ACOUSTICS ADVISOR ENDORSEMENT
SYDNEY METRO WEST (SSI 10038)

Review of	**Central Tunnelling Package:** Bi-Annual Construction Monitoring Report January – June 2024	**Reviewed document reference:**	AFJV Bi-Annual Construction Monitoring Report – January 2024 – June 2024 SMWSTCTP-AFJ-1NL-EN-RPT-000026 Revision 01 dated 30 July 2024.
Prepared by:	[redacted]		
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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. I am satisfied that the report has been adequately updated to address comments from Sydney Metro, the Environmental Representative (ER) and me on the noise and vibration components and on that basis, I endorse it.

[redacted]

[redacted]

Metro West Alternate Acoustics Advisor

Bi-Annual Construction Monitoring Report - 5 January 2024 - June 2024

SMWSTCTP-AFJ-1NL-EN-RPT-000026 Revision 01

Sydney Metro West – Central Tunnelling Package

DOCUMENT APPROVAL

	Prepared By	Reviewed By	Approved By
Name:	[redacted]	[redacted]	[redacted]
Position:	Senior Environmental Coordinator	Project Environmental Manager	Operational Services Director
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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 monitoring report (B-ACMR) has been prepared to address the Condition of Approval (CoA) C23 of the planning approval for Sydney Metro West – Concept and Stage 1. The B-ACMR presents monitoring data for the reporting period for all works undertaken on the Sydney Metro West Central Tunnelling Package (CTP) from **01st of January 2024 to 30th June 2024.** This is the fifth B-ACMR prepared for the CTP. This period has been expanded to align bi-annually with the calendar months for ease of reporting and will continue with this data range for the following reports.

This report will present results from the construction phase of the monitoring programs and compare the results against established baseline data where available. There is a large amount of noise and vibration data from the unattended monitors, therefore, examples of data have been provided to demonstrate the monitoring which occurred during the period. Groundwater and surface water data will be provided in full. This report will primarily highlight and discuss exceedances of the required criteria and show other results demonstrating compliance.

In accordance with each Construction Monitoring Program, the data will be made available to relevant authorities within 40 business days of the ending of the monitoring period.

During the reporting period the CTP has seen significant progression, achieving several milestones including the breakthrough of the TBM's into Five Dock and Burwood North. The completion of approximately 7.6km's of TBM tunnelling has also meant the conclusion of a key risk as White Bay Power Station now falls outside the zone of influence for any significant vibratory impact resulting from TBM activity. Furthermore, staggered monitoring programs (such as groundwater and surface water) have now typically entered a quarterly phase, reducing the overall quantity of results.

2. NOISE AND VIBRATION

The Noise and Vibration Monitoring Program (NVMP) aims to identify the potential impacts of the 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, 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?
    - (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), DNVIS verification and to confirm the 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 can largely be contributed to the staging of work requiring minimal surface works for the completion of station boxes.

2.1.2 UNATTENDED MONITORING

Unattended Noise and vibration monitoring throughout this report 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). All monitors have been installed to monitor on a 24 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.

During the reporting period, two temporary vibration monitors located adjacent to Burwood's South shaft were removed on 29/05/2024, AFJV reviewed the upcoming works (Phase B2) and identified that no more vibration generating works where scheduled. This is reflected in Section 7.1.4 of the North Burwood DNVIS.

On 04/03/2024, Five Docks 'St Albans Church" noise monitor was moved approximately 24 meters to the east to better reflect the auditory impacts of the project resulting from the mobilisation of a harmonic sub.

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

During this reporting period, 84 attended noise monitoring events were conducted at different locations near the 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.

Two instances where the noise level exceeded the predicted level were identified. The first resulted from line marking activities occurring adjacent to a residence near CTP's North Strathfield site where results exceeded by 1dba due to the proximity of monitoring. The elevated noise was observed by the onsite environmental advisor and discussed with the supervisor. The duration of the works was approximately 15 minutes and was required to comply with road safety requirements. The exceedance was then reviewed the following day with the Project Environmental Manager and discussed with the Acoustic Advisor. It was deemed that no exceedance occurred at the façade of the nearest property which was approximately 10m from the line marking works.

The second event was identified at CTP's Five Dock site where a demolition saw was used during pavement restoration. The works were observed to generate acoustic impacts close to the modelled values. The onsite environmental advisor identified the elevated noise level and requested the crews implement additional acoustic mitigation. Noise mats were installed around the works, subsequent verification monitoring was then conducted confirming modelled levels and no exceedance.

In both cases, AFJV had provided alternative accommodation. A summary of attended noise results including field notes are provided in Appendix A.

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 identified during unattended monitoring considering the mass of data collected throughout the 6 months as there are over 1,800,000 data points. As unattended monitoring is ongoing, the data is only assessed 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.

Unattended vibration monitoring was also conducted, both continuously and on a case-by-case basis at Burwood North (Royal Enfield), Sydney Olympic Park (10 Herb Elliot Drive) and The Bays (WBPS). Throughout the reporting period, 3 vibration spikes were recorded and investigated as outlined below.

- A spike of 16.9mm/s was recorded on 01 February 2024 on the BWD_3 vibration unit near Burwood North southern shaft site. The spike was caused by the AFJV Environmental Advisor whilst checking monitors at 13:00 and was not a result of AFJV works.

- Monitoring of the Royal Enfield property adjacent to Burwood southern shaft site recorded a spike of 19.2mm/s on the 21st of March 2024. The spike was noted to be the AFJV Environmental Advisor swapping vibration monitor batteries and was not a result of AFJV works. No further action was required.

- Monitoring of the unit at 10 Herb Elliot Drive, Sydney Olympic Park recorded a spike of 157mm/s on the 20 of May 2024 at 13:00. The spike was noted to be an AFJV Environmental Advisor swapping vibration monitor batteries and was not a result of AFJV works. No further action was required.

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

2.2.3 GROUND-BORNE NOISE AND VIBRATION MONITORING

Ground-borne noise and vibration (GBN) monitoring was conducted throughout this reporting period in accordance with ICNG section 4.2, CTP's Noise and Vibration Management Plan (NVMP), Noise and Vibration Monitoring Program (NVMoP), and Detailed Noise and Vibration Impact Statement (DNVIS). GBN monitoring requires installation of the monitors within the affected properties. Based on the TBM's progression and GBN modelling, the AFJV community approached potentially effected properties to offer AA and monitoring prior to the impact occurring.

All monitoring was conducted using Svan958AG monitoring devices, equipped with a microphone for noise and a tri-axial geophone for vibration, was used for monitoring. Recordings of the noise were not taken given they were installed in private properties.

During the reporting period, 10 ground-borne noise and vibration monitoring events were conducted at several locations along the tunnel/cross passage alignment between the Five Dock and North Strathfield sites. Four monitoring events were related to cross passage works, and six were conducted for TBM excavation. A summarised table of monitoring events can be found in Table 2-A. Only nighttime results were considered because this is an unattended monitor. During the daytime, it is challenging to distinguish between activities within the premises and construction activities. In order to maintain privacy of the residents, AFJV does not record real time audio of ground borne noise data collected.

Table 2-A Ground Borne Noise and Vibration Monitoring locations and results.

Location	TBM/XP	Date	Noise Results (dB)	Predicted Noise (dB)	Vibration Results (mm/s)	Predicted Vibration (mm/s)	Comments
7 East Street, Five Dock	TBM	5-Feb-24	43.7-42.2	44.6	0.03-0.006	0.4	
77 Henley Marine Dr, Rodd Point	XP 25	9-Feb-24	No results - XP works rescheduled	-	-	-	
9A Rickard Street, Rodd Point	XP 27	14-Feb-24	34.9	40.1	0.759	0.17	PPV below criteria for unreinforced or light framed structures
28 A Lancelot Street, Five Dock	TBM	22-Feb-24	46.7-37.7	47.9-34	0.902-0.398	0.5-0.1	PPV below criteria for unreinforced or light framed structures
63 Lancelot Street, Five Dock	TBM	26-Feb-24	41.9-30.1	47-45.8	0.55-0.2	0.5	PPV below criteria for unreinforced or light framed structures
64 Ingham Avenue, Rodd Point	XP 29	5-Mar-24	43.6-30.6	42.6	0.881-0.363	0.19	PPV below criteria for unreinforced or light framed structures
140 Queens Street, Five Dock	TBM	21-Mar-24	-	-	0.6-0.432	0.1	PPV below criteria for unreinforced or light framed structures. There are no noise results due to an issue with the GBN monitor.
14 Park Avenue, Concord	TBM	28-May-24	34.1-29.6	Outside of tunnel alignment	0.046-0.041	Outside of tunnel alignment	
12/104 William Street, Five Dock	XP 34	15-May-24	45.7- 32.7	47	0.046-0.155	0.36	

Each monitoring event was analysed upon completion, and a report developed for the AA and ER to assess as well as a report provided to the property owner.

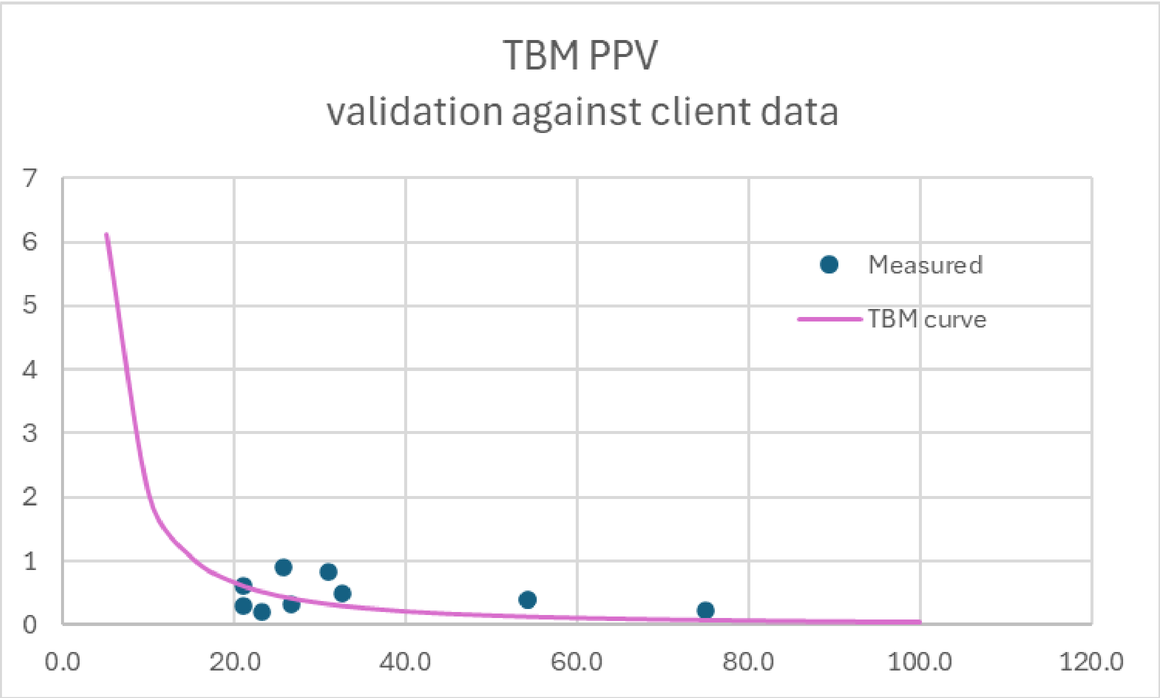
Over the reporting period, no major impacts were observed. All recorded values fell below the trigger levels specified in the NVMP, posing no risk of damage to surrounding buildings. This aligns with the construction vibration values set out in BS 7385 Part 2-1993, 'Evaluation and Measurement for Vibration in Buildings Part 2'.

Throughout the monitoring period, several exceedances of modelled GBN&V levels were identified. In all cases AFJV consulted with a qualified acoustic consultant to ensure modelling assumptions and outputs were consistent with monitored impacts, confirming that no modifications to the noise and vibration models were required. The detected exceedances were minimal and well below the trigger values for cosmetic damage, and, although some outliers were observed, most results were consistent with the model curves. In the case of noise exceedances, these were detected only in the monitoring conducted in the vicinity of XP 29. Since the noise level is less than 2 dB(A) above the prediction, the significance of the residual noise level is negligible according to the NSW Noise Policy for Industry (2017). Additionally, these exceedances were not attributable to hammering associated with cross passages excavation.

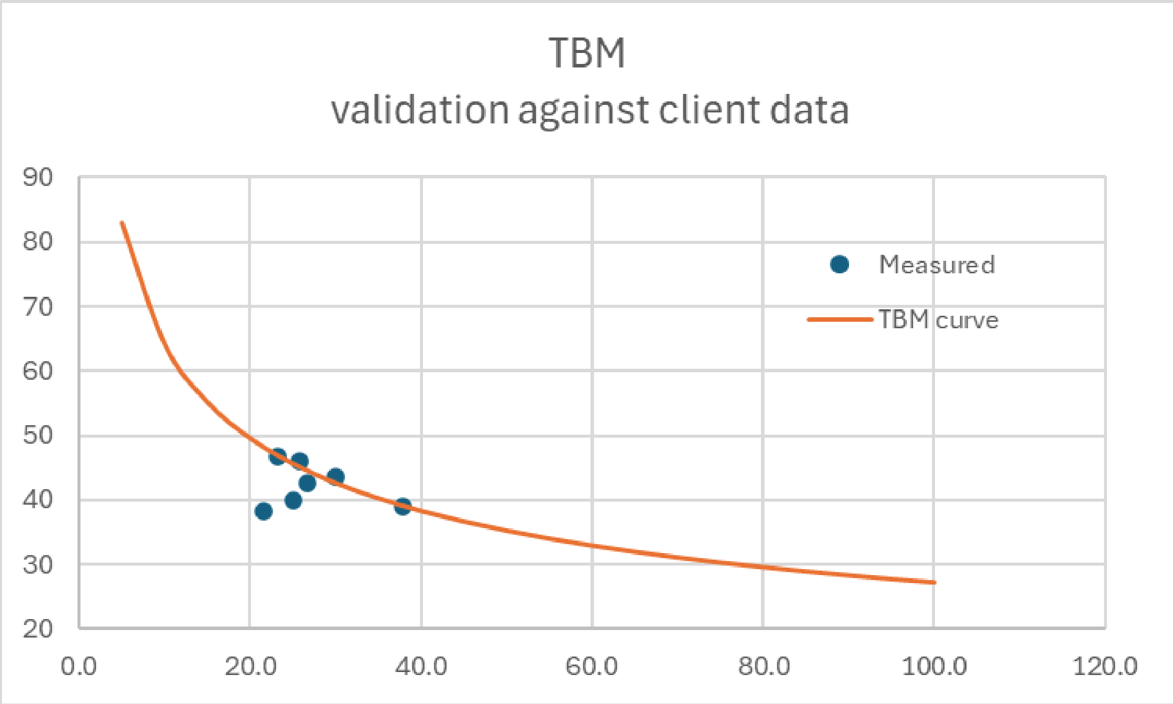
AFJV implemented restricted working hours for cross passage works impacting residents along Lancelot Street west of FDK. Excavation hours were restricted to 10pm for cross passages 31-34. This was not a requirement based on modelling impacts but AFJV restricted hours as a reasonable and feasible mitigation to reduce impact on sensitive receivers.

A comparison of the Ground borne Noise and Vibration modelled curve and registered values from TBM cutting can be found below in Figure 2-A showing impacts to affected properties being in line with predicted values. A complete suite of GBN&V monitoring data and reports can be found in appendix B.

Figure 2-A- TBM cutting Noise and Vibration results vs. Predicted Values



X=Distance(m)-Y=Vibration (mm/s)



X=Distance (m)-Y=Noise (dB)

2.2.3 PLANT SOUND POWER LEVELS

In accordance with the NVMP, DNVIS and CNVS, AFJV conducted a number of sound power measurements to ensure all the machines 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 was conducted upon arrival at the site.

Throughout the reporting period, SWL measurements were carried out across various plant and equipment on the CTP project. 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.

As per the results depicted in Appendix A, no instances of machines exceeding 105dB(A) levels were identified during the reporting period across the CTP project.

Although no exceedances were observed AFJV recognises the requirement to implement reasonable and feasible corrective actions to mitigate elevates SPL's. Reasonable and feasible measures may include adding or upgrading muffling devices, and building enclosures around stationary plant items, provide practical solutions to address any deviation from the allowed noise levels.

2.2.4 TRAFFIC NOISE REVIEW

No additional traffic noise reviews were completed during this monitoring period as they were confirmed in the previous Bi-Annual Report 4.

2.2 NOISE AND VIBRATION COMPLAINTS

There were several complaints received from the community regarding noise at each site. Complaints were addressed by the AFJV community team and preventive actions were taken. Reasonable and feasible mitigation measures were provided to minimise the impacts on the affected community members. A number of mitigation strategies were recommended by the environmental team and implemented and facilitated in consultation with the community team.

Examples of mitigation measures associated complaints:

- A noise complaint was received on 27th of February 2024 from a resident adjacent to the North Burwood station box. The complaint related to noise generated from the Water Treatment Plant (WTP) located at the BWD site. In response to the complaint, AFJV investigated and found that the WTP was not in operation during the night of complaint. Additionally, mitigation measures are being assessed, and the updated DNVIS includes acoustic shielding being installed on some components of the WTP to minimise noise impact.

- A noise complaint was received on 12th June 2024 from a resident adjacent to the North Burwood station box. The complaint related to the night works occurring on Parramatta Rd. In response to the complaint, AFJV conducted a series of attended noise monitoring measurements around the property on Loftus St, Burton St, and Burwood Rd. Monitoring was first conducted during the evening period (6pm to 10pm) on the 13th of June 2024 and then again during the night period (10pm to 7am). Both monitoring events identified that works were operating below predicted noise levels. Follow-up monitoring was again conducted in front of the resident's property on the 17th and 25th of June 2024. Results again identified compliance with the modelled noise prediction for the residence.

- A ground-borne noise complaint was received on 14th February 2024 from a resident adjacent to cross passage 25. The complaint related to the ground-borne noise generated by excavation work. In response to the complaint, AFJV installed noise monitoring at the property to verify the noise. The noise level did not exceed the predicted levels.

- A second example of a ground-borne vibration complaint was received on 20th May 2024 from a resident adjacent to cross passage 34. In response to the complaint, AFJV offered to install a ground-borne vibration monitor at the property, but unfortunately, the stakeholder did not accept this. Consequently, AFJV installed the vibration monitor at another property closer to the cross passage 34 location, and the vibration level did not exceed the predicted levels. Moreover, the stakeholder requested alternative accommodation, and the community team responded to that request by providing alternative accommodation for the week of work.

2.4 CONCLUSION

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

Throughout the monitoring period one non-compliance with the Noise and Vibration Management Plan and associated documents was identified. This non-compliance occurred due to an error in the noise modelling software, which failed to identify the units above the ground level of an apartment complex that qualified for alternative accommodation due to ground-borne noise impacts. The issue was resolved by providing retrospective alternative accommodation as soon as the error was discovered.

A majority of observations obtained in the reporting period identified auditory contributors that were not related to construction activities. Although elevated levels were observed, reasonable and feasible mitigation measures were implemented. Elevated noise level were identified during the operation of line marking at North Strathfield. A review of the works occurring found all reasonable and feasible mitigation measures had been implemented.

Elevated events observed during vibration monitoring at the Sydney Olympic Park site were not related to AFJV works. These spikes were attributed to AFJV Environmental Advisor swapping vibration monitor batteries, rather than a result of AFJV vibratory works. Monitoring undertaken at Burwood North Southern site identified elevated events as isolated spikes, related to monitoring personnel performing maintenance on the unit or tests by the site team to ensure the monitor was set up correctly and not a result of construction activities. The Burwood monitor has since been removed due to its redundancy in current staging of works.

Ground-borne noise and vibration monitoring was conducted at various locations along the tunnel/cross passage alignment between Five Dock and North Strathfield. The purpose of this monitoring was to ensure compliance with the Noise and Vibration Management Plan and associated documents. During the reporting period, the collected data were systematically recorded and analysed to assess the impact of construction activities on the surrounding environment. The results confirmed that ground-borne noise and vibration levels were in line with the modelled predicted values. This demonstrates the effectiveness of the implemented mitigation measures and AFJV's commitment to minimising the impact on surrounding receivers.

AFJV will continue to implement noise & vibration mitigation strategies where reasonable and feasible. Where applicable these mitigation measures are included in the relevant DNVIS. For example, the Five Dock DNVIS Rev 12 where a reasonable and feasible table was included to detail the assessment process by AFJV in regard to ventilation required for tunnelling in the acoustic shed. AFJV is committed to minimising their impact on surrounding receivers with the implementation of a dedicated noise specialist aimed specifically at identifying and mitigating noise and vibrational impacts. AFJV has an environmental resource available on night shift.

3. SURFACE WATER

The purpose of the Surface Water Monitoring Program (SWMP) is to identify the potential impacts of the CTP works on water quality within local receiving waters. The data presented in the B-ACMR was prepared in accordance with Condition C23 of the Project Planning Approval which requires reporting the results of the CTP works to the Planning Secretary, ER and relevant regulatory agencies.

The report is to provide monitoring data and analysis of results as required to be generated in SWMP. This report details the results during the construction phase of the SWMP. This report will compare the ANZECC guideline and baseline water quality against water quality monitoring data undertaken during the reporting period.

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 ANZECC 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 ANZECC 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 leu of baseline surface water monitoring data was collected as part of the EIS.

Table 3-B- PRE-EXISTING WATER QUALITY DATA

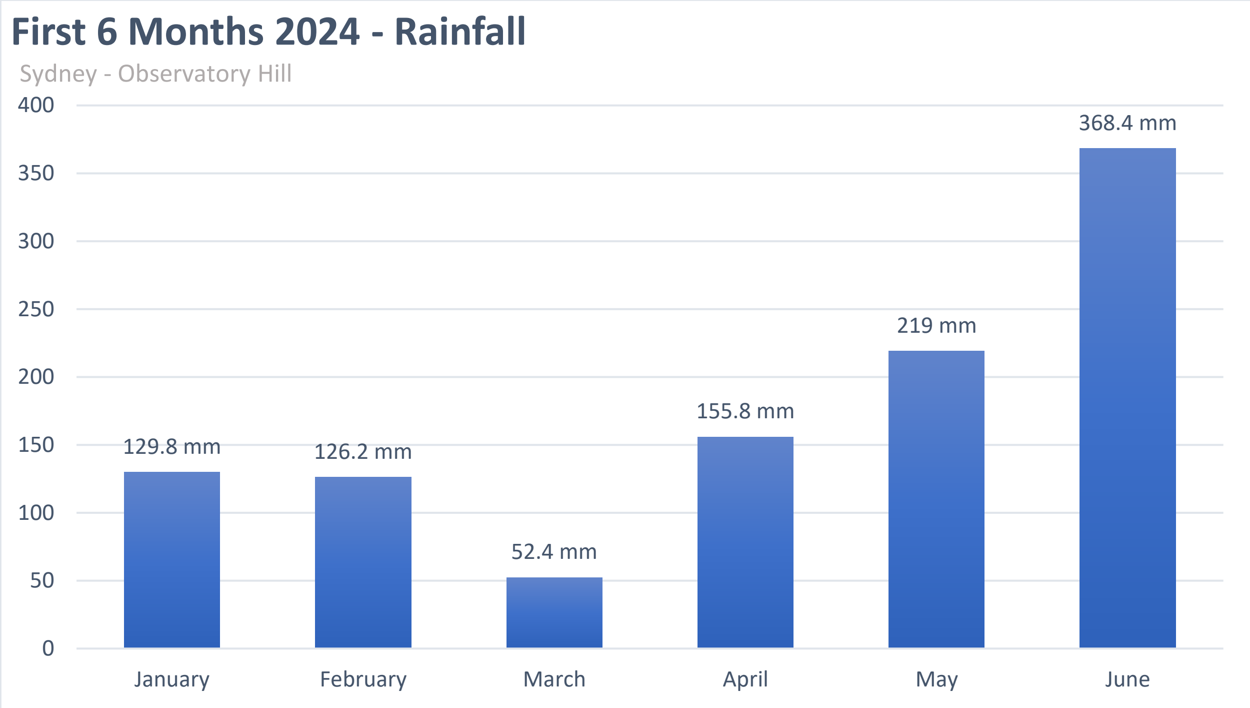
Parameter	ANZECC Guideline [1]	Sal1 (U/S)[3] – Salesyard creek	Sal2 (D/S)[3]- Salesyard creek	Pow1 (U/S)[3] - Powells Creek	Pow2 (D/S)[3] - Powells Creek	SLP2 (D/S)[3] -St Lukes Park Canal	Bar2 (D/S)[3] - Barnwell Park Canal	Dob1 (U/S)[3] - Dobroyd Canal	Dob2 (D/S)[3] - Dobroyd Canal	SW09 Dobroyd Canal[4]	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 1,051.6 mm of rainfall was received at Observatory Hill with the highest rainfall received in June 2024 and lowest in March 2024 as presented in Figure 3-A.

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. Surface water data collected during the monitoring period showed exceedances in Dissolved Oxygen, Electrical Conductivity, and Turbidity 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.

Furthermore, comparison of surface water monitoring results (Appendix C) with discharge data collected from the Water Treatment Plants found 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, redox and turbidity results collected from each water quality sampling location.

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

3.6 CONCLUSION

As outlined in section 3.3, 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 ANZECC (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 or associated operations.

AFJV is currently reviewing the monitoring program that is required for the remainder of the project as monitoring sites become redundant.

4. GROUNDWATER

The purpose of the Groundwater Monitoring Program (GWMP) is to identify the potential impacts of the CTP works on the groundwater quality of the local environments. 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. All locations are currently being monitored on a quarterly basis as per the Groundwater Monitoring Program.

Groundwater encountered in excavations for the Project has been treated by water treatment plants (WTP) at The Bays, Burwood North, Sydney Olympic Park and Five Dock sites during this monitoring period. The influx of groundwater in the sites is highly dependent on rainfall as greater ingress is observed during higher rainfall. Since the surface water and ground water is treated through single water treatment plants at each site, the numerous variables, including sprinkler systems utilised for dust suppression, makes calculating the specific amount of groundwater ingress for each site an estimation.

4.1 GROUNDWATER MONITORING LOCATIONS

In accordance with the GWMP, there are 33 boreholes identified throughout the project to monitor and sample. Section 7.1 of the CEMP specifies monitoring 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

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
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
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
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

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 out of 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 that were sampled during the monitoring period. Further explanation on why some boreholes were not sampled it is included in table 4-C.

Table 4-B Groundwater Wells Monitored

Site	Borehole number	Quarterly Monitoring 7	Quarterly Monitoring 8
The Bays	S02d	Sampled	Sampled
	S02s	Not monitored (Refer to table 4-C)	Sampled
	S06	Sampled	Sampled

	AF-CGW1	Not Monitored (Refer to table 4-C)	Not Monitored (Refer to table 4-C)
	S54	Not Monitored (Refer to table 4-C)	Not Monitored (Refer to table 4-C)

Site	Borehole number	Quarterly Monitoring 6	Quarterly Monitoring 7
Sydney Olympic Park	SMW_BH019	Sampled	Sampled
	SMW_BH120	Sampled	Sampled
	SMW_BH126	Sampled	Sampled
Tunnel SOP-NS	BH715B	Sampled	Sampled
	AF_BH36	Sampled	Sampled

Site	Borehole number	Quarterly Monitoring 6	Quarterly Monitoring 7
Burwood	BH046R	Sampled	Sampled
	BH044	Sampled	Not Monitored (Refer to table 4-C)

Site	Borehole number	Quarterly Monitoring 6	Quarterly Monitoring 7
Five Dock	BH051	Sampled	Sampled
	BH051s	Not monitored (Refer to table 4-C)	Not monitored (Refer to table 4-C)
	BH050s	Not monitored (Refer to table 4-C)	Not monitored (Refer to table 4-C)
	BH050	Not monitored (Refer to table 4-C)	Not monitored (Refer to table 4-C)

Site	Borehole number	Quarterly Monitoring 3	Quarterly Monitoring 4
North Strathfield	SMW-BH035s	Sampled	Not monitored (Refer to table 4-C)

	SMW_BH009	Not monitored (Refer to table 4-C)	Not monitored (Refer to table 4-C)
	SMW_BH009s	Not monitored (Refer to table 4-C)	Sampled
	SMW_BH035	Sampled	Not monitored (Refer to table 4-C)
	SMW_BH038	Sampled	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

The groundwater monitoring wells that could not be accessed, replaced, or sampled during this monitoring period are listed in Table 4-C.

Table 4-C Explanation of groundwater wells not monitored

Month (2023)	Site	Borehole number	Comments
Round 6: 21/02/2024 Round 7: 24/05/2024	Five Dock	SMW_BH051s	The monitoring well had no water to sample.
Round 6: 21/02/2024 Round7: 24/05/2024	Five Dock	SMW_BH050s	The monitoring well had no water to sample.
Round6: 21/02/2024 Round7: 24/05/2024	Five Dock	SMW_BH050	The monitoring well had no water to sample.
Round3: 21/02/2024Round4: 13/05/2024	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 3: 21/02/2024	North Strathfield	SMW_BH009s	The monitoring well had no water to sample.
Round 4: 13/05/2024	North Strathfield	SMW_BH035s SMW_BH035	Sampling could not be conducted as car was parked over the borehole for the entire day, despite traffic control having been scheduled from early in the morning.
Round7: 13/05/2024	Burwood	BH 044	Sampling could not be acquired due to a parked car obstructing access.

Round7: 19/03/2024 Round8: 11/06/2024	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.
Round7: 19/03/2024	The Bays	S02_s	The monitoring well had no water to sample.
Round7: 19/03/2024 Round8: 11/06/2024	The Bays	AF_CGW1	Shallow and dry Well

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, for each borehole sampled during the monitoring period.

4.3 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.
-

4.3.1 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	March	TRH C10 - C1–, TRH C15 - C28, TRH C29-C36, Total +ve TRH (C10-C36), TRH >C16 - C34. TRH >C34-C40, Total +ve TRH (>C10-C40), Fluoranthene, Benzo(a)anthracene, Chrysene, Benzo(b,j+k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-c,d)pyrene, Benzo(g,h,i)perylene, Total +ve PAH's
	S_02s	June	Chloroform
	S06	June	TRH C10 - C14
Five Dock	SMW_BH051	May	Total +ve TRH (C10-C36)
	SMW_BH050s	February	Boron-Dissolved, Barium-Dissolved, Boron-Total, Barium-Total
		May	Barium-Dissolved, Boron-Total, Barium-Total

Burwood	SMW_BH046R	February	Cobalt-Dissolved, Arsenic-Total, Beryllium-Total, Cadmium-Total, Cobalt-Total, Nickel-Total, Lead-Total, Zinc-Total, Iron-Total
		May	Bicarbonate Alkalinity as CaCO3, Copper-Dissolved, Cobalt-Dissolved, Molybdenum-Dissolved, Nickel-Dissolved, Zinc-Dissolved, Arsenic-Total, Cobalt-Total, Molybdenum-Total, Nickel-Total, Lead-Total, Zinc-Total
	SMW_BH044	February	Total +ve PAH's
North Strathfield	SMW_BH035s	February	Copper-Dissolved, Manganese-Dissolved, Zinc-Dissolved, Nickel-Total, Zinc-Total
	SMW_BH009S	February	Sulphate, SO4, Cadmium-Dissolved, Cobalt-Dissolved, Manganese-Dissolved, Nickel-Dissolved, Zinc-Dissolved, Cobalt-Total, Manganese-Total, Nickel-Total,
		May	Perfluorooctanoic acid PFOA
	SMW_BH035	February	Hardness, Ammonia (as N in water), Nitrate as N in water, Total Nitrogen in water, Barium-Dissolved,
	SMW_B H038	February and May	No Exceedance
Olympic Park	SMW_BH120	March	Cobalt-Dissolved
		June	Sodium – Dissolved, Magnesium – Dissolved, Hardness, Cobalt-Dissolved, Nickel-Dissolved, Nickel-Total
	SMW_BH126	March	TRH C6 - C9, TRH C29 - C36, Perfluorobutanesulfonic acid, Perfluorohexanesulfonic acid – PFHxS, Perfluorooctanesulfonic acid PFOS, Perfluorobutanoic acid, Perfluorohexanoic acid, Perfluorooctanoic acid PFOA, Total Positive PFHxS & PFOS
		June	No Exceedance
	AF_BH36	March	TRH C29 - C36, Cobalt-Dissolved, Manganese-Dissolved, Arsenic-Total, Beryllium-Total, Copper-Total, Cobalt-Total, Manganese-Total, Nickel-Total, Iron-Total
		June	Cobalt-Dissolved, Manganese-Dissolved, Beryllium-Total, Copper-Total, Manganese-Total
	SMW_BH019	March	No Exceedance
		June	No Exceedance
Tunnel Alignment	BH_715B	May	Sodium – Dissolved, Magnesium – Dissolved, Hardness, Sulphate (SO4), Chloride, Cl, Manganese-Dissolved, Manganese-Total
		June	Sodium – Dissolved, Sulphate (SO4), Cobalt-Dissolved, Manganese-Dissolved, Manganese-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 drawdown.

The Central Tunnelling Package's 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.

BH 120 and BH126:
Both boreholes are located adjacent to SOP’s station box. BH120 exhibits an exceedance in dissolved cobalt, while BH126 shows an exceedance in perfluorobutanesulfonic acid (PFAS). In both instances, concentrations peaked in December 2023 and subsequently declined in the following monitoring rounds. The three rounds where exceedances were detected revealed a peak in the concentration of these components, followed by a decrease in subsequent rounds. Specifically, for BH120, cobalt levels nearly returned to the trigger value of 13.2 µg/L, compared to an exceedance of 14 µg/L.

Technical Papers 7 and 8 of the Project’s EIS suggest that groundwater in this area may be contaminated with nutrients, metals, hydrocarbons, volatile organic compounds, perfluorooctanesulfonic acid, asbestos, and landfill gas. Additionally, the EIS notes that excavation will act as a groundwater sink, causing groundwater to flow toward the excavation site.

Based on this sampling data, the values observed during this period are consistent with the assessment of the EIS in terms of localised contamination and draw down generated by the excavation. The variation in concentrations observed in the monitoring rounds are likely due to patches of contaminated groundwater in the surrounding area. All groundwater ingress into the station box is being treated at SOP's Water Treatment Plant removing existing contamination prior to discharge.

AFBH36:
AFBH36 is located further away from SOP's station box and along the tunnel alignment. According to Technical Papers 7 and 8 of the Environmental Impact Statement (EIS), the contaminants of concern in this area include PFAS, nutrients, heavy metals, hydrocarbons, and volatile organic compounds (VOCs).

Exceedances were observed for more than three consecutive monitoring rounds for total arsenic, dissolved manganese, dissolved cobalt, total beryllium, total copper, total cobalt, total manganese, total nickel, and total iron. Similar to BH 120 and BH126, there is a peak in contaminant concentrations in December 2023, with lower values in the preceding and following monitoring rounds. There is no evident reason for this trend, as AFBH36 is unlikely to be affected by the drawdown generated by the excavation and has not yet been impacted by tunnelling activities, given that the tunnel boring machines (TBMs) have not reached this location.

BH035 and BH035S:
These boreholes are located near the North Strathfield station box. In the shallow borehole, an exceedance in dissolved manganese was recorded, with concentrations peaking in December but being lower in the previous and subsequent monitoring rounds. The deep borehole, on the other hand, showed an exceedance in dissolved barium, with a peak in September 2023, followed by lower values in the preceding and subsequent rounds.

Technical Paper 8 identifies that the area affected by groundwater level drawdown is potentially contaminated with heavy metals, hydrocarbons, solvents, chlorinated hydrocarbons, and VOCs. As the station box acts as a groundwater sink, the flow of groundwater directed toward the station box may be affecting the levels of manganese at these locations. These contaminants are not related to any construction activity of the project and are most likely contaminants already present in the groundwater.

S02_d:
Exceedances in Total Recoverable Hydrocarbons (C10-C36, C15-C28, >C16-C34, and >C10-C40) were detected in the monitoring rounds of March 2023, June 2023, September 2023, December 2023, and March 2024. All cases were below the trigger value in the June 2024 monitoring round. Given that the entire site is stabilised and covered with a concrete slab above the natural ground, the TRH exceedances are not due to construction activities.

Technical Paper 8 identifies the potential for groundwater within the construction site footprint to be contaminated with heavy metals, hydrocarbons, polychlorinated biphenyls (PCBs), asbestos, and perfluorooctanesulfonic acid (PFOS). Groundwater adjacent to the construction footprint may be contaminated with heavy metals, hydrocarbons, pesticides, PCBs, asbestos, and PFOS. The natural movement of groundwater, combined with the flow caused by the station box excavation, results in fluctuations in the already present hydrocarbons, as detailed in Technical Paper 8 of this project's EIS.

In all analysed exceedances above, no increasing trends were observed, indicating exceedances were pre-existing and not the result of AFJV activities. Any potentially contaminated water ingress to the station boxes or through TBM and Cross Passages excavation, is being treated in the project's water treatment plants. The treatment of existing contamination through the AFJV water treatment plants has potentially removed some localised contamination improving surrounding groundwater environments.

4.4 GROUNDWATER LEVELS

Apart from the data gathered during the field investigations, live dataloggers are installed in boreholes across the CTP station boxes and tunnel alignment. This data was monitored by engineers and survey teams to monitor observable drawdowns to ensure these are within the expected levels. This report was collated in consultation with respective engineering teams who provided input into the conclusions drawn from groundwater levels data.

