-34	May-34	Jun-34	Jul-34	Aug-34	Sep-34	Oct-34	Nov-34	Dec-34	Jan-35	Feb-35	Mar-35	Apr-35	May-35	Jun-35	Jul-35	Aug-35	Sep-35	Oct-35	Nov-35	Dec-35	Jan-36	Feb-36	Mar-36	Apr-36	May-36	Jun-36	Jul-36	Aug-36	Sep-36	Oct-36	Nov-36	Dec-36	Jan-37	Feb-37	Mar-37	Apr-37	May-37	Jun-37	Jul-37	Aug-37	Sep-37
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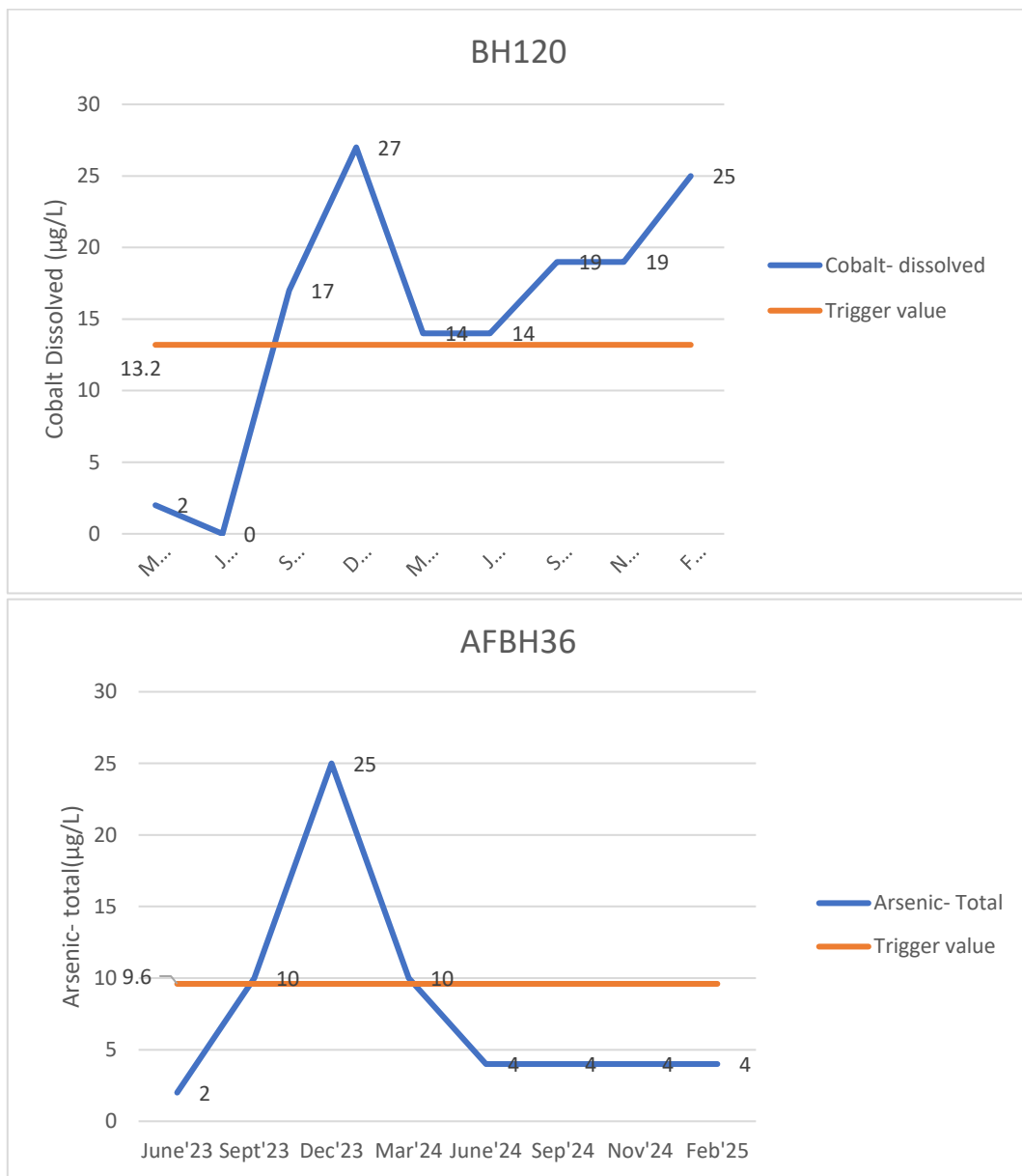
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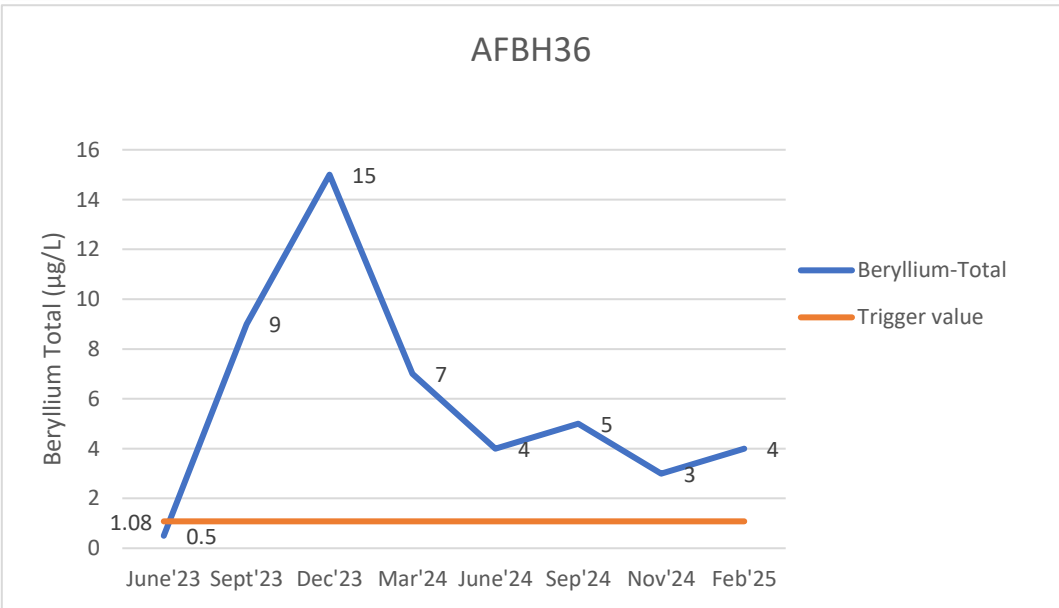
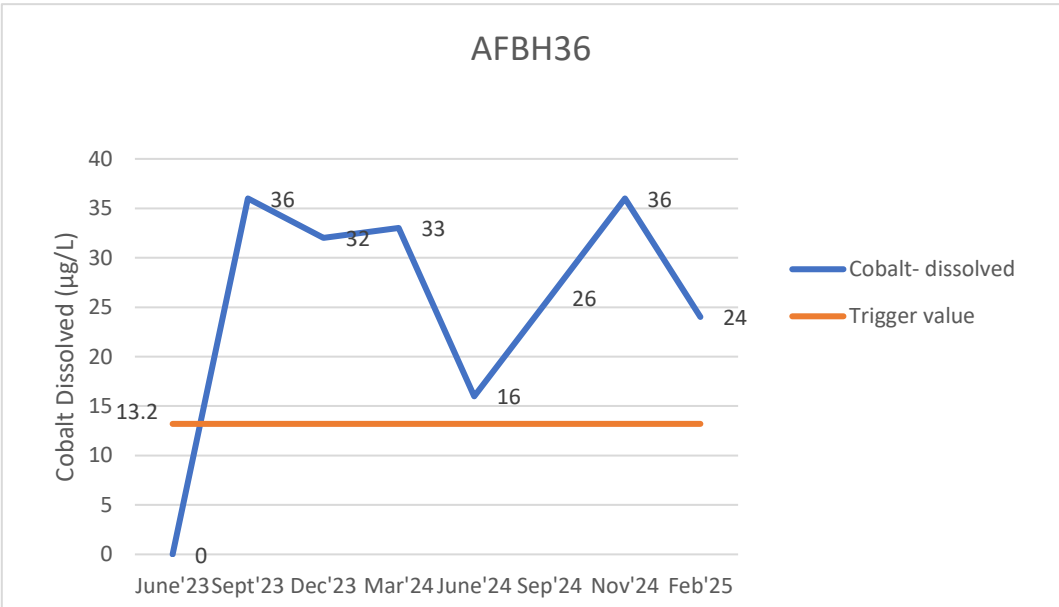
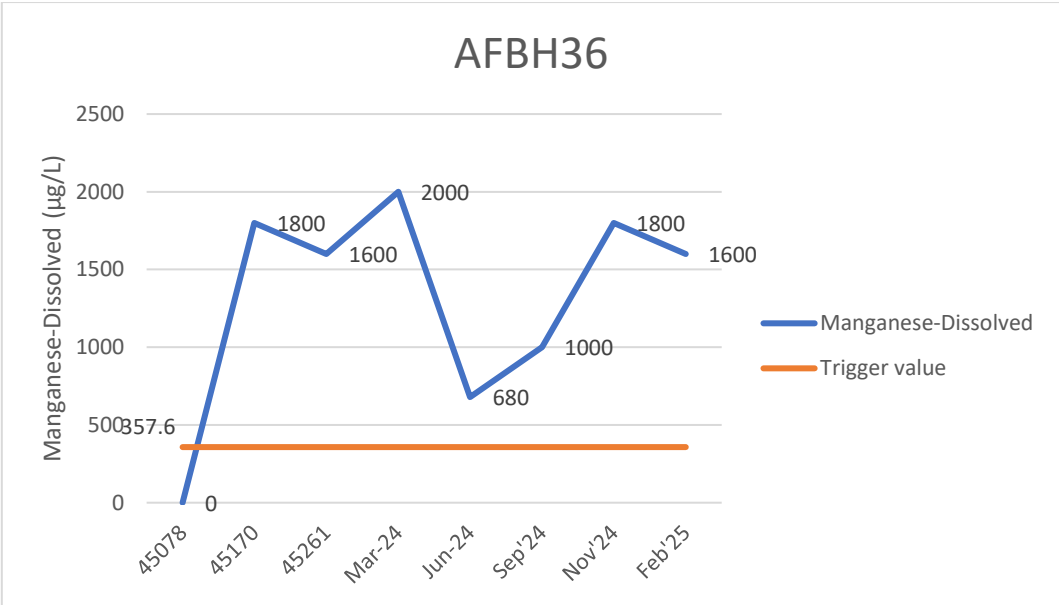
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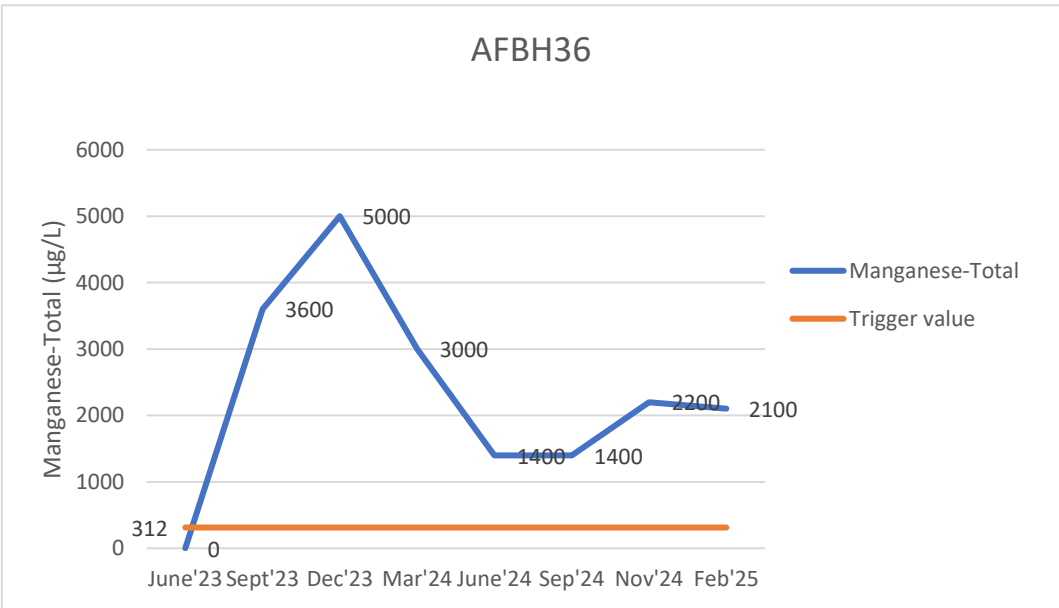
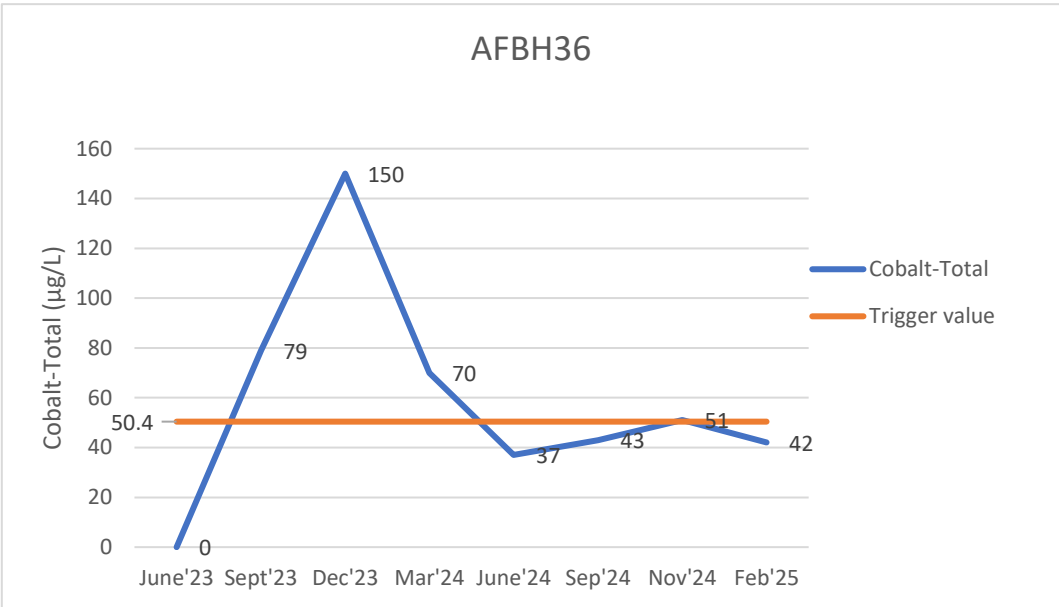
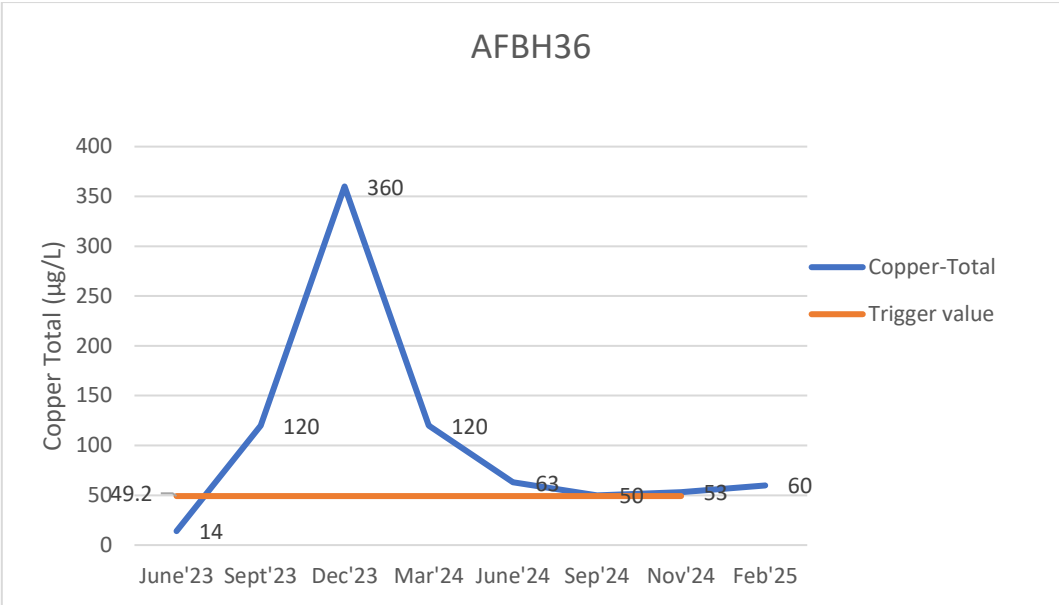
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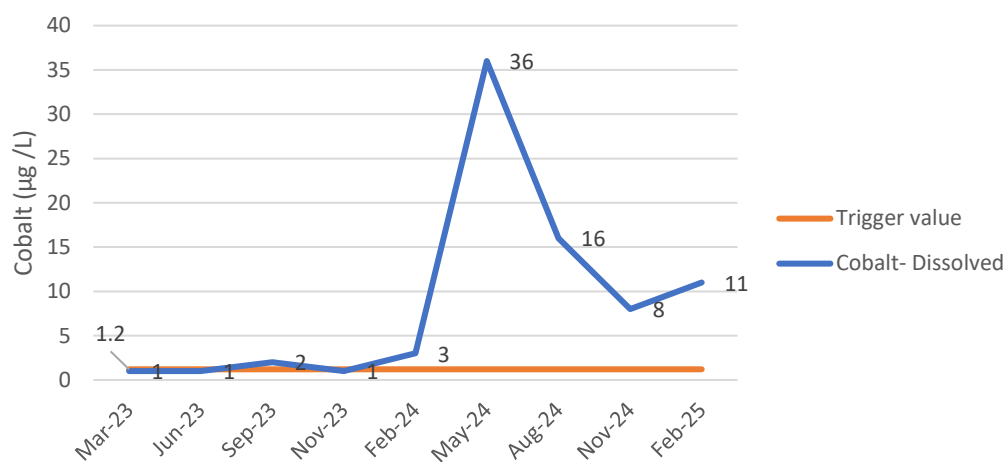
Groundwater Monitoring Program Management Response