During the reporting period, groundwater levels in the boreholes located along the project station boxes exhibited minimal variance. Analysis of data retrieved from water well loggers indicated no significant fluctuations in groundwater levels since the previous reporting period. Some fluctuation in water levels were observed during the immediate passing of TBMs around BH 26.15, Bh26.30 and BH26.42 in the tunnel alignment between Burwood North and Five Dock Station boxes. A draw down of -10m, -15m and -18 meters was observed respectively, no design criteria was identified at these well points prior to construction however recharge has been observed after the TBM has passed. These variations are likely attributed to localised TBM-induced water drawdown, with effects being short-term and stabilising shortly after TBM passage. Also, these Boreholes are located right next to Cross Passage 34, which is yet to be lined and waterproofed and this could be affecting water recharge and level stabilisation.

An assessment in EIS Technical Paper 7 (Hydrology) and the CTP Hydrogeological Reports conducted in accordance with condition D122 revealed that the observed drawdown levels align closely with the pre-assessment data. The projected drawdown in the immediate proximity of The Bays station box, anticipated to decline up to 28 meters, corresponds well with the outcomes derived from the AFJV analysis. Moreover, the recharging levels, while exhibiting a deceleration, are expected to continue fluctuating. AFJV will continue to review groundwater levels and include that information in the next bi-annual report.

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

Table 4-E shows the boreholes that possess live dataloggers.

Table 4-E Live datalogger boreholes

LIVE DATALOGGER BOREHOLES					
TBM Alignment Water Levels	**THE BAYS**	**FIVE DOCK**	**BURWOOD**	**NORTH STRATHFIELD**	**SYDNEY OLYMPIC PARK**
AF_BH22.15 AF_BH22.30 AF_BH22.42 AF_BH26.15 AF_BH26.30 AF_BH26.42 AF_BH30.15 AF_BH30.30 AF_BH30.48 AF_BH36 AF_BH36s SMW_BH720.20 SMW_BH720.56 SMW_BH722.20 SMW_BH722.43 SMW_BH722.56 SMW_ENV715B_w	AF_BH07_W AF_BH07S_W AF_BH44_W AF_BH51.11 AF_BH51.18 AF_BH51.34 AFGW11 SMW_BH724 S54 AFCGW2-2 AFCGW9	SMW_BH050_s SMW_BH050_w SMW_BH051_s SMW_BH051_w R248_3103_BH141R248_3103_BH141A SMW_BH719	BH1326 SMW_BH044w SMW_BH046s SMW_BH046w BH1326 BH1336 BH714_s BH714_w SMW_BHCINT01 SMW_BHCINT02 SMW_BHCINT03	SMW_BH009_s SMW_BH009_w SMW_BH035_s SMW_BH035_w SMW_BH038_w	SMW_BH019_w SMW_BH068 SMW_BH068S SMW_BH120_W SMW_ENV714_W SMW_ENV715

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

Water treatment plant monitoring has been undertaken following the stipulated frequency in condition E2.1 and condition M2.2 of the project's EPL:

i) Daily on the first 3 days of discharges,
ii) Weekly for the first month of discharges,
iii) Fortnightly for the first 3 months,
iv) Monthly for the rest of the WTPs operation. (Condition M2.2 of the EPL)

Within 10 business days of each sample results being taken a Performance report must be submitted to the EPA.

In the period from January to June 2024, three Construction Water Treatment Plants were in operation at The Bays, Burwood North and Sydney Olympic Park sites. Five Dock's WTP has been non operational throughout this reporting period. All plants are on a monthly sampling regime, except Burwood North, that is still on a fortnightly regime, but sampling was suspended as no discharge has occurred on a continual basis. Due to operational issues, offsite discharge of North Burwood's water treatment plant has been suspended as of the 30th of April 2024 until further notice. During the reporting period, AFJV did have discharges outside the pH criteria range of the EPL in April 2024 from the BWD WTP, these exceedances were reported to the EPA and DPHI. Please refer to Appendix E for results in the sampling rounds of each of the WTP's.

As part of the ongoing performance improvement, elevated concentrations of some analytes have been found in some of the sampling rounds. Exceedances of EPL criteria through the Proof of Performance (PoP) reports supplied to the EPA are provided in Table 4-F along with corrective actions taken to improve water quality. Refer to Appendix E for monitoring results.

Table 4-F corrective actions for WTP elevated concentrations

Site	Analyte	Corrective action for elevated concentration
The Bays	Chromium IV compounds	The EP 65 filters were replaced at the end of December 2023. Granular Activated Carbon (GAC) media was replaced on March 8, 2024. Ion Exchange (IX) resins were replaced on May 30, 2024. Ongoing maintenance includes backwashing the IP65 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 are performed by an external consultant.
	Zinc	
	Nitrogen total	
	Phosphorus total	
	Perfluorooctanesulphonate (PFOS)	
Burwood North	Aluminium	EP65 and GAC filter replacement commenced February 2024 Backwashing of the EP65 and GAC filters to neutralise any residual water still held up inside the vessels occurred in April 2024.
	Manganese	
	Nitrogen total	
	Phosphorus total	
	Aluminium	
	Nitrate+Nitrite	
Sydney Olympic Park	Allluminium	Ongoing optimisation of coagulation and chlorination dosages is being performed. During the week of May 20th, the GAC filter media was replaced, and a caustic brine regeneration of the resin was conducted to improve filter performance.
	Chromium IV compounds	
	Zinc	
	Nitrate+Nitrite	
	Nitrogen total	
	Phosphorus total	
	Copper	

The performance of the WTPs is continually monitored and maintenance conducted to ensure the discharge concentrations are within the established limits in the EPL Condition L2. In a recent review of the Eastern Tunnelling Package's EPL, AFJV found that the discharge limits of ETP more accurately represent the discharge capabilities of the WTP's on both projects. Consequently, a meeting has been scheduled with the EPA to discuss the discharge limits for the CTP's EPL. AFJV is exploring the possibility of amending the current discharge criteria through discussions with the EPA through and updated WPIA to represent the discharge capacity of the WTP's based on the gathered body of data.

As inlet water values are consistently over the design limits, the WTP's ability to achieve some of the discharge criteria set out in the EPL is unachievable. This scenario was discussed with the EPA prior to commencement of WTP discharge and agreed that a Pollution Reduction Plan (PRP) would be added to the EPL and performance of the WTP's would be tracked through Proof of Performance (POP) reporting to determine the limits of treatment by the plants. After enough data was gathered an updated Water Pollution Impact Assessment (WPIA) based on the performance of the WTP's has been developed and submitted to the EPA (June 2023) as per CoA U1.3. The WPIA adjusts some of the limits under condition L2 based the WTP's capacity and proposes new reasonable and feasible discharge limits. AFJV have yet to receive a response on the updated WPIA from the EPA and continue to report on the current discharge criteria outlined in the EPL. During this reporting period of report 5 the EPA has yet to respond to the WPIA previously submitted in June 2023.

Average daily discharge varies depending on production and groundwater ingress in the station boxes and at the front of the TBM. The cumulative discharge from all The Bays, Burwood North and Sydney Olympic Park plants is portrayed below in Figures 4-A, 4-B and 4-C.

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

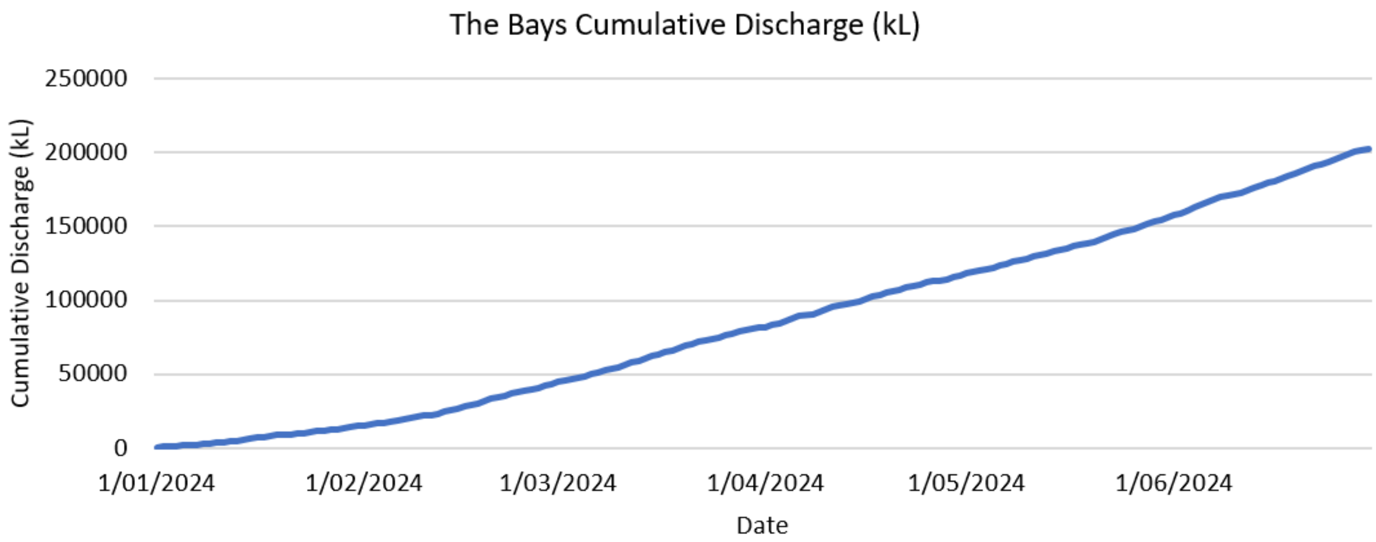


Figure 4-B - Six month cumulative discharge for Burwood North's WTP

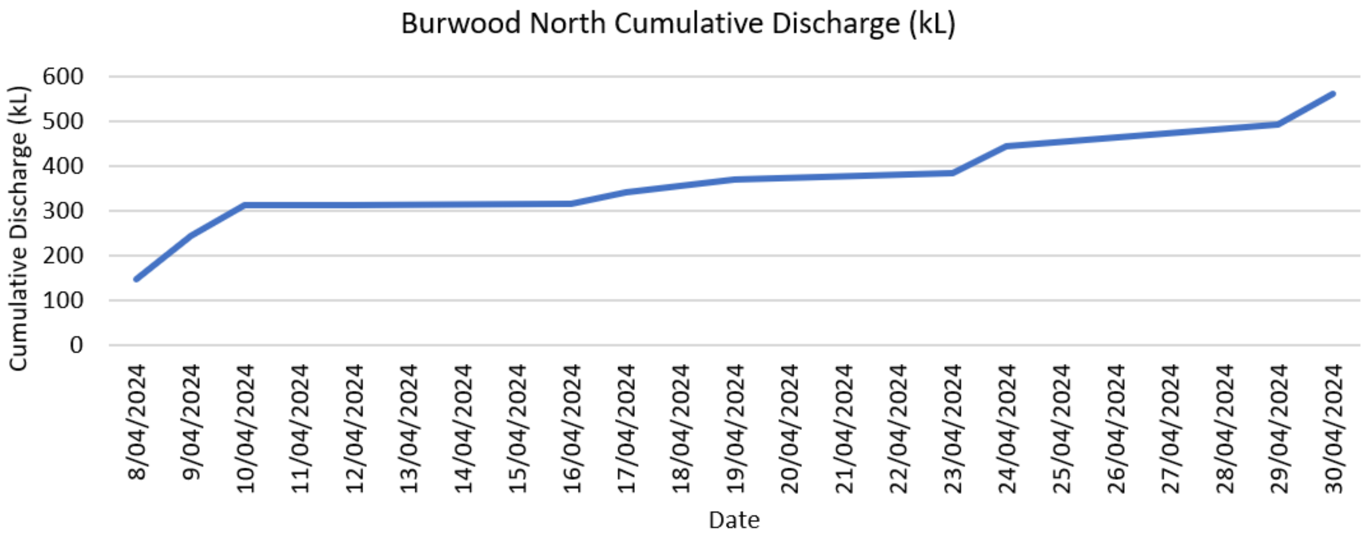
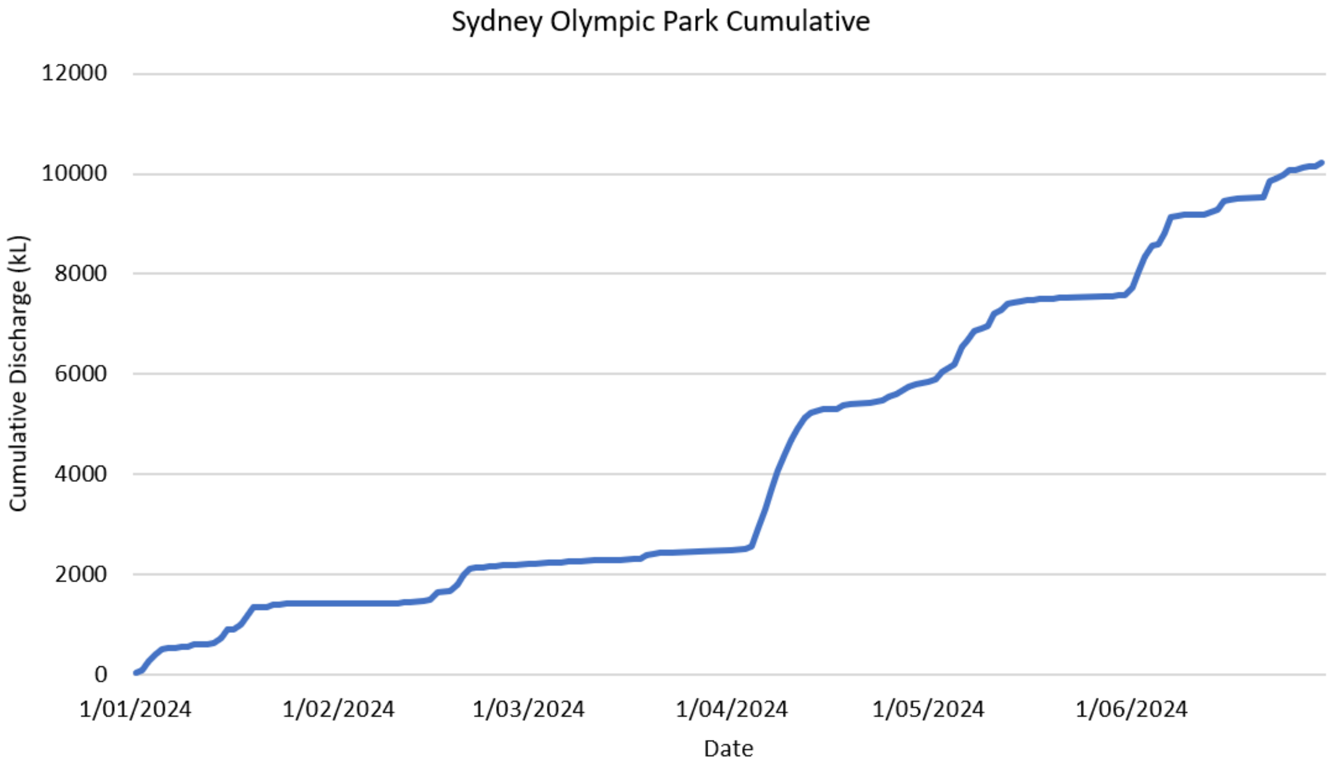


Figure 4-C - Six month cumulative discharge Sydney Olympic Park's WTP



4.6 CONCLUSION

As highlighted in section 4.3 of this report, the groundwater environment in the vicinity of the CTP construction site exhibits notable background contamination, as identified in the pre-construction assessments outlined in the project's EIS, Technical Paper 7 (Hydrology) and Tech Paper 8 (Contamination). Notably, heavy metals (cobalt, manganese, arsenic, copper, lead, nickel, and zinc), PFAS, hydrocarbons (TRH, BTEX, PAH), and ammonia levels surpassed the ANZECC (2020) 95th percentile protection of freshwater aquatic ecosystems trigger levels. This is typical of natural groundwater in Sydney.

The results obtained by AFJV during the monitoring period align with the pre-existing groundwater conditions documented in the EIS and technical paper 7. Both assessments noted significant variability in various analytes, especially among heavy metals. The analysis of AFJV's results revealed no discernible trend in analytes across the project that could be attributed to project-induced drawdown. Special attention was given to analytes like sodium and chloride, indicative of saltwater intrusion, a key indicator of 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, it can be concluded that exceedances identified during the period reflect pre-existing conditions rather than 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 technical paper 7 – Hydrology. Throughout the reporting period, the groundwater levels in the boreholes situated along the project alignment and station boxes displayed minimal variance. An examination of data retrieved from water well loggers indicated no significant fluctuations in groundwater levels compared to pre-existing estimates. However, some water level fluctuations were identified during the passage of TBMs, specifically BH 26.15, Bh26.30 and BH26.42 in the tunnel alignment between Burwood North and Five Dock Station boxes. These variations are likely attributed to localised TBM-induced water drawdown, with effects being short-term and stabilising shortly after TBM passage. Boreholes displaying the largest of fluctuations were located right next to cross passage 34, which is yet to be lined and waterproofed and this could be affecting water recharge and level stabilisation. Furthermore, the evaluation of EIS Technical Paper 7 (Hydrology) and CTP Hydrogeological Reports depict drawdown levels consistent with observed drawdown levels compared to pre-assessment data. The projected drawdown near The Bays station box, forecasted at a maximum of -28 meters, is reflected by findings observed in AFJV analysis. A conclusive analysis of CTP’s drawdown effect against the predictive values cannot be made until the 2-year post station box excavation milestone is reached. AFJV will continue monitoring the groundwater levels and report the findings in the next biannual report.

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 exchanging and renewing filter media and increasing backwashing frequency were implemented in response to the observed exceedances. All water treatment monitoring results were collated and submitted to the EPA in proof of performance reports in accordance with the EPL.

AFJV is currently reviewing the program of monitoring that is required for the remainder of the project as sampling wells become redundant.

APPENDIX A - NOISE MONITORING LOCATIONS AND RESULTS

APPENDIX A (i) – ATTENDED NOISE MONITORING EXAMPLES

Date	Time	Report number	Monitored by	Attended/Unattended	Site	Purpose	OOHW#	Source location	Monitoring location	Works	NCA	Period	NML Level dB	Model Prediction (LAeq) dB	LAeq dB	LA90 dB	LAmax dB	NML 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)
8/01/2024	09:52pm-10:07pm	20240108-NST-01	Osamah Naji	Attended	North Strathfield	OOHW Verification	385	Queen St,	121 Queen st, NST	Saw Cutter, Excavator 5T	NCA11	Night	44	90	70.8	50.7	86.3	Yes	No	Yes	N/A	N/A	No	Yes	Construction works were dominant noise source. Traffic (bus and planes) also audible.	Rion NL-42	23/05/2024	20240110-NST-01-Attended OOHW
8/01/2024	08:25pm-08:40pm	20240108-TBY-01	Osamah Naji	Attended	The Bays	OOHW Verification	291	TBY Site	17 Rumsay St, Rozelle	Vac Truck, Pump	NCA21	Night	40	29	45.2	37.4	68	No	Yes	Yes	N/A	N/A	No	Yes	Construction works inaudible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	20240108-TBY-Attended-OOHW
9/01/2024	10:00pm-10:15pm	20240109-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	4-12 Garfield st, FDK	Elevated Working Platform	NCA14	Night	38	44	50.1	46.8	59.9	Yes	Yes	Yes	N/A	N/A	No	Yes	Construction works audible but cars, pedestrian and airplane were dominant noise source.	Rion NL-42	23/05/2024	20240109-FDK-attended OOHW 384
9/01/2024	10:17pm-10:32pm	20240109-FDK-02	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	110 Great N Rd, FDK	Elevated Working Platform	NCA14	Night	43	47	65.2	52.1	85.2	Yes	Yes	Yes	N/A	N/A	No	Yes	Construction works audible but cars, pedestrian and airplane were dominant noise source.	Rion NL-42	23/05/2024	20240109-FDK-02-attended
10/01/2024	09:44pm-09:59pm	20240110-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	384	West cavern	110 Great N Rd, FDK	Elevated Working Platform	NCA14	Night	43	47	65.8	50.1	82	Yes	Yes	Yes	N/A	N/A	No	Yes	Construction works inaudible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	20240110-FDK-attended OOHW-DNVIS
10/01/2024	08:58pm-09:13pm	20240110-FDK-02	Osamah Naji	Attended	Five Dock	DNVIS Verification	384	West cavern	7 East St, FDK	Elevated Working Platform	NCA14	Night	38	46	62.9	51	79.6	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction works were dominant noise source. Traffic (bus and planes) also audible.	Rion NL-42	23/05/2024	20240110-FDK-attended OOHW-DNVIS
15/01/2024	09:58pm-10:13pm	20240115-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	380	Burwood Rd	28 Burton St Concord	Jet & Vav Combo Truck	NCA12	Night	47	73	82.6	57.7	93.7	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction works were dominant noise source. Traffic (bus and cars) also audible.	Rion NL-42	23/05/2024	20240115-BWD-attended OOHW 380
16/01/2024	10:56pm-11:10pm	20240116-FDK-01	Osamah Naji	Attended	Five Dock	OOHW Verification	384	West cavern	110 Great North Rd, FDK	EWP	NCA14	Night	43	47	63.8	52	79.4	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction works inaudible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	Noise monitoring report 20231216-FDK-01.docx
18/01/2024	08:56pm-09:10pm	20240118-FDK-01	Osamah Naji	Attended	Five Dock	OOHW Verification	384	West cavern	110 Great North Rd, FDK	EWP	NCA14	Night	43	47	68.3	56.4	92	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction works inaudible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	20240118-FDK-Attended OOHW 384
18/01/2024	09:15pm-09:30pm	20240118-FDK-02	Osamah Naji	Attended	Five Dock	OOHW Verification	384	West cavern	7 East St, FDK	EWP	NCA14	Night	38	46	54.7	52.3	70.4	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction works were dominant noise source. Traffic and pedestrian also audible.	Rion NL-42	23/05/2024	20240118-FDK-02-Attended OOHW 384
22/01/2024	9:15pm-9:30pm	20240122-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	319/391	South Shaft	8 Burwood Rd, BWD	Light Vechicles, Flatbed T, 120T	NCA13	Night	49	62	67.4	59.9	87.5	Yes	Yes	Yes	N/A	N/A	NO	Yes	Construction works audible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	20240122-BWD-01-Attended 319-391
23/01/2024	09:50pm-10:04pm	20240123-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	110 Great North Rd, FDK	2X 250 Drill and 1X generator	NCA15	Night	48	47	68.2	55.1	86.3	No	Yes	Yes	Yes	N/A	No	Yes	Construction works inaudible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	20240123-FDK-01-Attended
23/01/2024	10:10pm-10:24pm	20240123-FDK-02	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	7 East St, FDK	2X 250 Drill and 1X generator	NCA14	Night	38	46	60	47.4	79.4	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction works audible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	Noise monitoring report 20240123-FDK-02.docx
24/01/2024	09:32pm-09:47pm	20240124-NST-01	Osamah Naji	Attended	North Strathfield	OOHW Verification	378	Queen st, NST	123 Queen St, NST	Feet Truck	NCA11	Night	44	76	72.1	66.3	91.2	Yes	No	Yes	N/A	N/A	No	Yes	Construction works were dominant noise source. Traffic, airplane, and pedestrian also audible.	Rion NL-42	23/05/2024	Noise monitoring report 20240124-NSF-01.docx
29/01/2024	08:48pm-09:03pm	20240129-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification		West cavern	110 Great North Rd, FDK	EWP	NCA14	Night	48	47	69.1	54.7	88.2	No	Yes	Yes	Yes	N/A	No	Yes	Construction works inaudible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	20240129-FDK-Attended DNVIS
29/01/2024	09:21pm-09:35pm	20240129-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	310	Parramatta Rd	314 Parramatta Rd, Burwood	Quick Cut	NCA13	Night	53	56	71.6	64.3	85.3	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction works audible but not dominant noise source.	Rion NL-42	23/05/2024	20240129-BWD-Attended OOHW 310
30/01/2024	08:59pm-09:14pm	20240130-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification		West cavern	110 Great North Rd, FDK	EWP, Hand Tools	NCA14	Night	48	47	67.7	54.6	88.1	No	Yes	Yes	Yes	N/A	No	Yes	Construction works inaudible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	30012024-Attended-FDK-DNVIS
30/01/2024	09:48pm-10:02pm	20240130-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	308	Parramatta Rd	10-12 Burwood Rd, Burwood	Quick Cut	NCA13	Night	48	72	73	64.8	99.7	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction works audible but not dominant noise source.	Rion NL-42	23/05/2024	20240130-BWD-Attended OOHW 308
31/01/2024	09:25pm-09:39pm	20240131-NST-01	Osamah Naji	Attended	North Strathfield	OOHW Verification	385	Queen St,	121 Queen st, NST	Saw Cutter, Excavator 5T	NCA11	Night	44	90	67.3	59.8	87	Yes	No	Yes	N/A	N/A	No	Yes	Construction works were dominant noise source. Traffic was also audible.	Rion NL-42	23/05/2024	31012024-Attended-NST-OOHW 385
1/02/2024	08:27pm-08:41pm	20240201-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	110 Great North Rd, FDK	EWP, Hand Tools	NCA14	Night	48	47	69.4	57.9	90.2	No	Yes	Yes	Yes	N/A	No	Yes	Construction works inaudible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	20240201_Attended_DNVIS- FDK
2/02/2024	08:22pm-08:36pm	20240202-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	110 Great North Rd, FDK	EWP, Hand Tools	NCA14	Night	48	47	68.6	55.3	86.3	No	Yes	Yes	Yes	N/A	No	Yes	Construction works inaudible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	02022024-Attended-DNVIS-FDK
5/02/2024	5/2/24-13/2/24	20240205-GBN	Kelvin Nmereole	Unattended	Five Dock	DNVIS Verification	N/A	TBM Excavation	7 East Street, Five Dock	TBM Excavation	NCA14	Night	35	44.6	42.6	41.1	49.1	Yes	No	Yes	Yes	N/A	No	Yes	TBM Excavation	Svan958AG (sn 69084)	25/07/2024	20240205 GBN monitoring report 7 East Street.pdf
5/02/2024	08:47pm-09:01pm	20240205-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	110 Great North Rd, FDK	EWP, Hand Tools	NCA14	Evening	48	43	66	53.6	79.7	No	Yes	Yes	Yes	N/A	No	Yes	Construction works audible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	05022024-Attended-DNVIS-FDK-01
5/02/2024	09:25pm-09:39pm	20240205-FDK-02	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	4-12 Garfield st, FDK	EWP, Hand Tools	NCA14	Evening	46	41	33.8	50.6	79	No	No	Yes	Yes	N/A	No	Yes	Construction works audible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	05022024-Attended-DNVIS-FDK-02
6/02/2024	08:44pm-08:59pm	20240206-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	110 Great North Rd, FDK	EWP, Hand Tools	NCA14	Evening	48	43	66.1	55.8	90.6	No	Yes	Yes	Yes	N/A	No	Yes	Construction works audible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	06022024-Attended-DNVIS-FDK-01
6/02/2024	08:20pm-08:34pm	20240206-FDK-02	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	7 East St, FDK	EWP, Hand Tools	NCA14	Evening	46	43	56.4	54	73.3	No	Yes	Yes	Yes	N/A	No	Yes	Construction works audible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	06022024-Attended_DNVIS-FDK-02
7/02/2024	08:25pm-08:39pm	20240207-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	7 East St, FDK	EWP, Hand Tools	NCA14	Evening	46	43	57.3	51.3	84	No	Yes	Yes	Yes	N/A	No	Yes	Construction works audible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	07022024-Attended-DNVIS-FDK-01
7/02/2024	08:46pm-09:00pm	20240207-FDK-02	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	110 Great North Rd, FDK	EWP, Hand Tools	NCA14	Evening	48	43	65.9	55.2	82.6	No	Yes	Yes	Yes	N/A	No	Yes	Construction works audible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	07022024-Attended-DNVIS-FDK-02
8/02/2024	10:05pm-10:19pm	20240208-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	7 East St, FDK	EWP, Hand Tools	NCA14	Night	38	43	55	52.6	62.6	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction works audible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	08022024-Attended_DNVIS-FDK-01
8/02/2024	09:21pm-09:35pm	20240208-FDK-02	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	4-12 Garfield st, FDK	EWP, Hand Tools	NCA14	Evening	46	43	52.6	49.9	69.7	No	Yes	Yes	Yes	N/A	No	Yes	Construction works audible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	08022024-Attended_DNVIS-FDK-02
12/02/2024	08:31pm-08:45pm	20240212-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	7 East St, FDK	EWP, Hand Tools	NCA14	Evening	38	43	57.8	53.3	77.4	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction works audible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	12022024-Attended-DNVIS-FDK-01
13/02/2024	08:40pm-08:54pm	20240213-FDK-01	Osamah Naji	Attended	Burwood	OOHW Verification	310	Parramatta Rd	316 Parramatta Rd	5T Ecavator, Vac Truck	NCA13	Evening	48	81	73.9	70.6	84.3	Yes	No	Yes	Yes	N/A	No	Yes	Construction works audible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	20240213-Attended-BWD-01-310
14/02/2024	14/02/24 - 21/02/24	20240214-GBN	Christian Menini	Unattended	Five Dock	DNVIS Verification	N/A	XP 27	9A Rickard Street, Rodd Point	XP cutting and excavation	NCA17	Night	35	41	35	25	6	No	No	Yes	Yes	N/A	No	Yes	XP 27 Excavation. 31m deep and 18.3 Horizontal distance.	Svan958AG (Sn 59503)	25/07/2024	20240214 GBN monitoring report 9a Rickard
15/02/2024	08:29pm-08:43pm	20240215-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	7 East St, FDK	EWP, Hand Tools	NCA14	Evening	46	43	56.9	52.9	80.5	No	Yes	Yes	Yes	N/A	No	Yes	Construction works audible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	1502024-Attended-DNVIS-FDK-01
19/02/2024	08:24pm-08:38pm	20240219-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	7 East St, FDK	EWP, Hand Tools	NCA14	Evening	46	43	57.9	51.6	90.9	No	Yes	Yes	Yes	N/A	No	Yes	Construction works audible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	19022024-Attended-DNVIS-FDK-01
20/02/2024	08:14pm-08:28pm	20240220-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	7 East St, FDK	EWP, Hand Tools	NCA14	Evening	46	43	56.7	52	81.2	No	Yes	Yes	Yes	N/A	No	Yes	Construction works audible but cars and pedestrians were dominant noise source.	Rion NL-42	23/05/2024	20022024-Attended-DNVIS-FDK-01
21/02/2024	09:14pm-09:26pm	20240221-NST-01	Osamah Naji	Attended	North Strathfield	OOHW Verification	393	Queen St,	93 Queen st, NST	Hand Tools, Ute, Light Tower	NCA11	Evening	47	65	64.5	56.3	77	Yes	No	Yes	N/A	N/A	No	Yes	Construction works audible but not dominant noise source.	Rion NL-42	23/05/2024	21022024-Attended-OOHW-NST-01
26/02/2024	08:16pm-08:30pm	20240226-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	7 East St, FDK	EWP, Hand Tools	NCA14	Evening	46	43	57.6	53.8	79.1	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction works audible (50-52dba) but dominant noise sources were from cars, pedestrians, and airplanes.	Rion NL-42	23/05/2024	2602024-Attended-DNVIS-FDK-01
27/02/2024	08:01pm-08:15pm	20240227-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	7 East St, FDK	EWP, Hand Tools	NCA14	Evening	46	43	53.9	50.5	67.3	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction works audible (50-52dba) but dominant noise sources were from cars, pedestrians, and airplanes.	Rion NL-42	23/05/2024	27022024-Attended-DNVIS-FDK-01
27/02/2024	09:22pm-09:35pm	20240227-FDK-02	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	7 East St, FDK	EWP, Hand Tools	NCA14	Evening	46	43	55.5	51.5	77.7	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction works audible (50-52dba) but dominant noise sources were from cars, pedestrians, and airplanes.	Rion NL-42	23/05/2024	2702024-Attended-DNVIS-FDK-02
29/02/2024	11:22pm-11:35pm	20240229-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	7 East St, FDK	EWP, Hand Tools	NCA14	Night	38	42	55.9	55	62	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction works audible (50-52dba) and dominant noise sources.	Rion NL-42	23/05/2024	29022024-Attended-DNVIS-FDK-01
29/02/2024	10:48pm-11:02pm	20240229-FDK-02	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	West cavern	4-12 Garfield St, FDK	EWP, Hand Tools	NCA14	Night	38	38	55.2	49.5	72.4	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction works audible (38-40dba) but not dominant noise sources.	Rion NL-42	23/05/2024	29022024-Attended-DNVIS-FDK-02
4/03/2024	09:09pm-09:24pm	20240304-NST-01	Osamah Naji	Attended	North Strathfield	OOHW Verification	399	Queen St, NST	125 Queen St, NST	Line Marking, Vac T, UTE	NCA11	Evening	44	79	80.9	66.3	96	Yes	Yes	Yes	Yes	N/A	Yes	No	The construction works were dominant noise sources. The line marking truck initially caused the noise, but it was only	Rion NL-42	23/05/2024	04032024-Attended-OOHW-NST-399
11/03/2024	08:52pm-09:06pm	20240311-FDK-01	Osamah Naji	Attended	Five Dock	OOHW Verification	400	Second Ave	26 Waterview St, FDK	Truck, Bobcat, Road Profiler	NCA15	Evening	43	79	74.2	66	98	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities constituted the primary sources of noise. As anticipated, the noise level exceeded the NML during	Rion NL-42	23/05/2024	11032024-Attended-OOHW-FDK-01
11/03/2024	08:35pm-08:49pm	20240311-FDK-02	Osamah Naji	Attended	Five Dock	OOHW Verification	400	Second Ave	110 Great N Rd, FDK	Truck, Bobcat, Road Profiler	NCA15	Evening	43	91	76.3	69.1	90.5	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities constituted the primary sources of noise. As anticipated, the noise level exceeded the NML during	Rion NL-42	23/05/2024	11032024-Attended-OOHW-FDK-02
11/03/2024	08:13pm-08:27pm	20240311-FDK-03	Osamah Naji	Attended	Five Dock	OOHW Verification	400	Second Ave	2 Second Ave, FDK	Truck, Bobcat, Road Profiler	NCA15	Evening	43	86	82.8	72.9	104.4	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities constituted the primary sources of noise. As anticipated, the noise level exceeded the NML during	Rion NL-42	23/05/2024	11032024-Attended-OOHW-FDK-03
11/03/2024	10:07pm-10:21pm	20240311-FDK-04	Osamah Naji	Attended	Five Dock	OOHW Verification	400	Second Ave	2 Second Ave, FDK	Truck, Demo Saw, Bobcat,	NCA15	Night	43	86	90.5	72.3	104.1	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction activities were the primary sources of noise. As expected, the noise level exceeded the NML during the	Rion NL-42	23/05/2024	11032024-Attended-OOHW-FDK-04
13/03/2024	09:18pm-09:32pm	20240313-NST-01	Osamah Naji	Attended	North Strathfield	OOHW Verification	385	Queen St	123 Queen St, NST	Truck, 5T Excavator, Hand Tools	NCA11	Evening	44	70	69.2	54.7	94.2	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities constituted the primary sources of noise. As anticipated, the noise level exceeded the NML during	Rion NL-42	23/05/2024	13032024-Attended-OOHW-NST-385
14/03/2024	09:45pm-09:59pm	20240314-NST-01	Osamah Naji	Attended	North Strathfield	OOHW Verification	385	Queen St	25 Beronga St, NST	Truck, 5T Excavator, Hand Tools	NCA11	Evening	44	74	63.3	60.8	80.1	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities constituted the primary sources of noise. As anticipated, the noise level exceeded the NML during	Rion NL-42	23/05/2024	14032024-Attended_OOHW-NST-385
20/03/2024	09:11pm-09:25pm	20240320-NST-01	Osamah Naji	Attended	North Strathfield	OOHW Verification	382	Queen St	23 Beronga St, NST	Vac Truck	NCA11	Evening	44	79	77.7	63.5	83.3	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities constituted the primary sources of noise. As anticipated, the noise level exceeded the NML during	Rion NL-42	23/05/2024	20032024-Attended-OOHW-NST-382
8/04/2024	08:10pm-08:24pm	20240408-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	310	Parramatta Rd	1A Loftus St, BWD	Truck, 5T Excavator, Hand tools	NCA12	Evening	48	67	62.2	53.1	86.9	Yes	No	Yes	Yes	N/A	No	Yes	Construction works audible (58-62dba) but not dominant noise sources.	Rion NL-42	23/05/2024	20240408-Attended-OOHW-BWD-310
15/04/2024	07:31pm-07:45pm	20240415-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	Station box	9 East St, FDK	Booster, Convyor belt	NCA15	Evening	46	44	54.6	51.1	77.1	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction activities were audible, but so were cars, airplanes, and pedestrians.	Rion NL-42	23/05/2024	20240415-Attended-DNVIS-FDK-01
22/04/2024	08:25pm-08:39pm	20240422-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	Station box	9 East St, FDK	Booster, Convyor belt	NCA15	Evening	46	44	61.1	52.4	78.9	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars, airplanes, and pedestrians.	Rion NL-42	23/05/2024	20240422-Attended-DNVIS-FDK-01
24/04/2024	06:00pm-06:14pm	20240424-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	N/A	Parramatta Rd	1A Loftus St, BWD	Hand Tools	NCA12	Evening	48	N/A	63	55.1	92.6	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction activities were inaudible, but the dominant noise sources were cars on Parramatta Rd.	Rion NL-42	23/05/2024	20240424-Attended-DNVIS-BWD-01
24/04/2024	08:53pm-09:07pm	20240424-BWD-02	Osamah Naji	Attended	Burwood	OOHW Verification	N/A	Parramatta Rd	1A Loftus St, BWD	AGI Truck	NCA12	Evening	48	N/A	62.8	60	76	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars on Parramatta Rd.	Rion NL-42	23/05/2024	20240424-Attended-DNVIS-BWD-02
29/04/2024	08:43pm-08:57pm	20240429-BWD-01	Osamah Naji	Attended	Burwood	DNVIS Verification	N/A	Parramatta Rd	1A Loftus St, BWD	Hand Tools	NCA12	Evening	48	40	61.4	65.9	75.1	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction activities were inaudible, but the dominant noise sources were airplane and cars on Parramatta Rd.	Rion NL-42	23/05/2024	20240429-Attended-DNVIS-BWD-01
6/05/2024	09:26pm-09:40pm	20240506-NST-01	Osamah Naji	Attended	North Strathfield	OOHW Verification	410	Station box	101 Queen St, NST	Cable Winch, Hand Tools	NCA11	Evening	48	48	59.2	54.3	68.1	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were inaudible, and the dominant noise sources were traffic and pedestrians.	SVANTEK, 34933	8/04/2025	20240506-Attended-OOHW-NST-01
6/05/2024	10:23pm-10:36pm	20240506-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	308/405	Burwood Rd	28 Burton St, BWD	avator, Vac Truck, 2T Tripper, 8T T	NCA11	Night	47	82	69.6	66.8	75.5	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were audible and dominant noise sources. However, AFJV has provided alternative accommodation	SVANTEK, 34933	8/04/2025	20240506-Attended-OOHW-BWD-01
9/05/2024	09:38pm-09:52pm	20240509-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	308/405	Parramatta Rd	8 Burwood Rd	avator, Vac Truck, 2T Tripper, 8T T	NCA13	Night	44	75	69.7	67.1	83.9	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars on Parramatta Rd.	SVANTEK, 34933	8/04/2025	20240509-Attended-OOHW-BWD-01
13/05/2024	08:58pm-09:12pm	20240513-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	408/405	Burwood Rd/	6 Burwood Rd	avator, Vac Truck, 2T Tripper, 8T T	NCA13	Evening	47	80	67.6	65.3	86.2	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars on Parramatta Rd.	SVANTEK, 34933	8/04/2025	20240513-Attended-OOHW-BWD-01
20/05/2024	09:16pm-09:30pm	20240520-NST-01	Osamah Naji	Attended	North Strathfield	OOHW Verification	415	Queen St	123 Queen St, NST	300T crane, truck	NCA11	Evening	48	74	64.1	62.3	71.2	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were the primary sources of noise. As expected, the noise level exceeded the NML during the	SVANTEK, 34933	8/04/2025	20240520-Attended-OOHW-NST-01
21/05/2024	08:27pm-08:41pm	20240521-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	404	Loftus St, BWD	1a Loftus St, BWD	Truck, Profiler, Vibratory, Bobcat	NCA12	Evening	47	92	78.3	77.4	91.7	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were the primary sources of noise. As expected, the noise level exceeded the NML during the	SVANTEK, 34933	8/04/2025	20240430-Attended-DNVIS-BWD-01
23/05/2024	07:03pm-07:17pm	20240523-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	Station box	9 East St, FDK	Booster, Convyor belt	NCA15	Evening	46	46	57	49.9	74.7	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars, airplanes, and pedestrians.	Rion NL-42	7/05/2025	20240523-Attended-DNVIS-FDK-01
27/05/2024	08:03pm-08:23pm	20240527-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	412 & 310	Parramatta Rd, BWD	8 Burwood Rd	Vac Truck, 5T Excavator, Quick Cu	NCA12	Evening	48	72.2	70.3	60.9	86.5	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were the primary sources of noise. As expected, the noise level exceeded the NML during the	Rion NL-42	7/05/2025	20240527-Attended-OOHW-BWD-01
30/05/2024	09:55pm-10:09pm	20240530-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	308	Parramatta Rd, BWD	8 Burwood Rd	Vac Truck, Truck, Saw Cutter	NCA12	Evening	48	71	72	65	89.4	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were the primary sources of noise. As expected, the noise level exceeded the NML during the	Rion NL-42	7/05/2025	20240530-Attended-OOHW-BWD-01
31/05/2024	10:05pm-10:19pm	20240531-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	Station box	7 East St, FDK	Booster, Convyor belt, Crusher	NCA15	Night	38	38	53.5	50.5	70.2	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars, airplanes, and pedestrians.	Rion NL-42	7/05/2025	20240531-Attended-DNVIS-FDK-01
31/05/2024	10:28pm-10:42pm	20240531-FDK-02	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	Station box	110 Great north Rd, FDK	Booster, Convyor belt, Crusher	NCA15	Night	43	43	68.2	55.5	88.5	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars, airplanes, and pedestrians.	Rion NL-42	7/05/2025	20240531-Attended-DNVIS-FDK-02
12/06/2024	07:20pm-07:34pm	20240612-FDK-01	Osamah Naji	Attended	Five Dock	DNVIS Verification	N/A	Station box	3 East St, FDK	Booster, Convyor belt, Crusher	NCA15	Evening	46	46	59.9	48.7	87.3	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars, airplanes, and pedestrians.	Rion NL-42	7/05/2025	20240612-Attended-DNVIS-FDK-01
13/06/2024	10:20pm-10:34pm	20240613-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	308 & 405	Parramatta Rd, BWD	8 Burwood Rd	ıd Tools, 6T Excavator, Wacker Pa	NCA12	Night	49	77.4	68.1	61.9	86	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were the primary sources of noise. As expected, the noise level exceeded the NML during the	Rion NL-42	7/05/2025	20240613-Attended-OOHW-BWD-01
17/06/2024	09:00pm-09:14pm	20240617-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	308	Parramatta Rd, BWD	1A Loftus St, BWD	or, Wacker Backer, Hand Tools, Cc	NCA12	Evening	47	58	56	49.6	71	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were the primary sources of noise. As expected, the noise level exceeded the NML during the	Rion NL-42	7/05/2025	20240617-Attended-OOHW-BWD-01
17/06/2024	09:18pm-09:32pm	20240617-BWD-02	Osamah Naji	Attended	Burwood	OOHW Verification	308	Parramatta Rd, BWD	16 Burton St, BWD	or, Wacker Backer, Hand Tools, Cc	NCA12	Evening	47	63	56.8	48.7	79.4	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were the primary sources of noise. As expected, the noise level exceeded the NML during the	Rion NL-42	7/05/2025	20240617-Attended-OOHW-BWD-02
17/06/2024	09:38pm-09:52pm	20240617-BWD-03	Osamah Naji	Attended	Burwood	OOHW Verification	308	Parramatta Rd, BWD	8 Burwood Rd, BWD	or, Wacker Backer, Hand Tools, Cc	NCA12	Evening	47	71	71	64.8	85.3	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were the primary sources of noise. As expected, the noise level exceeded the NML during the	Rion NL-42	7/05/2025	20240617-Attended-OOHW-BWD-03
17/06/2024	08:27pm-08:41pm	20240617-FDK-01	Osamah Naji	Attended	Five Dock	OOHW Verification	423	Station box	9 East St, FDK	Booster, Convyor belt, Crusher	NCA14	Evening	46	46	54.4	56.2	76.8	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars, airplanes, and pedestrians.	Rion NL-42	7/05/2025	20240617-Attended-OOHW-FDK-01
17/06/2024	07:48pm-08:02pm	20240617-FDK-02	Osamah Naji	Attended	Five Dock	OOHW Verification	423	Station box	110 Great N Rd, FDK	Booster, Convyor belt, Crusher	NCA15	Evening	48	48	68	55	90.4	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars, airplanes, and pedestrians.	Rion NL-42	7/05/2025	20240617-Attended-OOHW-FDK-02
18/06/2024	09:00pm-09:14pm	20240618-FDK-01	Osamah Naji	Attended	Five Dock	OOHW Verification	423	Station box	9 East St, FDK	Booster, Convyor belt, Crusher	NCA14	Evening	46	46	52.1	50.4	67.6	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars, airplanes, and pedestrians.	Rion NL-42	7/05/2025	20240618-Attended-OOHW-FDK-01
18/06/2024	10:03pm-10:17pm	20240618-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	308	Parramatta Rd, BWD	8 Burwood Rd, BWD	or, Wacker Backer, Hand Tools, Cc	NCA12	Evening	47	71	69.5	61.5	83.9	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were the primary sources of noise. As expected, the noise level exceeded the NML during the	Rion NL-42	7/05/2025	20240618-Attended-OOHW-BWD-01
19/06/2024	09:00pm-09:14pm	20240619-FDK-01	Osamah Naji	Attended	Five Dock	OOHW Verification	423	Station box	3 East St, FDK	Booster, Convyor belt, Crusher	NCA14	Evening	46	46	61.1	50	79.5	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars, airplanes, and pedestrians.	Rion NL-42	7/05/2025	20240619-Attended-OOHW-FDK-01
20/06/2024	09:02pm-09:16pm	20240620-FDK-01	Osamah Naji	Attended	Five Dock	OOHW Verification	423	Station box	5 East St, FDK	Booster, Convyor belt, Crusher	NCA14	Evening	46	46	60.1	51.5	78.4	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars, airplanes, and pedestrians.	Rion NL-42	7/05/2025	20240620-Attended-OOHW-FDK-01
20/06/2024	10:02pm-10:16pm	20240620-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	308	Parramatta Rd, BWD	8 Burwood Rd, BWD	or, Wacker Backer, Hand Tools, Cc	NCA12	Evening	47	71	71	63.6	87	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars, airplanes, and pedestrians.	Rion NL-42	7/05/2025	20240620-Attended-OOHW-BWD-01
25/06/2024	10:05pm-10:19pm	20240625-FDK-01	Osamah Naji	Attended	Five Dock	OOHW Verification	423	Station box	5 East St, FDK	Booster, Convyor belt, Crusher	NCA14	Night	38	38	57	51.5	75.3	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars, airplanes, and pedestrians.	Rion NL-42	7/05/2025	20240625-Attended-OOHW-FDK-01
25/06/2024	10:29pm-10:43pm	20240625-BWD-01	Osamah Naji	Attended	Burwood	OOHW Verification	308	Parramatta Rd, BWD	1A Loftus St, BWD	or, Wacker Backer, Hand Tools, Cc	NCA12	Night	47	63.1	59.4	50.5	79	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were the primary sources of noise. As expected, the noise level exceeded the NML during the	Rion NL-42	7/05/2025	20240625-Attended-OOHW-BWD-01
25/06/2024	10:47pm-11:00pm	20240625-BWD-02	Osamah Naji	Attended	Burwood	OOHW Verification	308	Parramatta Rd, BWD	16 Burton St, BWD	or, Wacker Backer, Hand Tools, Cc	NCA12	Night	47	67.3	52.1	48.1	71.3	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were the primary sources of noise. As expected, the noise level exceeded the NML during the	Rion NL-42	7/05/2025	20240625-Attended-OOHW-BWD-02
25/06/2024	11:08pm-11:22pm	20240625-BWD-03	Osamah Naji	Attended	Burwood	OOHW Verification	308	Parramatta Rd, BWD	8 Burwood Rd, BWD	or, Wacker Backer, Hand Tools, Cc	NCA12	Night	49	76.3	69.1	61.3	89.3	Yes	No	Yes	Yes	N/A	No	Yes	Construction activities were the primary sources of noise. As expected, the noise level exceeded the NML during the	Rion NL-42	7/05/2025	20240625-Attended-OOHW-BWD-03
27/06/2024	11:00pm-11:14pm	20240627-FDK-01	Osamah Naji	Attended	Five Dock	OOHW Verification	423	Station box	7 East St, FDK	Booster, Convyor belt, Crusher	NCA14	Night	38	38	50.7	48.4	69.4	Yes	Yes	Yes	Yes	N/A	No	Yes	Construction activities were audible, but the dominant noise sources were cars, airplanes, and pedestrians.	Rion NL-42	7/05/2025	20240627-Attended-OOHW-FDK-01

afJV

Noise Monitoring Report

Project:	Sydney Metro West – Central Tunnelling Package			**Report No.**	*20240613-BWD-01*
Site:	**BWD**			**Monitoring type:**	Attended ☒ Unattended ☐
Data collected by:	**Osamah Naji**			**Date:**	13/06/2024
Purpose of monitoring:	**DNVIS Verification**		**OOHW#:**	308 & 405	
	OOHW Permit Verification			**Time:**	**Start: 10:20pm End: 10:34pm**
	Complaint Response				

Construction noise source and description of activity:	**Monitoring location/s:**	**NCA**	**NML (dB)**	**Prediction (dB)**
6T Excavador, Wacker Backer, Hand Tools	**8 Burwood Rd, BWD**	**13**	**49**	**77.4**

Meteorological conditions			
Temperature (°C):	13	**Cloud cover (%):**	55
Wind (km/hr and direction)	4	**Rainfall:**	**No**
Instrumentation details (include serial number):	**Rion NL-42**	**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 OOHW 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. Plant has been selected to reduce impact on residents as far as reasonably practicable.
3. All efforts are being made to schedule noisy works to the earliest part of the shift, with sawing being limited to 12am.
4. Specific sequencing of the construction activities drives the work program to priorities minimizing noise impacts on neighboring residents and the local community.
5. Additional mitigation such as noise mats and enclosures will be employed around noisy equipment where practicable.
6. 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.
7. Potentially affected receivers will be notified. Where necessary additional noise mitigation measures from the Sydney Metro Construction Noise and Vibration Standard (CNVS) have been specified in table 14 of the accompanying noise assessment reports and indicated for each receiver in Appendix B of the report.
8. The workforce induction will include particular emphasis on positive behavioral practices such as avoiding unnecessary shouting or loud radios on site.
9. Priority has been given to the use of quieter and less vibration-emitting construction methods and plant alternatives where feasible and reasonable.
10. The noise levels of the plant and equipment will meet the maximum noise requirements of the CNVS.
11. 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.
12. All plant movement alarms are to be non-tonal as per project policy.
13. 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.):

Construction activities were audible, but traffic on Parramatta Rd was also noticeable. However, AFJV has provided alternative accommodation (AA). The construction noise level was around 64-66 dBA.

afJV

10:20 – 10:34 Pm 405 308 13/6/24

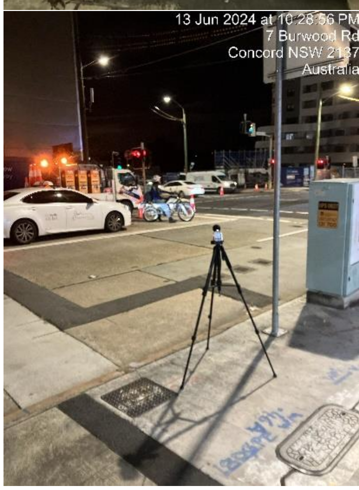
osand

Location	Time	Observations	LAeq dBA	LA10 dBA	LA90 dBA	LAmax dBA
8 Burwood Rd BWD	10:20	68.9 Bus + Traffic				
	10:21	62.8 Traffic				
	10:22	69.7 "				
	10:23	75.9 " excavator				
	10:24	71.9 " "				
	10:25	63.4 " Peel [illegible]				
	10:26	66.6 "	68.1	70	61.9	86.
	10:27	68.5 " Vibratory Roller				
	10:28	66.1 "				
	10:29	77.3 "				
	10:30	86.1 "				
	10:31	64.3 " excavator				
	10:32	65.5 " "				
	10:33	61.3 "				
	10:34	60.2 "				


13 Jun 2024 at 10:26:18 PM
344 Parramatta Rd
Burwood NSW 2134
Australia


13 Jun 2024 at 10:29:03 PM
7 Burwood Rd
Concord NSW 2137
Australia


13 Jun 2024 at 10:32:27 PM
7 Burwood Rd
Concord NSW 2137
Australia


13 Jun 2024 at 10:28:56 PM
7 Burwood Rd
Concord NSW 2137
Australia


13 Jun 2024 at 10:34:10 PM
5 Burwood Rd
Concord NSW 2137
Australia


13 Jun 2024 at 10:34:42 PM
7 Burwood Rd
Concord NSW 2137
Australia
RION
SOUND LEVEL METER
NL-42
LAeq 68.1 dB
LAFmax 86.0 dB
LAF10 70.0 dB
LAF90 61.9 dB
START/STOP
PAUSE/CONT


13 Jun 2024 at 10:19:39 PM
5 Burwood Rd
Concord NSW 2137
Australia
made different

Attachment A: Monitoring, work locations & photos

Monitoring Location

Working Area

Work Location

Noise Monitoring Report

Project:	Sydney Metro West – Central Tunnelling Package				**Report No.**	*20240506-BWD-01*		
Site:	**BWD**				**Monitoring type:**	Attended ☒ Unattended ☐		
Data collected by:	**Osamah Naji**				**Date:**	06/05/2024		
Purpose of monitoring:	**DNVIS Verification**	☒	**OOHW#:**	308& 405	**Time:**	**Start: 10:23pm End: 10:36pm**		
	OOHW Permit Verification	☐						
	Complaint Response	☐						
Construction noise source and description of activity:					**Monitoring location/s:**	**NCA**	**NML (dB)**	**Prediction (dB)**
5T Excavator, Vac Truck, 2T Tripper, 8T Tripper					**28 Burton St, BWD**	**12**	**47**	**82**
Meteorological conditions								
Temperature (°C):	15				**Cloud cover (%):**	90		
Wind (km/hr and direction)	6				**Rainfall:**	**No**		
Instrumentation details (include serial number):	SVANTEK, 34933				**Calibration valid until:**	08/04/2025		
					Field Calibrated?	**YES** ☒ **NO** ☐		
Assessment of light spill:								
Instrumentation and method:								
Tripod 1.5-meter Height, Rion NL-42 **15 minutes** **Attended OOHW 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.

- All plant movement alarms are to be non-tonal as per project policy. **- Noise matts to be used were reasonably and feasibly possible** **- Noise-emitting plant to be directed away from sensitive receivers where possible.** **- Plant & equipment to be switched off when not in use.** **- The workforce induction will include particular emphasis on positive behavioural practices such as avoiding unnecessary shouting or loud radios on site where low voice communication to be maintained.** **- Sequencing of the construction activities to prioritise minimizing noise impacts on neighboring residents and the local community especially later through the night.**
Results summary description: (ie, including dominant noise sources, contribution of project activities, non-construction related sources, highest noise source, etc.):
Construction activities were audible and dominant noise sources. However, AFJV has provided alternative accommodation for receivers.

afJV

Odhiambo
P2 405-308 10:23 - 10:36pm
6/5/24

afJV

Osande

Location	Time	Observations	LAeq dBA	LA10 dBA	LA90 dBA	LAmax dBA
28	10:23	67-2 excavator 5T				
Bottom	10:24	69-7 " "				
SJ	10:25	70-1 " " + Bus				
BuP	10:26	69-6 " "				
	10:27	70-9 " " Cars				
	10:28	66-2 " "	69.6		66.8	75.5
	10:29	71-3 " "				
	10:30	75-5 " " Cars				
	10:31	67-3 " " "				
	10:32	73-4 " " "				
	10:33	69-9 " "				
	10:34	68-5 " "				
	10:35	69-9 " "				
	10:36	72-7 " " Cars				

AFJV | NOISE MONITORING REPORT | SMWSTCTP-AFJ-1NL-NV-FRM-000001 REV 01 06/03/24 3


6 May 2024 at 10:24:00 PM
11–13 Burwood Rd
Concord NSW 2137
Australia


6 May 2024 at 10:24:30 PM
11–13 Burwood Rd
Concord NSW 2137
Australia


6 May 2024 at 10:24:05 PM
11–13 Burwood Rd
Concord NSW 2137
Australia


6 May 2024 at 10:24:12 PM
11–13 Burwood Rd
Concord NSW 2137
Australia


6 May 2024 at 10:28:31 PM
28 Burton St
Concord NSW 2137
Australia


6 May 2024 at 10:25:08 PM
14–18 Burwood Rd
Concord NSW 2137
Australia


6 May 2024 at 10:24:46 PM
11–13 Burwood Rd
Concord NSW 2137
Australia


6 May 2024 at 10:30:25 PM
11–13 Burwood Rd
Concord NSW 2137
Australia

Attachment A: Monitoring, work locations & photos

Monitoring Location

Working Area

Work Location

Noise Monitoring Report

Project:	Sydney Metro West – Central Tunnelling Package				**Report No.**	*20240515-NST-01*
Site:	**NST**				**Monitoring type:**	Attended ☒ Unattended ☐
Data collected by:	**Osamah Naji**				**Date:**	15/05/2024
Purpose of monitoring:	**DNVIS Verification**		**OOHW#:**	415	**Time:**	**Start: 09:16 pm End: 09:30pm**
	OOHW Permit Verification	☒				
	Complaint Response					

Construction noise source and description of activity:	**Monitoring location/s:**	**NCA**	**NML (dB)**	**Prediction (dB)**
2 Flatbed T, Mobile crane 300	**123 Queen St, NST**	**11**	**44**	**74**

Meteorological conditions			
Temperature (°C):	13	**Cloud cover (%):**	35
Wind (km/hr and direction)	7	**Rainfall:**	**No**
Instrumentation details (include serial number):	SVANTEK, 34933	**Calibration valid until:**	08/04/2025
		Field Calibrated?	**YES** ☒ **NO** ☐
Assessment of light spill:			

Instrumentation and method:

Tripod 1.5-meter Height, Rion NL-42

15 minutes

Attended OOHW 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. **Plant has been selected to reduce impact on residents as far as reasonably practicable.**
3. **All efforts are being made to space truck arrivals evenly to avoid backing up of trucks on the road**
4. **Specific sequencing of the construction activities drives the work program to priorities minimizing noise impacts on neighboring residents and the local community.**
5. **Noise monitoring at sensitive receptors will be used to confirm noise impacts predicted during modelling. Work will be under-taken to reduce impacts should thresholds look set to be exceeded.**
6. **Potentially affected receivers will be notified. Where necessary additional noise mitigation measures from the Sydney Metro Construction Noise and Vibration Standard (CNVS) have been specified in table 14 of the accompanying noise assessment reports and indicated for each receiver in Appendix B of the report.**
7. **The workforce induction will include particular emphasis on positive behavioral practices such as avoiding unnecessary shouting or loud radios on site.**
8. **Priority has been given to the use of quieter and less vibration-emitting construction methods and plant alternatives where feasible and reasonable.**
9. **The noise levels of the plant and equipment will meet the maximum noise requirements of the CNVS.**
10. **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.**
11. **All plant movement alarms are to be non-tonal as per project policy.**
12. **Radios to be turned down to low volume where practical.**

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

Construction activities were the dominant noise sources. However, AFJV has provided AA for receivers.

afJV

P-415 20/5/24 Osamah

afJV

9:16 - 9:30 pm -

Location	Time	Observations	LAeq dBA	LA10 dBA	LA90 dBA	LAmax dBA
123	9:16	64.1 300T Crane				
Queen	9:17	71.2 〃				
St,	9:18	67.1 〃				
NSF	9:19	70.8 〃				
	9:20	66.1 〃				
	9:21	62.2 〃	64.1	64.3	62.3	71.2
	9:22	67.1 〃				
	9:23	61.1 〃				
	9:24	60.8 〃				
	9:25	63.4 〃				
	9:26	64.2 〃				
	9:27	61.5 〃				
	9:28	65.1 〃				
	9:29	62.4 〃				
	9:30	61.8				

Attachment A: Monitoring, work locations & photos

Monitoring Location

Crane Location

Site location

Noise Monitoring Report

Project:	Sydney Metro West – Central Tunnelling Package				**Report No.**	*20240311-FDK-01*
Site:	**FDK**				**Monitoring type:**	Attended ☒ Unattended ☐
Data collected by:	**Osamah Naji**				**Date:**	11/03/2024
Purpose of monitoring:	**DNVIS Verification**	☐	**OOHW#:**	400	**Time:**	**Start: 08:52 End: 09:06**
	OOHW Permit Verification	☒				
	Complaint Response	☐				

Construction noise source and description of activity:	**Monitoring location/s:**	**NCA**	**NML (dB)**	**Prediction (dB)**
Truck, Bobcat, Road Profiler	**26 Waterview St, FDK**	**15**	**43**	**79**

Meteorological conditions			
Temperature (°C):	19	**Cloud cover (%):**	30
Wind (km/hr and direction)	4	**Rainfall:**	**No**
Instrumentation details (include serial number):	Rion NL-42 C36211	**Calibration valid until:**	13/05/2024
		Field Calibrated?	**YES** ☒ **NO** ☐
Assessment of light spill:			

Instrumentation and method:

Tripod 1.5-meter Height, Rion NL-42

15 minutes

Attended OOHW 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 plant to be directed away from sensitive receivers where possible.**
3) **Plant & equipment to be switched off when not in use.**
4) **The workforce induction will include particular emphasis on positive behavioural practices such as avoiding unnecessary shouting or loud radios on site where low voice communication to be maintained.**
5) **Sequencing of the construction activities to prioritise minimising noise impacts on neighbouring residents and the local community especially later through the night.**
6) **workers to be briefed at prestart to ensure they don't make unnecessary noise.**
7) **Alternative accommodation for highly effected residence.**
8) **High Noise Works to be conducted prior to 10:00.**

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

Construction activities constituted the primary sources of noise. As anticipated, the noise level exceeded the NML during the monitoring period. Surprisingly, the predicted level was not surpassed. Nonetheless, AFJV has provided alternative accommodation for the receivers and implemented additional mitigation measures, as mentioned above.

af JV

Permit 400

8:52-9:06 11/3/24

Osamah

af JV

Location	Time	Observations	LAeq dBA	LA10 dBA	LA90 dBA	LAmax dBA
	8:52	75-9 Truck+ profiler				
eb	8:53	78-7 〃 〃				
water						
vein	8:54	79-1 〃 〃				
sf	8:55	79.8 〃 〃				
FOK	8:56	72-4 〃	71.2	77.6	66	98
	8:57	98-1 Dog.				
	8:58	78.4 Bob cat + Truck				
	8:59	85.1 〃 〃 〃				
	9:00	67.7 〃 〃				
		Truck profiler				
	9:01	73-1 〃				
	9:02	76-8 〃				
	9:03	74-9 〃 〃				
	9:04	71.4 〃 〃				
	9:05	72-2 Truck				
	9:06	62-2 Truck away				

3

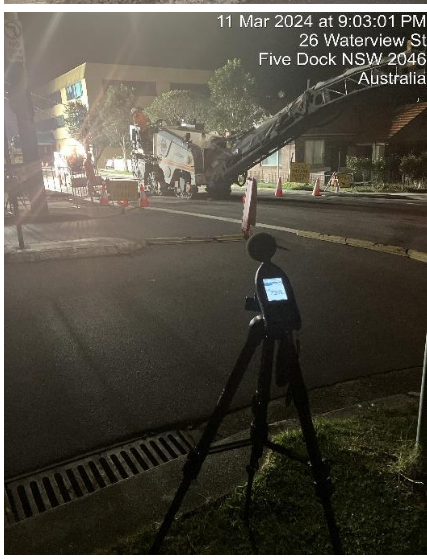
AFJV | NOISE MONITORING REPORT | SMWSTCTP-AFJ-1NL-NV-FRM-000001 REV 01 06/03/24


11 Mar 2024 at 8:52:27 PM
28 Waterview St
Five Dock NSW 2046
Australia


11 Mar 2024 at 8:52:11 PM
28 Waterview St
Five Dock NSW 2046
Australia


11 Mar 2024 at 8:55:27 PM
31 Waterview St
Five Dock NSW 2046
Australia


11 Mar 2024 at 8:57:27 PM
3 Second Ave
Five Dock NSW 2046
Australia


11 Mar 2024 at 9:03:01 PM
26 Waterview St
Five Dock NSW 2046
Australia


11 Mar 2024 at 9:07:09 PM
31 Waterview St
Five Dock NSW 2046
Australia
SLM 83%
WS None
Auto 15min 0d 00:15:00
Lp 100ms Leq 15min 000002
30 50 70 90 110 130
LAeq 74.2 dB
LAFmax 98.0 dB
LAF10 77.6 dB
LAF90 66.0 dB
01/01 00:54:06


11 Mar 2024 at 8:55:34 PM
31 Waterview St
Five Dock NSW 2046
Australia


11 Mar 2024 at 8:56:18 PM
37 Waterview St
Five Dock NSW 2046
Australia

Attachment A: Monitoring, work locations & photos

Monitoring Location   Work carries in cavern   Site location.

Attended Noise Monitoring Rion-42- 1A Loftus St, Burwood.

Attended Noise Monitoring Rion-42- 23 Beronga St, North Strathfield.

Attended Noise Monitoring Rion-42- 26 Waterview St, Five Dock.

Attended Noise Monitoring Rion-42- 1-3 Burwood Rd, Burwood.

Attended Noise Monitoring Rion-42- 110 Great North Rd, Five Dock.

Attended Noise Monitoring Rion-42- 15-17 Waratah St, North Strathfield.

APPENDIX A (ii) – SOUND POWER LEVELS

Location	Plant	Monitored SWL (dB(A))	Compliant with CNVS Table 13	Date
FDK	**Conveyor**	95	Not listed	27/02/2024
FDK	**Harmonic Sub**	89	Not listed	22/02/2024
NST	**Generator 2.5 Kva**	81	Not listed	21/03/2024
FDK	**Booster**	96	Not listed	15/04/2024
PCY	**Steel Fiber Weighing**	105	Not listed	15/05/2024
PCY	**Front end loader pouring aggregate into the boot bin**	100	Not listed	15/05/2024
PCY	**Truck unloading**	117	Not listed	15/05/2024
PCY	**Dog unloading aggregate**	128	Not listed	15/05/2024
PCY	**Pan Mixers and silos**	98	Not listed	15/05/2024
PCY	**Rattle gun**	115	Not listed	15/05/2024
BWD	**Grout Plant**	104	Not listed	21/05/2024
BWD	**Harmonic Sub**	79	Not listed	22/05/2024

APPENDIX A (iii) – RESULTS

Sydney Metro West - CTP

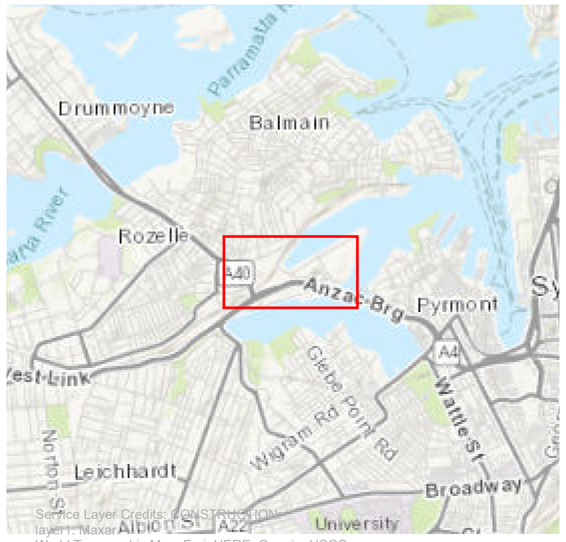
The Bays

Shared access areas

Ancillary facility location

Indicative location of unattended noise monitor

N
0 0.05 0.1 0.2 km



Map Creation Date: 6/14/2023

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.

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Sydney Metro West - CTP

Five Dock

Ancillary facility location

Indicative location of unattended noise monitor

Indicative location of unattended vibration monitor

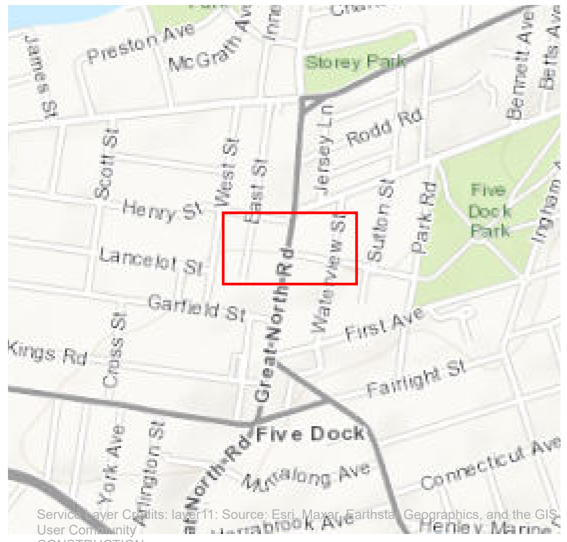
Note:

During this reporting period, St Albans unattended noise monitor was moved approximately 24 meters to the East to better capture the acoustic profile of the project.

The indicative point displayed in this image is accurate to current condition.

N

0 0.01 0.03 0.06 km



Map Creation Date: 6/9/2023

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.

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Sydney Metro West - CTP

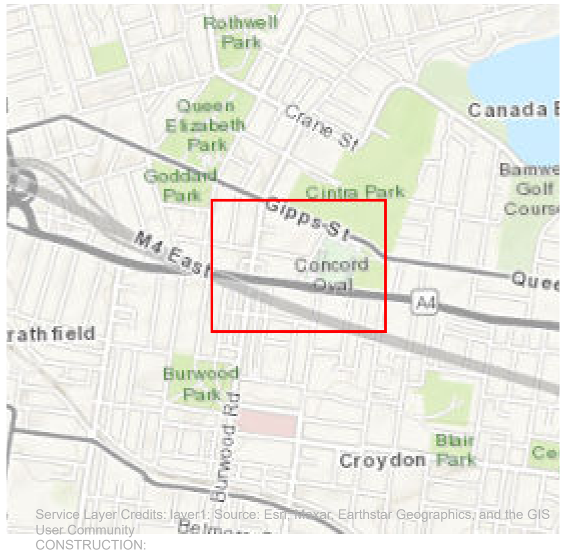
Burwood North

Indicative location of unattended noise monitor

Indicative location of unattended vibration monitor

N

0 0.03 0.06 0.12 km



Map Creation Date: 6/9/2023

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.