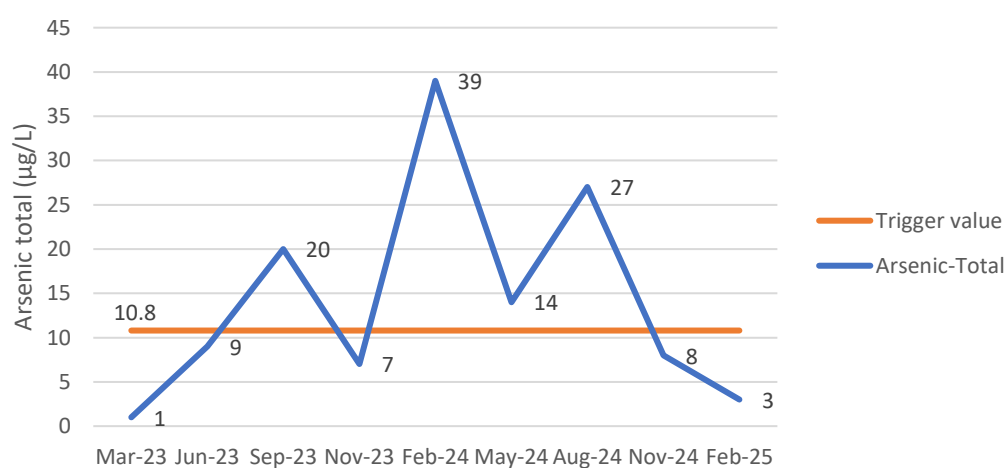




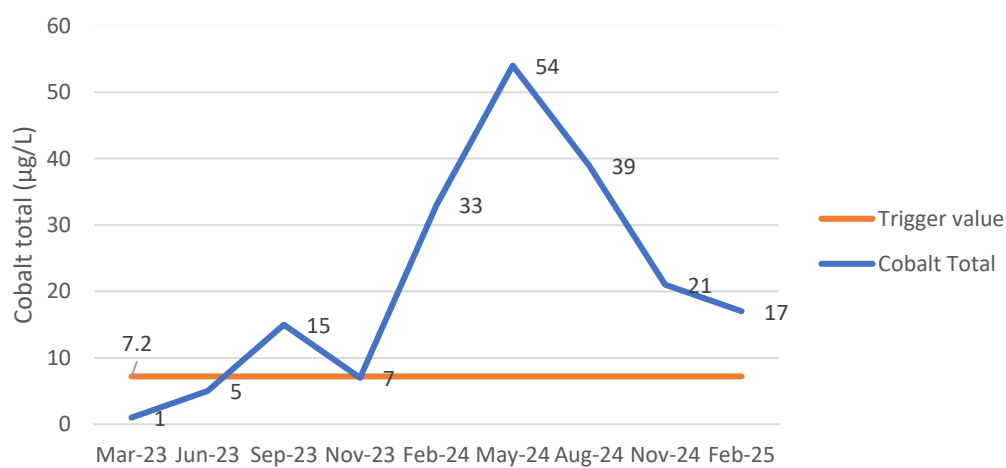
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CERTIFICATE OF ANALYSIS 373374

Client Details

Client	CTP AFJV
Attention	Christian Menini
Address	7 Figtree Dr, SYDNEY OLYMPIC PARK, NSW, 2127

Sample Details

Your Reference	<u>CTP Groundwater Monitoring</u>
Number of Samples	4 Water
Date samples received	18/02/2025
Date completed instructions received	18/02/2025

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	26/02/2025
Date of Issue	26/02/2025
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Amanda Chui, LC/Air Toxics Supervisor
 Dragana Tomas, Senior Chemist
 Giovanni Agosti, Group Technical Manager
 Liam Timmins, Organics Supervisor
 Nick Sarlamis, Assistant Operation Manager
 Sean McAlary, Senior Chemist
 Timothy Toll, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Client Reference: CTP Groundwater Monitoring

VOCs in water					
Our Reference		373374-1	373374-2	373374-3	373374-4
Your Reference	UNITS	BH120	S02_s	S02_d	BH715B
Date Sampled		18/02/2025	18/02/2025	18/02/2025	18/02/2025
Type of sample		Water	Water	Water	Water
Date Extracted	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Date Analysed	-	24/02/2025	24/02/2025	24/02/2025	24/02/2025
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1
Chloroform	µg/L	<1	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1

Client Reference: CTP Groundwater Monitoring

VOCs in water					
Our Reference		373374-1	373374-2	373374-3	373374-4
Your Reference	UNITS	BH120	S02_s	S02_d	BH715B
Date Sampled		18/02/2025	18/02/2025	18/02/2025	18/02/2025
Type of sample		Water	Water	Water	Water
Bromoform	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	98	101	102	98
Surrogate Toluene-d8	%	100	99	99	99
Surrogate 4-Bromofluorobenzene	%	95	96	98	93

Client Reference: CTP Groundwater Monitoring

vTRH(C6-C10)/BTEXN in Water					
Our Reference		373374-1	373374-2	373374-3	373374-4
Your Reference	UNITS	BH120	S02_s	S02_d	BH715B
Date Sampled		18/02/2025	18/02/2025	18/02/2025	18/02/2025
Type of sample		Water	Water	Water	Water
Date extracted	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Date analysed	-	24/02/2025	24/02/2025	24/02/2025	24/02/2025
TRH C ₆ - C ₉	µg/L	<10	<10	<10	<10
TRH C ₆ - C ₁₀	µg/L	<10	<10	<10	<10
TRH C ₆ - C ₁₀ less BTEX (F1)	µg/L	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	98	101	102	98
Surrogate Toluene-d8	%	100	99	99	99
Surrogate 4-Bromofluorobenzene	%	95	96	98	93

Client Reference: CTP Groundwater Monitoring

svTRH (C10-C40) in Water					
Our Reference		373374-1	373374-2	373374-3	373374-4
Your Reference	UNITS	BH120	S02_s	S02_d	BH715B
Date Sampled		18/02/2025	18/02/2025	18/02/2025	18/02/2025
Type of sample		Water	Water	Water	Water
Date extracted	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025
TRH C ₁₀ - C ₁₄	µg/L	<50	<500	55	<50
TRH C ₁₅ - C ₂₈	µg/L	<100	<1000	530	<100
TRH C ₂₉ - C ₃₆	µg/L	<100	<1000	520	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	1,100	<50
TRH >C ₁₀ - C ₁₆	µg/L	<50	<500	62	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50	<50	62	<50
TRH >C ₁₆ - C ₃₄	µg/L	<100	<1000	890	<100
TRH >C ₃₄ - C ₄₀	µg/L	<100	<1000	320	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	1,300	<50
Surrogate o-Terphenyl	%	68	90	98	71

Client Reference: CTP Groundwater Monitoring

PAHs in Water					
Our Reference		373374-1	373374-2	373374-3	373374-4
Your Reference	UNITS	BH120	S02_s	S02_d	BH715B
Date Sampled		18/02/2025	18/02/2025	18/02/2025	18/02/2025
Type of sample		Water	Water	Water	Water
Date extracted	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Naphthalene	µg/L	<0.1	0.1	<0.1	<0.1
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	0.3	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	0.6	<0.1	<0.1
Pyrene	µg/L	<0.1	0.6	0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	0.3	<0.1	<0.1
Chrysene	µg/L	<0.1	0.4	0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	0.7	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	0.4	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	0.2	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	0.4	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	0.6	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	4.2	0.21	<0.1
Surrogate <i>p</i> -Terphenyl-d14	%	64	#	88	86

Client Reference: CTP Groundwater Monitoring

All metals in water-dissolved					
Our Reference		373374-1	373374-2	373374-3	373374-4
Your Reference	UNITS	BH120	S02_s	S02_d	BH715B
Date Sampled		18/02/2025	18/02/2025	18/02/2025	18/02/2025
Type of sample		Water	Water	Water	Water
Date prepared	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Arsenic-Dissolved	µg/L	<1	<1	<1	2
Boron-Dissolved	µg/L	100	100	260	90
Barium-Dissolved	µg/L	57	210	83	40
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5	<0.5
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	44
Chromium-Dissolved	µg/L	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	<1	<1
Cobalt-Dissolved	µg/L	25	2	<1	160
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	320	580	160	1,700
Molybdenum-Dissolved	µg/L	<1	40	19	4
Nickel-Dissolved	µg/L	12	7	<1	98
Lead-Dissolved	µg/L	<1	<1	<1	5
Antimony-Dissolved	µg/L	<1	6	3	2
Selenium-Dissolved	µg/L	<1	<1	<1	1
Tin-Dissolved	µg/L	<1	<1	<1	<1
Zinc-Dissolved	µg/L	15	4	4	760
Iron-Dissolved	µg/L	460	100	20	790

Client Reference: CTP Groundwater Monitoring

All metals in water - total					
Our Reference		373374-1	373374-2	373374-3	373374-4
Your Reference	UNITS	BH120	S02_s	S02_d	BH715B
Date Sampled		18/02/2025	18/02/2025	18/02/2025	18/02/2025
Type of sample		Water	Water	Water	Water
Date prepared	-	26/02/2025	26/02/2025	26/02/2025	26/02/2025
Date analysed	-	26/02/2025	26/02/2025	26/02/2025	26/02/2025
Arsenic-Total	µg/L	<1	46	8	12
Boron-Total	µg/L	100	200	240	80
Barium-Total	µg/L	68	1,900	270	180
Beryllium-Total	µg/L	<0.5	15	1	1
Cadmium-Total	µg/L	<0.1	2.6	0.2	97
Chromium-Total	µg/L	4	270	28	15
Copper-Total	µg/L	19	770	89	460
Cobalt-Total	µg/L	21	120	12	180
Mercury-Total	µg/L	<0.05	<0.05	<0.05	<0.05
Manganese-Total	µg/L	270	4,500	550	1,600
Molybdenum-Total	µg/L	1	45	14	3
Nickel-Total	µg/L	19	210	18	120
Lead-Total	µg/L	3	490	34	250
Antimony-Total	µg/L	2	10	8	5
Selenium-Total	µg/L	<1	4	<1	38
Tin-Total	µg/L	<1	6	2	13
Zinc-Total	µg/L	28	6,200	810	1,400
Iron-Total	µg/L	2,100	160,000	22,000	13,000

Client Reference: CTP Groundwater Monitoring

Metals in Waters - Total					
Our Reference		373374-1	373374-2	373374-3	373374-4
Your Reference	UNITS	BH120	S02_s	S02_d	BH715B
Date Sampled		18/02/2025	18/02/2025	18/02/2025	18/02/2025
Type of sample		Water	Water	Water	Water
Date prepared	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Phosphorus - Total	mg/L	0.06	4.1	1.4	0.67

Client Reference: CTP Groundwater Monitoring

Miscellaneous Inorganics					
Our Reference		373374-1	373374-2	373374-3	373374-4
Your Reference	UNITS	BH120	S02_s	S02_d	BH715B
Date Sampled		18/02/2025	18/02/2025	18/02/2025	18/02/2025
Type of sample		Water	Water	Water	Water
Date prepared	-	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Date analysed	-	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Ammonia as N in water	mg/L	1.3	3.1	2.5	1.0
Nitrate as N in water	mg/L	0.12	<0.005	0.092	<0.005
Total Nitrogen in water	mg/L	1.9	5.4	7.0	1.7
Hexavalent Chromium, Cr ⁶⁺ Low Level	mg/L	<0.001	<0.001	<0.001	<0.001
Trivalent Chromium, Cr ³⁺	mg/L	<0.005	<0.005	<0.005	<0.005

Client Reference: CTP Groundwater Monitoring

Ion Balance					
Our Reference		373374-1	373374-2	373374-3	373374-4
Your Reference	UNITS	BH120	S02_s	S02_d	BH715B
Date Sampled		18/02/2025	18/02/2025	18/02/2025	18/02/2025
Type of sample		Water	Water	Water	Water
Date prepared	-	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Date analysed	-	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Calcium - Dissolved	mg/L	210	160	130	140
Potassium - Dissolved	mg/L	56	71	24	46
Sodium - Dissolved	mg/L	3,300	490	230	4,600
Magnesium - Dissolved	mg/L	440	35	17	460
Hardness (calc) equivalent CaCO ₃	mg/L	2,300	550	390	2,200
Hydroxide Alkalinity (OH ⁻) as CaCO ₃	mg/L	<5	<5	<5	<5
Bicarbonate Alkalinity as CaCO ₃	mg/L	700	450	210	540
Carbonate Alkalinity as CaCO ₃	mg/L	<5	<5	<5	<5
Total Alkalinity as CaCO ₃	mg/L	700	450	210	540
Sulphate, SO ₄	mg/L	460	120	79	580
Chloride, Cl	mg/L	5,500	920	420	6,800
Ionic Balance	%	4.0	-5.0	2.0	7.0

Client Reference: CTP Groundwater Monitoring

PFAS in Waters Extended					
Our Reference		373374-1	373374-2	373374-3	373374-4
Your Reference	UNITS	BH120	S02_s	S02_d	BH715B
Date Sampled		18/02/2025	18/02/2025	18/02/2025	18/02/2025
Type of sample		Water	Water	Water	Water
Date prepared	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Date analysed	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	0.04	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.2
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	0.01	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Surrogate ¹³ C ₈ PFOS	%	98	97	100	97
Surrogate ¹³ C ₂ PFOA	%	99	103	97	100
Extracted ISTD ¹³ C ₃ PFBS	%	101	103	100	94
Extracted ISTD ¹⁸ O ₂ PFHxS	%	110	111	105	104
Extracted ISTD ¹³ C ₄ PFOS	%	102	105	102	99
Extracted ISTD ¹³ C ₄ PFBA	%	53	98	78	#

Client Reference: CTP Groundwater Monitoring

PFAS in Waters Extended					
Our Reference		373374-1	373374-2	373374-3	373374-4
Your Reference	UNITS	BH120	S02_s	S02_d	BH715B
Date Sampled		18/02/2025	18/02/2025	18/02/2025	18/02/2025
Type of sample		Water	Water	Water	Water
Extracted ISTD ¹³ C ₃ PFPeA	%	80	92	89	44
Extracted ISTD ¹³ C ₂ PFHxA	%	89	109	104	69
Extracted ISTD ¹³ C ₄ PFHpA	%	98	102	102	78
Extracted ISTD ¹³ C ₄ PFOA	%	96	101	100	82
Extracted ISTD ¹³ C ₅ PFNA	%	100	107	104	90
Extracted ISTD ¹³ C ₂ PFDA	%	98	116	104	96
Extracted ISTD ¹³ C ₂ PFUnDA	%	101	116	106	100
Extracted ISTD ¹³ C ₂ PFDoDA	%	107	111	110	101
Extracted ISTD ¹³ C ₂ PFTeDA	%	95	105	102	84
Extracted ISTD ¹³ C ₂ 4:2FTS	%	69	96	96	53
Extracted ISTD ¹³ C ₂ 6:2FTS	%	72	119	110	49
Extracted ISTD ¹³ C ₂ 8:2FTS	%	76	136	112	57
Extracted ISTD ¹³ C ₈ FOSA	%	105	108	107	90
Extracted ISTD d ₃ N MeFOSA	%	102	99	103	98
Extracted ISTD d ₅ N EtFOSA	%	97	93	97	92
Extracted ISTD d ₇ N MeFOSE	%	114	112	110	108
Extracted ISTD d ₉ N EtFOSE	%	107	111	110	102
Extracted ISTD d ₃ N MeFOSAA	%	104	157	129	73
Extracted ISTD d ₅ N EtFOSAA	%	88	147	115	69
Total Positive PFHxS & PFOS	µg/L	<0.01	0.04	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	0.05	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	0.06	<0.01	<0.01

Client Reference: CTP Groundwater Monitoring

Dissolved Gases in Water					
Our Reference		373374-1	373374-2	373374-3	373374-4
Your Reference	UNITS	BH120	S02_s	S02_d	BH715B
Date Sampled		18/02/2025	18/02/2025	18/02/2025	18/02/2025
Type of sample		Water	Water	Water	Water
Date prepared	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Date analysed	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Methane	µg/L	<5	29	400	8

Client Reference: CTP Groundwater Monitoring

Method ID	Methodology Summary
AT-006	Dissolved gases determined by GC-FID based on draft method USEPA SOP RSK175
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Inorg-118	Hexavalent Chromium (Cr6+) - determined firstly by separation using ion chromatography followed by the colourimetric analytical finish. Water samples are ideally field filtered into alkali preserved containers prior to receipt for dissolved Cr6+ analysis. Unfiltered water samples into alkali preserved containers (or pH adjusted to pH 8-9 on receipt) can be classified as Total (unfiltered) Cr6+. Please note, for 'Total/Unfiltered' Trivalent Chromium in waters [calculated], these results may be exaggerated due to the digestive limitation of 'Total/Unfiltered' Hexavalent Chromium in NaOH at pH 8-9 compared to more comprehensive digestion for Total Chromium using the mineral acids HNO3 and HCl. Solid (includes soils, filters, paints, swabs for example) samples are extracted in a buffered catalysed solution prior to the analytical finish above. Water extractable options are available (e.g. as an option for filters) on request. Impingers may need pH adjusting to pH 8-9 prior to IC-colourimetric analytical finish.
Metals-020	Determination of various metals by ICP-AES. Total Phosphate determined stoichiometrically from Phosphorus (assumed to be present as Phosphate). Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.