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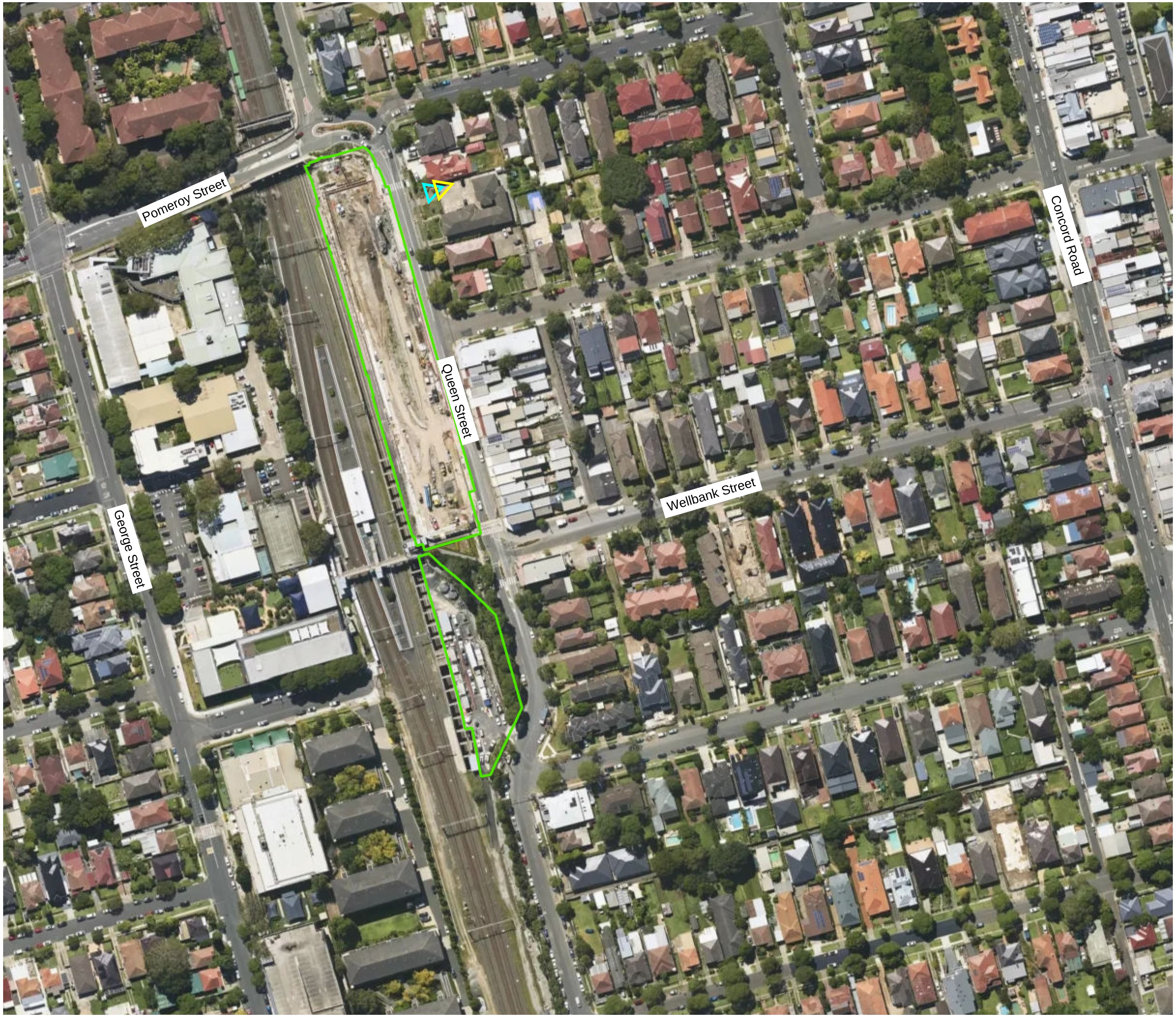
ArcGIS Web Map



North Strathfield

Indicative location of unattended noise monitor

Indicative location of unattended vibration monitor

N

0 0.03 0.06 0.12 km

Map Creation Date: 5/30/2023

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.

afJV

Sydney Metro West - CTP

Olympic Park

Indicative location of unattended noise monitor

Indicative location of unattended vibration monitor

N

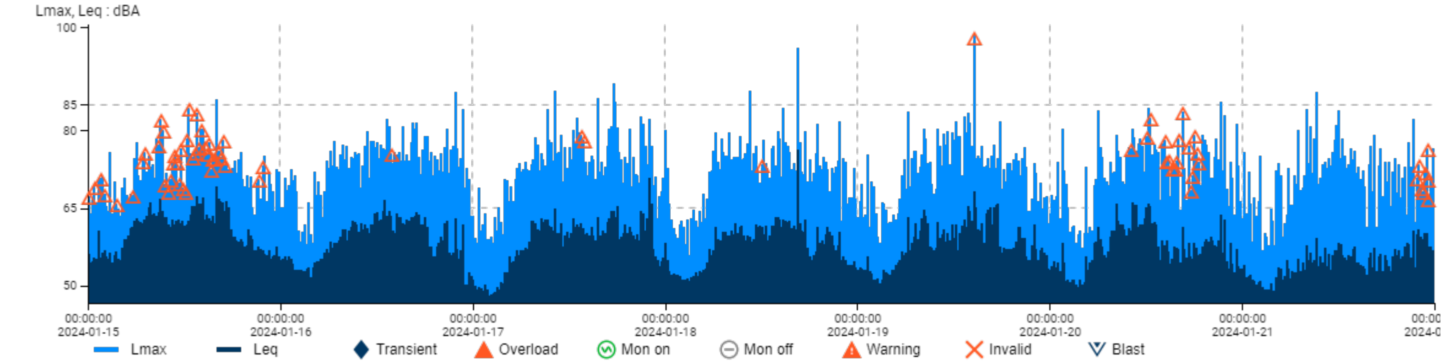
0 0.03 0.06 0.12 km

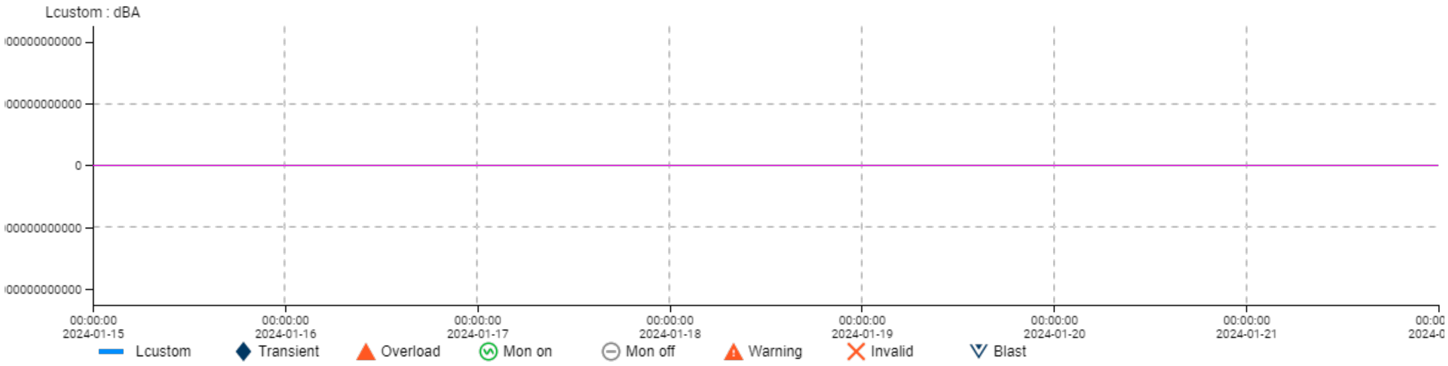
Map Creation Date: 6/9/2023

afJV

Interval report

Project	BWD
Project maintainer	-
Time frame	2024-01-15 00:00 - 2024-01-22 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High
Max	Lmax: 98.4 dBA, Leq: 76.2 dBA, Lcustom: null



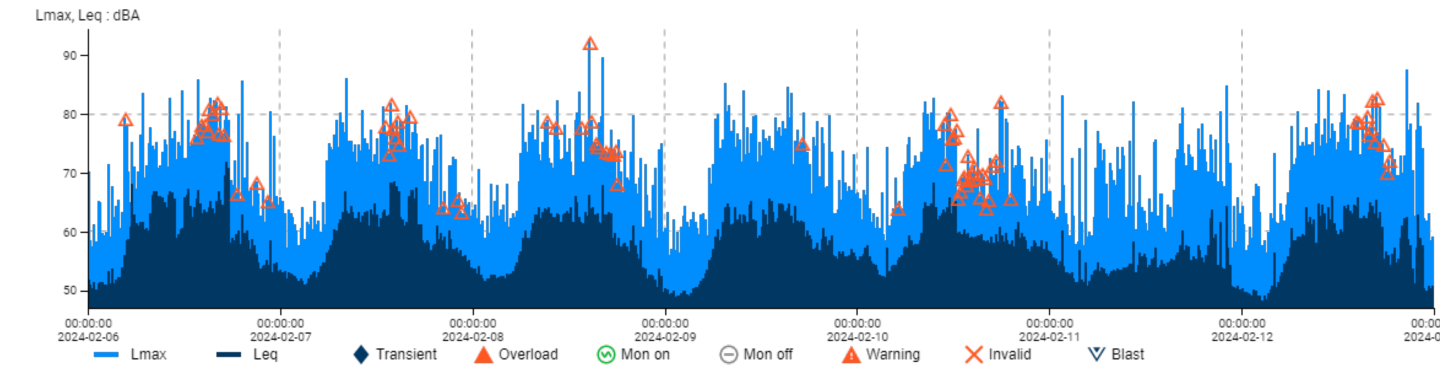


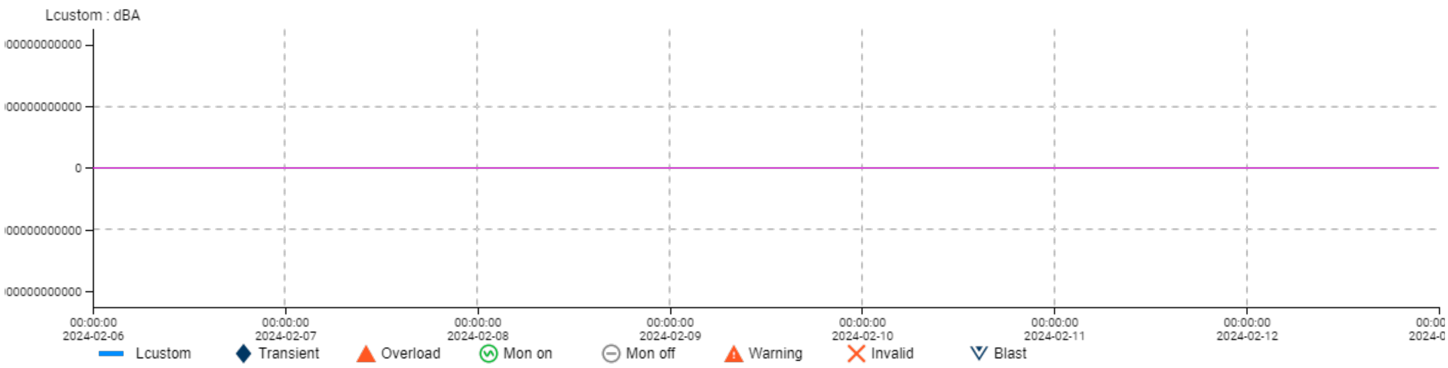
X-span	2024-01-15 00:00 - 2024-01-22 00:00
Y-span	Lmax, Leq : dBA: 46.59 - 100.53, Lcustom : dBA: 9007199254740991 - -9007199254740991

	Lmax	Leq	Lcustom
Max	98.4 dBA	76.2 dBA	
Date	2024-01-19	2024-01-18	-
Time	14:45:00	16:45:00	-

Interval report

Project	BWD
Project maintainer	-
Time frame	2024-02-06 00:00 - 2024-02-13 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High
Max	Lmax: 92.6 dBA, Leq: 71.8 dBA, Lcustom: null



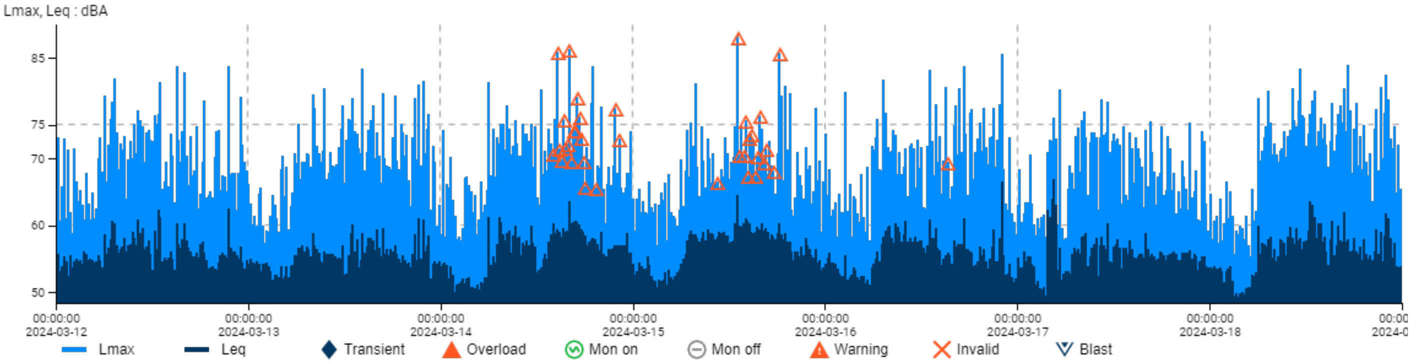


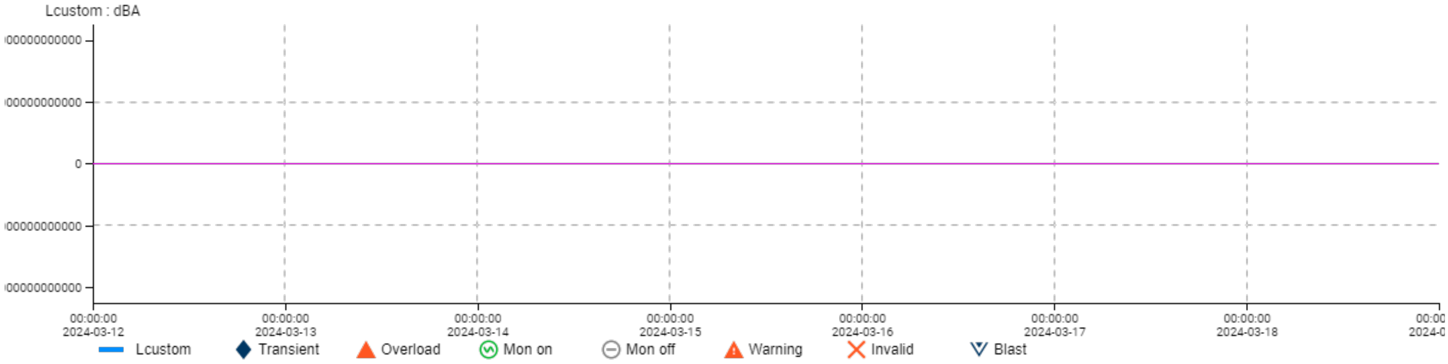
X-span	2024-02-06 00:00 - 2024-02-13 00:00
Y-span	Lmax, Leq : dBA: 47.02 - 94.43, Lcustom : dBA: 9007199254740991 - -9007199254740991

	Lmax	**Leq**	**Lcustom**
Max	92.6 dBA	71.8 dBA	
Date	2024-02-08	2024-02-06	-
Time	14:45:00	17:30:00	-

Interval report

Project	BWD
Project maintainer	-
Time frame	2024-03-12 00:00 - 2024-03-19 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High
Max	Lmax: 88.3 dBA, Leq: 66.8 dBA, Lcustom: null



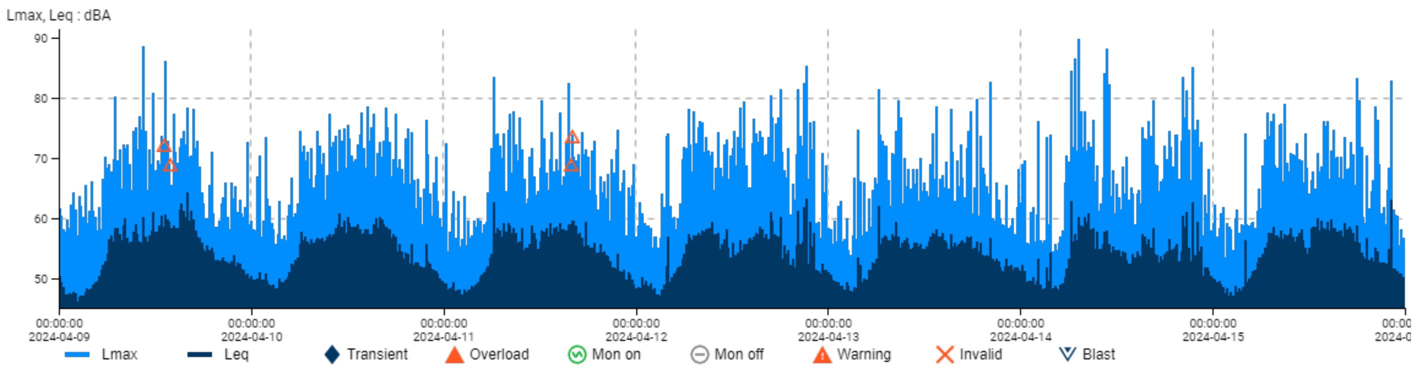


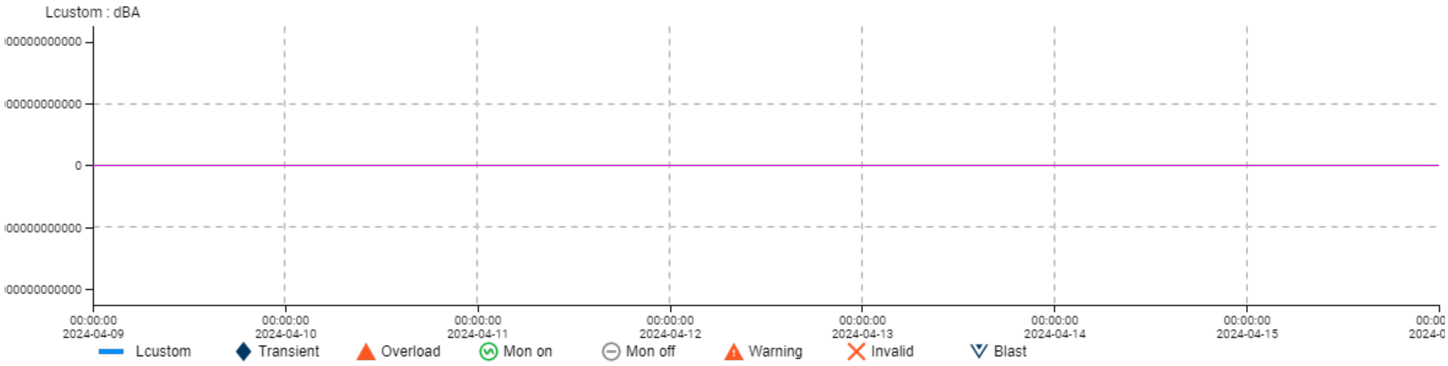
X-span	2024-03-12 00:00 - 2024-03-19 00:00
Y-span	Lmax, Leq : dBA: 48.43 - 89.95, Lcustom : dBA: 9007199254740991 - -9007199254740991

	Lmax	Leq	Lcustom
Max	88.3 dBA	66.8 dBA	
Date	2024-03-15	2024-03-17	-
Time	13:15:00	04:45:00	-

Interval report

Project	BWD
Project maintainer	-
Time frame	2024-04-09 00:00 - 2024-04-16 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High
Max	Lmax: 89.6 dBA, Leq: 64.2 dBA, Lcustom: null





X-span	2024-04-09 00:00 - 2024-04-16 00:00
Y-span	Lmax, Leq : dBA: 45.2 - 91.41, Lcustom : dBA: 9007199254740991 - -9007199254740991

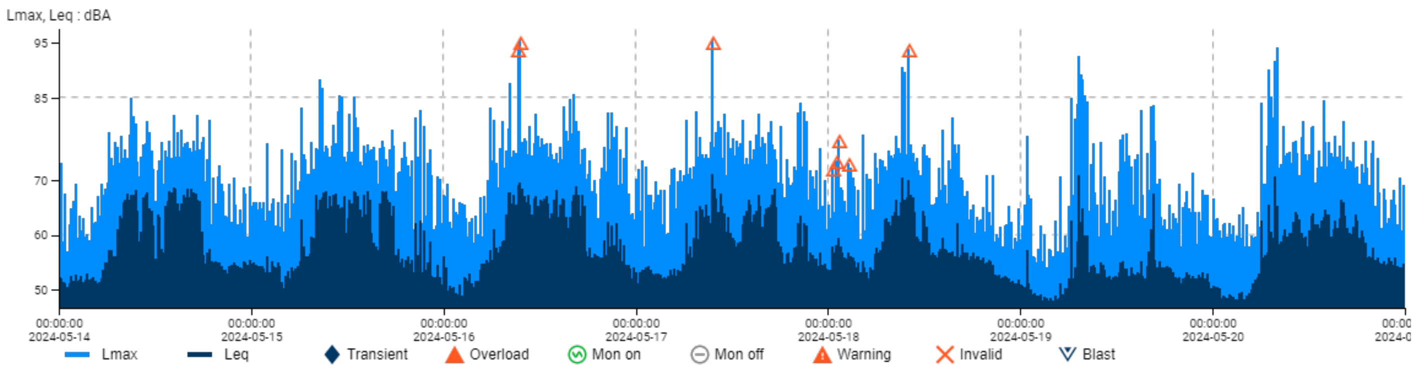
	Lmax	**Leq**	**Lcustom**
Max	89.6 dBA	64.2 dBA	
Date	2024-04-14	2024-04-09	-
Time	07:30:00	16:15:00	-

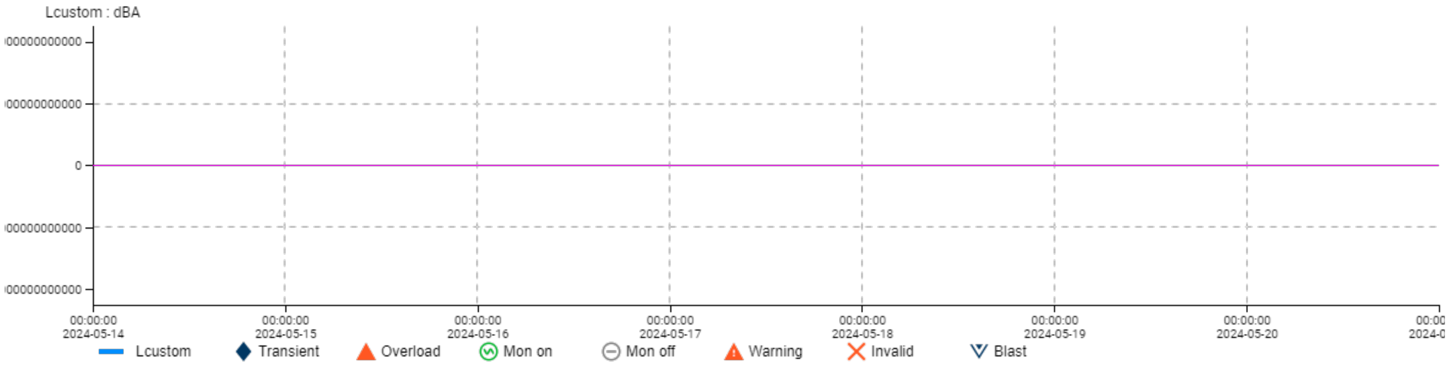
Interval report

Project	BWD
Project maintainer	-
Time frame	2024-05-14 00:00 - 2024-05-21 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max	Lmax: 95.4 dBA, Leq: 70.9 dBA, Lcustom: null



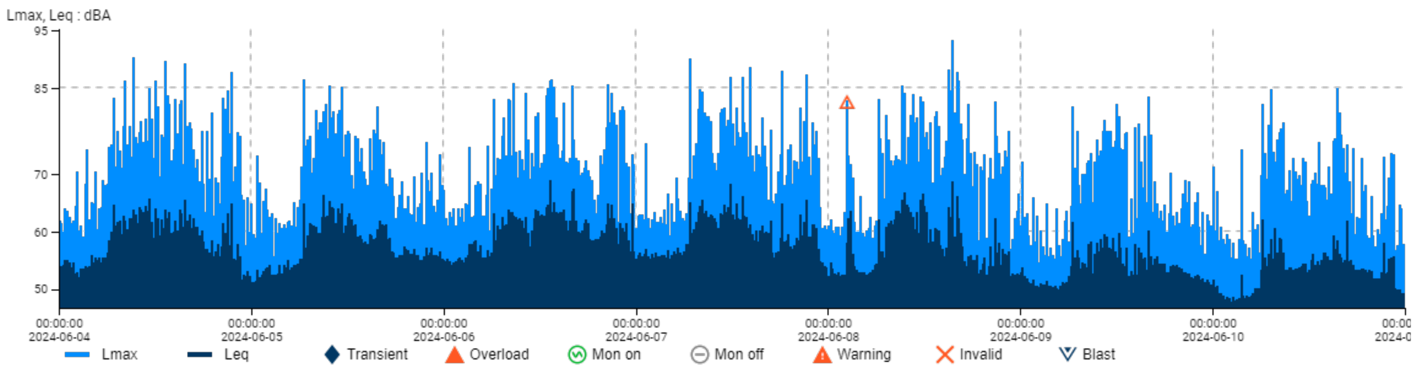


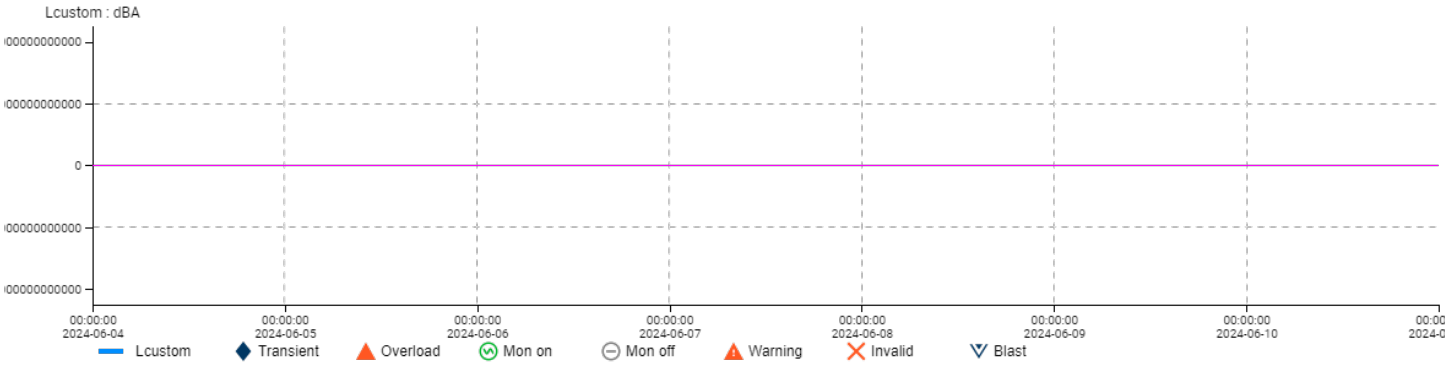
X-span	2024-05-14 00:00 - 2024-05-21 00:00
Y-span	Lmax, Leq : dBA: 46.75 - 97.47, Lcustom : dBA: 9007199254740991 - -9007199254740991

	Lmax	**Leq**	**Lcustom**
Max	95.4 dBA	70.9 dBA	
Date	2024-05-16	2024-05-17	-
Time	09:45:00	09:45:00	-

Interval report

Project	BWD
Project maintainer	-
Time frame	2024-06-04 00:00 - 2024-06-11 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High
Max	Lmax: 93.3 dBA, Leq: 68.9 dBA, Lcustom: null





X-span	2024-06-04 00:00 - 2024-06-11 00:00
Y-span	Lmax, Leq : dBA: 46.75 - 95.24, Lcustom : dBA: 9007199254740991 - -9007199254740991

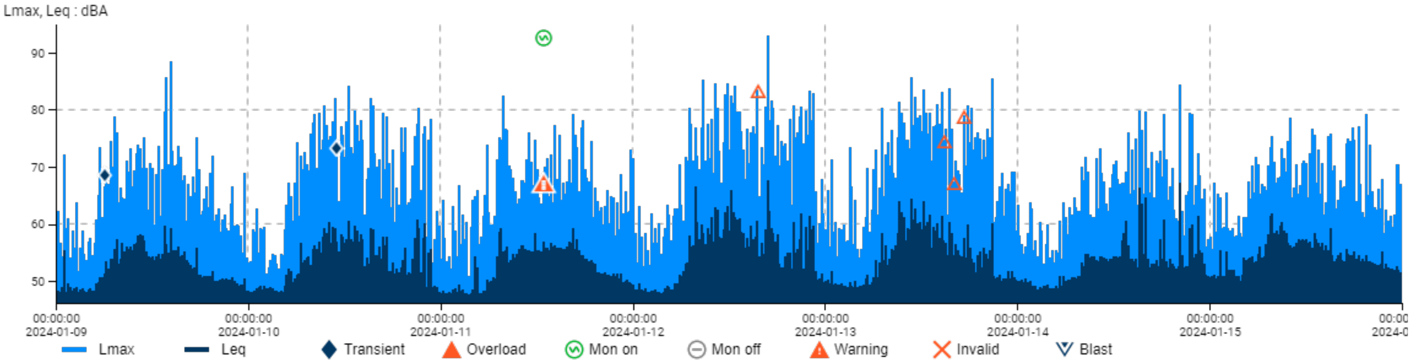
	Lmax	Leq	Lcustom
Max	93.3 dBA	68.9 dBA	
Date	2024-06-08	2024-06-06	-
Time	15:45:00	13:30:00	-

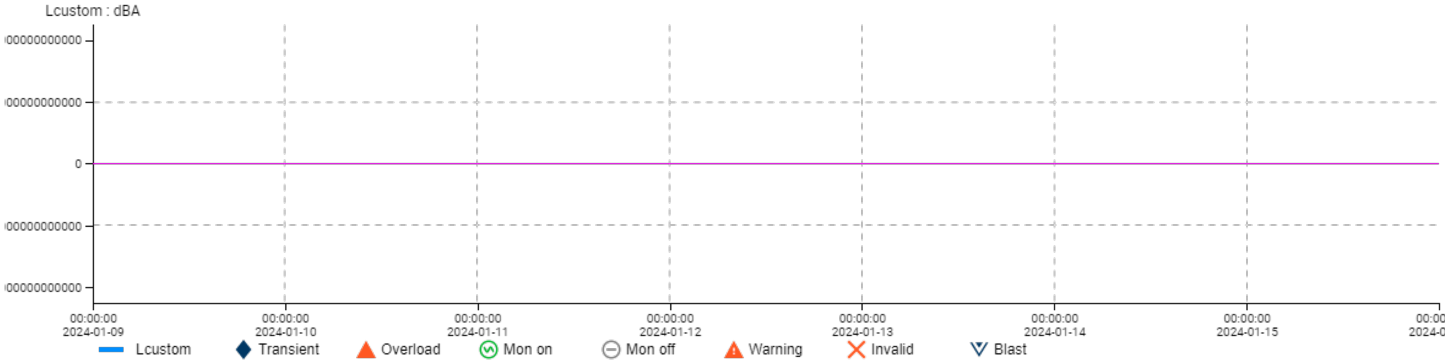
Interval report

Project	FDK
Project maintainer	-
Time frame	2024-01-09 00:00 - 2024-01-16 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	2023-08-14
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max Lmax: 92.8 dBA, Leq: 67.6 dBA, Lcustom: null





X-span	2024-01-09 00:00 - 2024-01-16 00:00
Y-span	Lmax, Leq : dBA: 46.18 - 94.9, Lcustom : dBA: 9007199254740991 - -9007199254740991

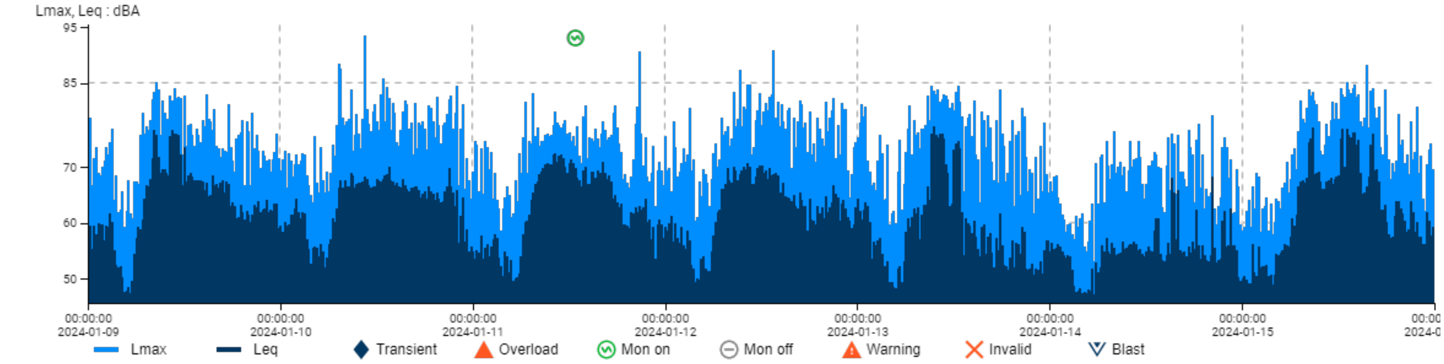
	Lmax	Leq	Lcustom
Max	92.8 dBA	67.6 dBA	
Date	2024-01-12	2024-01-12	-
Time	17:00:00	17:00:00	-

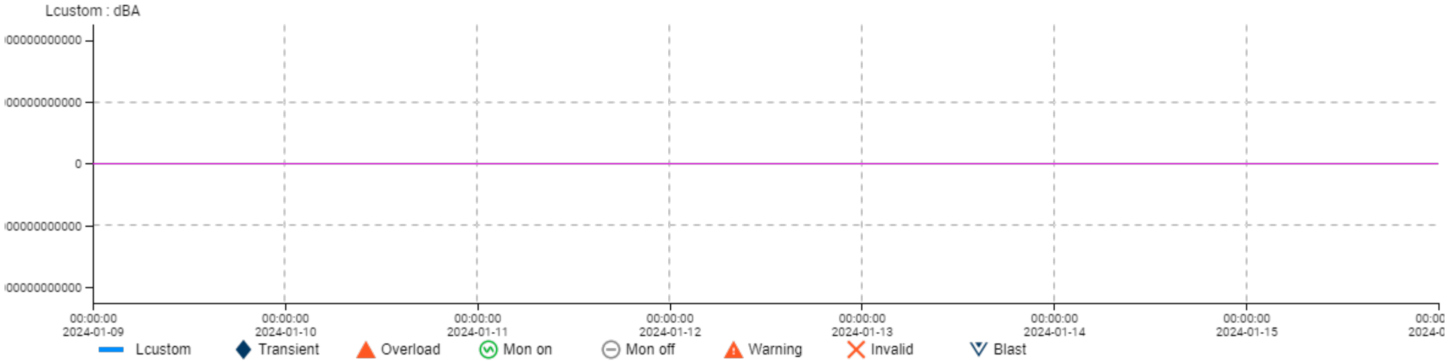
Interval report

Project	FDK
Project maintainer	-
Time frame	2024-01-09 00:00 - 2024-01-16 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max Lmax: 93.4 dBA, Leq: 77.1 dBA, Lcustom: null





X-span	2024-01-09 00:00 - 2024-01-16 00:00
Y-span	Lmax, Leq : dBA: 45.71 - 95.42, Lcustom : dBA: 9007199254740991 - -9007199254740991

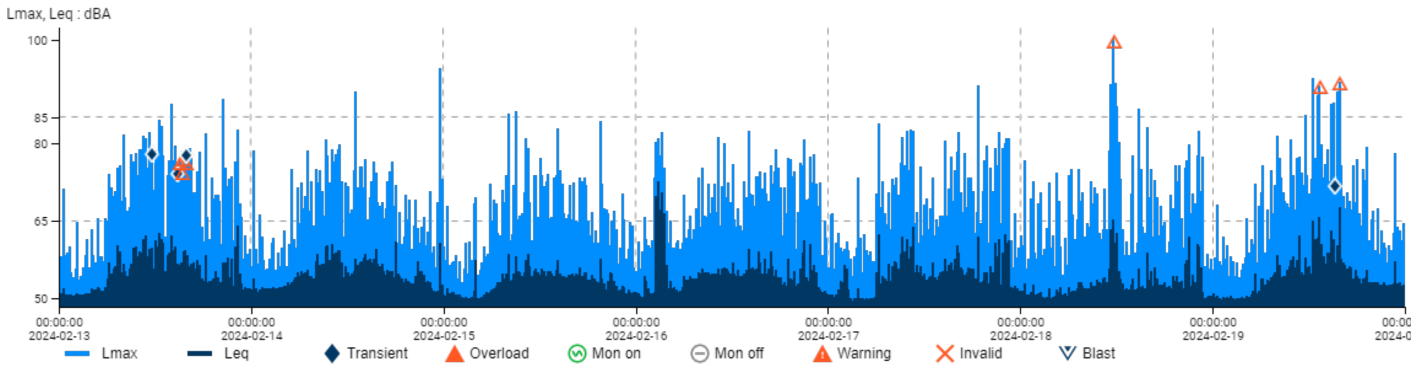
	Lmax	Leq	Lcustom
Max	93.4 dBA	77.1 dBA	
Date	2024-01-10	2024-01-13	-
Time	10:45:00	09:45:00	-

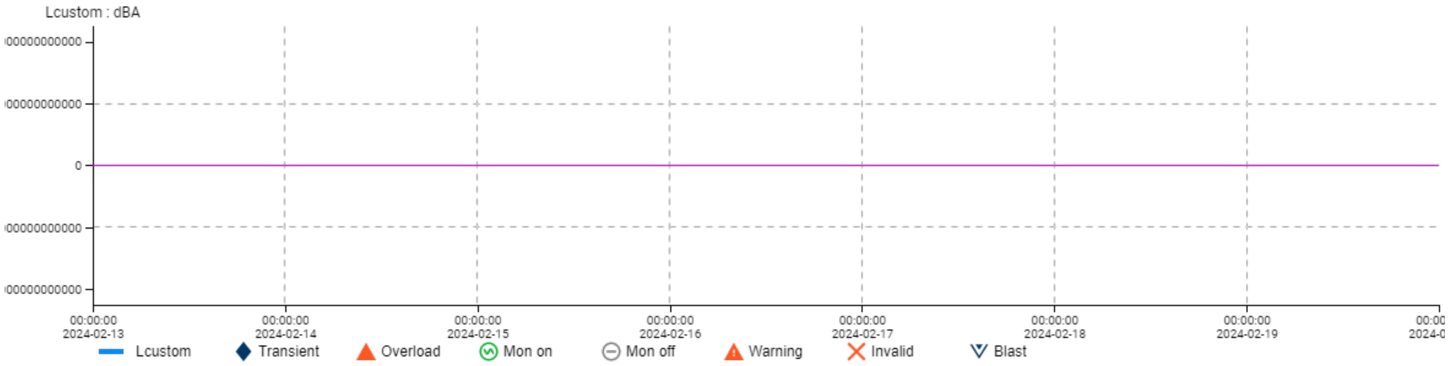
Interval report

Project	FDK
Project maintainer	-
Time frame	2024-02-13 00:00 - 2024-02-20 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	2023-08-14
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max	Lmax: 100 dBA, Leq: 72.4 dBA, Lcustom: null



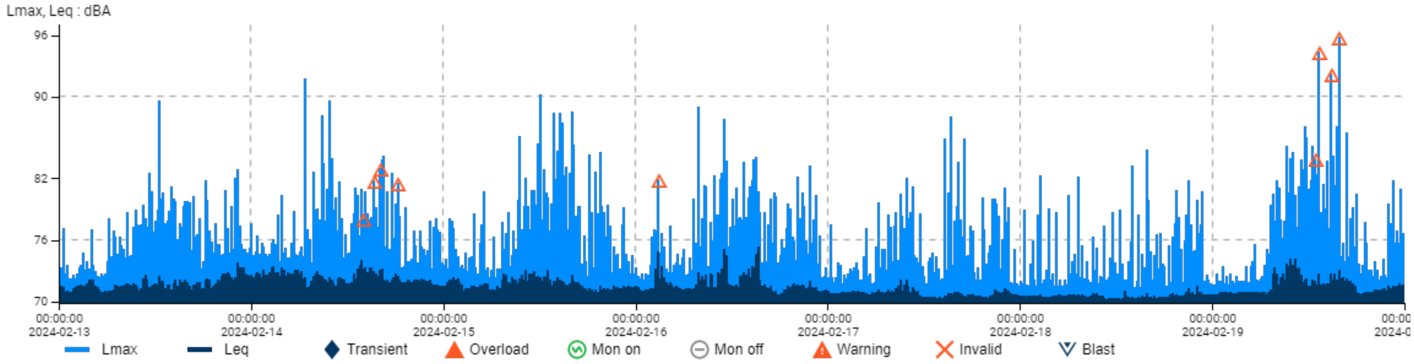


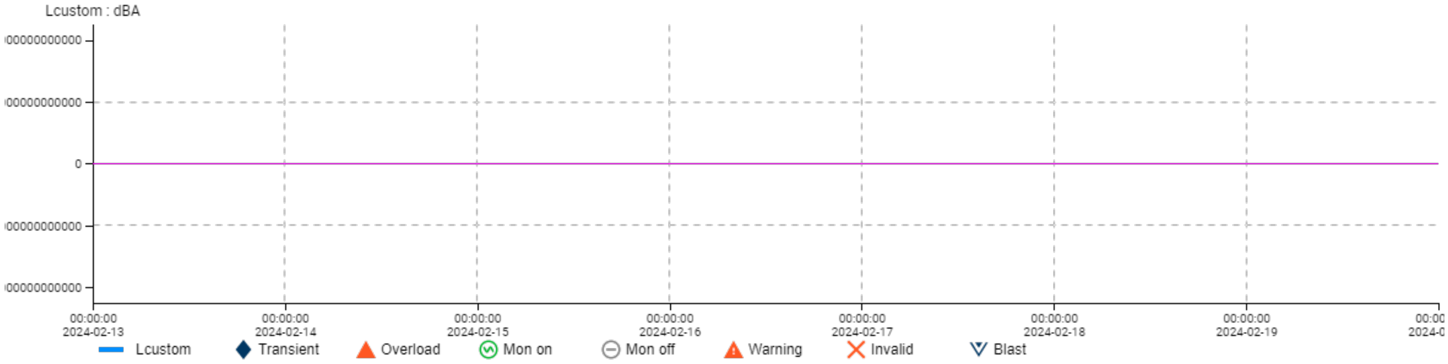
X-span	2024-02-13 00:00 - 2024-02-20 00:00
Y-span	Lmax, Leq : dBA: 48.36 - 102.35, Lcustom : dBA: 9007199254740991 - -9007199254740991

	Lmax	**Leq**	**Lcustom**
Max	100 dBA	72.4 dBA	
Date	2024-02-18	2024-02-16	-
Time	11:45:00	03:00:00	-

Interval report

Project	FDK
Project maintainer	-
Time frame	2024-02-13 00:00 - 2024-02-20 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High
Max	Lmax: 95.8 dBA, Leq: 75.3 dBA, Lcustom: null





X-span	2024-02-13 00:00 - 2024-02-20 00:00
Y-span	Lmax, Leq : dBA: 69.84 - 97.03, Lcustom : dBA: 9007199254740991 - -9007199254740991

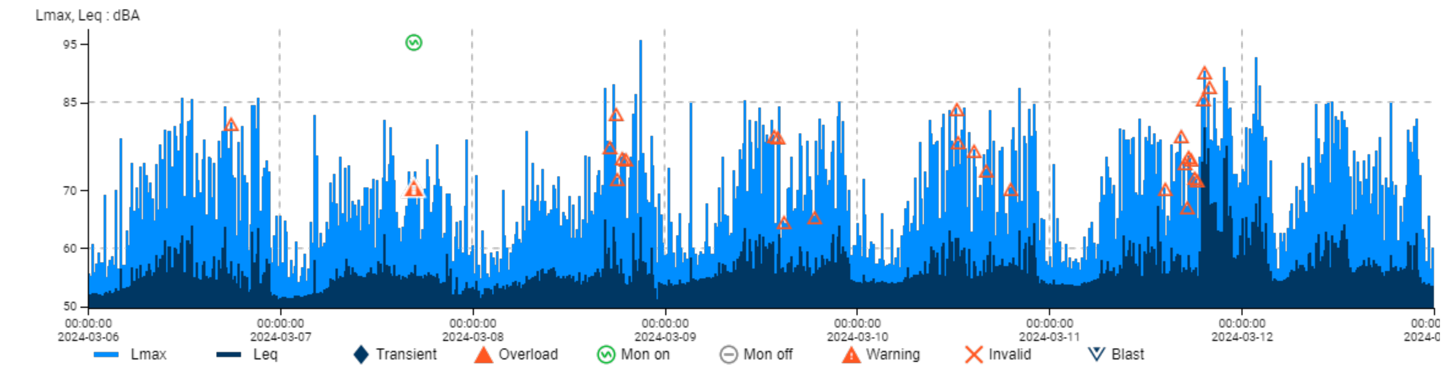
	Lmax	Leq	Lcustom
Max	95.8 dBA	75.3 dBA	
Date	2024-02-19	2024-02-16	-
Time	16:00:00	15:30:00	-

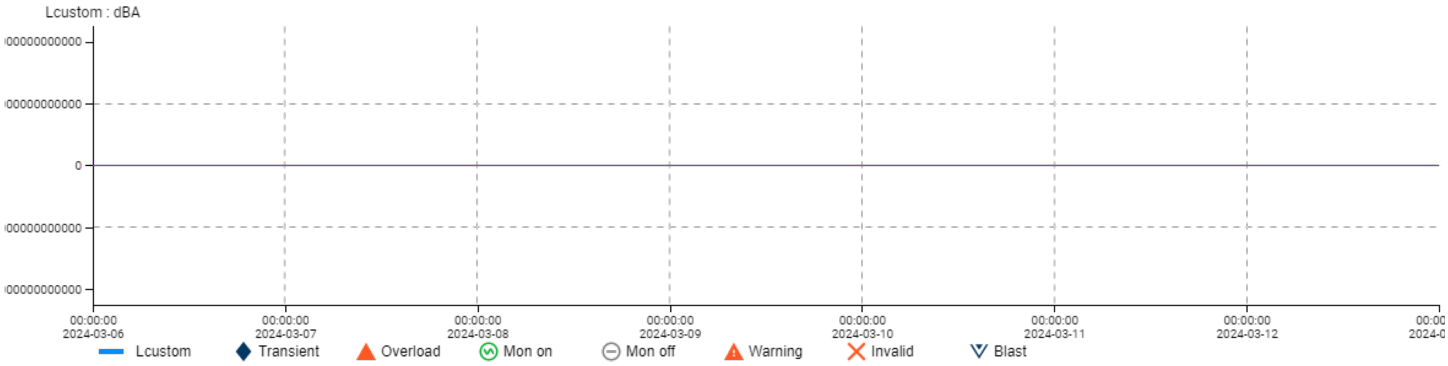
Interval report

Project	FDK
Project maintainer	-
Time frame	2024-03-06 00:00 - 2024-03-13 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	2023-08-14
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max	Lmax: 95.5 dBA, Leq: 80.6 dBA, Lcustom: null





X-span	2024-03-06 00:00 - 2024-03-13 00:00
Y-span	Lmax, Leq : dBA: 49.73 - 97.58, Lcustom : dBA: 9007199254740991 - -9007199254740991

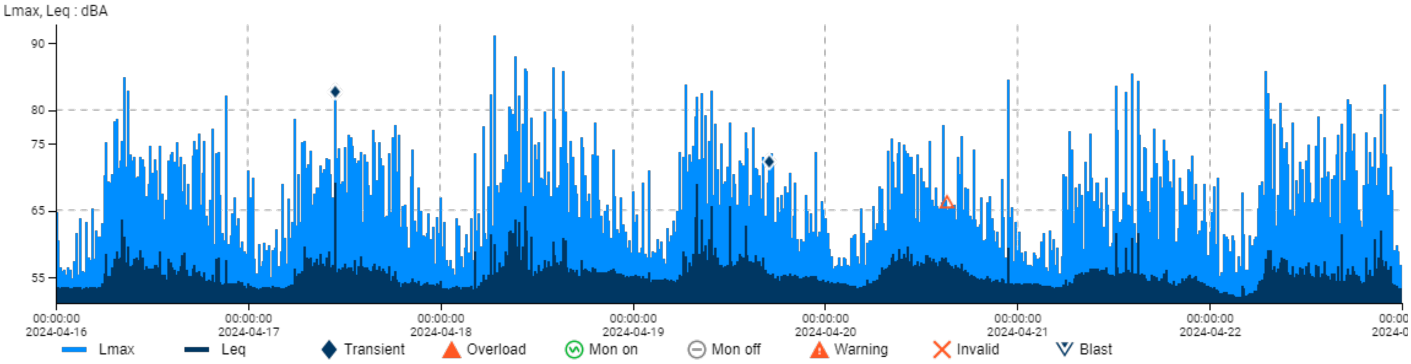
	Lmax	**Leq**	**Lcustom**
Max	95.5 dBA	80.6 dBA	
Date	2024-03-08	2024-03-11	-
Time	21:15:00	19:30:00	-

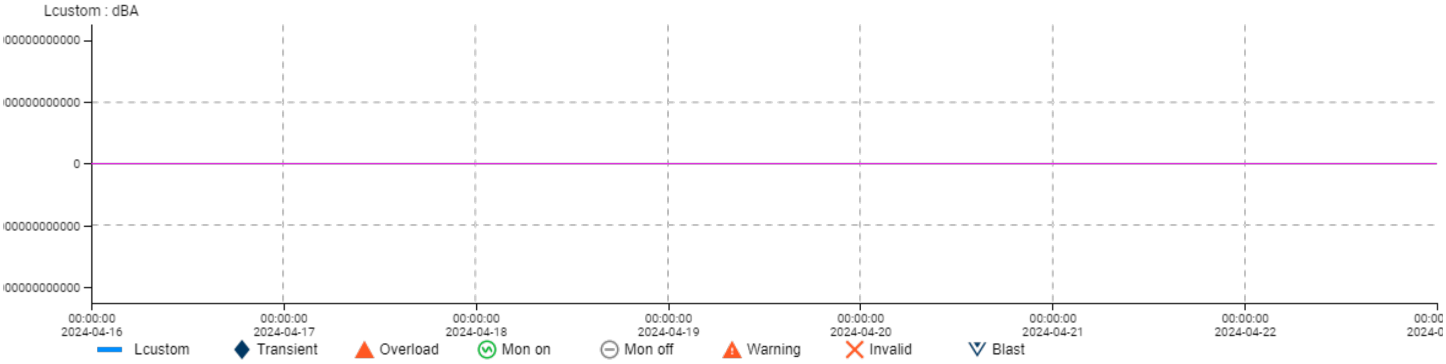
Interval report

Project	FDK
Project maintainer	-
Time frame	2024-04-16 00:00 - 2024-04-23 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	2023-08-14
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max	Lmax: 90.9 dBA, Leq: 69.1 dBA, Lcustom: null





X-span	2024-04-16 00:00 - 2024-04-23 00:00
Y-span	Lmax, Leq : dBA: 51.25 - 92.71, Lcustom : dBA: 9007199254740991 - -9007199254740991

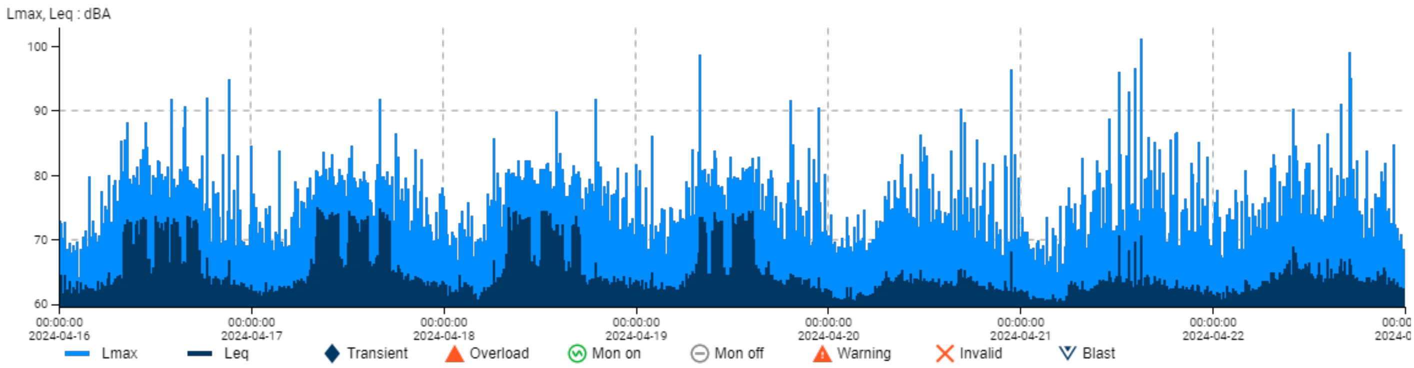
	Lmax	**Leq**	**Lcustom**
Max	90.9 dBA	69.1 dBA	
Date	2024-04-18	2024-04-17	-
Time	07:00:00	11:00:00	-

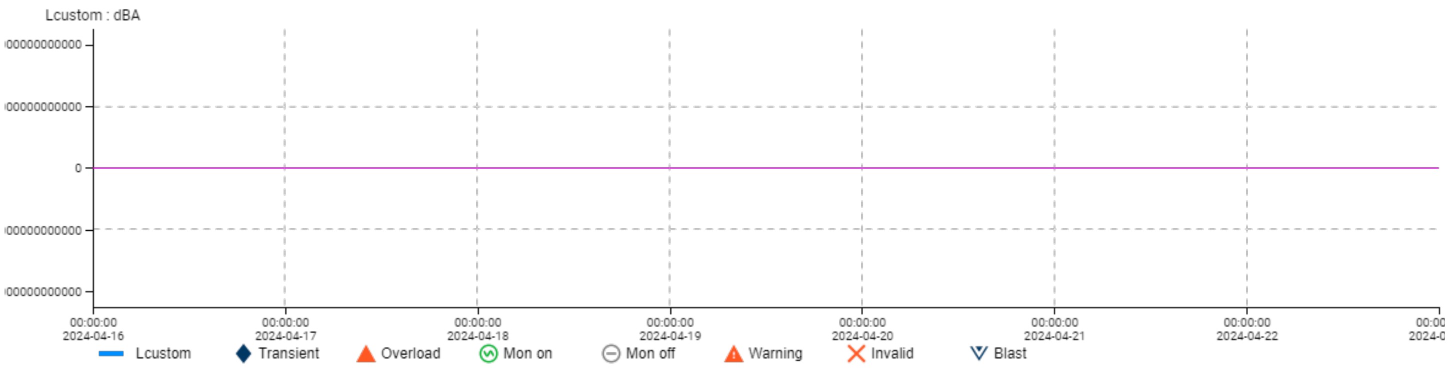
Interval report

Project	FDK
Project maintainer	-
Time frame	2024-04-16 00:00 - 2024-04-23 00:00 (Australia/Sydney)

Measuring point	FDK_4
Description	St Albans Church noise
Sensor type	S50
Sensor serial no.	10884
Master(s) serial no.	107963
Latest calibration	2022-06-21
Standard	(04) Lmax + Leq 55-130 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max	Lmax: 101 dBA, Leq: 74.9 dBA, Lcustom: null





X-span	2024-04-16 00:00 - 2024-04-23 00:00
Y-span	Lmax, Leq : dBA: 59.57 - 102.85, Lcustom : dBA: 9007199254740991 - -9007199254740991

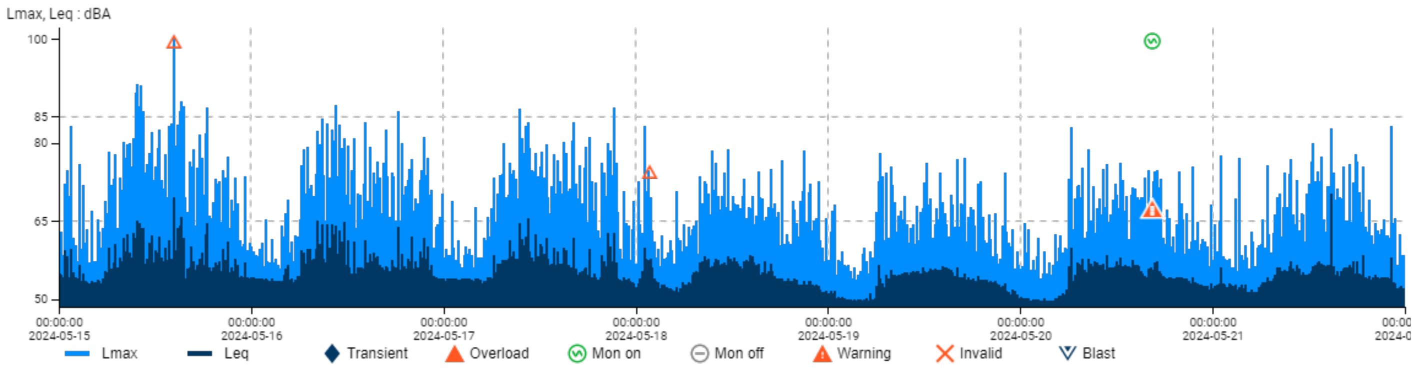
	Lmax	**Leq**	**Lcustom**
Max	101 dBA	74.9 dBA	
Date	2024-04-21	2024-04-17	-
Time	15:15:00	08:30:00	-

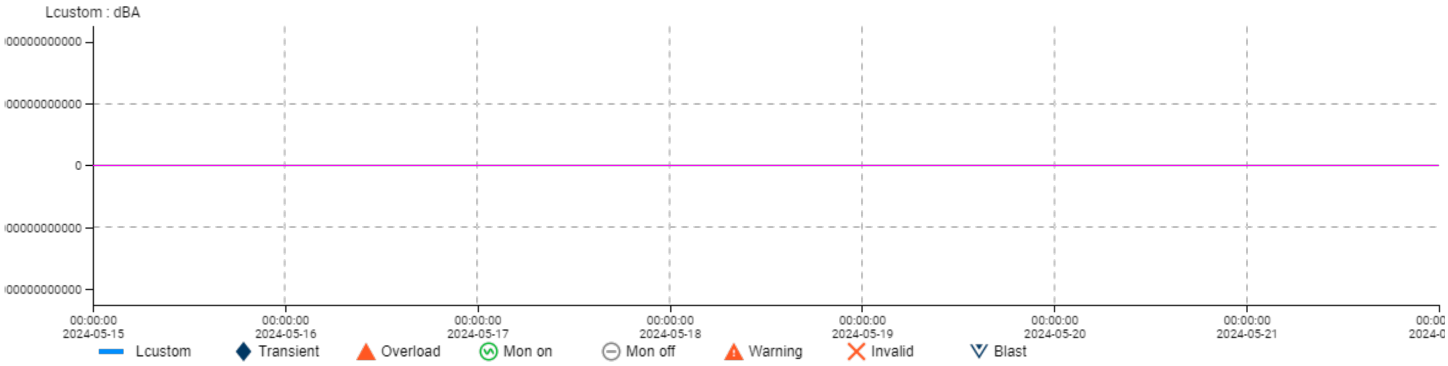
Interval report

Project	FDK
Project maintainer	-
Time frame	2024-05-15 00:00 - 2024-05-22 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	2023-08-14
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max	Lmax: 99.8 dBA, Leq: 70.1 dBA, Lcustom: null





X-span	2024-05-15 00:00 - 2024-05-22 00:00
Y-span	Lmax, Leq : dBA: 48.47 - 102.12, Lcustom : dBA: 9007199254740991 - -9007199254740991

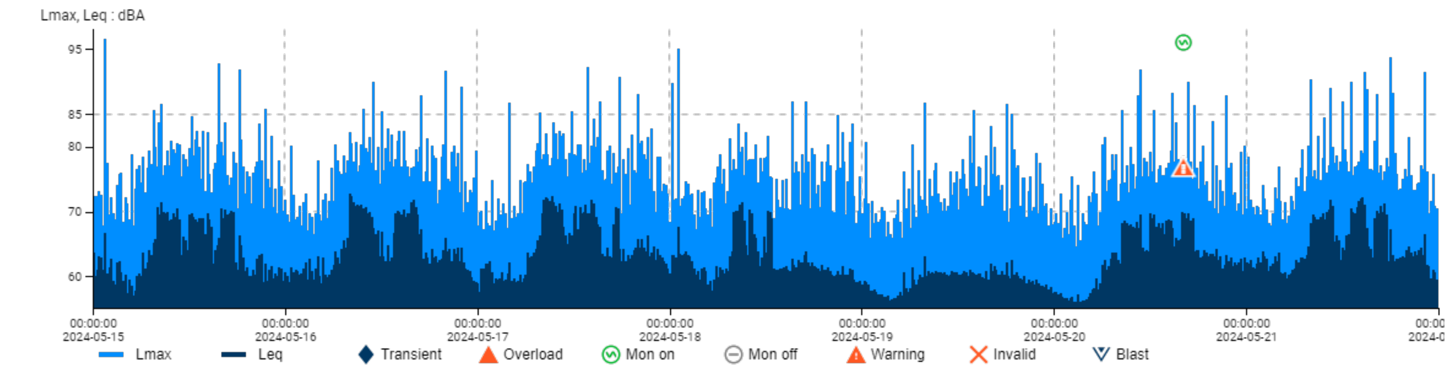
	Lmax	**Leq**	**Lcustom**
Max	99.8 dBA	70.1 dBA	
Date	2024-05-15	2024-05-21	-
Time	14:30:00	15:00:00	-

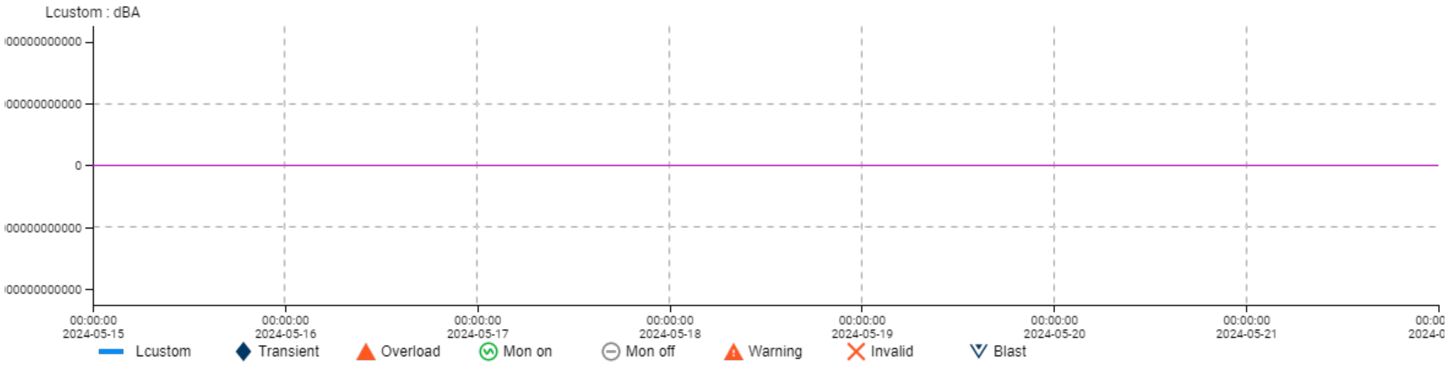
Interval report

Project	FDK
Project maintainer	-
Time frame	2024-05-15 00:00 - 2024-05-22 00:00 (Australia/Sydney)

Measuring point	FDK_4
Description	St Albans Church noise
Sensor type	S50
Sensor serial no.	10884
Master(s) serial no.	107963
Latest calibration	2022-06-21
Standard	(04) Lmax + Leq 55-130 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max Lmax: 96.5 dBA, Leq: 72.6 dBA, Lcustom: null





X-span	2024-05-15 00:00 - 2024-05-22 00:00
Y-span	Lmax, Leq : dBA: 55.17 - 98.1, Lcustom : dBA: 9007199254740991 - -9007199254740991

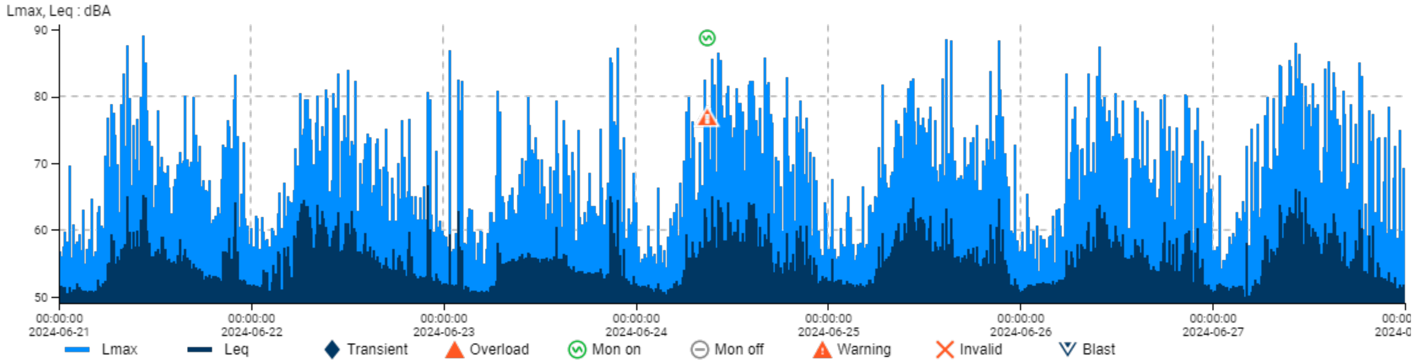
	Lmax	Leq	Lcustom
Max	96.5 dBA	72.6 dBA	
Date	2024-05-15	2024-05-16	-
Time	01:45:00	08:15:00	-

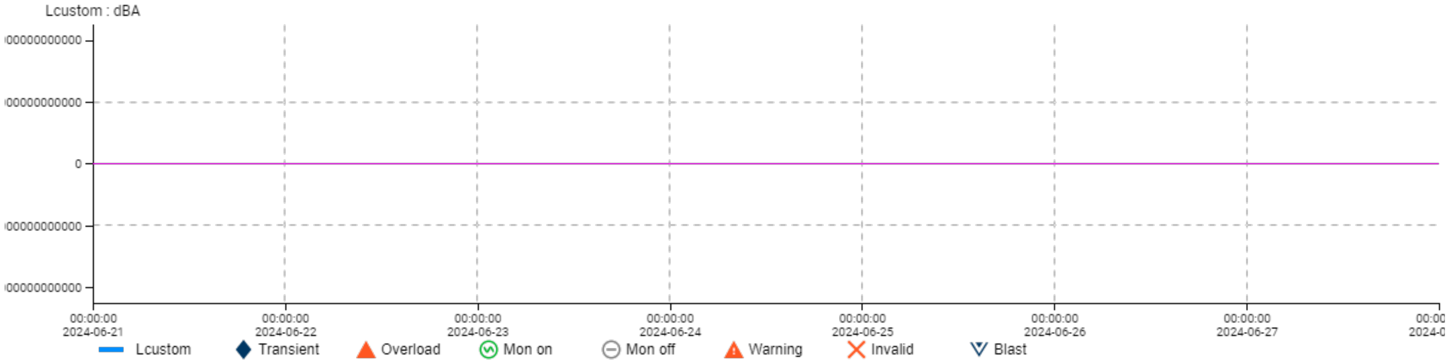
Interval report

Project	FDK
Project maintainer	-
Time frame	2024-06-21 00:00 - 2024-06-28 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	2023-08-14
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max	Lmax: 89 dBA, Leq: 66.6 dBA, Lcustom: null



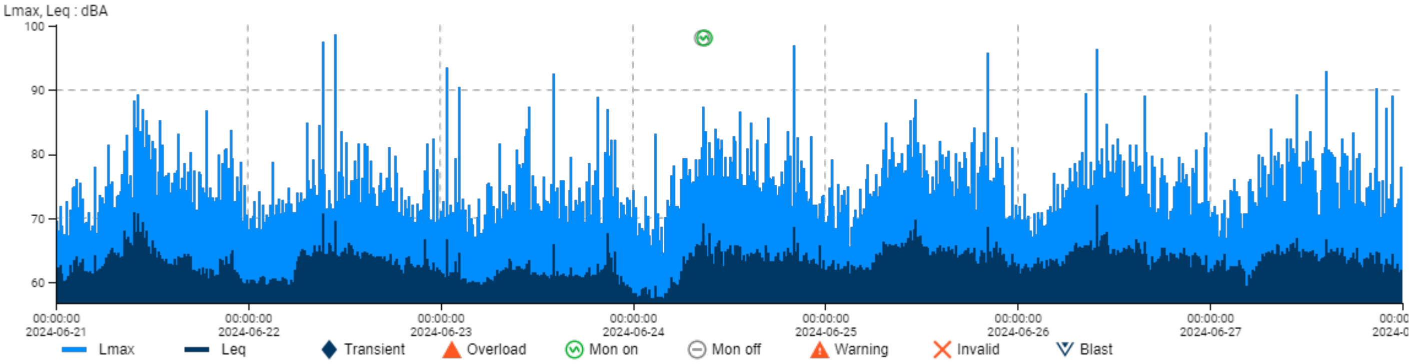


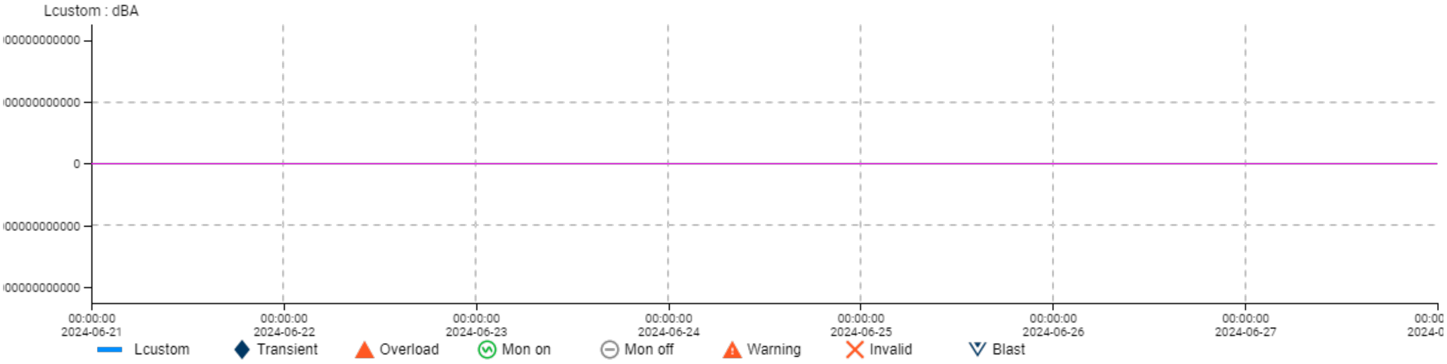
X-span	2024-06-21 00:00 - 2024-06-28 00:00
Y-span	Lmax, Leq : dBA: 49.07 - 90.76, Lcustom : dBA: 9007199254740991 - -9007199254740991

	Lmax	**Leq**	**Lcustom**
Max	89 dBA	66.6 dBA	
Date	2024-06-21	2024-06-22	-
Time	10:45:00	22:15:00	-

Interval report

Project	FDK
Project maintainer	-
Time frame	2024-06-21 00:00 - 2024-06-28 00:00 (Australia/Sydney)
Measuring point	FDK_4
Description	St Albans Church noise
Sensor type	S50
Sensor serial no.	10884
Master(s) serial no.	107963
Latest calibration	2022-06-21
Standard	(04) Lmax + Leq 55-130 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High
Max	Lmax: 98.5 dBA, Leq: 71.9 dBA, Lcustom: null





X-span	2024-06-21 00:00 - 2024-06-28 00:00
Y-span	Lmax, Leq : dBA: 56.78 - 100.2, Lcustom : dBA: 9007199254740991 - -9007199254740991

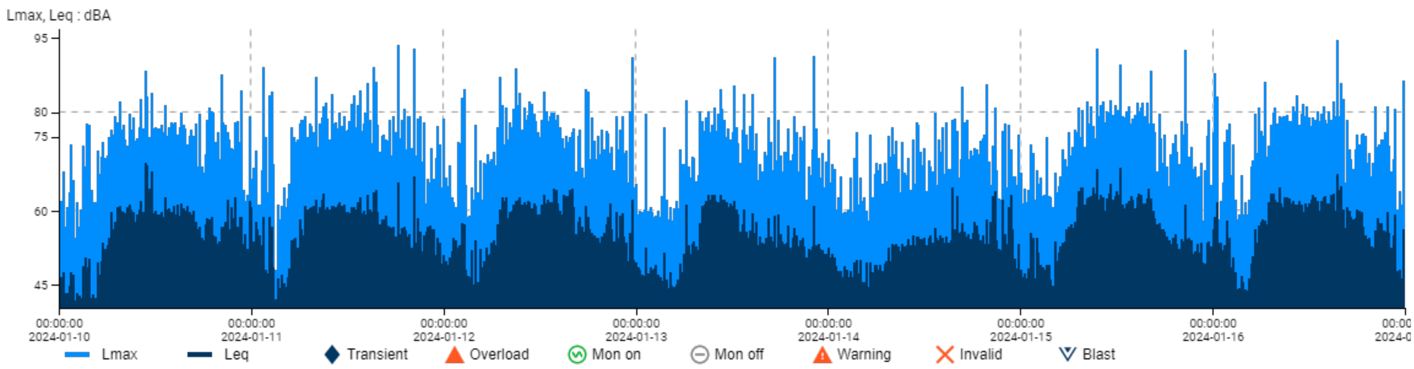
	Lmax	Leq	Lcustom
Max	98.5 dBA	71.9 dBA	
Date	2024-06-22	2024-06-26	-
Time	11:00:00	10:00:00	-

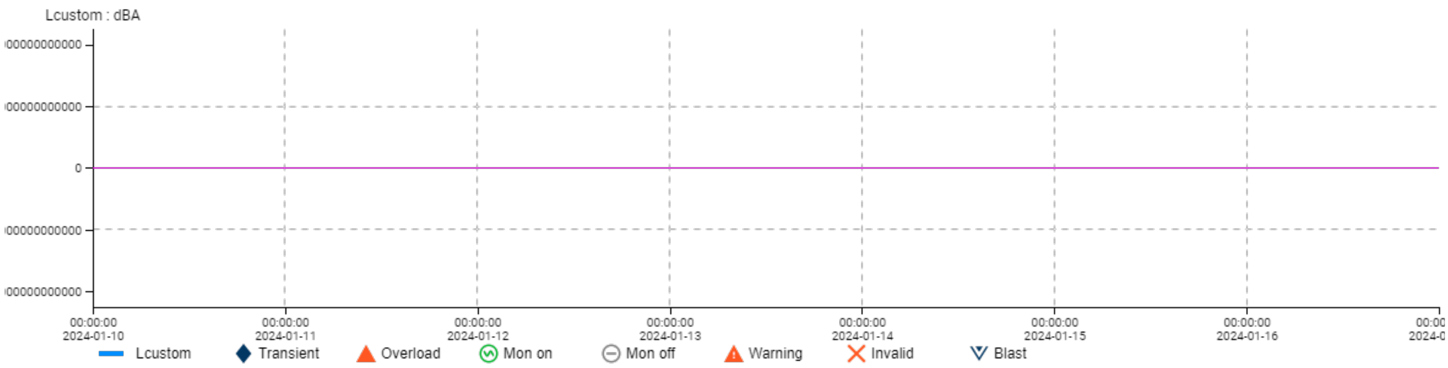
Interval report

Project	NST
Project maintainer	-
Time frame	2024-01-10 00:00 - 2024-01-17 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max Lmax: 94.5 dBA, Leq: 69.5 dBA, Lcustom: null



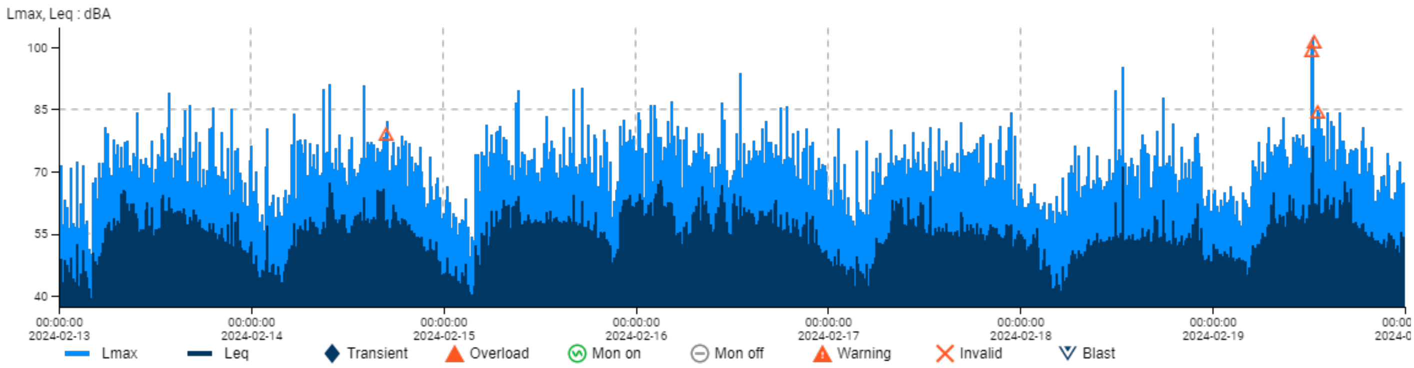


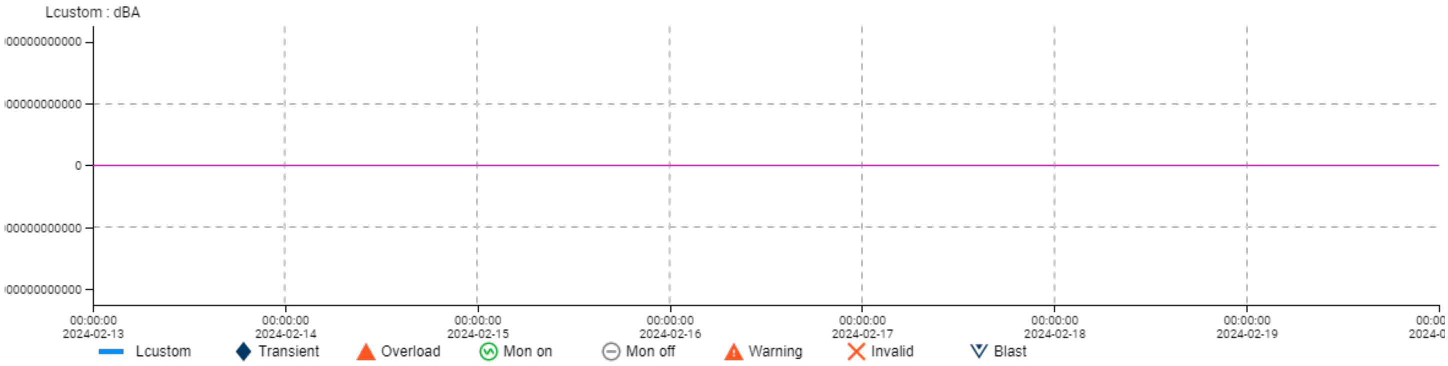
X-span	2024-01-10 00:00 - 2024-01-17 00:00
Y-span	Lmax, Leq : dBA: 40.31 - 96.83, Lcustom : dBA: 9007199254740991 - -9007199254740991