Client Reference: CTP Groundwater Monitoring

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W6	[NT]
Date Extracted	-			21/02/2025	[NT]	[NT]	[NT]	[NT]	21/02/2025	[NT]
Date Analysed	-			24/02/2025	[NT]	[NT]	[NT]	[NT]	24/02/2025	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Dibromomethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Bromoform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	97	[NT]
Styrene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W6	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	102	[NT]	[NT]	[NT]	[NT]	103	[NT]
Surrogate Toluene-d8	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	96	[NT]	[NT]	[NT]	[NT]	98	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W6	[NT]
Date extracted	-			21/02/2025	[NT]	[NT]	[NT]	[NT]	21/02/2025	[NT]
Date analysed	-			24/02/2025	[NT]	[NT]	[NT]	[NT]	24/02/2025	[NT]
TRH C ₆ - C ₉	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	97	[NT]
TRH C ₆ - C ₁₀	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	97	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	97	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	102	[NT]	[NT]	[NT]	[NT]	103	[NT]
Surrogate Toluene-d8	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	96	[NT]	[NT]	[NT]	[NT]	98	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			20/02/2025	[NT]	[NT]	[NT]	[NT]	20/02/2025	[NT]
Date analysed	-			21/02/2025	[NT]	[NT]	[NT]	[NT]	21/02/2025	[NT]
TRH C ₁₀ - C ₁₄	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	133	[NT]
TRH C ₁₅ - C ₂₈	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	126	[NT]
TRH C ₂₉ - C ₃₆	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	120	[NT]
TRH >C ₁₀ - C ₁₆	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	133	[NT]
TRH >C ₁₆ - C ₃₄	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	126	[NT]
TRH >C ₃₄ - C ₄₀	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	120	[NT]
Surrogate o-Terphenyl	%		Org-020	84	[NT]	[NT]	[NT]	[NT]	132	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: PAHs in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			20/02/2025	[NT]	[NT]	[NT]	[NT]	20/02/2025	[NT]
Date analysed	-			20/02/2025	[NT]	[NT]	[NT]	[NT]	20/02/2025	[NT]
Naphthalene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	75	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	81	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	71	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	69	[NT]	[NT]	[NT]	[NT]	72	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: All metals in water-dissolved					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	373374-2
Date prepared	-			20/02/2025	1	20/02/2025	20/02/2025		20/02/2025	20/02/2025
Date analysed	-			20/02/2025	1	20/02/2025	20/02/2025		20/02/2025	20/02/2025
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	99	98
Boron-Dissolved	µg/L	20	Metals-022	<20	1	100	100	0	99	105
Barium-Dissolved	µg/L	1	Metals-022	<1	1	57	57	0	101	102
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	1	<0.5	<0.5	0	101	110
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	103	104
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	102	115
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	99	107
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	25	26	4	101	112
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	[NT]		101	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	320	340	6	104	113
Molybdenum-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	101	109
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	12	12	0	98	108
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	99	95
Antimony-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	97	90
Selenium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	95	96
Tin-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	107	111
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	15	15	0	101	109
Iron-Dissolved	µg/L	10	Metals-022	<10	1	460	470	2	101	107

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: All metals in water-dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	3	20/02/2025	20/02/2025		[NT]	[NT]
Date analysed	-			[NT]	3	20/02/2025	20/02/2025		[NT]	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Boron-Dissolved	µg/L	20	Metals-022	[NT]	3	260	[NT]		[NT]	[NT]
Barium-Dissolved	µg/L	1	Metals-022	[NT]	3	83	[NT]		[NT]	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	[NT]	3	<0.5	[NT]		[NT]	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	3	<0.1	[NT]		[NT]	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Copper-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	3	<0.05	<0.05	0	[NT]	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	[NT]	3	160	[NT]		[NT]	[NT]
Molybdenum-Dissolved	µg/L	1	Metals-022	[NT]	3	19	[NT]		[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Lead-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Antimony-Dissolved	µg/L	1	Metals-022	[NT]	3	3	[NT]		[NT]	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Tin-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	3	4	[NT]		[NT]	[NT]
Iron-Dissolved	µg/L	10	Metals-022	[NT]	3	20	[NT]		[NT]	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: All metals in water - total						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			26/02/2025	2	26/02/2025	26/02/2025		26/02/2025	[NT]
Date analysed	-			26/02/2025	2	26/02/2025	26/02/2025		26/02/2025	[NT]
Arsenic-Total	µg/L	1	Metals-022	<1	2	46	[NT]		89	[NT]
Boron-Total	µg/L	20	Metals-022	<20	2	200	[NT]		85	[NT]
Barium-Total	µg/L	1	Metals-022	<1	2	1900	[NT]		82	[NT]
Beryllium-Total	µg/L	0.5	Metals-022	<0.5	2	15	[NT]		97	[NT]
Cadmium-Total	µg/L	0.1	Metals-022	<0.1	2	2.6	[NT]		91	[NT]
Chromium-Total	µg/L	1	Metals-022	<1	2	270	[NT]		92	[NT]
Copper-Total	µg/L	1	Metals-022	<1	2	770	[NT]		91	[NT]
Cobalt-Total	µg/L	1	Metals-022	<1	2	120	[NT]		90	[NT]
Mercury-Total	µg/L	0.05	Metals-021	<0.05	2	<0.05	<0.05	0	99	[NT]
Manganese-Total	µg/L	5	Metals-022	<5	2	4500	[NT]		92	[NT]
Molybdenum-Total	µg/L	1	Metals-022	<1	2	45	[NT]		88	[NT]
Nickel-Total	µg/L	1	Metals-022	<1	2	210	[NT]		90	[NT]
Lead-Total	µg/L	1	Metals-022	<1	2	490	[NT]		82	[NT]
Antimony-Total	µg/L	1	Metals-022	<1	2	10	[NT]		94	[NT]
Selenium-Total	µg/L	1	Metals-022	<1	2	4	[NT]		92	[NT]
Tin-Total	µg/L	1	Metals-022	<1	2	6	[NT]		91	[NT]
Zinc-Total	µg/L	1	Metals-022	<1	2	6200	[NT]		90	[NT]
Iron-Total	µg/L	10	Metals-022	<10	2	160000	[NT]		96	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: Metals in Waters - Total					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	373374-4
Date prepared	-			20/02/2025	1	20/02/2025	20/02/2025		20/02/2025	20/02/2025
Date analysed	-			20/02/2025	1	20/02/2025	20/02/2025		20/02/2025	20/02/2025
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	1	0.06	0.06	0	108	106

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			19/02/2025	1	19/02/2025	19/02/2025		19/02/2025	[NT]
Date analysed	-			19/02/2025	1	19/02/2025	19/02/2025		19/02/2025	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	1.3	[NT]		115	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.12	[NT]		110	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	1.9	1.9	0	114	[NT]
Hexavalent Chromium, Cr ⁶⁺ Low Level	mg/L	0.001	Inorg-118	<0.001	1	<0.001	[NT]		81	[NT]
Trivalent Chromium, Cr ³⁺	mg/L	0.005	Inorg-118	<0.005	1	<0.005	[NT]		[NT]	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: Ion Balance					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			19/02/2025	[NT]	[NT]	[NT]	[NT]	19/02/2025	[NT]
Date analysed	-			19/02/2025	[NT]	[NT]	[NT]	[NT]	19/02/2025	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	95	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	101	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	108	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	95	[NT]
Hydroxide Alkalinity (OH ⁻) as CaCO ₃	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bicarbonate Alkalinity as CaCO ₃	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbonate Alkalinity as CaCO ₃	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Total Alkalinity as CaCO ₃	mg/L	5	Inorg-006	<5	[NT]	[NT]	[NT]	[NT]	111	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	[NT]	[NT]	[NT]	[NT]	118	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: PFAS in Waters Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	373374-1
Date prepared	-			21/02/2025	[NT]	[NT]	[NT]	[NT]	21/02/2025	21/02/2025
Date analysed	-			21/02/2025	[NT]	[NT]	[NT]	[NT]	21/02/2025	21/02/2025
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	93	95
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	90	84
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	93	91
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	91	89
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	89	88
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	87	87
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	91	91
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	90	92
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	94	89
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	91	93
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	94	99
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	88	90
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	95	94
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	91	95
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	103	96
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	97	85
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	99	98
4:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	90	90
6:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	96	92
8:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	96	98
10:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	101	112
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	93	94
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	89	90
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	88	88
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	96	96
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	96	97
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	97	97
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	88	84
Surrogate ¹³ C ₈ PFOS	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	96	96
Surrogate ¹³ C ₂ PFOA	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	101	106

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: PFAS in Waters Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	373374-1
Extracted ISTD ¹³ C ₃ PFBS	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	102	101
Extracted ISTD ¹⁸ O ₂ PFHxS	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	106	111
Extracted ISTD ¹³ C ₄ PFOS	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	105	108
Extracted ISTD ¹³ C ₄ PFBA	%		Org-029	109	[NT]	[NT]	[NT]	[NT]	105	51
Extracted ISTD ¹³ C ₃ PFPeA	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	105	78
Extracted ISTD ¹³ C ₂ PFHxA	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	111	90
Extracted ISTD ¹³ C ₄ PFHpA	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	104	97
Extracted ISTD ¹³ C ₄ PFOA	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	104	92
Extracted ISTD ¹³ C ₅ PFNA	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	102	100
Extracted ISTD ¹³ C ₂ PFDA	%		Org-029	109	[NT]	[NT]	[NT]	[NT]	105	103
Extracted ISTD ¹³ C ₂ PFUnDA	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	111	105
Extracted ISTD ¹³ C ₂ PFDoDA	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	98	102
Extracted ISTD ¹³ C ₂ PFTeDA	%		Org-029	91	[NT]	[NT]	[NT]	[NT]	98	92
Extracted ISTD ¹³ C ₂ 4:2FTS	%		Org-029	110	[NT]	[NT]	[NT]	[NT]	106	72
Extracted ISTD ¹³ C ₂ 6:2FTS	%		Org-029	113	[NT]	[NT]	[NT]	[NT]	110	69
Extracted ISTD ¹³ C ₂ 8:2FTS	%		Org-029	124	[NT]	[NT]	[NT]	[NT]	111	69
Extracted ISTD ¹³ C ₈ FOSA	%		Org-029	115	[NT]	[NT]	[NT]	[NT]	113	100
Extracted ISTD d ₃ N MeFOSA	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	105	102
Extracted ISTD d ₅ N EtFOSA	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	102	101
Extracted ISTD d ₇ N MeFOSE	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	113	111

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: PFAS in Waters Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	373374-1
<i>Extracted ISTD d₉ N EtFOSE</i>	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	113	108
<i>Extracted ISTD d₃ N MeFOSAA</i>	%		Org-029	139	[NT]	[NT]	[NT]	[NT]	136	91
<i>Extracted ISTD d₅ N EtFOSAA</i>	%		Org-029	121	[NT]	[NT]	[NT]	[NT]	121	88

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: Dissolved Gases in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			21/02/2025	1	21/02/2025	21/02/2025		21/02/2025	[NT]
Date analysed	-			21/02/2025	1	21/02/2025	21/02/2025		21/02/2025	[NT]
Methane	µg/L	5	AT-006	<5	1	<5	<5	0	101	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Samples received in good order: Holding time exceedance

Dissolved Metals: no filtered, preserved sample was received, therefore the unpreserved sample was filtered through 0.45µm filter at the lab.

Note: there is a possibility some elements may be underestimated.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

PAHs in Water - # Percent recovery for the surrogate/matrix spike is not possible to report due to interference from analytes (other than those being tested) in sample/s 373374-2.

CERTIFICATE OF ANALYSIS 373488

Client Details

Client	CTP AFJV
Attention	Christian Menini
Address	7 Figtree Dr, SYDNEY OLYMPIC PARK, NSW, 2127

Sample Details

Your Reference	<u>CTP Groundwater Monitoring</u>
Number of Samples	10 Water
Date samples received	19/02/2025
Date completed instructions received	19/02/2025

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	26/02/2025
Date of Issue	26/02/2025
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Giovanni Agosti, Group Technical Manager
 Jack Wallis, Senior Chemist
 Jue Wang, Chemist (FAS)
 Nancy Zhang, Laboratory Manager, Sydney
 Nick Sarlamis, Assistant Operation Manager
 Sean McAlary, Senior Chemist
 Timothy Toll, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Client Reference: CTP Groundwater Monitoring

VOCs in water						
Our Reference		373488-1	373488-2	373488-3	373488-4	373488-5
Your Reference	UNITS	BH019	BH36	BH126	BH046R	BH051
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date Extracted	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Date Analysed	-	24/02/2025	24/02/2025	24/02/2025	24/02/2025	24/02/2025
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1	<1
Chloroform	µg/L	<1	<1	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	9	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1	<1
Benzene	µg/L	<1	<1	95	<1	<1
Dibromomethane	µg/L	<1	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	97	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1

Client Reference: CTP Groundwater Monitoring

VOCs in water						
Our Reference		373488-1	373488-2	373488-3	373488-4	373488-5
Your Reference	UNITS	BH019	BH36	BH126	BH046R	BH051
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Bromoform	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	6	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	7	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	2	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	1	<1	<1
n-butyl benzene	µg/L	<1	<1	1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	105	102	105	102	103
Surrogate Toluene-d8	%	100	99	102	100	100
Surrogate 4-Bromofluorobenzene	%	97	95	96	96	98

Client Reference: CTP Groundwater Monitoring

VOCs in water						
Our Reference		373488-6	373488-7	373488-8	373488-9	373488-10
Your Reference	UNITS	BH038	BH009s	BH050s	BH44	DS1
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date Extracted	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Date Analysed	-	24/02/2025	24/02/2025	24/02/2025	24/02/2025	24/02/2025
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1	<1
Chloroform	µg/L	<1	<1	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1

Client Reference: CTP Groundwater Monitoring

VOCs in water						
Our Reference		373488-6	373488-7	373488-8	373488-9	373488-10
Your Reference	UNITS	BH038	BH009s	BH050s	BH44	DS1
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Bromoform	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	100	100	99	99	100
Surrogate Toluene-d8	%	100	100	100	100	99
Surrogate 4-Bromofluorobenzene	%	94	95	93	94	93