	Lmax	**Leq**	**Lcustom**
Max	94.5 dBA	69.5 dBA	
Date	2024-01-16	2024-01-10	-
Time	15:45:00	11:00:00	-

Interval report

Project	NST
Project maintainer	-
Time frame	2024-02-13 00:00 - 2024-02-20 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High
Max	Lmax: 102.1 dBA, Leq: 76.2 dBA, Lcustom: null





X-span	2024-02-13 00:00 - 2024-02-20 00:00
Y-span	Lmax, Leq : dBA: 37.35 - 104.74, Lcustom : dBA: 9007199254740991 - -9007199254740991

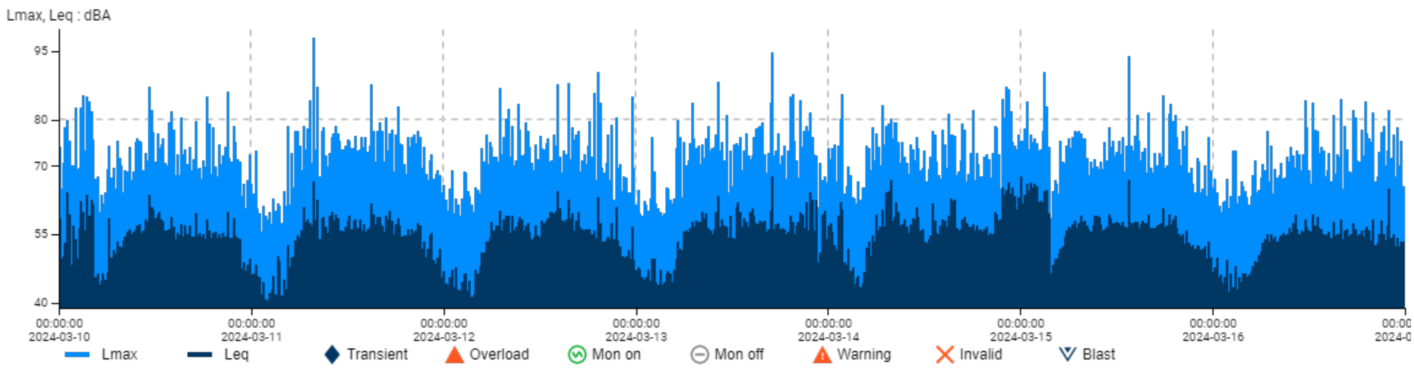
	Lmax	**Leq**	**Lcustom**
Max	102.1 dBA	76.2 dBA	
Date	2024-02-19	2024-02-19	-
Time	12:45:00	12:45:00	-

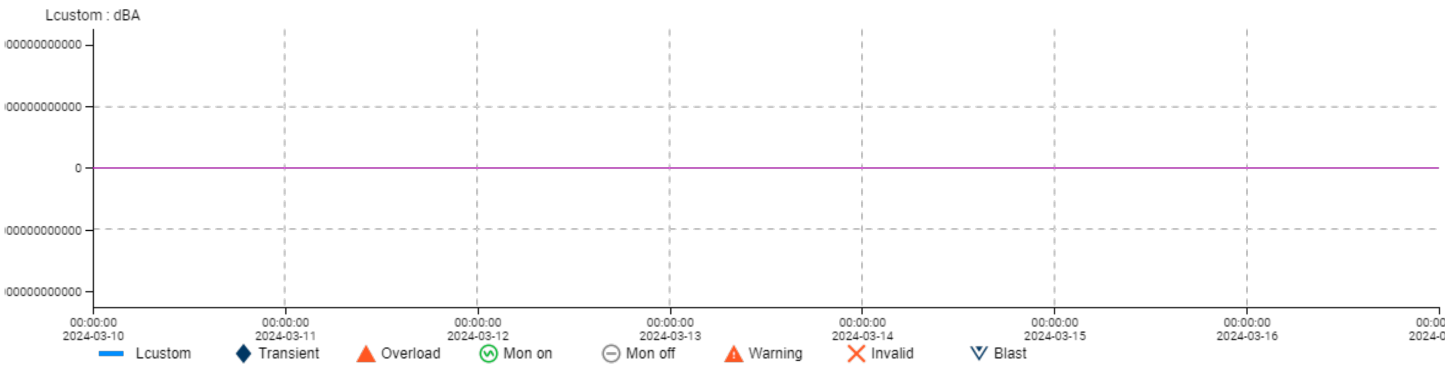
Interval report

Project	NST
Project maintainer	-
Time frame	2024-03-10 00:00 - 2024-03-17 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max	Lmax: 97.6 dBA, Leq: 67.4 dBA, Lcustom: null



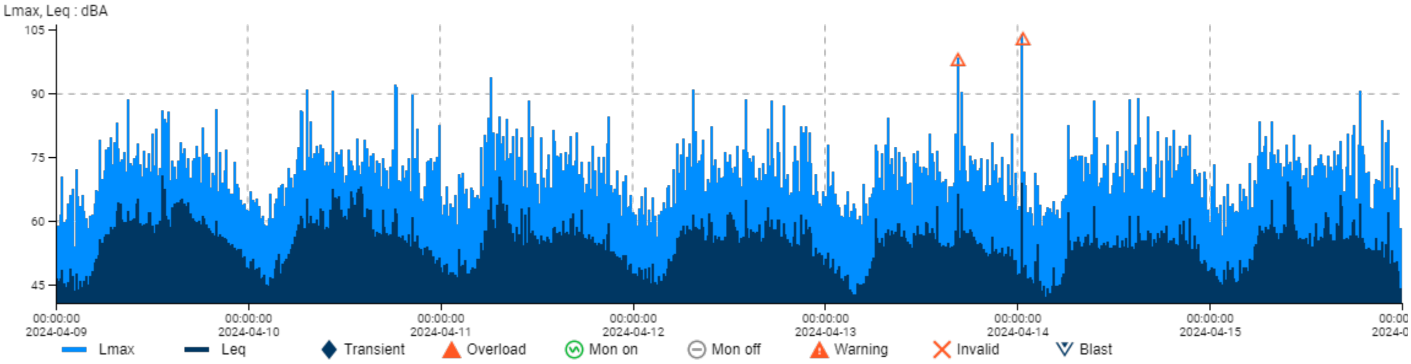


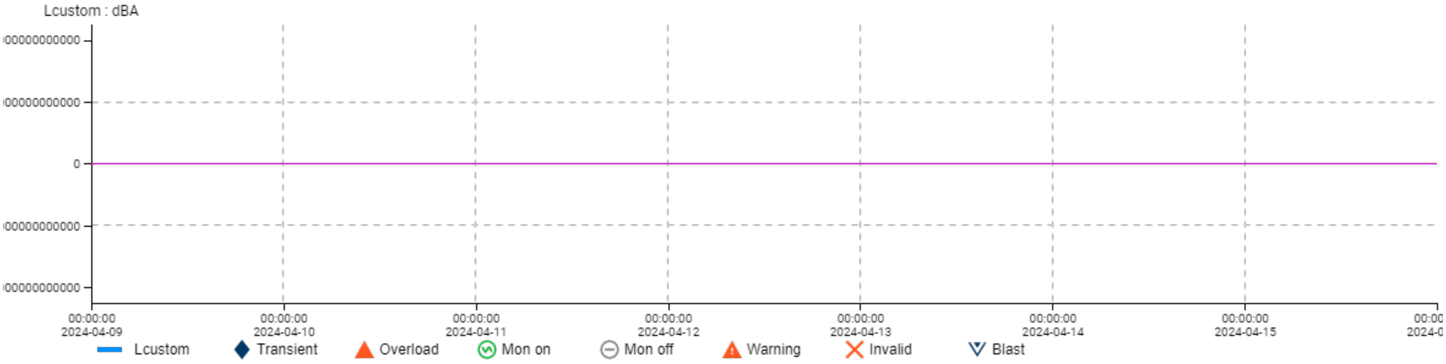
X-span	2024-03-10 00:00 - 2024-03-17 00:00
Y-span	Lmax, Leq : dBA: 38.84 - 99.71, Lcustom : dBA: 9007199254740991 - -9007199254740991

	Lmax	**Leq**	**Lcustom**
Max	97.6 dBA	67.4 dBA	
Date	2024-03-11	2024-03-13	-
Time	08:00:00	17:15:00	-

Interval report

Project	NST
Project maintainer	-
Time frame	2024-04-09 00:00 - 2024-04-16 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High
Max	Lmax: 103.7 dBA, Leq: 70.5 dBA, Lcustom: null





X-span	2024-04-09 00:00 - 2024-04-16 00:00
Y-span	Lmax, Leq : dBA: 40.79 - 106.19, Lcustom : dBA: 9007199254740991 - -9007199254740991

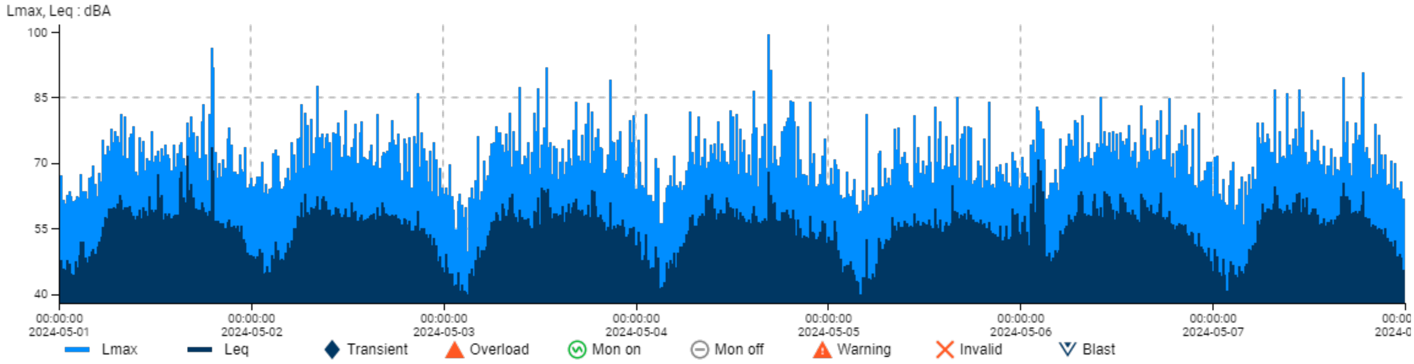
	Lmax	**Leq**	**Lcustom**
Max	103.7 dBA	70.5 dBA	
Date	2024-04-14	2024-04-09	-
Time	00:45:00	13:30:00	-

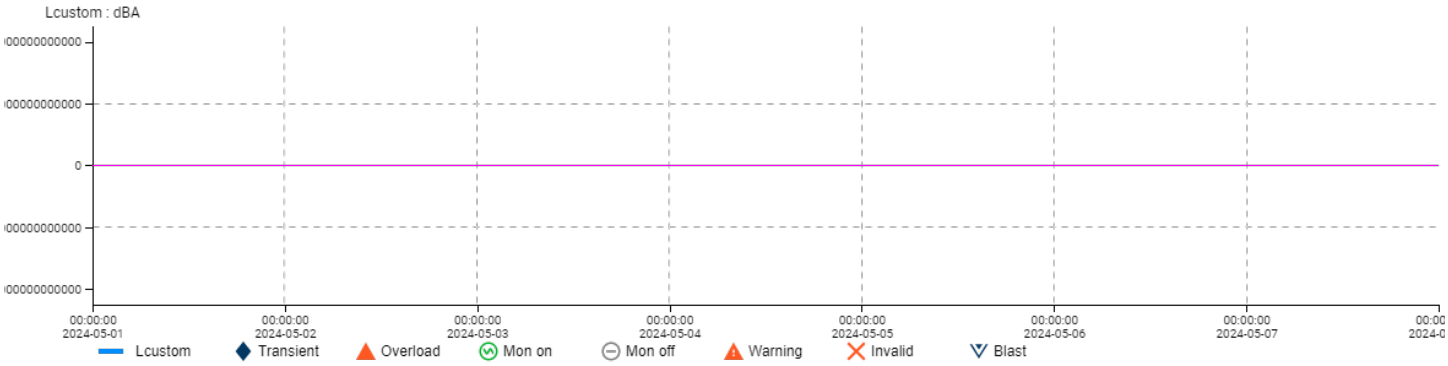
Interval report

Project	NST
Project maintainer	-
Time frame	2024-05-01 00:00 - 2024-05-08 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max Lmax: 99.2 dBA, Leq: 73.4 dBA, Lcustom: null





X-span	2024-05-01 00:00 - 2024-05-08 00:00
Y-span	Lmax, Leq : dBA: 37.91 - 101.69, Lcustom : dBA: 9007199254740991 - -9007199254740991

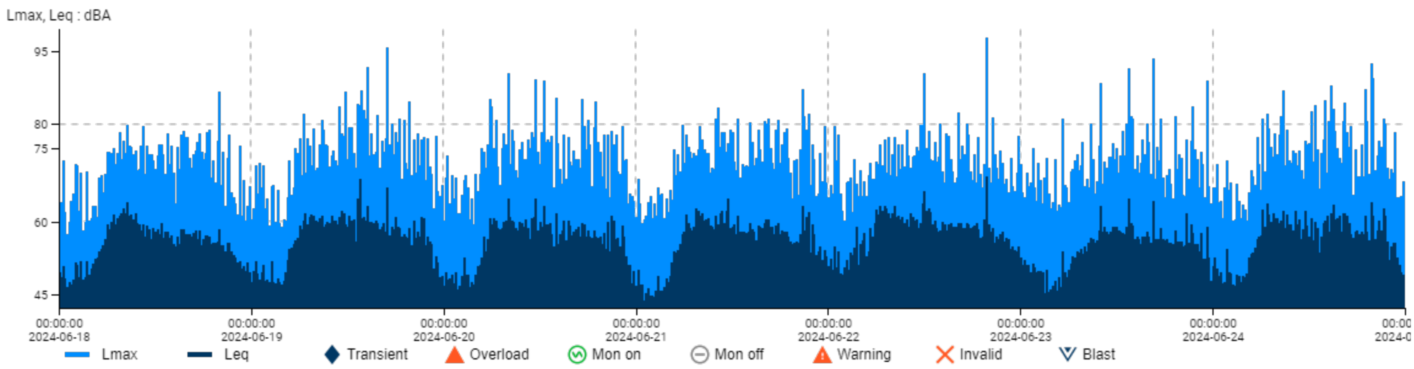
	Lmax	**Leq**	**Lcustom**
Max	99.2 dBA	73.4 dBA	
Date	2024-05-04	2024-05-01	-
Time	16:45:00	19:15:00	-

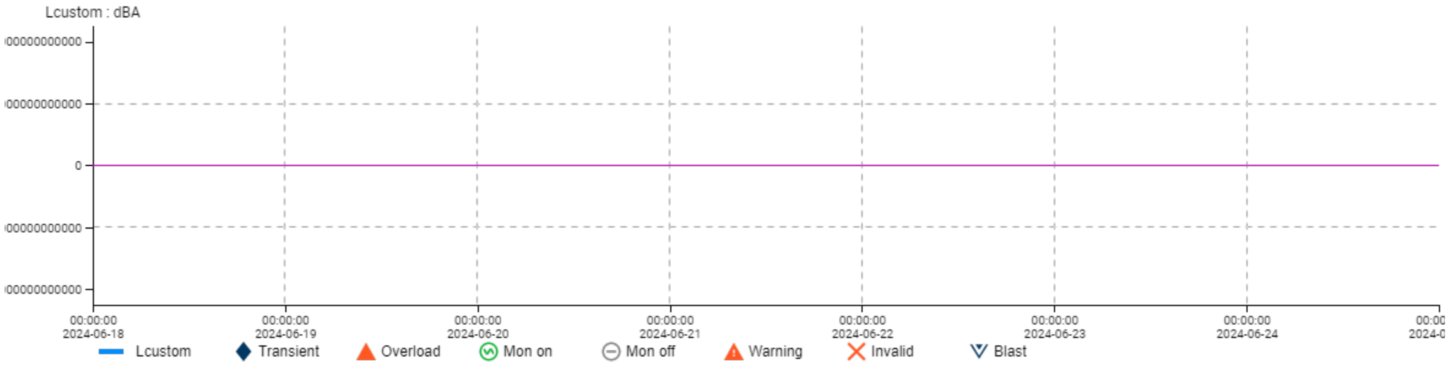
Interval report

Project	NST
Project maintainer	-
Time frame	2024-06-18 00:00 - 2024-06-25 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max Lmax: 97.5 dBA, Leq: 69.2 dBA, Lcustom: null





X-span	2024-06-18 00:00 - 2024-06-25 00:00
Y-span	Lmax, Leq : dBA: 42.32 - 99.51, Lcustom : dBA: 9007199254740991 - -9007199254740991

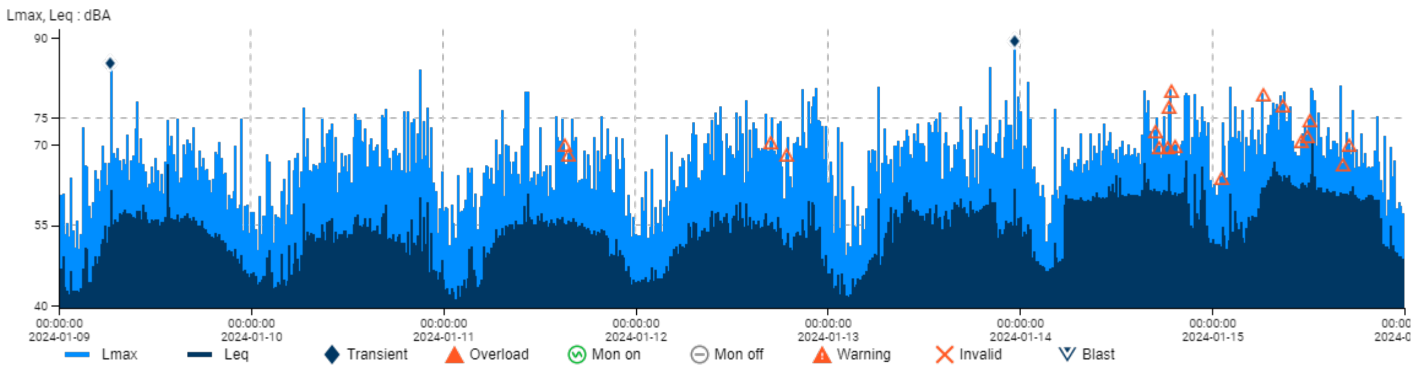
	Lmax	**Leq**	**Lcustom**
Max	97.5 dBA	69.2 dBA	
Date	2024-06-22	2024-06-22	-
Time	20:00:00	20:00:00	-

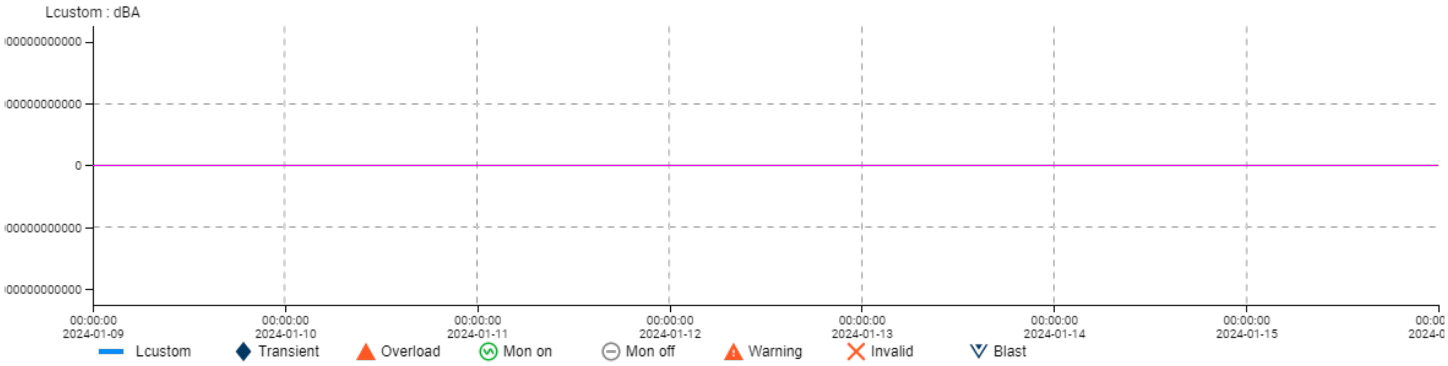
Interval report

Project	SOP
Project maintainer	-
Time frame	2024-01-09 00:00 - 2024-01-16 00:00 (Australia/Sydney)

Measuring point	N1 #14624
Description	Second floor balcony Pullman Hotel
Sensor type	S50
Sensor serial no.	14624
Master(s) serial no.	108060
Latest calibration	2023-08-02
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max	Lmax: 89.6 dBA, Leq: 70.1 dBA, Lcustom: null





X-span	2024-01-09 00:00 - 2024-01-16 00:00
Y-span	Lmax, Leq : dBA: 39.55 - 91.61, Lcustom : dBA: 9007199254740991 - -9007199254740991

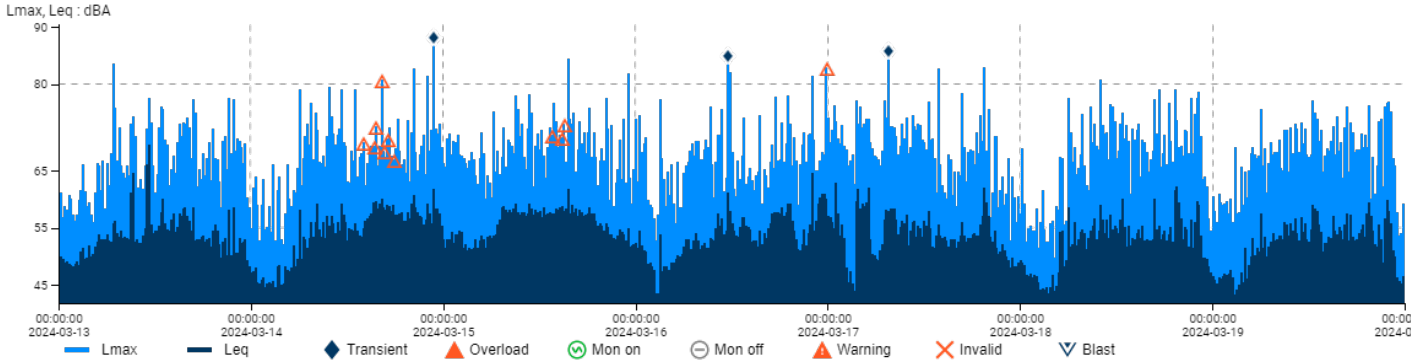
	Lmax	**Leq**	**Lcustom**
Max	89.6 dBA	70.1 dBA	
Date	2024-01-13	2024-01-15	-
Time	23:30:00	12:45:00	-

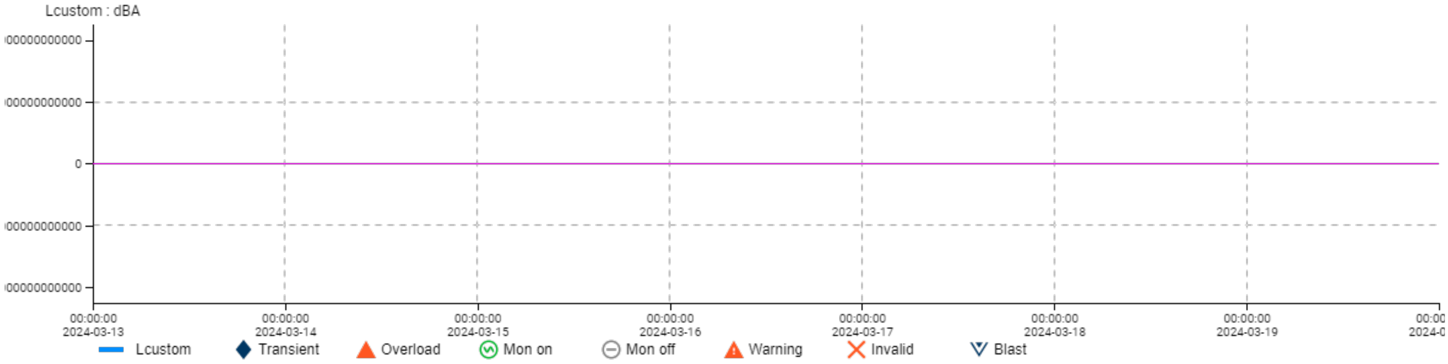
Interval report

Project	SOP
Project maintainer	-
Time frame	2024-03-13 00:00 - 2024-03-20 00:00 (Australia/Sydney)

Measuring point	N1 #14624
Description	Second floor balcony Pullman Hotel
Sensor type	S50
Sensor serial no.	14624
Master(s) serial no.	108060
Latest calibration	2023-08-02
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max Lmax: 88.5 dBA, Leq: 69.4 dBA, Lcustom: null



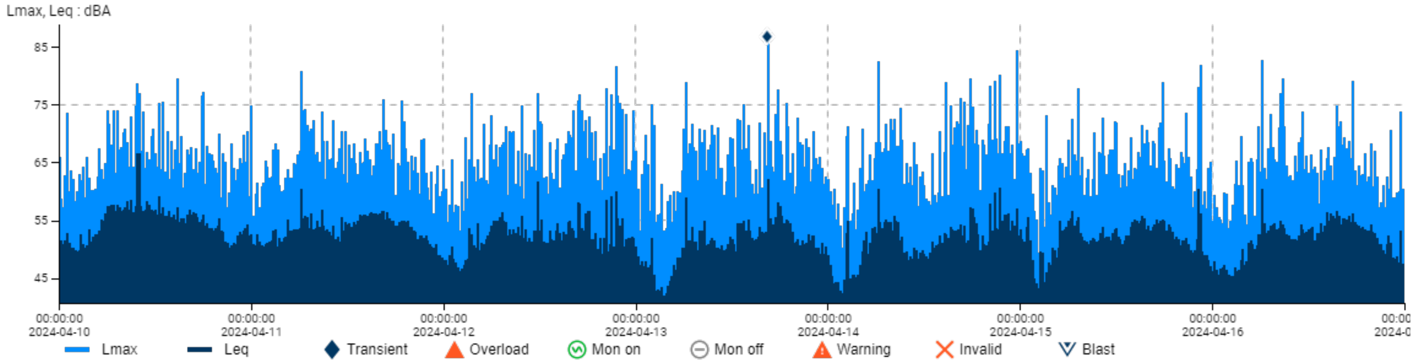


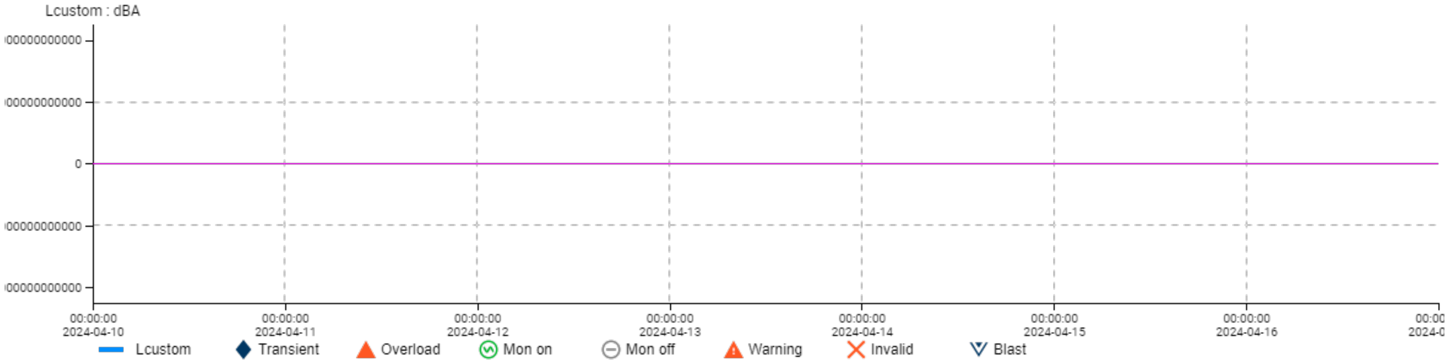
X-span	2024-03-13 00:00 - 2024-03-20 00:00
Y-span	Lmax, Leq : dBA: 41.89 - 90.44, Lcustom : dBA: 9007199254740991 - -9007199254740991

	Lmax	**Leq**	**Lcustom**
Max	88.5 dBA	69.4 dBA	
Date	2024-03-14	2024-03-13	-
Time	23:00:00	11:30:00	-

Interval report

Project	SOP
Project maintainer	-
Time frame	2024-04-10 00:00 - 2024-04-17 00:00 (Australia/Sydney)
Measuring point	N1 #14624
Description	Second floor balcony Pullman Hotel
Sensor type	S50
Sensor serial no.	14624
Master(s) serial no.	108060
Latest calibration	2023-08-02
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High
Max	Lmax: 87 dBA, Leq: 66.5 dBA, Lcustom: null



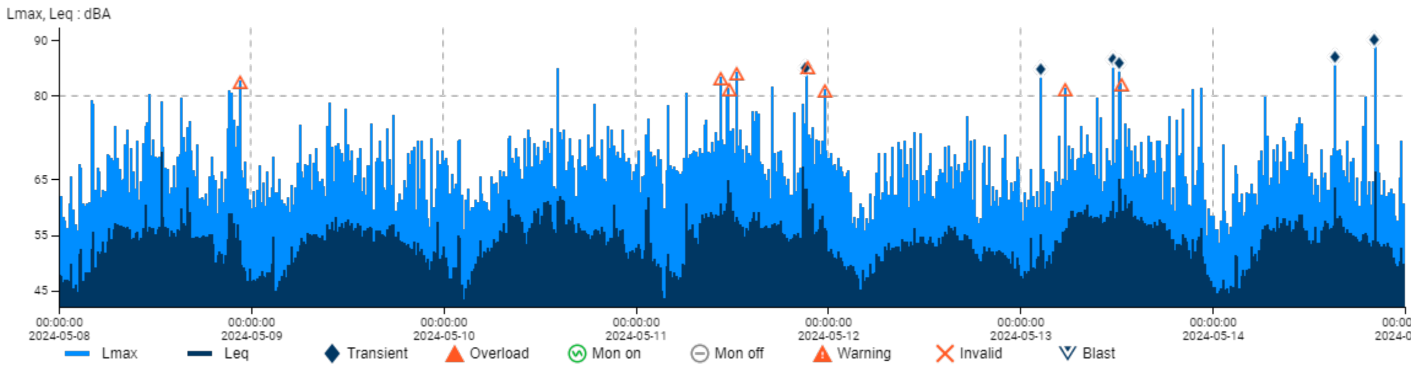


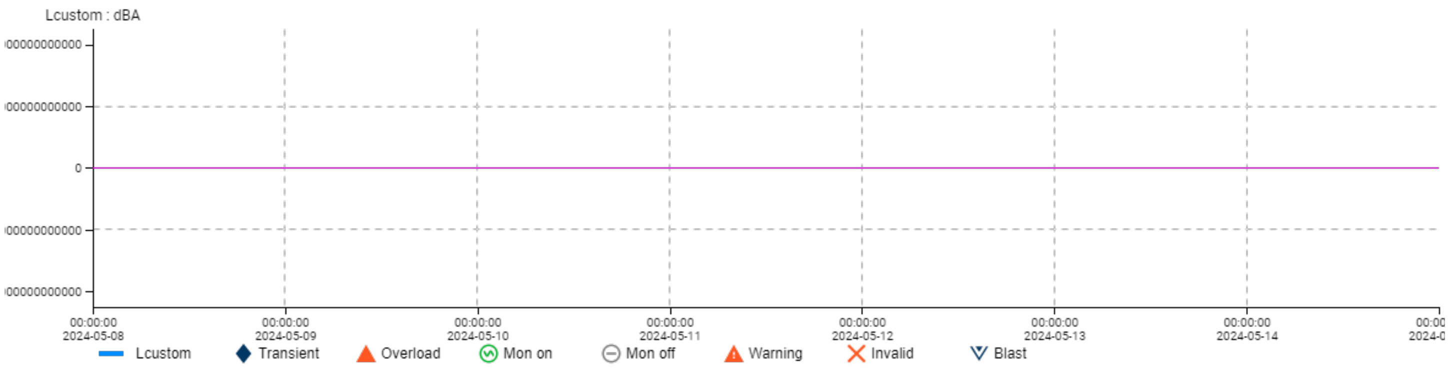
X-span	2024-04-10 00:00 - 2024-04-17 00:00
Y-span	Lmax, Leq : dBA: 40.67 - 88.89, Lcustom : dBA: 9007199254740991 - -9007199254740991

	Lmax	**Leq**	**Lcustom**
Max	87 dBA	66.5 dBA	
Date	2024-04-13	2024-04-10	-
Time	16:45:00	10:15:00	-

Interval report

Project	SOP
Project maintainer	-
Time frame	2024-05-08 00:00 - 2024-05-15 00:00 (Australia/Sydney)
Measuring point	N1 #14624
Description	Second floor balcony Pullman Hotel
Sensor type	S50
Sensor serial no.	14624
Master(s) serial no.	108060
Latest calibration	2023-08-02
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High
Max	Lmax: 90.4 dBA, Leq: 69.9 dBA, Lcustom: null



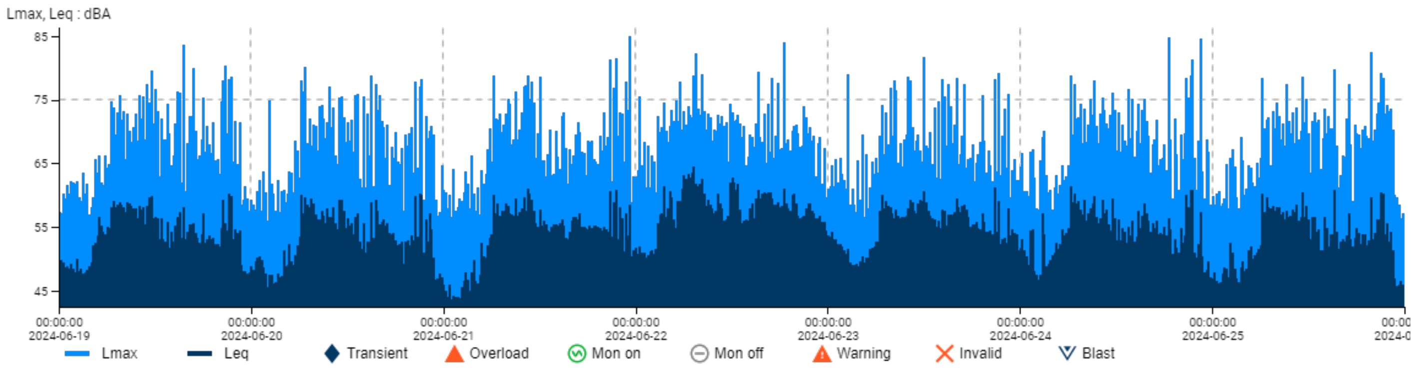


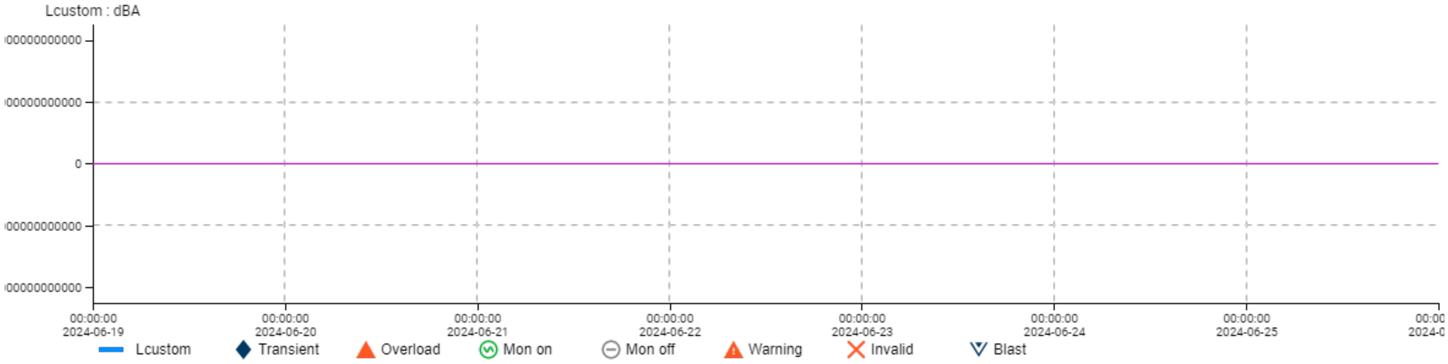
X-span	2024-05-08 00:00 - 2024-05-15 00:00
Y-span	Lmax, Leq : dBA: 42.08 - 92.25, Lcustom : dBA: 9007199254740991 - -9007199254740991

	Lmax	Leq	Lcustom
Max	90.4 dBA	69.9 dBA	
Date	2024-05-14	2024-05-08	-
Time	20:30:00	13:00:00	-

Interval report

Project	SOP
Project maintainer	-
Time frame	2024-06-19 00:00 - 2024-06-26 00:00 (Australia/Sydney)
Measuring point	N1 #14624
Description	Second floor balcony Pullman Hotel
Sensor type	S50
Sensor serial no.	14624
Master(s) serial no.	108060
Latest calibration	2023-08-02
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High
Max	Lmax: 84.9 dBA, Leq: 64.4 dBA, Lcustom: null





X-span	2024-06-19 00:00 - 2024-06-26 00:00
Y-span	Lmax, Leq : dBA: 42.46 - 86.35, Lcustom : dBA: 9007199254740991 - -9007199254740991

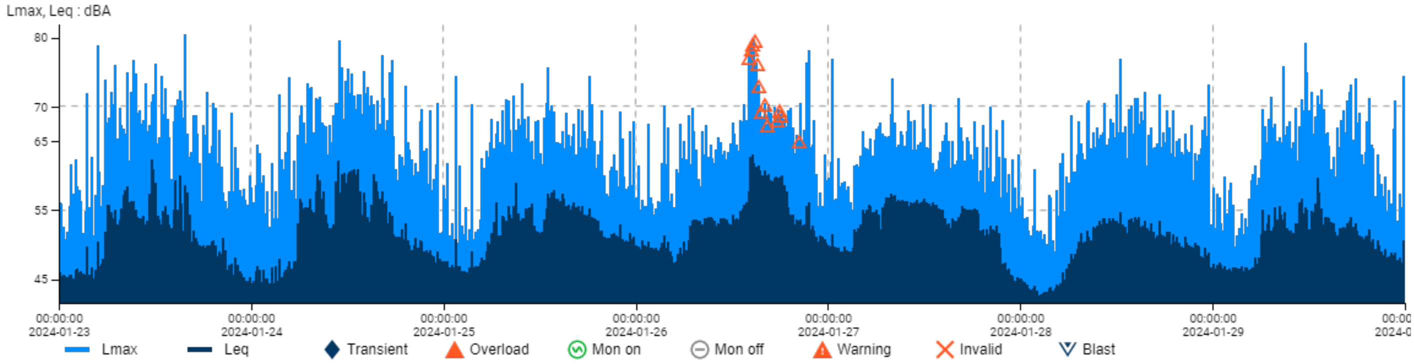
	Lmax	Leq	Lcustom
Max	84.9 dBA	64.4 dBA	
Date	2024-06-21	2024-06-22	-
Time	23:30:00	07:30:00	-

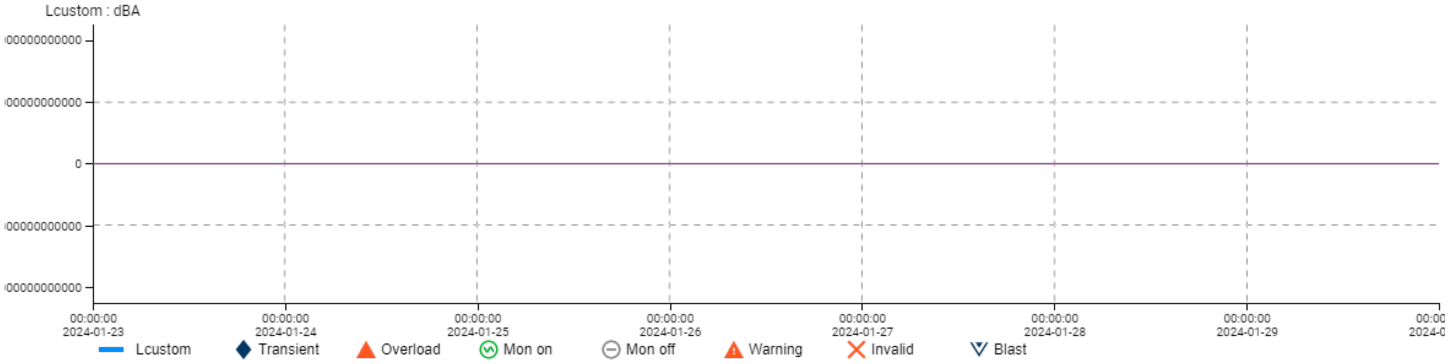
Interval report

Project	TBY
Project maintainer	-
Time frame	2024-01-23 00:00 - 2024-01-30 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max	Lmax: 80.3 dBA, Leq: 63 dBA, Lcustom: null





X-span	2024-01-23 00:00 - 2024-01-30 00:00
Y-span	Lmax, Leq : dBA: 41.58 - 81.87, Lcustom : dBA: 9007199254740991 - -9007199254740991

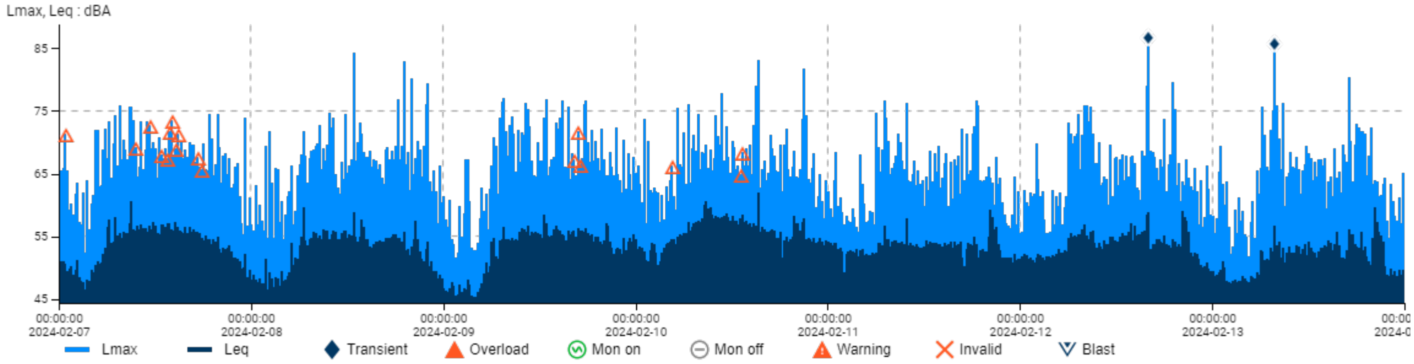
	Lmax	**Leq**	**Lcustom**
Max	80.3 dBA	63 dBA	
Date	2024-01-23	2024-01-26	-
Time	16:00:00	14:45:00	-

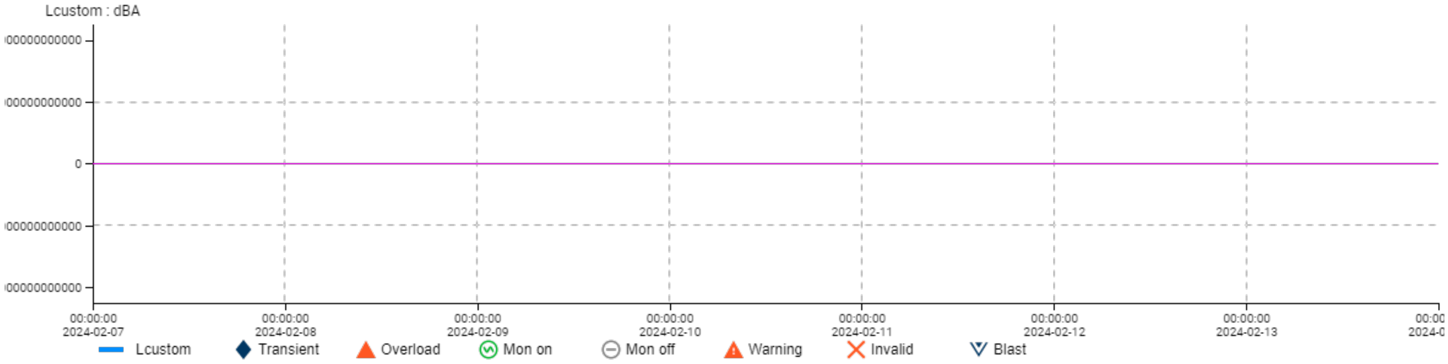
Interval report

Project	TBY
Project maintainer	-
Time frame	2024-02-07 00:00 - 2024-02-14 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max Lmax: 87 dBA, Leq: 61.9 dBA, Lcustom: null





X-span	2024-02-07 00:00 - 2024-02-14 00:00
Y-span	Lmax, Leq : dBA: 44.37 - 88.78, Lcustom : dBA: 9007199254740991 - -9007199254740991

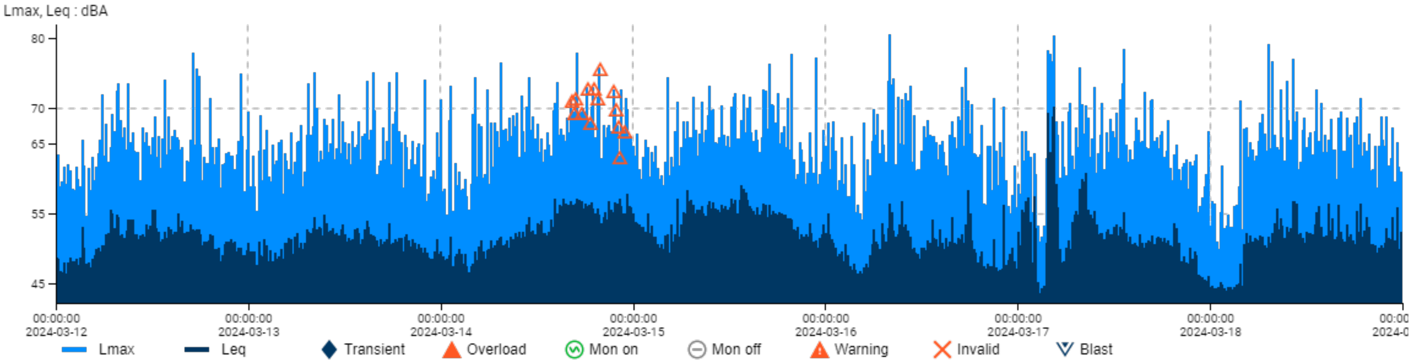
	Lmax	Leq	Lcustom
Max	87 dBA	61.9 dBA	
Date	2024-02-12	2024-02-10	-
Time	16:15:00	15:30:00	-

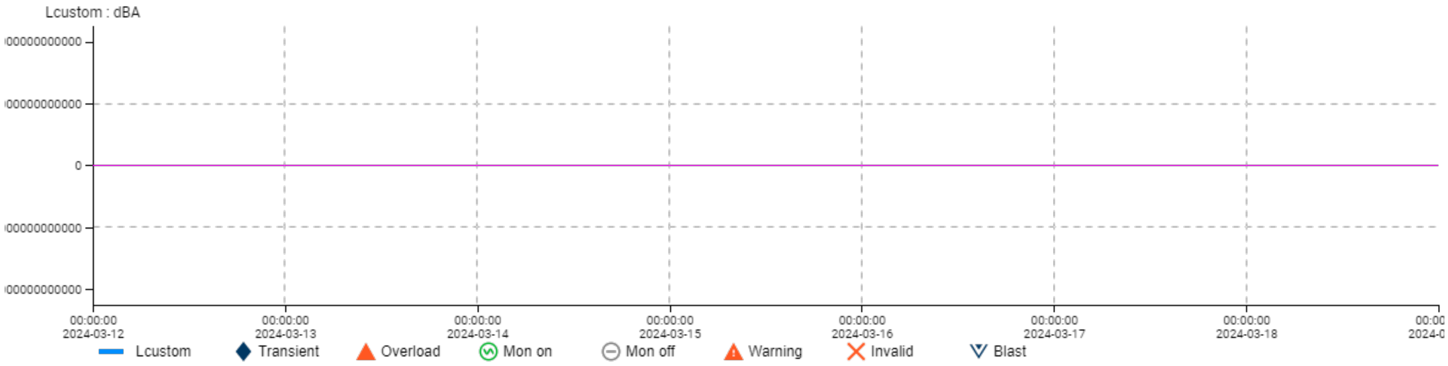
Interval report

Project	TBY
Project maintainer	-
Time frame	2024-03-12 00:00 - 2024-03-19 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max	Lmax: 80.4 dBA, Leq: 70.1 dBA, Lcustom: null



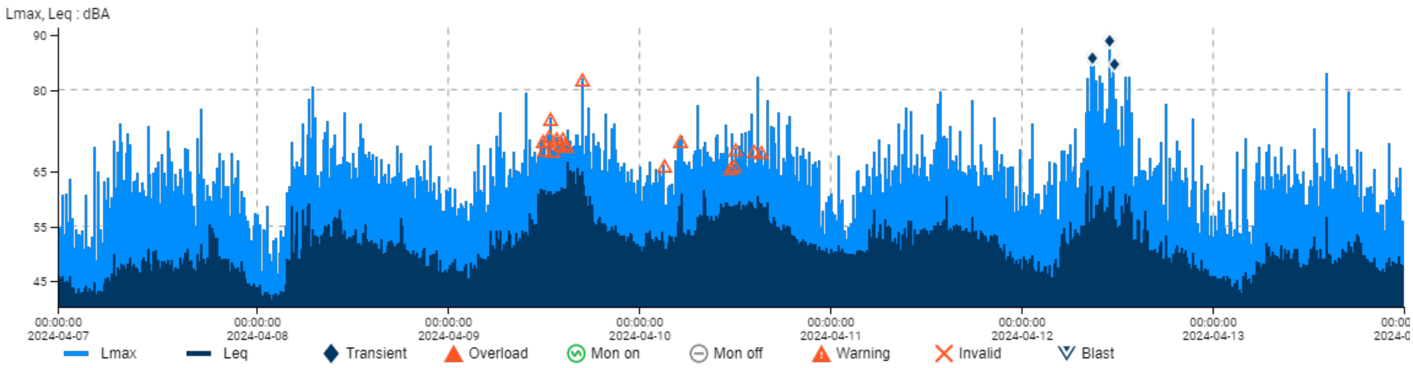


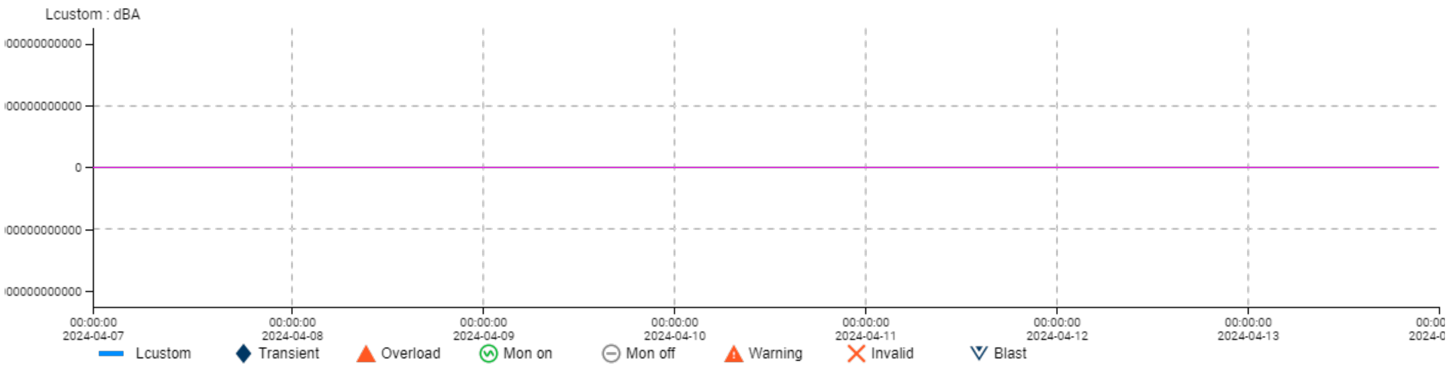
X-span	2024-03-12 00:00 - 2024-03-19 00:00
Y-span	Lmax, Leq : dBA: 42.28 - 81.93, Lcustom : dBA: 9007199254740991 - -9007199254740991

	Lmax	**Leq**	**Lcustom**
Max	80.4 dBA	70.1 dBA	
Date	2024-03-16	2024-03-17	-
Time	08:15:00	04:45:00	-

Interval report

Project	TBY
Project maintainer	-
Time frame	2024-04-07 00:00 - 2024-04-14 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High
Max	Lmax: 89.3 dBA, Leq: 66.8 dBA, Lcustom: null





X-span	2024-04-07 00:00 - 2024-04-14 00:00
Y-span	Lmax, Leq : dBA: 40.34 - 91.46, Lcustom : dBA: 9007199254740991 - -9007199254740991

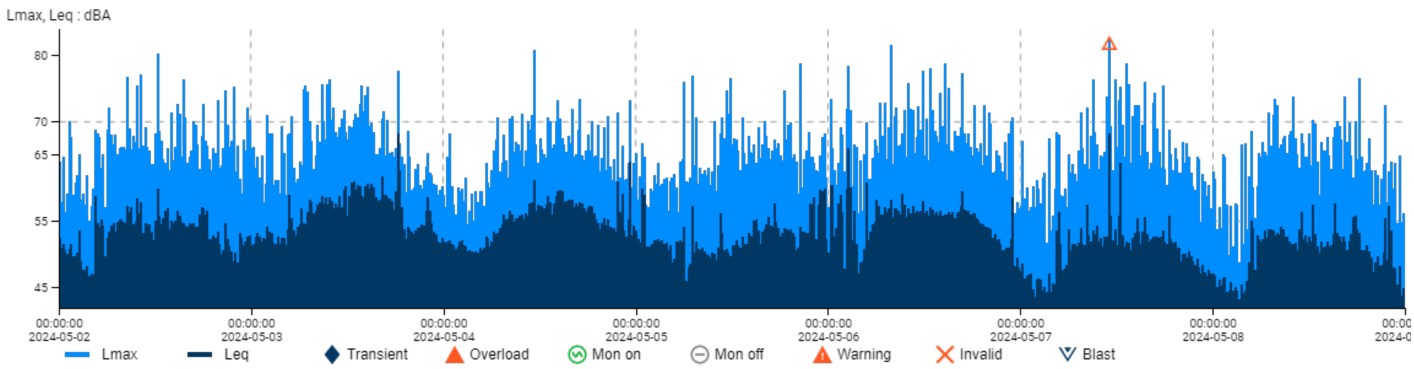
	Lmax	Leq	Lcustom
Max	89.3 dBA	66.8 dBA	
Date	2024-04-12	2024-04-09	-
Time	11:15:00	15:15:00	-

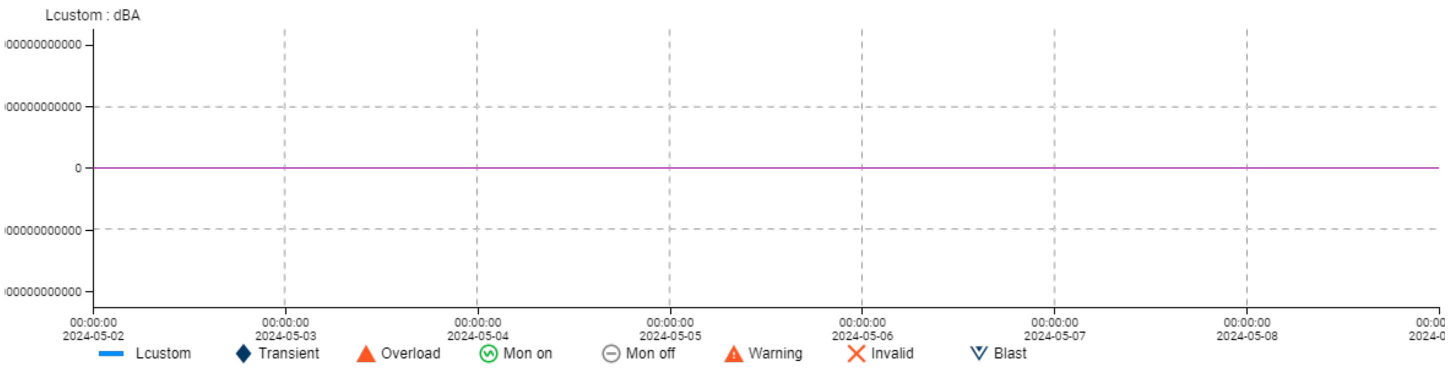
Interval report

Project	TBY
Project maintainer	-
Time frame	2024-05-02 00:00 - 2024-05-09 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High

Max	Lmax: 82.3 dBA, Leq: 68.1 dBA, Lcustom: null



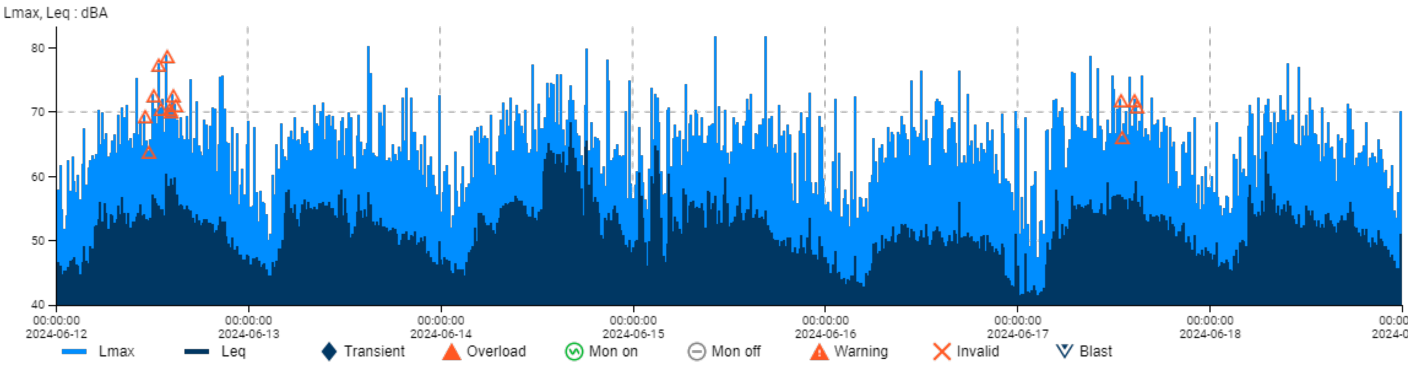


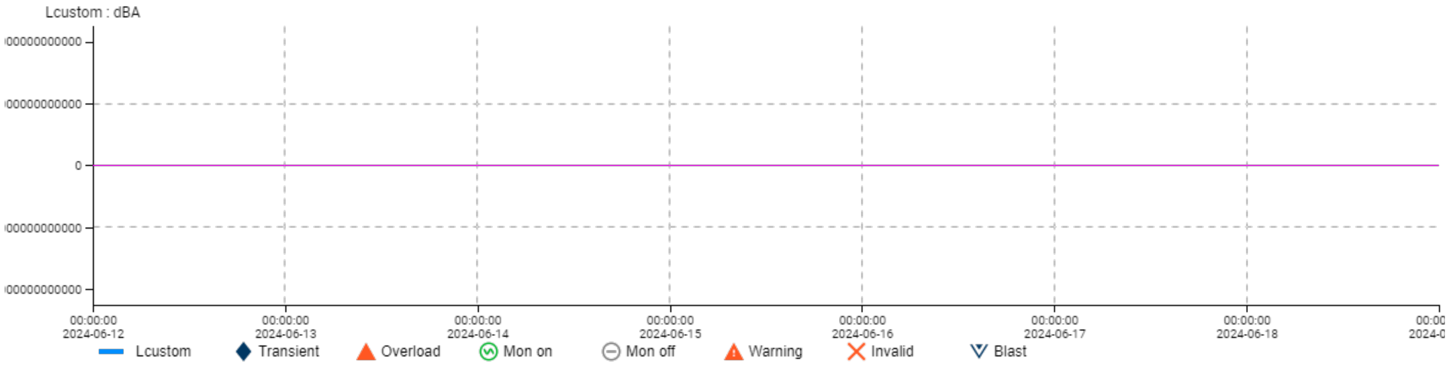
X-span	2024-05-02 00:00 - 2024-05-09 00:00
Y-span	Lmax, Leq : dBA: 41.85 - 83.99, Lcustom : dBA: 9007199254740991 - -9007199254740991

	Lmax	**Leq**	**Lcustom**
Max	82.3 dBA	68.1 dBA	
Date	2024-05-07	2024-05-03	-
Time	11:15:00	18:30:00	-

Interval report

Project	TBY
Project maintainer	-
Time frame	2024-06-12 00:00 - 2024-06-19 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	2023-07-25
Standard	(02) Lmax + Leq 30-105 dBA Fast
Unit	dBA
Quantity	Sound Pres.Level, Eqv.Sound Pres.L, Leq accumulation
Interval time	15 minutes
Table threshold	High
Max	Lmax: 81.5 dBA, Leq: 68.2 dBA, Lcustom: null





X-span	2024-06-12 00:00 - 2024-06-19 00:00
Y-span	Lmax, Leq : dBA: 39.96 - 83.21, Lcustom : dBA: 9007199254740991 - -9007199254740991

	Lmax	**Leq**	**Lcustom**
Max	81.5 dBA	68.2 dBA	
Date	2024-06-15	2024-06-14	-
Time	10:30:00	16:30:00	-

APPENDIX A (iv) – CALIBRATION RECORDS

Certificate Of Calibration

Certificate No: C39361

Equipment Tested : Sound Level Calibrator

Manufacturer:	Svantek
Type No:	SV 31 **Serial No:** 31892
Class:	1
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	996	hPa ±1 hPa	**Date of Receipt :**	03/04/2024
Temperature	24	°C ±1° C	**Date of Calibration :**	08/04/2024
Relative Humidity	49	% ±5%	**Date of Issue :**	08/04/2024

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

Checked by: ....

Authorised Signature: ....

Hein Soe

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.

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Head Office & Calibration Laboratory
Unit 14, 22 Hudson Avenue, Castle Hill NSW 2154
(02) 9680 8133
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Acoustic and Vibration Measurements

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: Ferrovial 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: ....
Hein Soe

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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	**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: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: ....

AUTHORISED SIGNATURE: ....
Bruce Meldrum

Accredited for compliance with ISO/IEC 17025 - Calibration
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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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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: SLM39651

EQUIPMENT TESTED: Sound Level Meter

Manufacturer:	Rion		
Type No:	NL-42	**Serial No:**	00145400
Mic. Type:	UC-52	**Serial No:**	149905
Pre-Amp. Type:	NH-24	**Serial No:**	35296

Owner: Ferrovial 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
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.

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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.

APPENDIX B - VIBRATION MONITORING LOCATIONS AND RESULTS

Vibration Monitoring Register

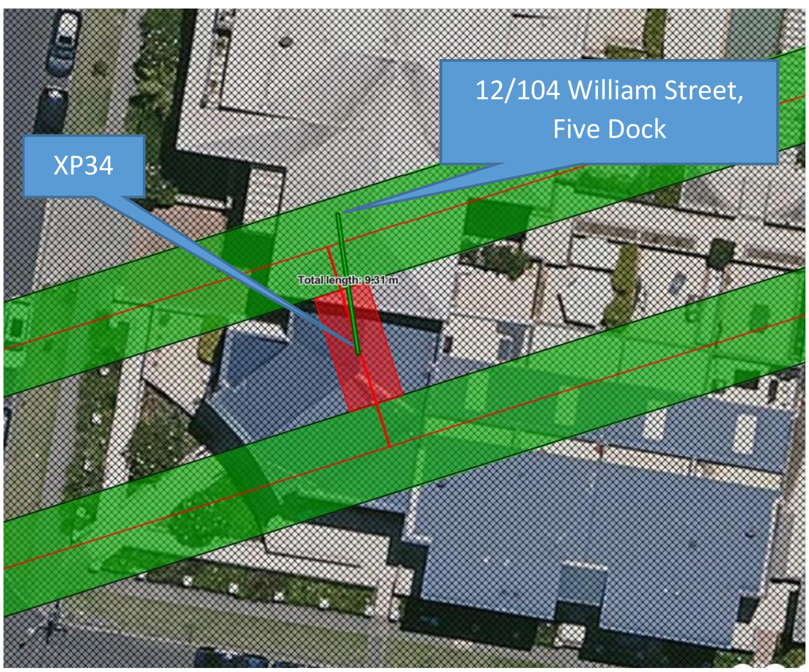
Date	Time	Site	Conducted by	Attended/ Unattended	Type/Model number	Serial No.	Calibration due	Duration of monitoring	Source location	Measurement location	Distance to source (m)	Works being undertaken	PPV Preferred Criteria (mm/s)	PPV (mm/s)	Frequency (Hz)	VDV Preferred Criteria (m/s1.75)	Vibration Dose Value (VDV m/s1.75)	Below criteria (Y/N)	Comments
01-31/01/2024	12am-12pm	Burwood South	Osamah Naji	Unattended	C22	.07781 & 10684	45603	31 days	BWD South shaft	Royal Enfield shop wall	5	BWD South shaft excavation	7.5	66.1	2	N/A	N/A	No	The exceedance is not due to AFJV construction, as shown in the above photos. The photos depict different times with no movement observed on any of the AFJV equipment.
01-31/01/2024	12am-12pm	Burwood South	Osamah Naji	Unattended	C22	33770 & 106845	25/07/2024	31 days	BWD North shaft	16 Burton St, Concord	5	BWD South shaft excavation	7.5	1.6	44.5	N/A	N/A	Y	No exceedance recorded
01-31/01/2024	12am-12pm	Five Dock	Osamah Naji	Unattended	C22	106845	26/07/2025	31 days	FDK East	110 GNR	1	Tunneling work, excavation and spoil loadout	7.5	5.6	205	N/A	N/A	Y	No exceedence recorded
01-31/01/2024	12am-12pm	Five Dock	Osamah Naji	Unattended	C22	33730	25/07/2025	31 days	FDK East	St Albans Church	3	TBM Maintenance & Spoil loadout	7.5	1.6	293	N/A	N/A	Y	No exceedence recorded
01-31/01/2024	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	24.7	36.6	N/A	N/A	No	The exceedance is not due to AFJV construction, as shown in the above photos. The photos depict different times with no movement observed on any of the AFJV equipment.
01-31/01/2024	12am-12pm	N Strathfield	Osamah Naji	Unattended	C22	33720	25/07/2025	31 days	N Strathfield Site	125 Queens st, N Strathfield	5	Rocking hammering 250T crane excavation	7.5	1.35	128	N/A	N/A	Y	No exceedence recorded
23-24/01/2024	12am-12pm	The Bays	Christian Grinberg Menini	Unattended	C22	107769	31/03/2025	2 days	Vibration Roller	24 Robert Street – Javelin Smash Repairs	7	Vibratory Roller used for pavement restoration	7.5	1.6	-	N/A	N/A	Y	No exceedance recorded. Permit 392 OOHW validation monitoring
01-29/02/2024	12am-12pm	Burwood South	Osamah Naji	Unattended	V12	33770 & 106845	25/07/2024	29 days	BWD North shaft	16 Burton St, Concord	5	BWD South shaft excavation	7.5	4.9	25.5	N/A	N/A	Y	No exceedance recorded
01-29/02/2024	12am-12pm	Burwood South	Osamah Naji	Unattended	C22	107781 & 106845	7/11/2024	29 days	BWD South shaft	Royal Enfield shop wall	5	BWD South shaft excavation	7.5	16.9	228	N/A	N/A	No	The exceedance is not due to AFJV construction, as shown in the above photos. The photos depict different times with no movement observed on any of the AFJV equipment.
01-29/02/2024	12am-12pm	Five Dock	Osamah Naji	Unattended	V12	106845	26/07/2025	29 days	FDK East	110 GNR	1	Tunneling work, excavation and spoil loadout	7.5	16.9	228	N/A	N/A	No	The exceedance is not due to AFJV construction, as shown in the above photos. The photos depict different times with no movement observed on any of the AFJV equipment.
01-29/02/2024	12am-12pm	Five Dock	Osamah Naji	Unattended	V12	33730	25/07/2025	29 days	FDK East	St Albans Church	3	TBM Maintenance & Spoil loadout	7.5	0.8	410	N/A	N/A	Y	No exceedence recorded
01-29/02/2024	12am-12pm	SOP	Osamah Naji	Unattended	C22	106848	26/04/2025	29 days	SOP site	10 Herb Elliot Dr,. SOP	5	Concrete pours. spoil loadout works	7.5	34.7	58.5	N/A	N/A	No	On 23/02/2024 at 15:00:00, the data exceedance limits (Trans 32.4mm/s- Hz 33.6) is attributed to the replacement of the battery by the Environmental representative.
01-29/02/2024	12am-12pm	N Strathfield	Osamah Naji	Unattended	V12	33720	25/07/2025	29 days	N Strathfield Site	125 Queens st, N Strathfield	5	Rocking hammering 250T crane excavation	7.5	0.8	128	N/A	N/A	Y	No exceedence recorded
05-13/2/2024	12am-12pm	Five Dock	Kelvin Nmereole	Unattended	Svan958AG	69084	25/07/2024	7 Days	TBM Tunnel	7 East Street, Five Dock	23	TBM Excavation	25	0.2	-	0.4	0.03	Y	No exceedance recorded
14-21/02/2024	12am-12pm	Five Dock	Christian Grinberg Menini	Unattended	Svan958AG	59503	25/07/2024	7 Days	XP 27	9a Rickard St, Rodd Point	31	XP Excavation	7.5	0.776	-	0.17	0.01	Y	No exceedance recorded
01-31/03/2024	12am-12pm	Burwood South	Osamah Naji	Unattended	V12	33770 & 106845	25/07/2024	31 days	BWD North shaft	16 Burton St, Concord	5	BWD South shaft excavation	7.5	1.85	108	N/A	N/A	Y	No exceedance recorded
01-31/03/2024	12am-12pm	Burwood South	Osamah Naji	Unattended	C22	107781 & 106845	7/11/2024	31 days	BWD South shaft	Royal Enfield shop wall	5	BWD South shaft excavation	7.5	19.2	102	N/A	N/A	No	On 21/03/2024 at 17:00:00, the data exceedance limits (Long(x) 19.2mm/s- Hz 102) is attributed to the replacement of the battery by the Environmental representative.
01-31/03/2024	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	231	29.5	N/A	N/A	No	On 13/03/2024 at 11:38:00, the data exceedance limits (Trans 231 mm/s- Hz 29.5) is attributed to the replacement of the battery by the Environmental representative.
01-31/03/2024	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	6.85	120	N/A	N/A	Y	No exceedence recorded
01-31/03/2024	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	2.7	120	N/A	N/A	Y	No exceedence recorded
01-31/03/2024	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	0.75	28.5	N/A	N/A	Y	No exceedence recorded
01-30/04/2024	12am-12pm	Burwood South	Osamah Naji	Unattended	V12	33770 & 106845	25/07/2024	30 days	BWD North shaft	16 Burton St, Concord	5	BWD South shaft excavation	7.5	2.55	256	N/A	N/A	Y	No exceedance recorded
01-30/04/2024	12am-12pm	Burwood South	Osamah Naji	Unattended	C22	107781 & 106845	7/11/2024	30 days	BWD South shaft	Royal Enfield shop wall	5	BWD South shaft excavation	7.5	0.6	293	N/A	N/A	Y	No exceedance recorded
01-30/04/2024	12am-12pm	Five Dock	Osamah Naji	Unattended	V12	106845	26/07/2025	30 days	FDK East	110 GNR	1	Tunneling work, excavation and spoil loadout	7.5	212	4.5	N/A	N/A	No	On 03/04/2024 at 14:56:00, the data exceedance limits (Vert 271 mm/s- Hz 8) is attributed to the replacement of the battery by the Environmental representative.
01-30/04/2024	12am-12pm	Five Dock	Osamah Naji	Unattended	V12	33730	25/07/2025	30 days	FDK East	St Albans Church	3	TBM Maintenance & Spoil loadout	7.5	0.35	186	N/A	N/A	Y	No exceedence recorded
01-30/04/2024	12am-12pm	N Strathfield	Osamah Naji	Unattended	V12	33720	25/07/2025	30 days	N Strathfield Site	125 Queens st, N Strathfield	5	Rocking hammering 250T crane excavation	7.5	1.3	36.5	N/A	N/A	Y	No exceedence recorded
01-30/04/2024	12am-12pm	SOP	Osamah Naji	Unattended	C22	106848	26/04/2025	30 days	SOP site	10 Herb Elliot Dr,. SOP	5	Concrete pours. spoil loadout works	7.5	4.15	62.1	N/A	N/A	Y	No exceedence recorded
01-31/05/2024	12am-12pm	Burwood South	Osamah Naji	Unattended	V12	33770 & 106845	25/07/2024	31 days	BWD North shaft	16 Burton St, Concord	5	BWD South shaft excavation	7.5	5.05	43.5	N/A	N/A	Y	No exceedance recorded
01-31/05/2024	12am-12pm	Burwood South	Osamah Naji	Unattended	C22	107781 &	7/11/2024	31 days	BWD South shaft	Royal Enfield shop wall	5	BWD South shaft excavation	7.5	61.5	6.6	N/A	N/A	No	On 29/05/2024 at 10:00:00, the data exceedance limits (Long(X) 61.5mm/s- Hz 102) is attributed to the unit removal by the Environmental representative.
01-31/05/2024	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	3.4	25.5	N/A	N/A	No	No exceedance recorded
01-31/05/2024	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	0.75	228	N/A	N/A	Y	No exceedence recorded
01-31/05/2024	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	1.1	120	N/A	N/A	Y	No exceedence recorded
01-31/05/2024	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	157	1	N/A	N/A	No	On 20/05/2024 at 13:00:00, the data exceedance limits (Vert(z) 157mm/s- Hz 102) is attributed to the replacement of the battery by the Environmental representative.
01-30/06/2024	12am-12pm	Burwood South	Osamah Naji	Unattended	V12	33770 & 106845	25/07/2024	30 days	BWD North shaft	16 Burton St, Concord	5	BWD South shaft excavation	7.5	0.65	25.5	N/A	N/A	Y	No exceedance recorded
01-30/06/2024	12am-12pm	Five Dock	Osamah Naji	Unattended	V12	106845	26/07/2025	30 days	FDK East	110 GNR	1	Tunneling work, excavation and spoil loadout	7.5	302	50	N/A	N/A	No	On 04/06/2024 at 22:48:00, the data exceedance limits (Vert(z) 302mm/s- Hz 50) is attributed to the replacement of the battery by the Environmental representative.
01-30/06/2024	12am-12pm	Five Dock	Osamah Naji	Unattended	V12	33730	25/07/2025	30 days	FDK East	St Albans Church	3	TBM Maintenance & Spoil loadout	7.5	0.85	256	N/A	N/A	Y	No exceedence recorded
01-30/06/2024	12am-12pm	N Strathfield	Osamah Naji	Unattended	V12	33720	25/07/2025	30 days	N Strathfield Site	125 Queens st, N Strathfield	5	Rocking hammering 250T crane excavation	7.5	1.6	108	N/A	N/A	Y	No exceedence recorded
01-30/06/2024	12am-12pm	SOP	Osamah Naji	Unattended	C22	106848	26/04/2025	30 days	SOP site	10 Herb Elliot Dr,. SOP	5	Concrete pours. spoil loadout works	7.5	50.2	137	N/A	N/A	No	On 14/06/2024 at 16:00:00, the data exceedance limits (Vert(z) 50.2mm/s- Hz 137) is attributed to the replacement of the battery by the Environmental representative.