Client Reference: CTP Groundwater Monitoring

vTRH(C6-C10)/BTEXN in Water						
Our Reference		373488-1	373488-2	373488-3	373488-4	373488-5
Your Reference	UNITS	BH019	BH36	BH126	BH046R	BH051
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Date analysed	-	24/02/2025	24/02/2025	24/02/2025	24/02/2025	24/02/2025
TRH C ₆ - C ₉	µg/L	<10	<10	350	<10	<10
TRH C ₆ - C ₁₀	µg/L	<10	<10	420	<10	<10
TRH C ₆ - C ₁₀ less BTEX (F1)	µg/L	<10	<10	320	<10	<10
Benzene	µg/L	<1	<1	95	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	25	<1	<1
Surrogate Dibromofluoromethane	%	105	102	105	102	103
Surrogate Toluene-d8	%	100	99	102	100	100
Surrogate 4-Bromofluorobenzene	%	97	95	96	96	98

vTRH(C6-C10)/BTEXN in Water						
Our Reference		373488-6	373488-7	373488-8	373488-9	373488-10
Your Reference	UNITS	BH038	BH009s	BH050s	BH44	DS1
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Date analysed	-	24/02/2025	24/02/2025	24/02/2025	24/02/2025	24/02/2025
TRH C ₆ - C ₉	µg/L	<10	<10	<10	<10	<10
TRH C ₆ - C ₁₀	µg/L	<10	<10	<10	<10	<10
TRH C ₆ - C ₁₀ less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	100	100	99	99	100
Surrogate Toluene-d8	%	100	100	100	100	99
Surrogate 4-Bromofluorobenzene	%	94	95	93	94	93

Client Reference: CTP Groundwater Monitoring

svTRH (C10-C40) in Water						
Our Reference	UNITS	373488-1	373488-2	373488-3	373488-4	373488-5
Your Reference		BH019	BH36	BH126	BH046R	BH051
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
TRH C ₁₀ - C ₁₄	µg/L	<50	<50	480	<50	<50
TRH C ₁₅ - C ₂₈	µg/L	<100	<100	1,000	<100	<100
TRH C ₂₉ - C ₃₆	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	1,500	<50	<50
TRH >C ₁₀ - C ₁₆	µg/L	<50	<50	660	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50	<50	640	<50	<50
TRH >C ₁₆ - C ₃₄	µg/L	<100	<100	870	<100	<100
TRH >C ₃₄ - C ₄₀	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	1,500	<50	<50
Surrogate o-Terphenyl	%	82	100	109	86	121

svTRH (C10-C40) in Water						
Our Reference	UNITS	373488-6	373488-7	373488-8	373488-9	373488-10
Your Reference		BH038	BH009s	BH050s	BH44	DS1
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
TRH C ₁₀ - C ₁₄	µg/L	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	µg/L	<100	<100	<100	430	<100
TRH C ₂₉ - C ₃₆	µg/L	<100	<100	<100	510	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	940	<50
TRH >C ₁₀ - C ₁₆	µg/L	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50	<50	<50	<50	<50
TRH >C ₁₆ - C ₃₄	µg/L	<100	<100	<100	800	<100
TRH >C ₃₄ - C ₄₀	µg/L	<100	<100	<100	220	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	1,000	<50
Surrogate o-Terphenyl	%	90	88	88	108	110

Client Reference: CTP Groundwater Monitoring

PAHs in Water						
Our Reference		373488-1	373488-2	373488-3	373488-4	373488-5
Your Reference	UNITS	BH019	BH36	BH126	BH046R	BH051
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	24/02/2025	24/02/2025	24/02/2025	24/02/2025
Naphthalene	µg/L	<0.1	<0.1	13	<0.1	<0.1
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	13	<0.1	<0.1
Surrogate <i>p</i> -Terphenyl-d14	%	84	73	74	71	73

Client Reference: CTP Groundwater Monitoring

PAHs in Water						
Our Reference		373488-6	373488-7	373488-8	373488-9	373488-10
Your Reference	UNITS	BH038	BH009s	BH050s	BH44	DS1
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	24/02/2025	24/02/2025	24/02/2025	24/02/2025	24/02/2025
Naphthalene	µg/L	<0.1	<0.1	<0.1	0.1	<0.1
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	2.6	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	0.2	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	1.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	1.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	5.8	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	6.3	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	3.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	3.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	11	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	9.6	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	6.0	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	1.4	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	6.4	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	13	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	58	<0.1
Surrogate p-Terphenyl-d14	%	71	76	77	68	71

Client Reference: CTP Groundwater Monitoring

All metals in water-dissolved						
Our Reference		373488-1	373488-2	373488-3	373488-4	373488-5
Your Reference	UNITS	BH019	BH36	BH126	BH046R	BH051
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Iron-Dissolved	µg/L	280	510	420	<10	200
Arsenic-Dissolved	µg/L	2	<1	2	<1	<1
Boron-Dissolved	µg/L	60	300	2,300	200	100
Barium-Dissolved	µg/L	18	20	600	34	29
Beryllium-Dissolved	µg/L	<0.5	0.9	<0.5	<0.5	<0.5
Cadmium-Dissolved	µg/L	<0.1	0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	20	<1	<1
Copper-Dissolved	µg/L	3	3	1	87	12
Cobalt-Dissolved	µg/L	<1	24	5	11	4
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	19	1,600	32	370	1,500
Molybdenum-Dissolved	µg/L	<1	<1	1	3	2
Nickel-Dissolved	µg/L	1	21	17	23	4
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Antimony-Dissolved	µg/L	<1	<1	<1	<1	1
Selenium-Dissolved	µg/L	<1	<1	<1	<1	<1
Tin-Dissolved	µg/L	<1	<1	<1	<1	<1
Zinc-Dissolved	µg/L	6	57	18	37	140

Client Reference: CTP Groundwater Monitoring

All metals in water-dissolved						
Our Reference		373488-6	373488-7	373488-8	373488-9	373488-10
Your Reference	UNITS	BH038	BH009s	BH050s	BH44	DS1
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Iron-Dissolved	µg/L	<10	30	<10	240	200
Arsenic-Dissolved	µg/L	<1	<1	<1	<1	<1
Boron-Dissolved	µg/L	20	100	100	80	90
Barium-Dissolved	µg/L	52	70	420	37	30
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	6	<1	<1	<1	12
Cobalt-Dissolved	µg/L	<1	51	<1	<1	16
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	<5	3,200	79	250	6,300
Molybdenum-Dissolved	µg/L	<1	<1	<1	2	1
Nickel-Dissolved	µg/L	<1	27	<1	<1	10
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Antimony-Dissolved	µg/L	2	<1	<1	<1	<1
Selenium-Dissolved	µg/L	<1	<1	<1	<1	<1
Tin-Dissolved	µg/L	<1	<1	<1	<1	<1
Zinc-Dissolved	µg/L	3	62	22	6	150

Client Reference: CTP Groundwater Monitoring

All metals in water - total						
Our Reference		373488-1	373488-2	373488-3	373488-4	373488-5
Your Reference	UNITS	BH019	BH36	BH126	BH046R	BH051
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Iron-Total	µg/L	690	17,000	6,800	3,900	2,800
Arsenic-Total	µg/L	3	4	3	3	1
Boron-Total	µg/L	70	330	2,100	200	100
Barium-Total	µg/L	22	110	730	82	32
Beryllium-Total	µg/L	<0.5	4	<0.5	<0.5	<0.5
Cadmium-Total	µg/L	<0.1	0.4	<0.1	<0.1	<0.1
Chromium-Total	µg/L	<1	13	27	6	<1
Copper-Total	µg/L	13	60	29	140	22
Cobalt-Total	µg/L	<1	42	8	17	2
Mercury-Total	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Total	µg/L	31	2,100	60	500	1,100
Molybdenum-Total	µg/L	1	<1	2	4	2
Nickel-Total	µg/L	2	44	23	30	4
Lead-Total	µg/L	<1	38	7	4	1
Antimony-Total	µg/L	<1	<1	2	<1	3
Selenium-Total	µg/L	<1	<1	<1	<1	<1
Tin-Total	µg/L	<1	<1	2	<1	1
Zinc-Total	µg/L	22	170	76	56	150

Client Reference: CTP Groundwater Monitoring

All metals in water - total						
Our Reference		373488-6	373488-7	373488-8	373488-9	373488-10
Your Reference	UNITS	BH038	BH009s	BH050s	BH44	DS1
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Iron-Total	µg/L	1,400	8,800	7,400	3,800	3,200
Arsenic-Total	µg/L	<1	6	3	2	1
Boron-Total	µg/L	20	100	100	90	90
Barium-Total	µg/L	74	560	540	52	34
Beryllium-Total	µg/L	<0.5	2	<0.5	<0.5	<0.5
Cadmium-Total	µg/L	<0.1	0.4	<0.1	<0.1	<0.1
Chromium-Total	µg/L	5	9	3	4	1
Copper-Total	µg/L	28	56	14	13	26
Cobalt-Total	µg/L	<1	99	1	2	4
Mercury-Total	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Total	µg/L	89	4,700	120	280	1,500
Molybdenum-Total	µg/L	1	1	1	2	2
Nickel-Total	µg/L	2	44	1	4	4
Lead-Total	µg/L	4	21	7	3	1
Antimony-Total	µg/L	7	<1	<1	<1	3
Selenium-Total	µg/L	<1	<1	<1	<1	<1
Tin-Total	µg/L	2	1	<1	<1	<1
Zinc-Total	µg/L	54	220	50	26	160

Client Reference: CTP Groundwater Monitoring

Metals in Waters - Total						
Our Reference		373488-1	373488-2	373488-3	373488-4	373488-5
Your Reference	UNITS	BH019	BH36	BH126	BH046R	BH051
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Phosphorus - Total	mg/L	1.1	1.5	0.2	0.05	0.1

Metals in Waters - Total						
Our Reference		373488-6	373488-7	373488-8	373488-9	373488-10
Your Reference	UNITS	BH038	BH009s	BH050s	BH44	DS1
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Phosphorus - Total	mg/L	0.1	0.4	0.1	0.3	0.1

Client Reference: CTP Groundwater Monitoring

Miscellaneous Inorganics						
Our Reference	UNITS	373488-1	373488-2	373488-3	373488-4	373488-5
Your Reference		BH019	BH36	BH126	BH046R	BH051
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Ammonia as N in water	mg/L	0.27	0.031	210	0.24	0.029
Nitrate as N in water	mg/L	<0.005	0.20	0.32	0.27	0.13
Total Nitrogen in water	mg/L	1.9	2.7	250	0.6	0.8
Hexavalent Chromium, Cr ⁶⁺ Low Level	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Trivalent Chromium, Cr ³⁺	mg/L	<0.005	<0.005	20	<0.005	<0.005

Miscellaneous Inorganics						
Our Reference	UNITS	373488-6	373488-7	373488-8	373488-9	373488-10
Your Reference		BH038	BH009s	BH050s	BH44	DS1
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Ammonia as N in water	mg/L	0.032	0.11	0.063	0.49	0.027
Nitrate as N in water	mg/L	0.71	0.055	0.077	0.069	0.11
Total Nitrogen in water	mg/L	1.0	0.4	0.4	0.8	0.9
Hexavalent Chromium, Cr ⁶⁺ Low Level	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Trivalent Chromium, Cr ³⁺	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005

Client Reference: CTP Groundwater Monitoring

Ion Balance						
Our Reference		373488-1	373488-2	373488-3	373488-4	373488-5
Your Reference	UNITS	BH019	BH36	BH126	BH046R	BH051
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	20/02/2025	20/02/2025	24/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	24/02/2025	20/02/2025	20/02/2025
Calcium - Dissolved	mg/L	10	2	43	110	34
Potassium - Dissolved	mg/L	12	8.6	280	26	6.3
Sodium - Dissolved	mg/L	27	400	970	1,000	210
Magnesium - Dissolved	mg/L	3	10	50	130	6.8
Hardness (calc) equivalent CaCO ₃	mg/L	37	49	310	790	110
Hydroxide Alkalinity (OH ⁻) as CaCO ₃	mg/L	<5	<5	<5	<5	<5
Bicarbonate Alkalinity as CaCO ₃	mg/L	53	99	1,900	790	220
Carbonate Alkalinity as CaCO ₃	mg/L	<5	<5	<5	<5	<5
Total Alkalinity as CaCO ₃	mg/L	53	99	1,900	790	220
Sulphate, SO ₄	mg/L	9	350	1	400	170
Chloride, Cl	mg/L	40	310	1,400	1,600	81
Ionic Balance	%	-4.0	1.0	-15	-5.0	5.0

Ion Balance						
Our Reference		373488-6	373488-7	373488-8	373488-9	373488-10
Your Reference	UNITS	BH038	BH009s	BH050s	BH44	DS1
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	20/02/2025	20/02/2025	20/02/2025
Calcium - Dissolved	mg/L	42	39	55	71	33
Potassium - Dissolved	mg/L	2	5.4	6.5	27	7.5
Sodium - Dissolved	mg/L	11	88	20	1,000	300
Magnesium - Dissolved	mg/L	1	9.4	3	81	12
Hardness (calc) equivalent CaCO ₃	mg/L	110	140	150	510	130
Hydroxide Alkalinity (OH ⁻) as CaCO ₃	mg/L	<5	<5	<5	<5	<5
Bicarbonate Alkalinity as CaCO ₃	mg/L	75	110	200	590	210
Carbonate Alkalinity as CaCO ₃	mg/L	<5	<5	<5	<5	<5
Total Alkalinity as CaCO ₃	mg/L	75	110	200	590	210
Sulphate, SO ₄	mg/L	41	74	14	260	190
Chloride, Cl	mg/L	23	89	14	1,500	190
Ionic Balance	%	-6.0	3.0	-8.0	-5.0	8.0

Client Reference: CTP Groundwater Monitoring

PFAS in Waters Extended						
Our Reference		373488-1	373488-2	373488-3	373488-4	373488-5
Your Reference	UNITS	BH019	BH36	BH126	BH046R	BH051
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Date analysed	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	0.07	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	0.05	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01	0.14	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.02	<0.01	0.23	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	0.67	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	0.03	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	0.24	<0.01	0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	0.12	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	0.37	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	0.13	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	0.05	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	0.1	<0.02	<0.02
Surrogate ¹³ C ₈ PFOS	%	97	97	97	99	99
Surrogate ¹³ C ₂ PFOA	%	97	102	99	107	101
Extracted ISTD ¹³ C ₃ PFBS	%	107	104	104	100	111
Extracted ISTD ¹⁸ O ₂ PFHxS	%	107	105	104	106	110
Extracted ISTD ¹³ C ₄ PFOS	%	103	102	100	101	104
Extracted ISTD ¹³ C ₄ PFBA	%	86	73	30	91	95

Client Reference: CTP Groundwater Monitoring

PFAS in Waters Extended						
Our Reference		373488-1	373488-2	373488-3	373488-4	373488-5
Your Reference	UNITS	BH019	BH36	BH126	BH046R	BH051
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD ¹³ C ₃ PFPeA	%	108	100	68	92	107
Extracted ISTD ¹³ C ₂ PFHxA	%	112	106	91	105	112
Extracted ISTD ¹³ C ₄ PFHpA	%	107	101	83	100	104
Extracted ISTD ¹³ C ₄ PFOA	%	104	100	93	94	105
Extracted ISTD ¹³ C ₅ PFNA	%	105	103	95	99	108
Extracted ISTD ¹³ C ₂ PFDA	%	106	106	96	101	113
Extracted ISTD ¹³ C ₂ PFUnDA	%	107	111	108	102	108
Extracted ISTD ¹³ C ₂ PFDoDA	%	112	97	107	100	114
Extracted ISTD ¹³ C ₂ PFTeDA	%	99	98	96	94	107
Extracted ISTD ¹³ C ₂ 4:2FTS	%	107	93	78	87	106
Extracted ISTD ¹³ C ₂ 6:2FTS	%	113	101	98	83	112
Extracted ISTD ¹³ C ₂ 8:2FTS	%	112	101	122	86	112
Extracted ISTD ¹³ C ₈ FOSA	%	113	108	96	107	114
Extracted ISTD d ₃ N MeFOSA	%	106	102	102	102	107
Extracted ISTD d ₅ N EtFOSA	%	103	99	98	98	104
Extracted ISTD d ₇ N MeFOSE	%	119	116	111	110	116
Extracted ISTD d ₉ N EtFOSE	%	114	109	111	114	111
Extracted ISTD d ₃ N MeFOSAA	%	122	113	129	108	132
Extracted ISTD d ₅ N EtFOSAA	%	113	109	122	94	116
Total Positive PFHxS & PFOS	µg/L	0.02	<0.01	0.37	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	0.02	<0.01	0.60	<0.01	<0.01
Total Positive PFAS	µg/L	0.02	<0.01	2.2	<0.01	0.01

Client Reference: CTP Groundwater Monitoring

PFAS in Waters Extended						
Our Reference		373488-6	373488-7	373488-8	373488-9	373488-10
Your Reference	UNITS	BH038	BH009s	BH050s	BH44	DS1
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Date analysed	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	0.01	<0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	0.01	<0.01	0.15	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	0.02	0.01	<0.01	0.01
Perfluoroheptanoic acid	µg/L	<0.01	0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	0.03	<0.01	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01	<0.01	0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamidethanol	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamidethanol	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulfonamidacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulfonamidacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate ¹³ C ₈ PFOS	%	99	99	96	96	97
Surrogate ¹³ C ₂ PFOA	%	102	99	93	98	101
Extracted ISTD ¹³ C ₃ PFBS	%	106	108	105	104	107
Extracted ISTD ¹⁸ O ₂ PFHxS	%	106	103	109	113	113
Extracted ISTD ¹³ C ₄ PFOS	%	100	102	105	106	104
Extracted ISTD ¹³ C ₄ PFBA	%	106	106	112	76	71

Client Reference: CTP Groundwater Monitoring

PFAS in Waters Extended						
Our Reference		373488-6	373488-7	373488-8	373488-9	373488-10
Your Reference	UNITS	BH038	BH009s	BH050s	BH44	DS1
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD ¹³ C ₃ PFPeA	%	107	105	109	97	106
Extracted ISTD ¹³ C ₂ PFHxA	%	104	108	105	112	107
Extracted ISTD ¹³ C ₄ PFHpA	%	99	102	108	109	107
Extracted ISTD ¹³ C ₄ PFOA	%	100	102	115	111	114
Extracted ISTD ¹³ C ₅ PFNA	%	100	100	113	115	112
Extracted ISTD ¹³ C ₂ PFDA	%	101	104	114	116	121
Extracted ISTD ¹³ C ₂ PFUnDA	%	107	110	127	125	132
Extracted ISTD ¹³ C ₂ PFDoDA	%	105	111	121	127	119
Extracted ISTD ¹³ C ₂ PFTeDA	%	85	95	105	102	107
Extracted ISTD ¹³ C ₂ 4:2FTS	%	102	112	112	74	118
Extracted ISTD ¹³ C ₂ 6:2FTS	%	110	114	111	90	118
Extracted ISTD ¹³ C ₂ 8:2FTS	%	111	112	119	102	120
Extracted ISTD ¹³ C ₈ FOSA	%	108	113	119	117	121
Extracted ISTD d ₃ N MeFOSA	%	101	104	107	106	112
Extracted ISTD d ₅ N EtFOSA	%	92	98	102	102	106
Extracted ISTD d ₇ N MeFOSE	%	108	112	121	124	124
Extracted ISTD d ₉ N EtFOSE	%	108	113	112	111	115
Extracted ISTD d ₃ N MeFOSAA	%	123	133	124	116	121
Extracted ISTD d ₅ N EtFOSAA	%	111	115	110	102	105
Total Positive PFHxS & PFOS	µg/L	<0.01	0.02	<0.01	0.15	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	0.04	<0.01	0.15	<0.01
Total Positive PFAS	µg/L	<0.01	0.08	0.01	0.16	0.01

Client Reference: CTP Groundwater Monitoring

Dissolved Gases in Water						
Our Reference		373488-1	373488-2	373488-3	373488-4	373488-5
Your Reference	UNITS	BH019	BH36	BH126	BH046R	BH051
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Date analysed	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Methane	µg/L	89	<5	14,000	<5	<5

Dissolved Gases in Water						
Our Reference		373488-6	373488-7	373488-8	373488-9	373488-10
Your Reference	UNITS	BH038	BH009s	BH050s	BH44	DS1
Date Sampled		19/02/2025	19/02/2025	19/02/2025	19/02/2025	19/02/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Date analysed	-	21/02/2025	21/02/2025	21/02/2025	21/02/2025	21/02/2025
Methane	µg/L	<5	6	37	<5	<5

Client Reference: CTP Groundwater Monitoring

Method ID	Methodology Summary
AT-006	Dissolved gases determined by GC-FID based on draft method USEPA SOP RSK175
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Inorg-118	Hexavalent Chromium (Cr6+) - determined firstly by separation using ion chromatography followed by the colourimetric analytical finish. Water samples are ideally field filtered into alkali preserved containers prior to receipt for dissolved Cr6+ analysis. Unfiltered water samples into alkali preserved containers (or pH adjusted to pH 8-9 on receipt) can be classified as Total (unfiltered) Cr6+. Please note, for 'Total/Unfiltered' Trivalent Chromium in waters [calculated], these results may be exaggerated due to the digestive limitation of 'Total/Unfiltered' Hexavalent Chromium in NaOH at pH 8-9 compared to more comprehensive digestion for Total Chromium using the mineral acids HNO3 and HCl. Solid (includes soils, filters, paints, swabs for example) samples are extracted in a buffered catalysed solution prior to the analytical finish above. Water extractable options are available (e.g. as an option for filters) on request. Impingers may need pH adjusting to pH 8-9 prior to IC-colourimetric analytical finish.
Metals-020	Determination of various metals by ICP-AES. Total Phosphate determined stoichiometrically from Phosphorus (assumed to be present as Phosphate). Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.

Client Reference: CTP Groundwater Monitoring

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: VOCs in water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
Date Extracted	-			25/02/2025	4	21/02/2025	25/02/2025		21/02/2025	[NT]
Date Analysed	-			26/02/2025	4	24/02/2025	26/02/2025		24/02/2025	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	4	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	4	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	4	<10	<10	0	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	4	<10	<10	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	4	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	4	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	4	<1	<1	0	101	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	4	<1	<1	0	100	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	4	<1	<1	0	101	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	4	<1	<1	0	100	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	4	<1	<1	0	99	[NT]
Dibromomethane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	4	<1	<1	0	120	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	4	<1	<1	0	100	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	4	<1	<1	0	100	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	4	<1	<1	0	107	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	4	<1	<1	0	98	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	4	<1	<1	0	99	[NT]
Bromoform	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	4	<2	<2	0	100	[NT]
Styrene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: VOCs in water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
o-xylene	µg/L	1	Org-023	<1	4	<1	<1	0	99	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	101	4	102	92	10	102	[NT]
Surrogate Toluene-d8	%		Org-023	99	4	100	98	2	101	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	96	4	96	89	8	98	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	[NT]
Date extracted	-			25/02/2025	4	21/02/2025	25/02/2025		21/02/2025	[NT]
Date analysed	-			26/02/2025	4	24/02/2025	26/02/2025		24/02/2025	[NT]
TRH C ₆ - C ₉	µg/L	10	Org-023	<10	4	<10	<10	0	100	[NT]
TRH C ₆ - C ₁₀	µg/L	10	Org-023	<10	4	<10	<10	0	100	[NT]
Benzene	µg/L	1	Org-023	<1	4	<1	<1	0	99	[NT]
Toluene	µg/L	1	Org-023	<1	4	<1	<1	0	100	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	4	<1	<1	0	99	[NT]
m+p-xylene	µg/L	2	Org-023	<2	4	<2	<2	0	100	[NT]
o-xylene	µg/L	1	Org-023	<1	4	<1	<1	0	99	[NT]
Naphthalene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	101	4	102	92	10	102	[NT]
Surrogate Toluene-d8	%		Org-023	99	4	100	98	2	101	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	96	4	96	89	8	98	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			24/02/2025	1	20/02/2025	20/02/2025		20/02/2025	[NT]
Date analysed	-			25/02/2025	1	20/02/2025	20/02/2025		20/02/2025	[NT]
TRH C ₁₀ - C ₁₄	µg/L	50	Org-020	<50	1	<50	<50	0	115	[NT]
TRH C ₁₅ - C ₂₈	µg/L	100	Org-020	<100	1	<100	<100	0	116	[NT]
TRH C ₂₉ - C ₃₆	µg/L	100	Org-020	<100	1	<100	<100	0	108	[NT]
TRH >C ₁₀ - C ₁₆	µg/L	50	Org-020	<50	1	<50	<50	0	115	[NT]
TRH >C ₁₆ - C ₃₄	µg/L	100	Org-020	<100	1	<100	<100	0	116	[NT]
TRH >C ₃₄ - C ₄₀	µg/L	100	Org-020	<100	1	<100	<100	0	108	[NT]
Surrogate o-Terphenyl	%		Org-020	98	1	82	86	5	112	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: PAHs in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	373488-2
Date extracted	-			20/02/2025	1	20/02/2025	20/02/2025		20/02/2025	20/02/2025
Date analysed	-			24/02/2025	1	20/02/2025	20/02/2025		24/02/2025	24/02/2025
Naphthalene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	101	84
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	101	83
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	82
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	106	83
Anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	105	82
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	84
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	133	71
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	98
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	63	1	84	84	0	102	75

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: All metals in water-dissolved					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	373488-4
Date prepared	-			24/02/2025	2	20/02/2025	20/02/2025		20/02/2025	20/02/2025
Date analysed	-			24/02/2025	2	20/02/2025	20/02/2025		20/02/2025	20/02/2025
Iron-Dissolved	µg/L	10	Metals-022	<10	2	510	520	2	102	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	94	[NT]
Boron-Dissolved	µg/L	20	Metals-022	<20	2	300	320	6	107	[NT]
Barium-Dissolved	µg/L	1	Metals-022	<1	2	20	19	5	105	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	2	0.9	1	11	106	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	2	0.1	0.2	67	103	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	107	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	2	3	3	0	102	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	2	24	24	0	108	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	2	<0.05	[NT]		101	#
Manganese-Dissolved	µg/L	5	Metals-022	<5	2	1600	1600	0	107	[NT]
Molybdenum-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	104	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	2	21	21	0	104	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	100	[NT]
Antimony-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	97	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	99	[NT]
Tin-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	108	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	2	57	54	5	106	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: All metals in water-dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	3	20/02/2025	20/02/2025		[NT]	[NT]
Date analysed	-			[NT]	3	20/02/2025	20/02/2025		[NT]	[NT]
Iron-Dissolved	µg/L	10	Metals-022	[NT]	3	420	[NT]		[NT]	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	3	2	[NT]		[NT]	[NT]
Boron-Dissolved	µg/L	20	Metals-022	[NT]	3	2300	[NT]		[NT]	[NT]
Barium-Dissolved	µg/L	1	Metals-022	[NT]	3	600	[NT]		[NT]	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	[NT]	3	<0.5	[NT]		[NT]	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	3	<0.1	[NT]		[NT]	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	3	20	[NT]		[NT]	[NT]
Copper-Dissolved	µg/L	1	Metals-022	[NT]	3	1	[NT]		[NT]	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	[NT]	3	5	[NT]		[NT]	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	3	<0.05	<0.05	0	[NT]	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	[NT]	3	32	[NT]		[NT]	[NT]
Molybdenum-Dissolved	µg/L	1	Metals-022	[NT]	3	1	[NT]		[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	3	17	[NT]		[NT]	[NT]
Lead-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Antimony-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Tin-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	3	18	[NT]		[NT]	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: All metals in water - total					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	373488-4
Date prepared	-			24/02/2025	1	20/02/2025	20/02/2025		20/02/2025	20/02/2025
Date analysed	-			24/02/2025	1	20/02/2025	20/02/2025		20/02/2025	20/02/2025
Iron-Total	µg/L	10	Metals-022	<10	1	690	750	8	97	[NT]
Arsenic-Total	µg/L	1	Metals-022	<1	1	3	3	0	93	[NT]
Boron-Total	µg/L	20	Metals-022	<20	1	70	60	15	100	[NT]
Barium-Total	µg/L	1	Metals-022	<1	1	22	25	13	99	[NT]
Beryllium-Total	µg/L	0.5	Metals-022	<0.5	1	<0.5	<0.5	0	104	[NT]
Cadmium-Total	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	101	[NT]
Chromium-Total	µg/L	1	Metals-022	<1	1	<1	<1	0	101	[NT]
Copper-Total	µg/L	1	Metals-022	<1	1	13	13	0	97	[NT]
Cobalt-Total	µg/L	1	Metals-022	<1	1	<1	<1	0	101	[NT]
Mercury-Total	µg/L	0.05	Metals-021	<0.05	1	<0.05	[NT]		99	#
Manganese-Total	µg/L	5	Metals-022	<5	1	31	32	3	100	[NT]
Molybdenum-Total	µg/L	1	Metals-022	<1	1	1	1	0	106	[NT]
Nickel-Total	µg/L	1	Metals-022	<1	1	2	2	0	97	[NT]
Lead-Total	µg/L	1	Metals-022	<1	1	<1	1	0	100	[NT]
Antimony-Total	µg/L	1	Metals-022	<1	1	<1	<1	0	106	[NT]
Selenium-Total	µg/L	1	Metals-022	<1	1	<1	<1	0	96	[NT]
Tin-Total	µg/L	1	Metals-022	<1	1	<1	<1	0	110	[NT]
Zinc-Total	µg/L	1	Metals-022	<1	1	22	24	9	98	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: All metals in water - total						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	3	20/02/2025	20/02/2025		[NT]	[NT]
Date analysed	-			[NT]	3	20/02/2025	20/02/2025		[NT]	[NT]
Iron-Total	µg/L	10	Metals-022	[NT]	3	6800	[NT]		[NT]	[NT]
Arsenic-Total	µg/L	1	Metals-022	[NT]	3	3	[NT]		[NT]	[NT]
Boron-Total	µg/L	20	Metals-022	[NT]	3	2100	[NT]		[NT]	[NT]
Barium-Total	µg/L	1	Metals-022	[NT]	3	730	[NT]		[NT]	[NT]
Beryllium-Total	µg/L	0.5	Metals-022	[NT]	3	<0.5	[NT]		[NT]	[NT]
Cadmium-Total	µg/L	0.1	Metals-022	[NT]	3	<0.1	[NT]		[NT]	[NT]
Chromium-Total	µg/L	1	Metals-022	[NT]	3	27	[NT]		[NT]	[NT]
Copper-Total	µg/L	1	Metals-022	[NT]	3	29	[NT]		[NT]	[NT]
Cobalt-Total	µg/L	1	Metals-022	[NT]	3	8	[NT]		[NT]	[NT]
Mercury-Total	µg/L	0.05	Metals-021	[NT]	3	<0.05	<0.05	0	[NT]	[NT]
Manganese-Total	µg/L	5	Metals-022	[NT]	3	60	[NT]		[NT]	[NT]
Molybdenum-Total	µg/L	1	Metals-022	[NT]	3	2	[NT]		[NT]	[NT]
Nickel-Total	µg/L	1	Metals-022	[NT]	3	23	[NT]		[NT]	[NT]
Lead-Total	µg/L	1	Metals-022	[NT]	3	7	[NT]		[NT]	[NT]
Antimony-Total	µg/L	1	Metals-022	[NT]	3	2	[NT]		[NT]	[NT]
Selenium-Total	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Tin-Total	µg/L	1	Metals-022	[NT]	3	2	[NT]		[NT]	[NT]
Zinc-Total	µg/L	1	Metals-022	[NT]	3	76	[NT]		[NT]	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: Metals in Waters - Total					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			20/02/2025	1	20/02/2025	20/02/2025		20/02/2025	[NT]
Date analysed	-			20/02/2025	1	20/02/2025	20/02/2025		20/02/2025	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	1	1.1	1.1	0	103	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: Miscellaneous Inorganics					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	373488-1
Date prepared	-			20/02/2025	1	20/02/2025	20/02/2025		20/02/2025	20/02/2025
Date analysed	-			20/02/2025	1	20/02/2025	20/02/2025		20/02/2025	20/02/2025
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	0.27	0.27	0	115	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	<0.005	0	110	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	1.9	[NT]		111	110
Hexavalent Chromium, Cr ⁶⁺ Low Level	mg/L	0.001	Inorg-118	<0.001	1	<0.001	<0.001	0	95	[NT]
Trivalent Chromium, Cr ³⁺	mg/L	0.005	Inorg-118	<0.005	1	<0.005	[NT]		[NT]	[NT]

QUALITY CONTROL: Miscellaneous Inorganics					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	373488-2
Date prepared	-			[NT]	2	20/02/2025	20/02/2025		[NT]	20/02/2025
Date analysed	-			[NT]	2	20/02/2025	20/02/2025		[NT]	20/02/2025
Ammonia as N in water	mg/L	0.005	Inorg-057	[NT]	2	0.031	[NT]		[NT]	121
Nitrate as N in water	mg/L	0.005	Inorg-055	[NT]	2	0.20	[NT]		[NT]	100
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	[NT]	2	2.7	2.7	0	[NT]	[NT]
Hexavalent Chromium, Cr ⁶⁺ Low Level	mg/L	0.001	Inorg-118	[NT]	2	<0.001	[NT]		[NT]	82
Trivalent Chromium, Cr ³⁺	mg/L	0.005	Inorg-118	[NT]	2	<0.005	[NT]		[NT]	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: Ion Balance						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	373488-2
Date prepared	-			20/02/2025	1	20/02/2025	20/02/2025		20/02/2025	20/02/2025
Date analysed	-			20/02/2025	1	20/02/2025	20/02/2025		20/02/2025	20/02/2025
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	10	10	0	101	101
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	12	12	0	100	105
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	27	26	4	101	#
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	3	3	0	96	95
Hardness (calc) equivalent CaCO ₃	mg/L	3	Metals-020	[NT]	1	37	37	0	[NT]	[NT]
Hydroxide Alkalinity (OH ⁻) as CaCO ₃	mg/L	5	Inorg-006	<5	1	<5	<5	0	[NT]	[NT]
Bicarbonate Alkalinity as CaCO ₃	mg/L	5	Inorg-006	<5	1	53	57	7	[NT]	[NT]
Carbonate Alkalinity as CaCO ₃	mg/L	5	Inorg-006	<5	1	<5	<5	0	[NT]	[NT]
Total Alkalinity as CaCO ₃	mg/L	5	Inorg-006	<5	1	53	57	7	113	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	9	9	0	101	#
Chloride, Cl	mg/L	1	Inorg-081	<1	1	40	40	0	99	#
Ionic Balance	%		Inorg-040	[NT]	1	-4.0	-6.0	-40	[NT]	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: PFAS in Waters Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			21/02/2025	1	21/02/2025	21/02/2025		21/02/2025	[NT]
Date analysed	-			21/02/2025	1	21/02/2025	21/02/2025		21/02/2025	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	93	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	90	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	93	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	91	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	0.02	0.02	0	89	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	87	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	91	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	90	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	94	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	91	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	94	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	88	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	95	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	91	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	103	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	97	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	99	[NT]
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	90	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	96	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	96	[NT]
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	101	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	93	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	89	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	88	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	96	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	96	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	97	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	88	[NT]
Surrogate ¹³ C ₈ PFOS	%		Org-029	96	1	97	99	2	96	[NT]
Surrogate ¹³ C ₂ PFOA	%		Org-029	101	1	97	99	2	101	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: PFAS in Waters Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD ¹³ C ₃ PFBS	%		Org-029	107	1	107	107	0	102	[NT]
Extracted ISTD ¹⁸ O ₂ PFHxS	%		Org-029	103	1	107	108	1	106	[NT]
Extracted ISTD ¹³ C ₄ PFOS	%		Org-029	103	1	103	102	1	105	[NT]
Extracted ISTD ¹³ C ₄ PFBA	%		Org-029	109	1	86	86	0	105	[NT]
Extracted ISTD ¹³ C ₃ PFPeA	%		Org-029	108	1	108	104	4	105	[NT]
Extracted ISTD ¹³ C ₂ PFHxA	%		Org-029	107	1	112	108	4	111	[NT]
Extracted ISTD ¹³ C ₄ PFHpA	%		Org-029	103	1	107	101	6	104	[NT]
Extracted ISTD ¹³ C ₄ PFOA	%		Org-029	103	1	104	102	2	104	[NT]
Extracted ISTD ¹³ C ₅ PFNA	%		Org-029	106	1	105	105	0	102	[NT]
Extracted ISTD ¹³ C ₂ PFDA	%		Org-029	109	1	106	109	3	105	[NT]
Extracted ISTD ¹³ C ₂ PFUnDA	%		Org-029	106	1	107	117	9	111	[NT]
Extracted ISTD ¹³ C ₂ PFDoDA	%		Org-029	107	1	112	111	1	98	[NT]
Extracted ISTD ¹³ C ₂ PFTeDA	%		Org-029	91	1	99	96	3	98	[NT]
Extracted ISTD ¹³ C ₂ 4:2FTS	%		Org-029	110	1	107	105	2	106	[NT]
Extracted ISTD ¹³ C ₂ 6:2FTS	%		Org-029	113	1	113	114	1	110	[NT]
Extracted ISTD ¹³ C ₂ 8:2FTS	%		Org-029	124	1	112	112	0	111	[NT]
Extracted ISTD ¹³ C ₈ FOSA	%		Org-029	115	1	113	112	1	113	[NT]
Extracted ISTD d ₃ N MeFOSA	%		Org-029	105	1	106	104	2	105	[NT]
Extracted ISTD d ₅ N EtFOSA	%		Org-029	101	1	103	100	3	102	[NT]
Extracted ISTD d ₇ N MeFOSE	%		Org-029	108	1	119	114	4	113	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: PFAS in Waters Extended					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d ₉ N EtFOSE	%		Org-029	107	1	114	114	0	113	[NT]
Extracted ISTD d ₃ N MeFOSAA	%		Org-029	139	1	122	130	6	136	[NT]
Extracted ISTD d ₅ N EtFOSAA	%		Org-029	121	1	113	112	1	121	[NT]

Client Reference: CTP Groundwater Monitoring

QUALITY CONTROL: Dissolved Gases in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			21/02/2025	1	21/02/2025	21/02/2025		21/02/2025	[NT]
Date analysed	-			21/02/2025	1	21/02/2025	21/02/2025		21/02/2025	[NT]
Methane	µg/L	5	AT-006	<5	1	89	85	5	99	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Dissolved Metals: no filtered, preserved sample was received, therefore the unpreserved sample was filtered through 0.45µm filter at the lab.

Note: there is a possibility some elements may be underestimated.

For PFAS Extracted Internal Standards denoted with # or outside the 50-150% acceptance range, the respective target analyte results may be unaffected, in other circumstances the PQL has been raised to accommodate the outlier(s).

Ion Balance - # Percent recovery is not applicable due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

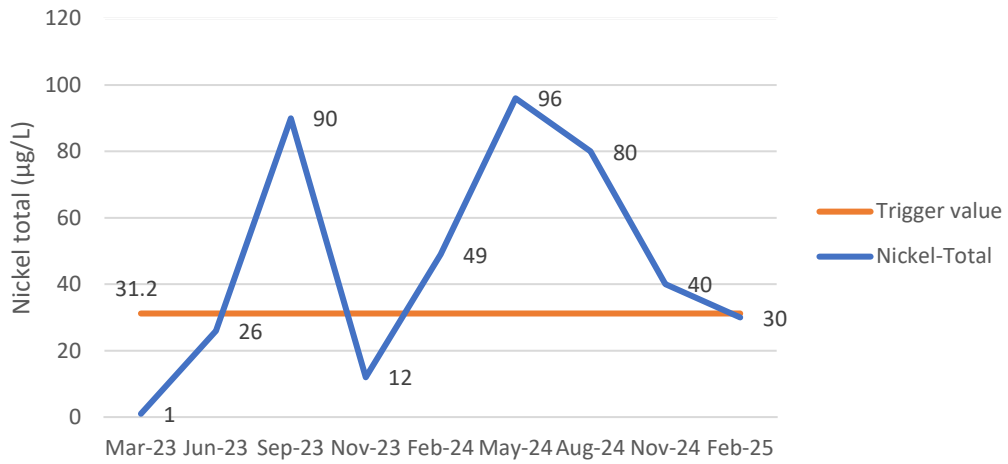
TRACE METALS: In theory the total metal content should be higher than the dissolved metal content. However, in some samples this is not the case. The sample has been re-analysed for both Total and Dissolved metals and results have been confirmed.

All metals in water-dissolved - # Low spike recovery was obtained for this sample. The sample was re-digested and re-spiked and the low recovery was confirmed. This is due to matrix interferences. However, an acceptable recovery was obtained for the LCS.

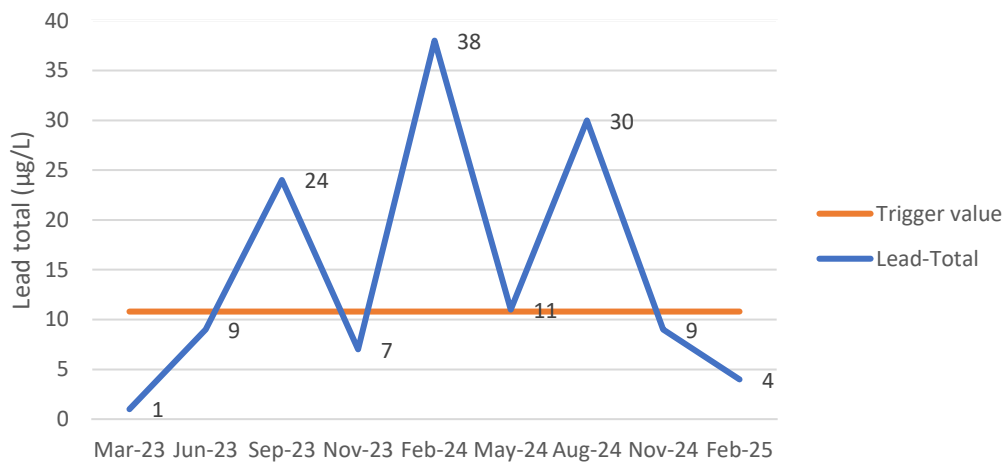
All metals in water - total - # Low spike recovery was obtained for this sample. The sample was re-digested and re-spiked and the low recovery was confirmed. This is due to matrix interferences. However, an acceptable recovery was obtained for the LCS.

DGAS: Sample run multiple times, results confirmed.

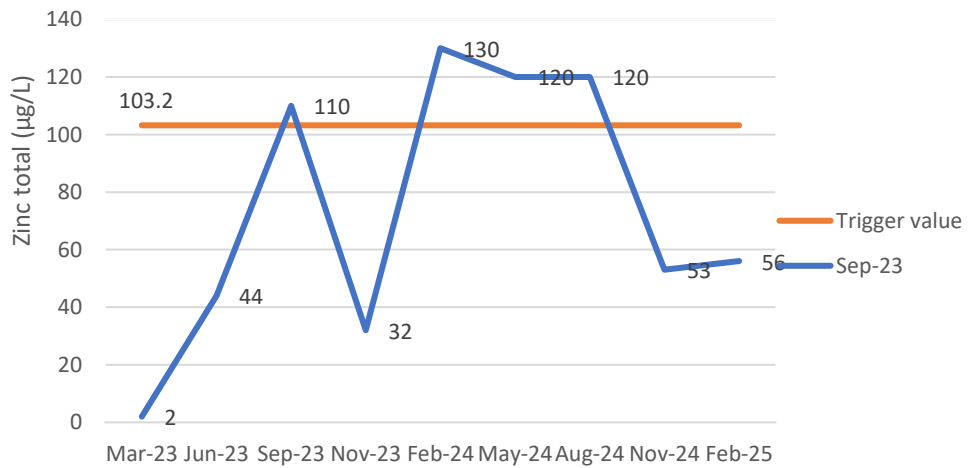
SMW_BH046R

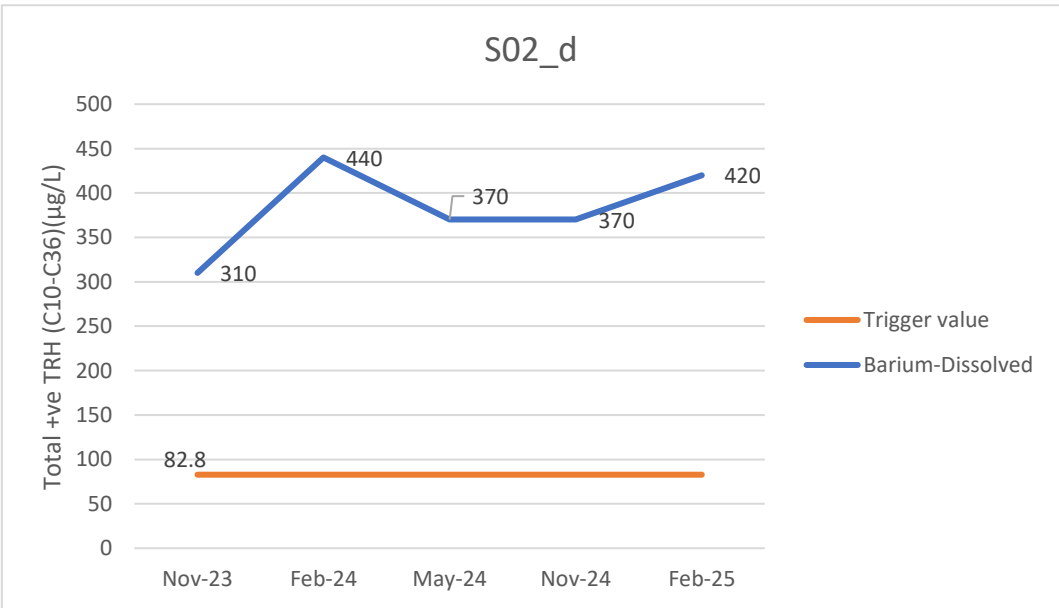
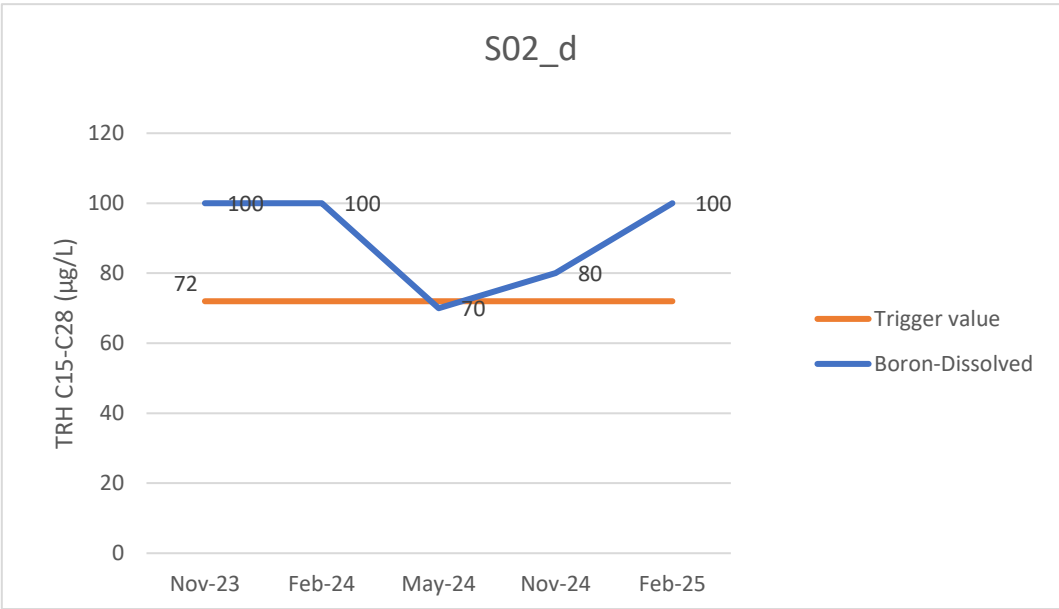
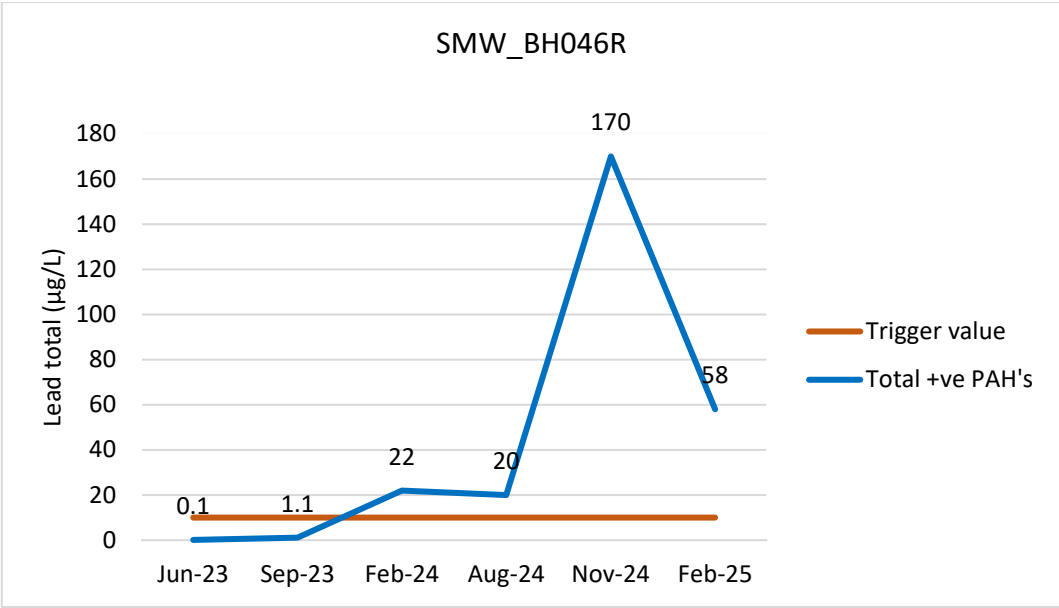


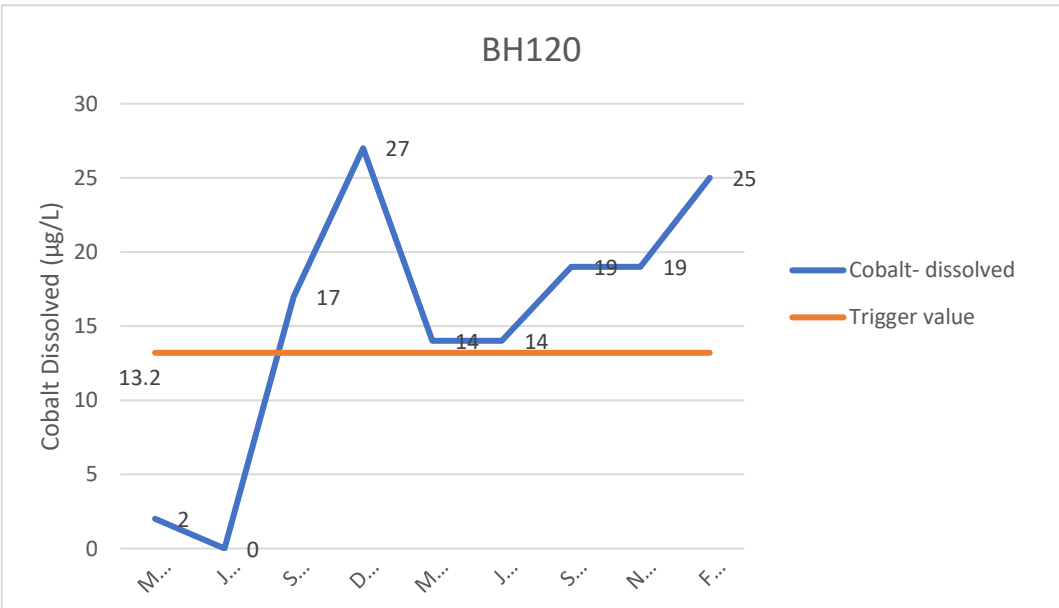
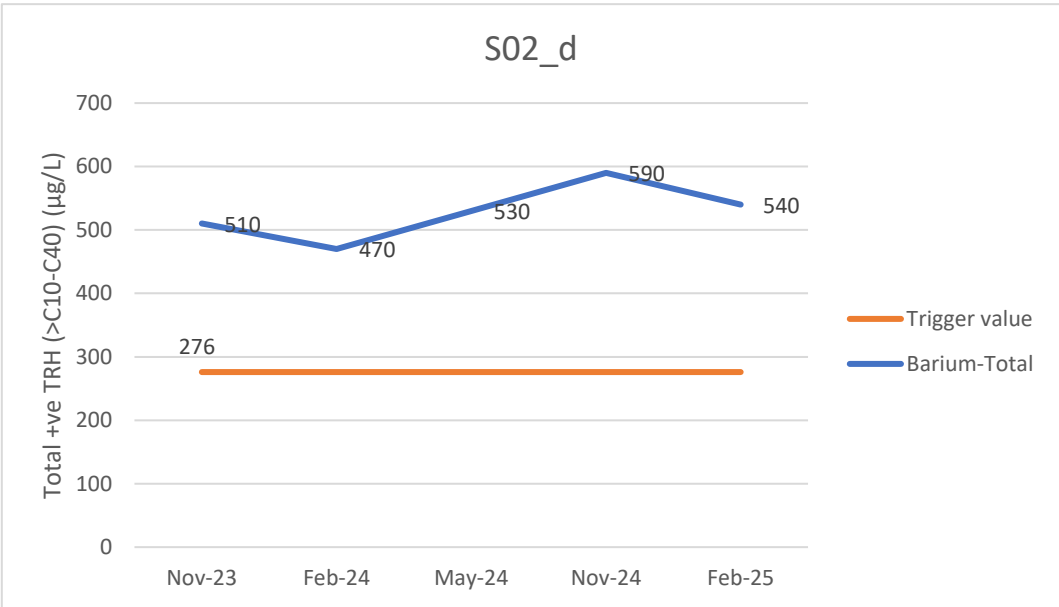
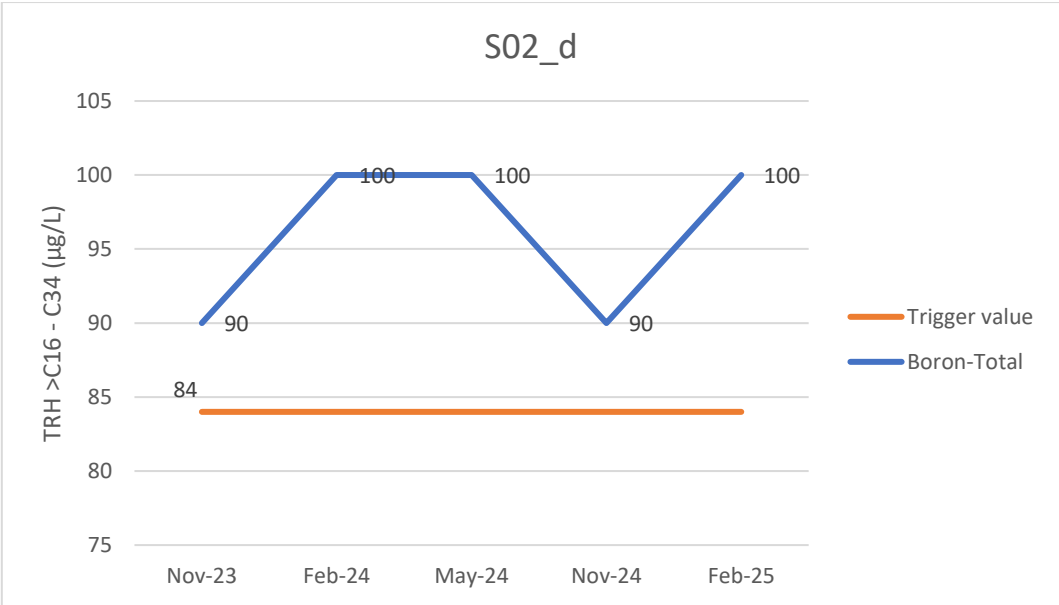
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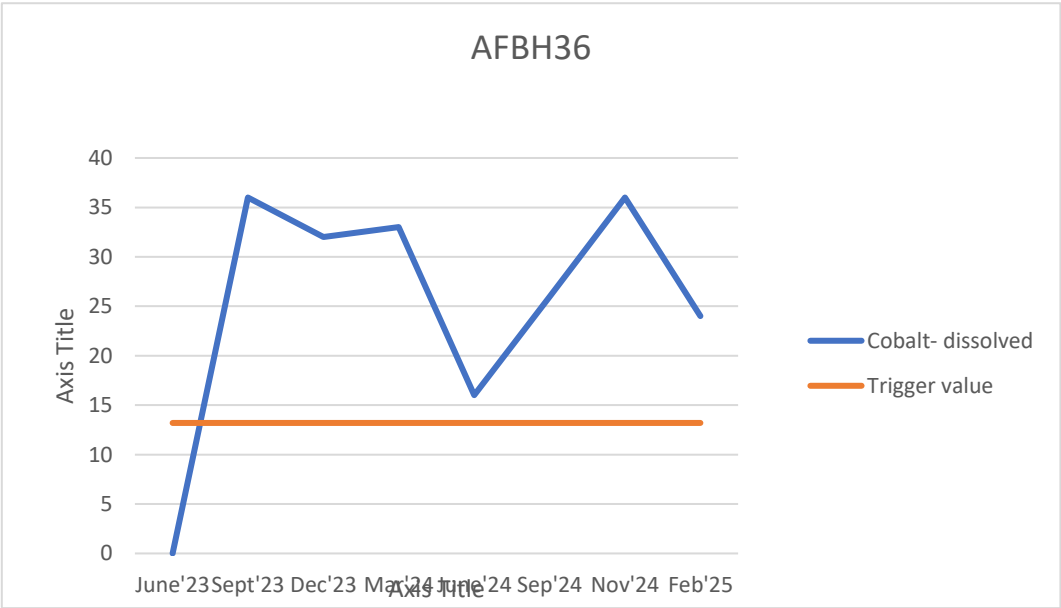
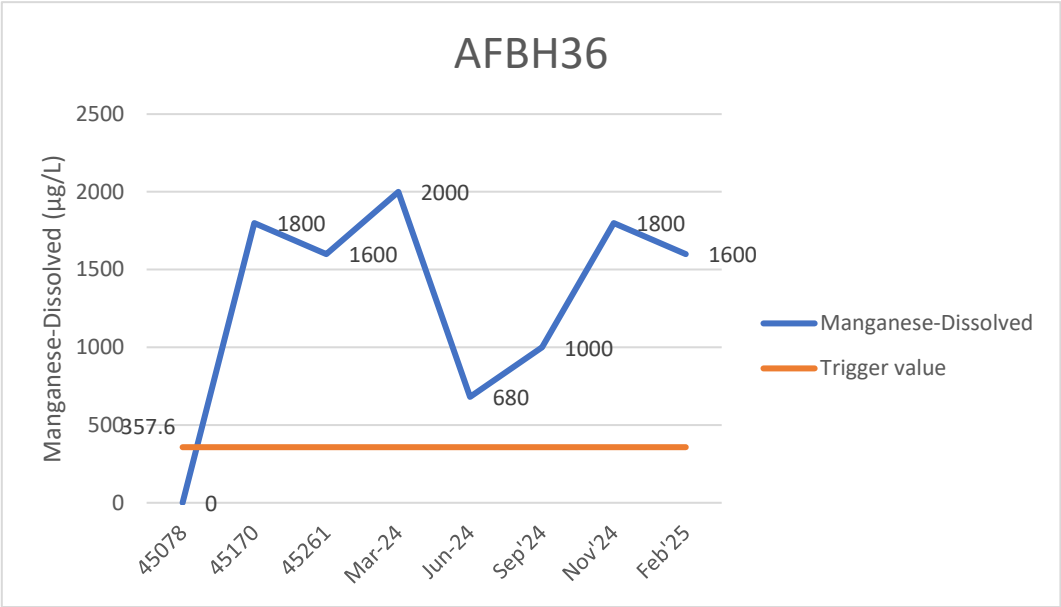
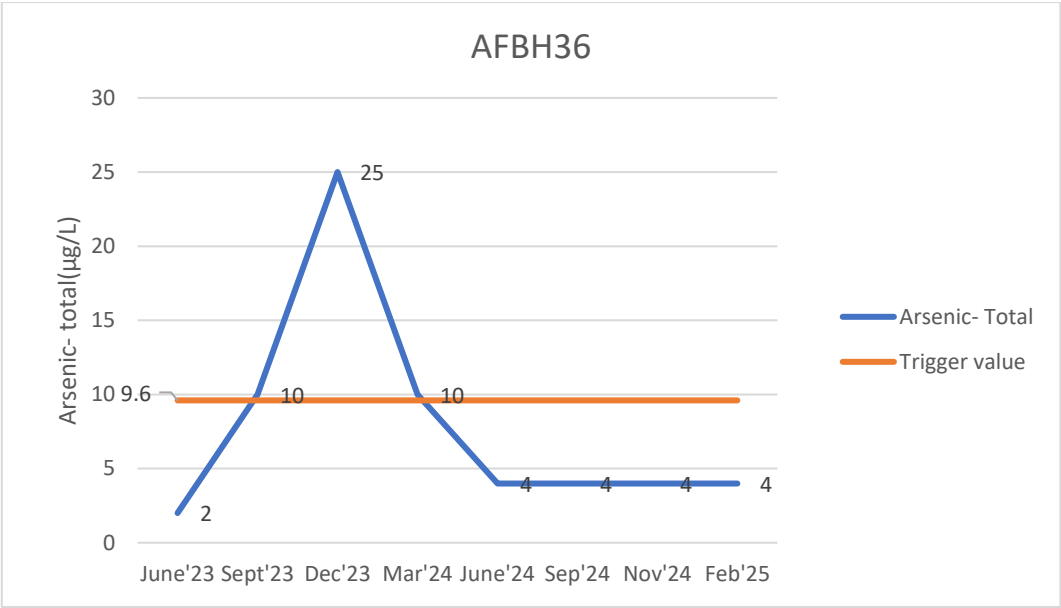


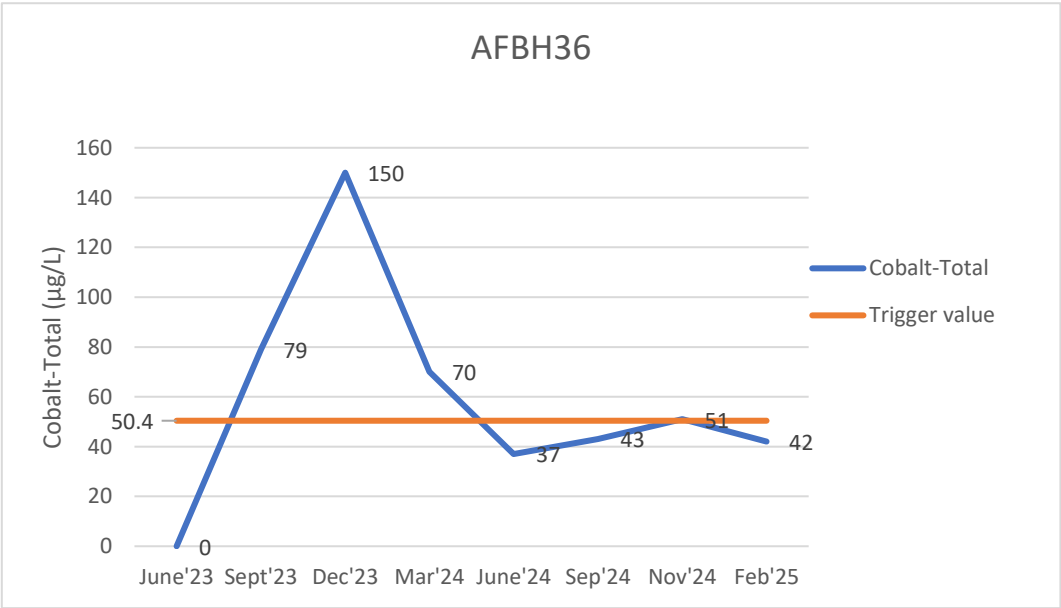
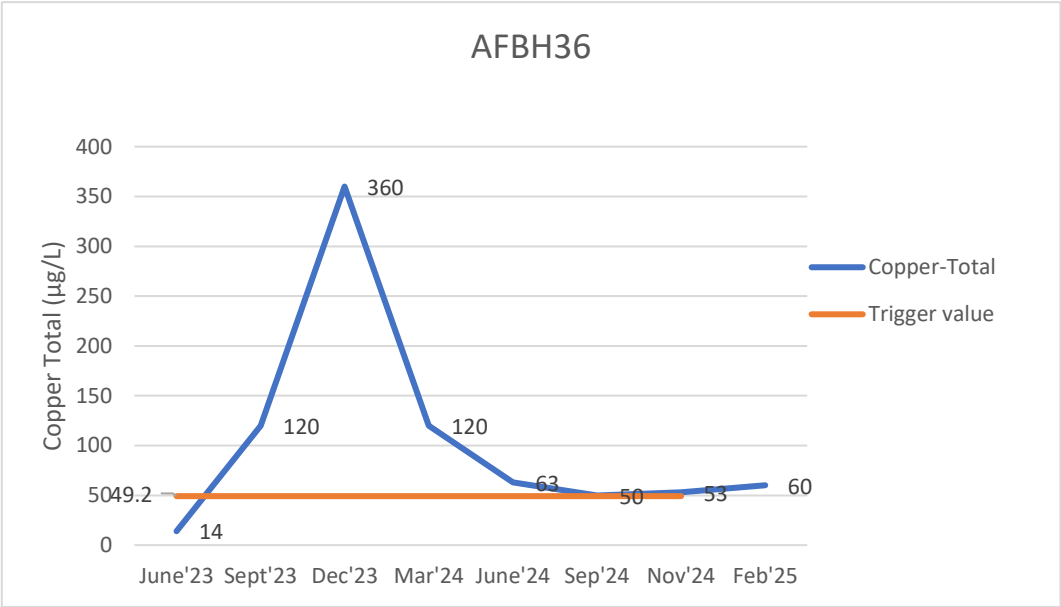
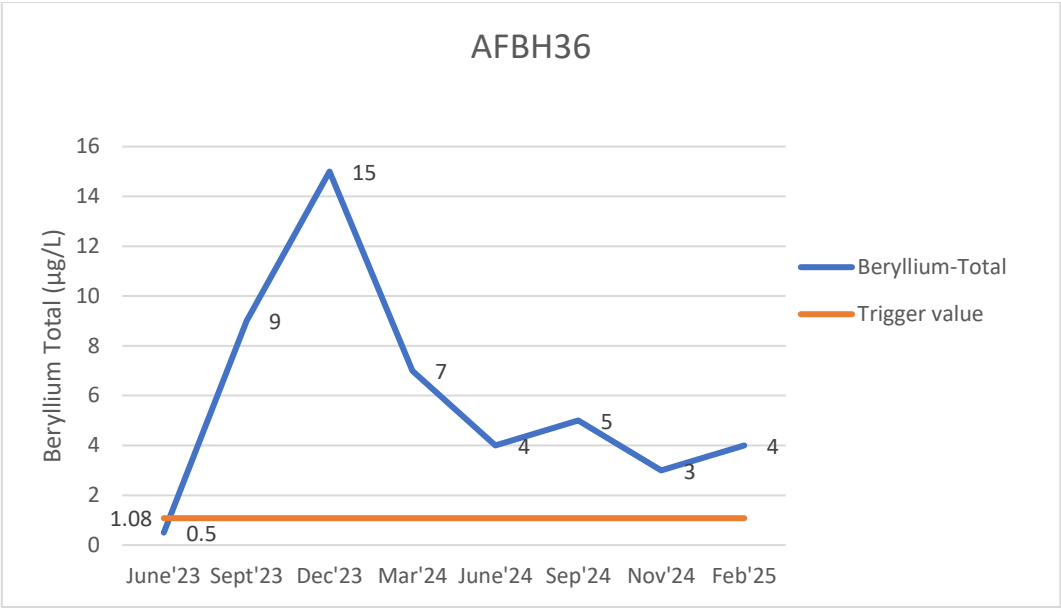
SMW_BH046R

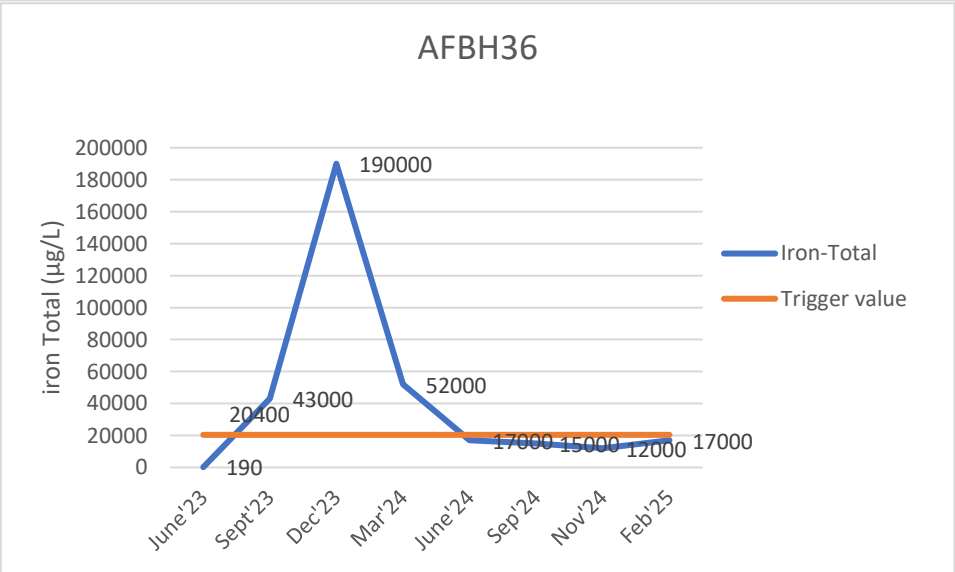
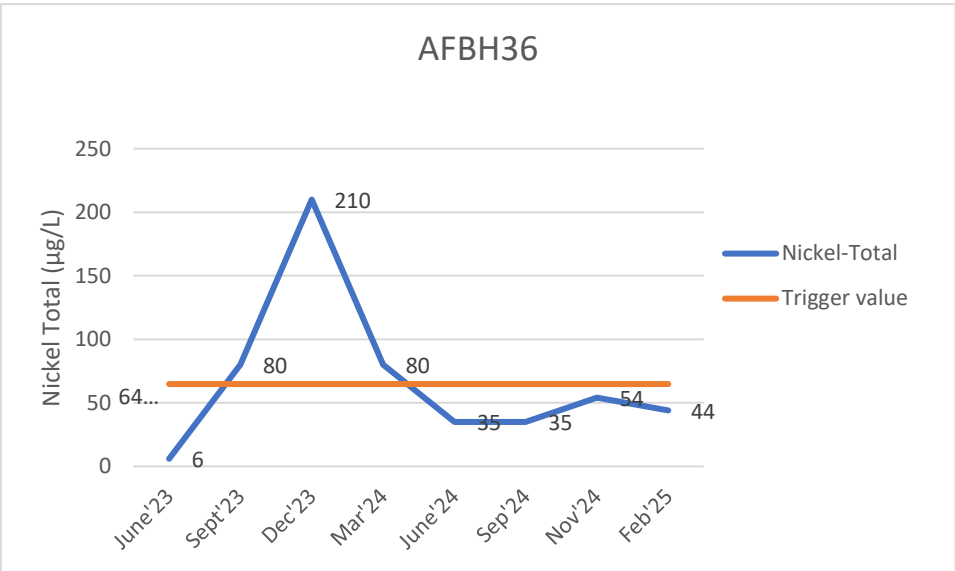
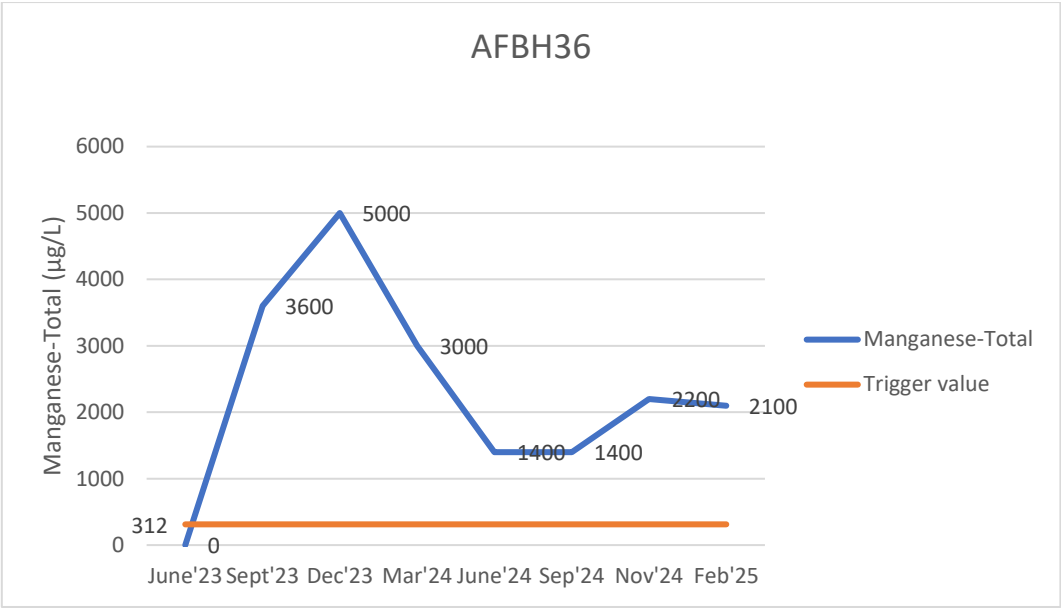












APPENDIX E – WTP SAMPLING AND DISCHARGE REGISTER

Sample Date	Site / WTP	Source Water	Lab ID			pH	Turbidity	Oil and Grease	Hydrocarbon s TRH (C6-C9)	Aluminium	Arsenic	Cadmium	Chromium (VI) Compound s	Cobalt	Copper	Iron	Lead	Manganes e	Nickel	Zinc	Ammonia	Nitrate + nitrite (oxidised nitrogen)	Nitrogen (total)	Perfluoroocta ne sulphonate (PFOS)	Phosphoru s (total)
					Sampling	Lab	TSS (Lab)	Visual	Lab	Lab	Lab	Lab	Lab	Lab	Lab	Lab	Lab	Lab	Lab	Lab	Lab	Lab	Lab	Lab	Lab
					UoM	pH units	mg/L	Y/N	ug/L	ug/l	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
				Notes	EPL Criteria Variation (05.12.2024)	6.5-8.5	15	N	100	55	N/A	0.7	15	1	1.3	300	4.4	80	7	8	910	300	1210	0.13	140
14/01/2025	TBY C-WTP	Untreated	370390		Month 19	8.5	710	N	<10	<10	1	<0.1	3	<1	<1	<10	<1	17	1	<1	150	660	1000	0.0079	150
14/01/2025	TBY C-WTP	Treated	370390		Month 19	7.6	<5	N	<10	<10	1	<0.1	<1	<1	<1	10	<1	8	<1	2	180	40	400	<0.0002	30
24/01/2025	TBY C-WTP	Untreated	371283		Handover assessment 1	8.4	220	N	<10	<10	1	<0.1	64	<1	1	<10	<1	<5	1	<1	220	200	1600	0.0082	110
24/01/2025	TBY C-WTP	Treated	371283		Handover assessment 1	7.1	<5	N	<10	<10	1	<0.1	<1	<1	<1	<10	<1	8	<1	2	170	<5	500	<0.0002	<10
4/02/2025	TBY C-WTP	Untreated	372047		Handover assessment 2	8.5	2100	N	<10	<10	1	<0.1	13	<1	1	<10	<1	<5	2	2	270	500	1500	0.016	280
4/02/2025	TBY C-WTP	Treated	372047		Handover assessment 2	7.4	<5	N	<10	<10	1	<0.1	<1	<1	<1	20	<1	10	<1	4	670	5	700	<0.0002	40
14/02/2025	TBY C-WTP	Untreated	373077		Handover assessment 3	9.2	560	N	<10	<10	<1	<0.1	29	<1	<1	<10	<1	<5	2	<1	310	200	2000	0.0025	140
14/02/2025	TBY C-WTP	Treated	373077		Handover assessment 3	7.8	6	N	<10	<10	<1	<0.1	<1	<1	<1	20	<1	11	<1	<1	530	20	1000	<0.0002	50
25/02/2025	TBY C-WTP	Untreated	373991		Handover assessment 4	10.8	390	N	30	20	<1	<0.1	8	<1	1	<10	<1	<5	1	<1	220	730	2000	0.01	160
25/02/2025	TBY C-WTP	Treated	373991		Handover assessment 4	8.1	<5	N	52	<10	<1	<0.1	<1	<1	<1	<10	<1	9	<1	<1	300	5	600	<0.0002	50
10/03/2025	TBY C-WTP	Untreated	375114		Handover assessment 5	8.8	440	N	<10	<10	<1	<0.1	3	<1	<1	<10	<1	<5	2	<1	990	200	2300	0.026	200
10/03/2025	TBY C-WTP	Treated	375114		Handover assessment 5	7.5	<5	N	<10	<10	<1	<0.1	<1	<1	<1	<10	<1	9	<1	<1	660	<5	1100	<0.0002	60
10/04/2025	TBY C-WTP	Untreated	377962		Month 22	8.3	310	N	83	<10	<1	<0.1	10	<1	2	<10	<1	<5	2	<1	310	520	1600	0.032	110
10/04/2025	TBY C-WTP	Treated	377962		Month 22	7.5	<5	N	<10	<10	<1	<0.1	<1	<1	<1	10	<1	26	<1	<1	330	<5	800	<0.0002	30
19/05/2025	TBY C-WTP	Untreated	380997		Month 23	7.8	1200	N	<10	<10	2	<0.1	<1	<1	1	<10	<1	<5	2	<1	550	5	1200	0.0048	90
19/05/2025	TBY C-WTP	Treated	380997		Month 23	7	<5	N	<10	<10	<1	<0.1	<1	<1	<1	<10	<1	9	<1	<1	460	<5	500	<0.0002	30
16/06/2025	TBY C-WTP	Untreated	380997		Month 24	9.1	130	N	<10	10	1	<0.1	<1	<1	<1	<10	<1	<5	3	4	440	210	1100	0.022	80
16/06/2025	TBY C-WTP	Treated	380997		Month 24	7.4	<5	N	110	<10	2	<0.1	<1	<1	<1	120	<1	15	<1	3	<5	<5	600	<0.0002	90

Sample Date	Site / WTP	Source Water	Lab ID	Notes	EPL Criteria Variation (05.12.2024)	pH	Turbidity	Oil and Grease	Hydrocarbons TRH (C6-C9)	Aluminium	Arsenic	Cadmium	Chromium (VI) Compounds	Cobalt	Copper	Iron	Lead	Manganese	Nickel	Zinc	Ammonia	Nitrate + nitrite (oxidised nitrogen)	Nitrogen (total)	Perfluorooctane sulphonate (PFOS)	Phosphorus (total)			
						Sampling UoM	Lab pH units	TSS (Lab) mg/L	Visual Y/N	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L	Lab ug/L
						6.5-8.5	15	N	100	55	None	0.7	10	1	1.3	300	4.4	300	7	8	910	300	1210	0.13	90			
21/01/2025	BWD	Untreated	370994	Internal Assessment Sampling		10.1	520	N	10	70		0.1	39	1	1	20	1	11	1	1	260	200	1100	0.0003	170			
21/01/2025	BWD	Treated	370994	Internal Assessment Sampling		7.1	5	N	10	10	1	0.1	1	1	1	70	1	5	1	1	63	20	100	0.0002	40			
28/01/2025	BWD	Untreated	371443	Internal Assessment Sampling		9.7	69	N	14	520	1	0.1	16	1	2	270	1	26	5	60	470	500	1600	0.0008	10			
28/01/2025	BWD	Treated	371443	Internal Assessment Sampling		7.4	5	N	10	10	1	0.1	1	1	1	70	1	10	1	2	210	80	300	0.0002	20			
4/02/2025	BWD	Untreated	372046	Internal Assessment Sampling		9.6	81	N	10	10	1	0.1	110	1	1	10	1	7	2	1	1300	2100	4700	0.0002	50			
4/02/2025	BWD	Treated	372046	Internal Assessment Sampling		7.3	5	N	10	10	1	0.1	1	1	1	270	1	13	1	2	580	200	700	0.0002	40			
11/02/2025	BWD	Untreated	372660	Internal Assessment Sampling		9.8	98	N	24	70	2	0.1	21	1	2	10	1	5	2	1	200	750	1500	0.0036	380			
11/02/2025	BWD	Treated	372660	Internal Assessment Sampling		7.6	5	N	10	10	1	0.1	1	1	1	180	1	12	1	2	83	200	300	0.0002	30			
18/02/2025	BWD	Untreated	373368	Internal Assessment Sampling		11.8	32000	N	22	680	1	0.1	64	1	4	70	1	8	2	1	600	1300	5300	0.0005	110			
18/02/2025	BWD	Treated	373368	Internal Assessment Sampling		7.9	5	N	10	10	1	0.1	3	1	1	10	1	12	1	1	43	20	300	0.0002	20			
25/02/2025	BWD	Untreated	374142	Internal Assessment Sampling		11.3	36	N	10	560	1	0.1	37	1	3	30	1	5	2	1	290	620	2100	0.001	40			
25/02/2025	BWD	Treated	374142	Internal Assessment Sampling		7.6	7	N	10	10	1	0.1	6	1	1	30	1	9	1	1	100	30	200	0.0002	10			
5/03/2025	BWD	Untreated	374773	Internal Assessment Sampling		9.7	140	N	10	30	1	0.1	9	1	1	10	1	5	1	1	490	400	2000	0.0008	80			
5/03/2025	BWD	Treated	374773	Internal Assessment Sampling		7.6	5	N	10	10	1	0.1	5	1	1	10	1	10	1	4	130	30	300	0.0002	30			
13/03/2025	BWD	Untreated	375542	Internal Assessment Sampling		11.5	340	N	160	690	1	0.1	23	1	4	50	1	5	3	1	550	790	3100	0.001	30			
13/03/2025	BWD	Treated	375542	Internal Assessment Sampling		8.2	5	N	10	10	1	0.1	3	1	1	10	1	5	1	1	670	100	1000	0.0002	30			
10/04/2025	BWD	Untreated	377959	Internal Assessment Sampling		1.7	5	N	22	20	1	0.1	1	1	1	10	1	5	2	1	460	100	1100	0.0005	30			
10/04/2025	BWD	Treated	377959	Internal Assessment Sampling		7.3	5	N	10	10	1	0.1	1	1	1	10	1	5	1	1	120	30	200	0.0002	10			
19/05/2025	BWD	Untreated	380995	Internal Assessment Sampling		6.9	6	N	42	30	1	0.1	2	1	1	90	1	9	1	38	100	560	700	0.0048	20			
19/05/2025	BWD	Treated	380995	Internal Assessment Sampling		6.7	5	N	10	10	1	0.1	1	1	1	10	1	5	1	1	360	136	500	0.0002	7			
NOTES:																												
100	Denotes exceedance of EPL concentration limits for discharge of treated water (L2.4).																											
100	Denotes untreated water quality exceeding the EPL concentration limits.																											