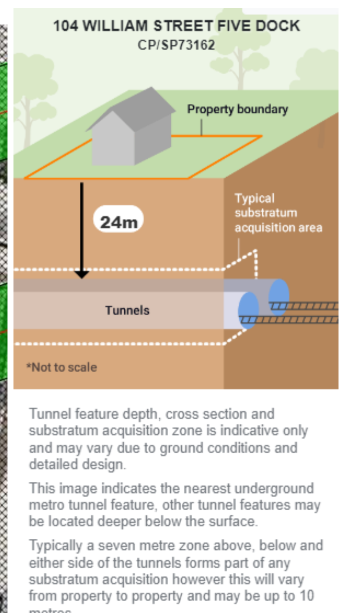
Location	Date Start	Date finished	Report Number	Summary Report Due Date (7 days after removal)	Status of Detailed report	Responsible Person
7 East Street, Five Dock	5/02/2024	13/02/2024	20240205-GBN-01	Complete	Complete	Kelvin Nmereole
28a Lancelot Street, Five Dock	22/02/2024	29/02/2024	20240222-GBN-01	Complete	Complete	Kelvin Nmereole
63 Lancelot Street, Five Dock	26/02/2024	5/03/2024	20240226-GBN-01	Complete	Complete	Kelvin Nmereole
77 Henley Marine Dr, Rodd Point XP 25	9/02/2024	15/02/2024	GBN.20240209	No report needed as no cutting happened during this period	N/A	Christian Grinberg
9a Rickard, Rodd Point XP 27	14/02/2024	21/02/2024	20240214-GBN-01	Complete	Complete	Christian Grinberg
64 Ingham Avenue, Five Dock XP29	5/03/2024	14/03/2024	20240305-GBN-01	Complete	Complete	Christian Grinberg
283 Parramatta Rd, Concord, NSW, 2046	8/04/2024	17/04/2024	20240418-GBN-01	Complete	Complete	Osamah Naji
140 Queens Rd, Five Dock	21/03/2024	28/03/2024	20240221-GBN-01	Complete	Complete	David Lamb
12/104 William Street, Five Dock XP 34	15/05/2024	22/05/2024	20240515-GBN-01	Complete	Complete	Christian Grinberg
14 Park Avenue, Concord, NSW, 2046	28/05/2024	30/05/2024	20240528-GBN-01	Complete	Complete	Osamah Naji

Groundborne Noise & Vibration Monitoring Report

Project: Sydney Metro West – Central Tunnelling Package	**Report No.** 20240515-GBN-01
Start: 10:00am, 15 May 2024	**End:** 10:00am, 22 May 2024
Data collected by: Christian Grinberg Menini	**Attended/Unattended monitoring:** Unattended
Was this monitoring event conducted in response to a complaint?	Yes (Complaint made on 14th. May 2024)
Location and description of construction activity (including operation and load conditions of plant) XP34 Excavation. Brokk 500 (5TN) used for excavation, hammering and bolting.	**Monitoring location** 12/104 William Street, Five Dock: Monitoring was conducted inside the living room. **Reason for location selection:** The only location deemed non-intrusive for the residents. The monitor is placed next to a computer desk that seems to be in frequent use throughout the day. Music was heard in the living room during both installation and retrieval of the monitor. Location was assessed by the engineer installing the equipment.
Distance between monitoring location and source (m)	XP34 Excavation at depth of approximately 24m and horizontal distance of approximately 9m - 11m.

Map/diagram of monitoring location/sensitive receiver and construction activity





Instrumentation details			
Type of monitor	One unit with noise (microphone) and vibration (tri-axial geophone) logging functions		
Make and Model	Svan958AG	**Last calibration date**	25/07/2023
Serial Number	59503	**Calibration valid until**	25/07/2024

Instrumentation set-up and method

The microphone was placed on a stand inside the living room of the residence. There is a potential for background noise interference from the balcony window on the west side of the living room. Additionally, objects located next to the microphone might also cause interference. This location was assessed as the only one that would not disrupt the residents' daily activities.

The geophone was secured to a weighted plate placed on the tiled floor.

Refer to Attachment C for a photo of the setup.

Results and analysis

The monitoring occurred during day, evening and night shifts, however, only results from the night period have been assessed in this report due to lower domestic and ambient noise and vibration sources allowing a more accurate comparison between prediction and actual levels. No works during Night Shift of 21st May and during the weekend (18th-19th)

Noise Results summary

Date	Night shift of 15/05/24	
Time	12:40AM – 12:55AM	03:55AM –04:10AM
Activity	Bolting+Meshing 09:45PM to 2:15AM	Brokk Cutting 3:00AM to 5:15AM
Prediction $LAeq_{15min}$ dBA	47	47
Trigger for Alt. Accomm. $LAeq_{15min}$ dBA	45	45
LAeq15min dBA	56.8	42.8
LA10 dBA	60.1	43.1
LA90 dBA	44.1	30.6
LAmax dBA	80.4	69.9
Commentary (including estimated contribution of construction activities vs non-construction sources)	During this timeframe, vibration levels are consistent with the preceding and subsequent periods. Therefore, the source remains unidentified. It is likely due to internal activities, as the increase in noise levels is not correlated with any spikes in vibration.	Monitoring event considered representative of impact from Brokk cutting

Date	Night shift of 16/05/24		
Time	11:10PM – 11:25PM	01:10AM – 01:25AM	03:40AM – 03:55AM
Activity	Brokk Cutting 10:45PM to 12:30AM	Brokk Cutting 01:00AM to 02:45AM	Brokk Cutting 03:15AM to 05:30AM
Prediction $LAeq_{15min}$ dBA	47	47	47
Trigger for Alt. Accomm. $LAeq_{15min}$ dBA	45	45	45
LAeq15min dBA	55.8	40.4	49.3
LA10 dBA	59.4	43.3	52.4
LA90 dBA	44	30.7	36.9
LAmax dBA	73.6	67.5	79.2
Commentary (including estimated contribution of construction activities vs non-construction sources)	During this timeframe, vibration levels are consistent with the preceding and subsequent periods. Therefore, the source remains unidentified. It is likely due to internal activities, as the increase in noise levels is not correlated with any spikes in vibration.	Monitoring event considered representative of impact from Brokk cutting	During this timeframe, vibration levels are consistent with the preceding and subsequent periods. Therefore, the source remains unidentified. There is a single spike in vibration, not necessarily related to hammering activities.

Date	Night shift of 17/05/24				
Time	12:40AM – 12:55AM	01:25AM – 01:40AM	02:40AM – 02:55AM	03:40AM – 03:55AM	05:10AM – 05:25AM
Activity	Brokk Cutting 12:30AM to 01:00AM	Brokk Cutting 01:30AM to 02:00AM	Brokk Cutting 02:30AM to 03:00AM	Brokk Cutting 03:30AM to 04:00AM	Brokk Cutting 04:30AM to 05:30AM
Prediction $LAeq_{15min}$ dBA	47	47	47	47	47
Trigger for Alt. Accomm. $LAeq_{15min}$ dBA	45	45	45	45	45
LAeq15min dBA	51.2	43.6	36.9	44.2	38.8
LA10 dBA	54.4	46.6	39.5	47.6	40.6
LA90 dBA	43.5	38.2	33.3	35.2	32
LAmax dBA	72.1	60.5	46.9	70.3	65.2
Commentary (including estimated contribution of construction activities vs non-construction sources)	During this timeframe, vibration levels are consistent with the preceding and subsequent periods. Based on previous periods with high noise levels, and this being consistent with this time, it is concluded that this is not related to excavation activities.	Monitoring event considered representative of impact from Brokk cutting	Monitoring event considered representative of impact from Brokk cutting	Monitoring event considered representative of impact from Brokk cutting	Monitoring event considered representative of impact from Brokk cutting

Date	Night shift of 20/05/24			
Time	1:25AM – 1:40AM	2:10AM – 2:25AM	3:55AM – 4:10AM	5:10AM – 5:25AM
Activity	Brokk Cutting 1:00AM to 1:45AM	Brokk Cutting 2:15AM to 3AM	Brokk Cutting 3:30AM to 4:30AM	Brokk Cutting 5:00AM to 6:00AM
Prediction $LAeq_{15min}$ dBA	47	47	47	47
Trigger for Alt. Accomm. $LAeq_{15min}$ dBA	45	45	45	45
LAeq15min dBA	32.7	45.7	35.2	38.4
LA10 dBA	35.3	49	38.3	42.1
LA90 dBA	29.4	31.1	31.6	32.6
LAmax dBA	50.5	71.4	50.2	55
Commentary (including estimated contribution of construction activities vs non-construction sources)	Monitoring event considered representative of impact from Brokk cutting	Monitoring event considered representative of impact from Brokk cutting	Monitoring event considered representative of impact from Brokk cutting	Monitoring event considered representative of impact from Brokk cutting

Refer to Attachment A for examples of graphs from the monitoring period.

Noise Conclusion:

Were results from XP activities higher than predicted?	No	If yes, discuss what action has been taken	N/A
Were results XP activities higher than trigger for alternative accommodation?	Yes	If yes, was alternative accommodation offered?	Yes, AA was offered after complaint was received.
Was the monitoring and results compliant with the NVMP?	Yes	If no, discuss what action has been taken	N/A

The monitoring process may have encountered significant interference due to several factors. Primarily, the monitor was located next to the resident's working desk. The resident mentioned that he would work if he couldn't sleep due to noise or other reasons, making it difficult to conduct a proper analysis without the audio recordings, which we cannot access due to privacy reasons. Additionally, the presence of objects close to the microphone could have inadvertently increased noise levels through reflection.

The observed instances of exceeding noise levels are likely linked to household activities, as all registered exceedances occurred before 1 am and were unrelated to XP's excavation activities. Both residents remained at home during the day and night, and one of them, who works from home, is most likely sensitive to noise and vibration perception.

Furthermore, as the resident mentioned GBN was affecting their sleep, alternative accommodation was offered but not accepted. Instead, movie tickets were offered and accepted by the residents.

Summary of vibration results:

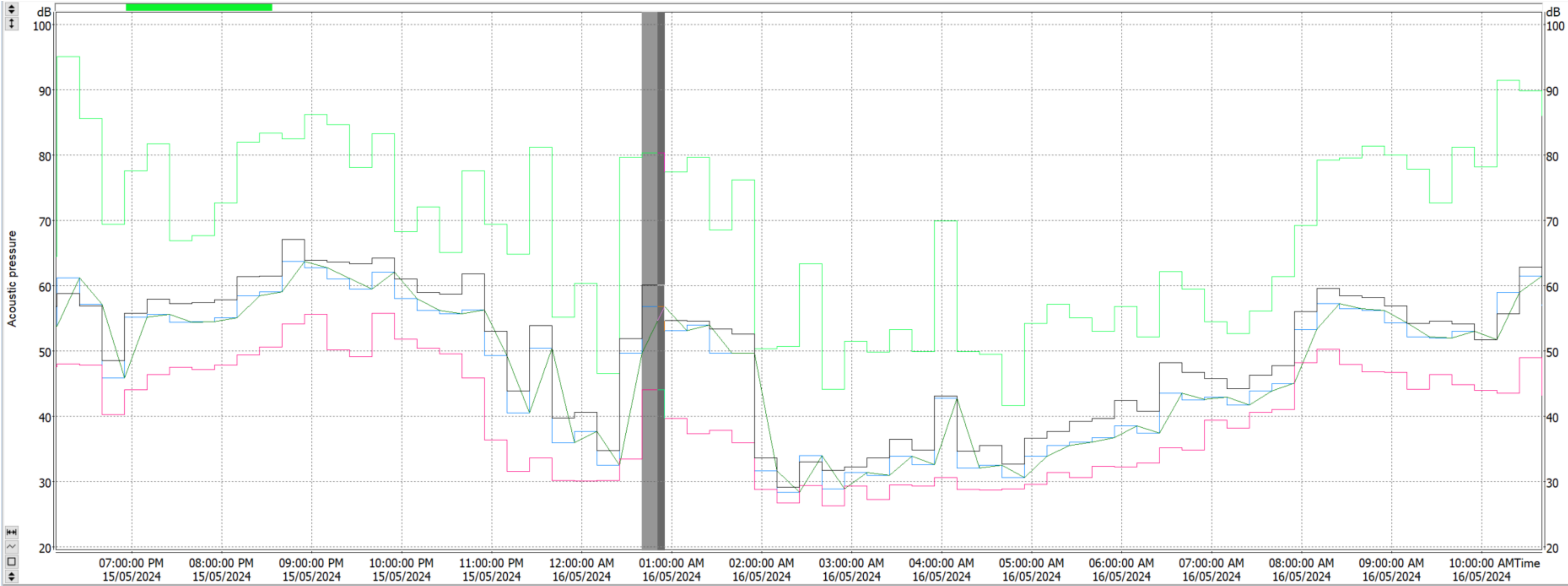
Date	15/05/24	16/05/24	17/05/24	20/05/24
Time	11pm-7am	11pm-7am	11pm-7am	11pm-7am
Activity	Bolting+Meshing: 9:45PM to 2:15AM Brokk Cutting 3:00AM – 5:15AM	Brokk Cutting: 10:45PM to 12:30AM 1:00AM to 02:45AM 3:15AM to 05:30AM	Brokk Cutting 11:30PM to 12:00AM 12:30AM to 01:00AM 01:30AM to 02:00AM 02:30AM to 03:00AM 03:30AM to 04:00AM 04:30AM to 05:30AM	Brokk Cutting 10PM to 11:00PM 1:00AM to 1:45AM 2:15AM to 03:00AM 3:30AM to 04:30AM 5:00AM to 06:00AM
Prediction m/s$^{1.75}$	0.36	0.36	0.36	0.36
VML m/s$^{1.75}$	0.26	0.26	0.26	0.26
Night (8 hr) VDV m/s$^{1.75}$	0.005	0.002	0.009	0.004
Screening level mm/s	7.5	7.5	7.5	7.5
Predicted PPV mm/s	0.6	0.6	0.6	0.6
PPV mm/s	0.046 at 04:04 am	0.077 at 4:00 am	0.155 at 11:28 pm	0.059 at 03:49 am
Comment	PPV below criteria for unreinforced or light framed structures. See graphs below. VDV below prediction and VML	PPV below criteria for unreinforced or light framed structures. See graphs below. VDV below prediction and VML	PPV below criteria for unreinforced or light framed structures. See graphs below. VDV below prediction and VML	PPV below criteria for unreinforced or light framed structures. See graphs below. VDV below prediction and VML

Refer to Attachment B for graphs from the monitoring period.

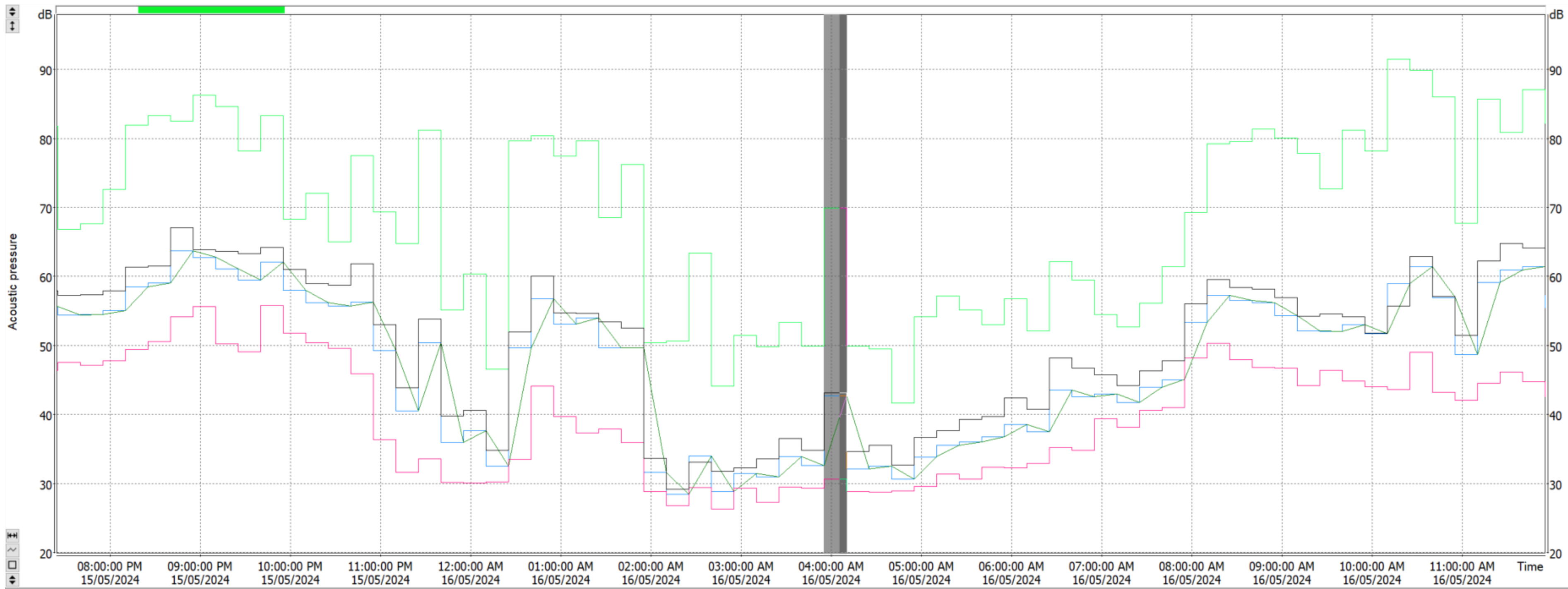
Vibration Conclusion:

Were results from XP activities higher than predicted?	No	If yes, discuss what action has been taken	N/A
Were results from XP activities higher than screening level and/or VML?	No	If yes, discuss what action has been taken	N/A
Was the monitoring and results compliant with the NVMP?	Yes	If no, discuss what action has been taken	N/A

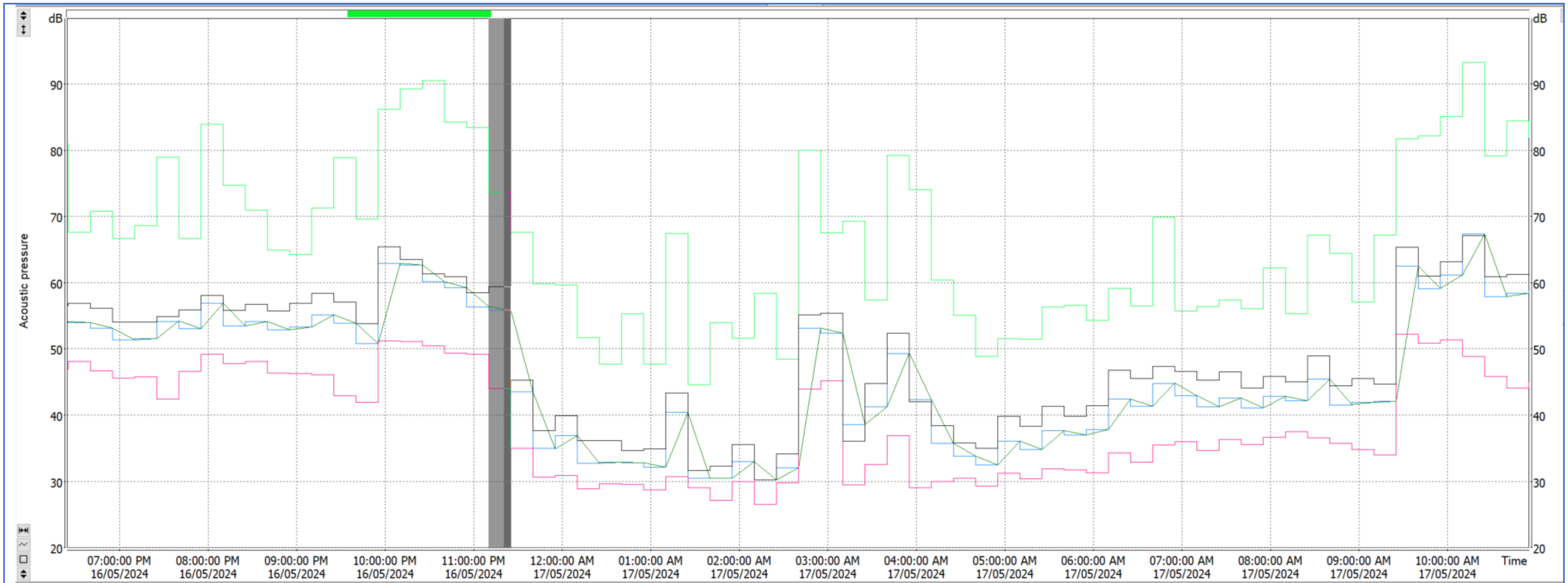
Attachment A: Noise Graphs



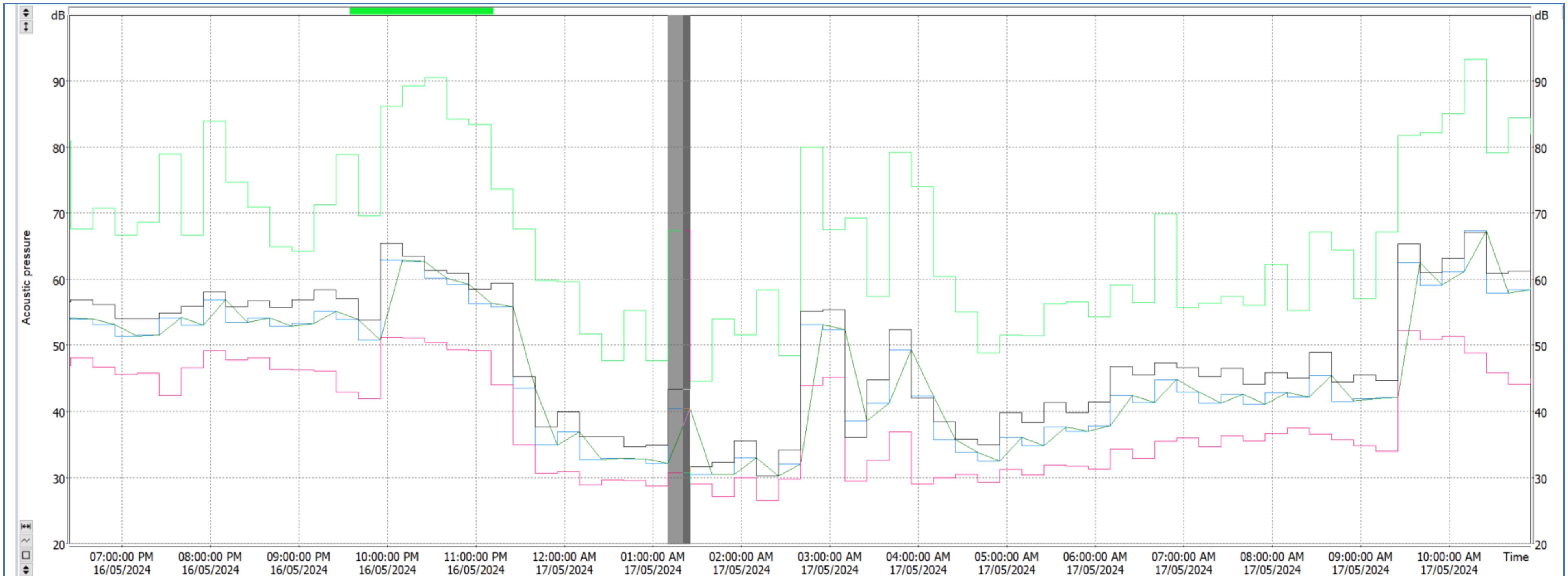
Info	Start	Duration	LAFeq (SR) [dB]	LAFeq (TH) [dB]	LAFeq Ln L90 [dB]	LAFmax (SR) [dB]	LAFeq Ln L10 [dB]
	-	-	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)
Main cursor	**16/05/2024 12:55:02 AM**	**-**	**56.8**	**56.8**	**44.1**	**80.4**	**60.1**
Inside blocks	16/05/2024 12:40:02 AM	00:15:00.000	56.8	56.8	44.1	80.4	60.1



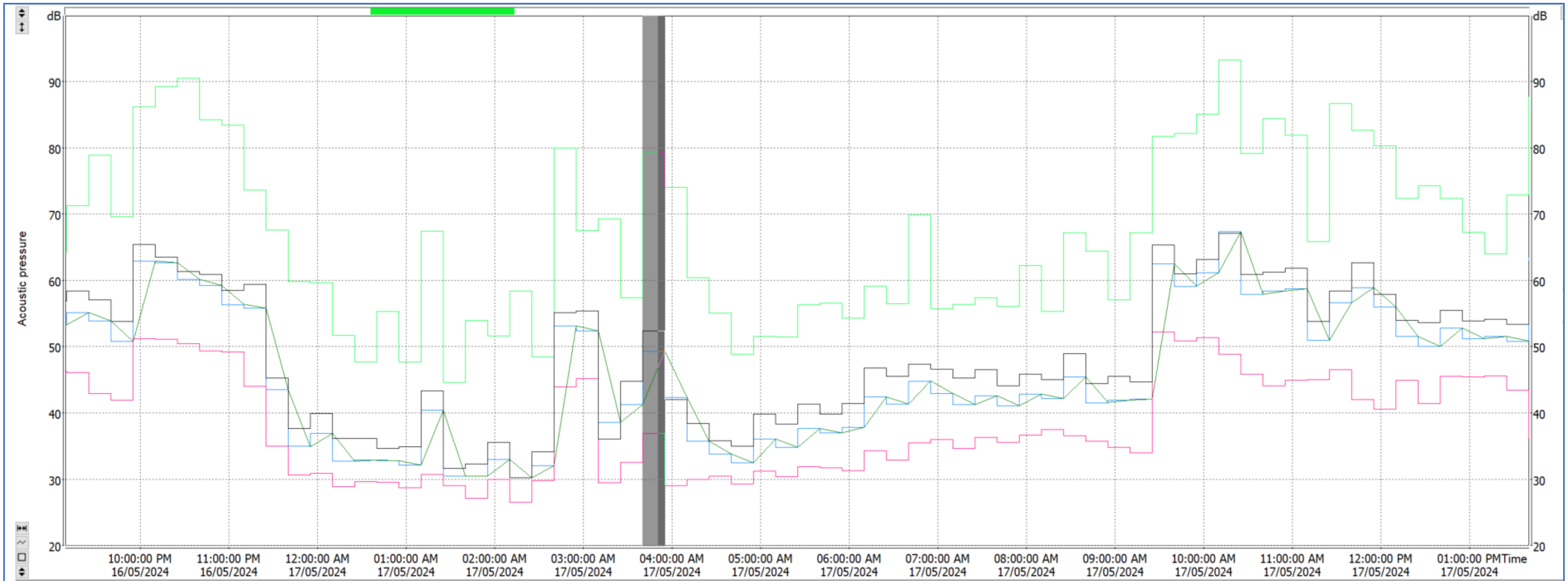
Info	Start	Duration	LAFeq (SR) [dB]	LAFeq (TH) [dB]	LAFeq Ln L90 [dB]	LAFmax (SR) [dB]	LAFeq Ln L10 [dB]
Info	-	-	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)
Main cursor	**16/05/2024 04:10:02 AM**	**-**	**42.7**	**42.8**	**30.6**	**69.9**	**43.1**
Inside blocks	16/05/2024 03:55:02 AM	00:15:00.000	42.7	42.8	30.6	69.9	43.1



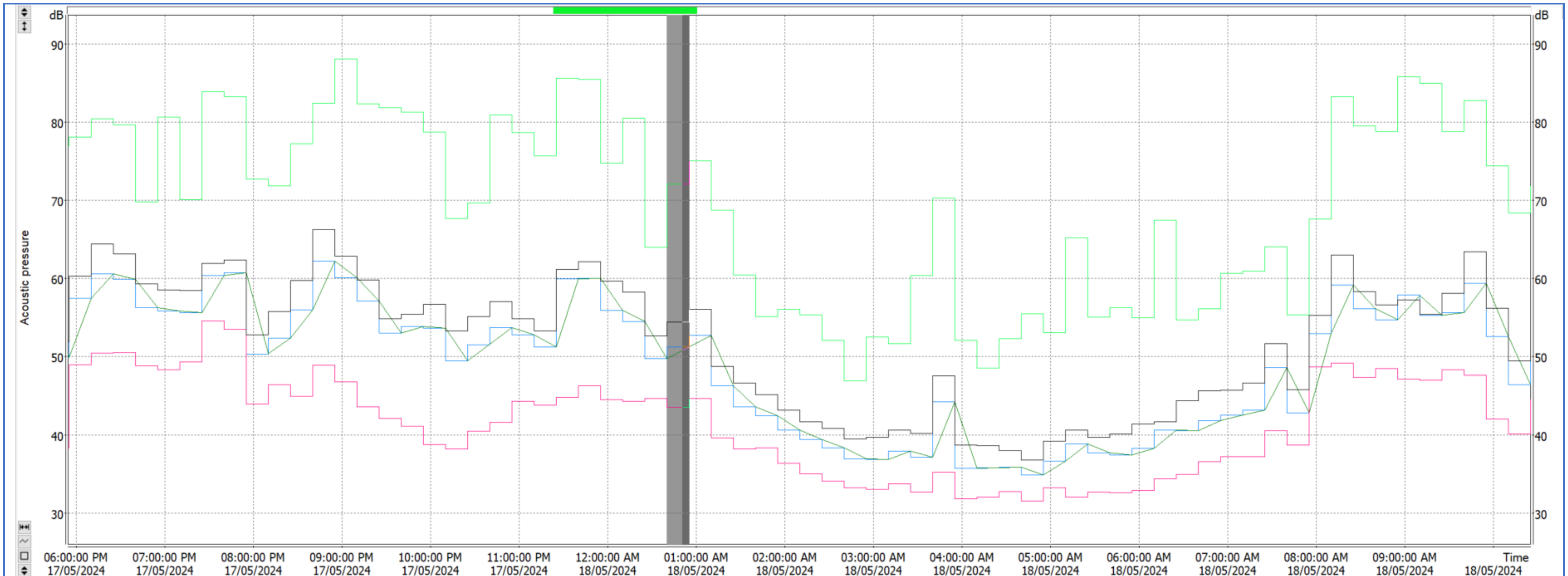
	Start	Duration	LAFeq (SR) [dB]	LAFeq (TH) [dB]	LAFeq Ln L90 [dB]	LAFmax (SR) [dB]	LAFeq Ln L10 [dB]
Info	-	-	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)
Main cursor	**16/05/2024 11:25:02 PM**	**-**	**55.8**	**55.8**	**44.0**	**73.6**	**59.4**
Inside blocks	16/05/2024 11:10:02 PM	00:15:00.000	55.8	55.8	44.0	73.6	59.4



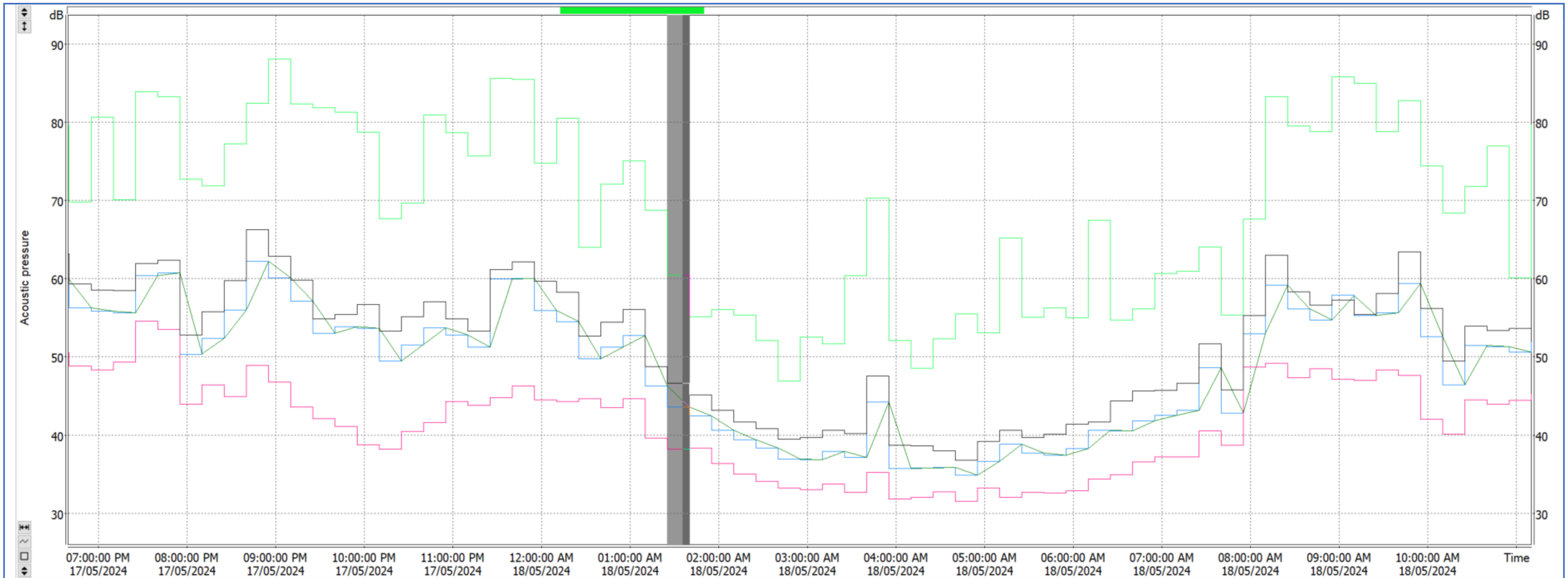
	Start	Duration	LAFeq (SR) [dB]	LAFeq (TH) [dB]	LAFeq Ln L90 [dB]	LAFmax (SR) [dB]	LAFeq Ln L10 [dB]
Info	-	-	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)
Main cursor	**17/05/2024 01:25:02 AM**	**-**	**40.4**	**40.4**	**30.7**	**67.5**	**43.3**
Inside blocks	17/05/2024 01:10:02 AM	00:15:00.000	40.4	40.4	30.7	67.5	43.3



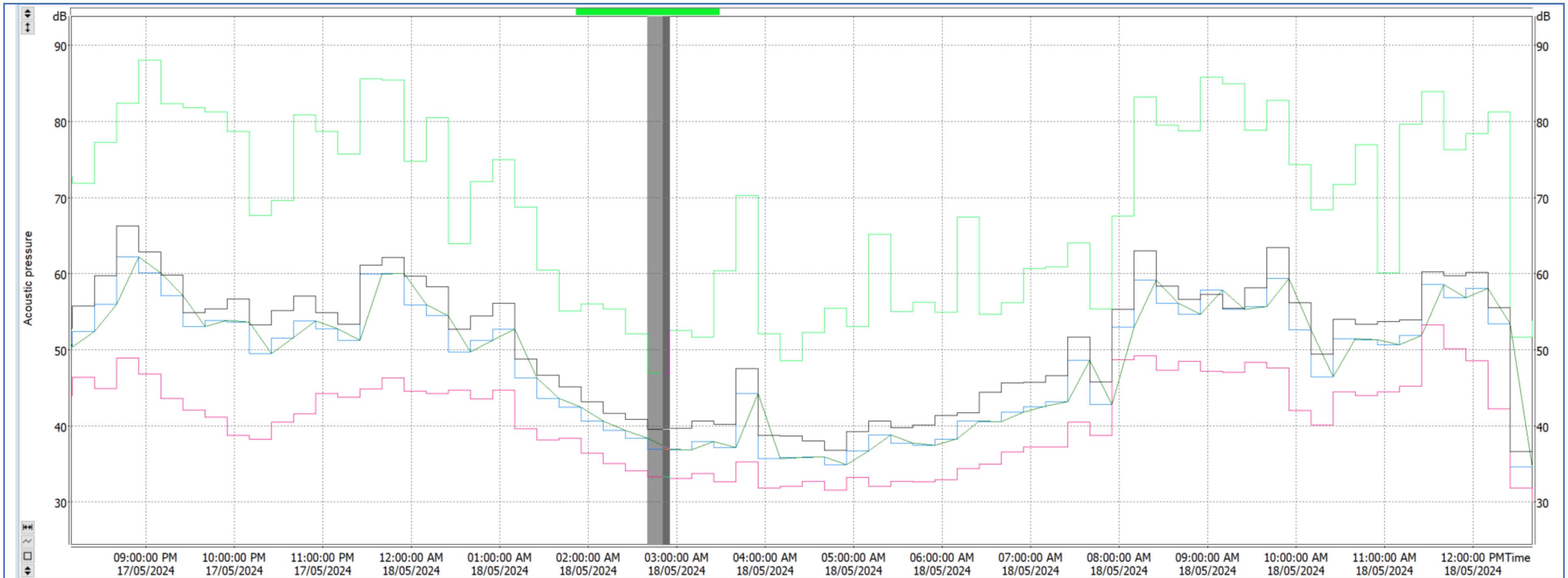
	Start	Duration	LAFeq (SR) [dB]	LAFeq (TH) [dB]	LAFeq Ln L90 [dB]	LAFmax (SR) [dB]	LAFeq Ln L10 [dB]
Info	-	-	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)
Main cursor	**17/05/2024 03:55:02 AM**	**-**	**49.3**	**49.3**	**36.9**	**79.2**	**52.4**
Inside blocks	17/05/2024 03:40:02 AM	00:15:00.000	49.3	49.3	36.9	79.2	52.4



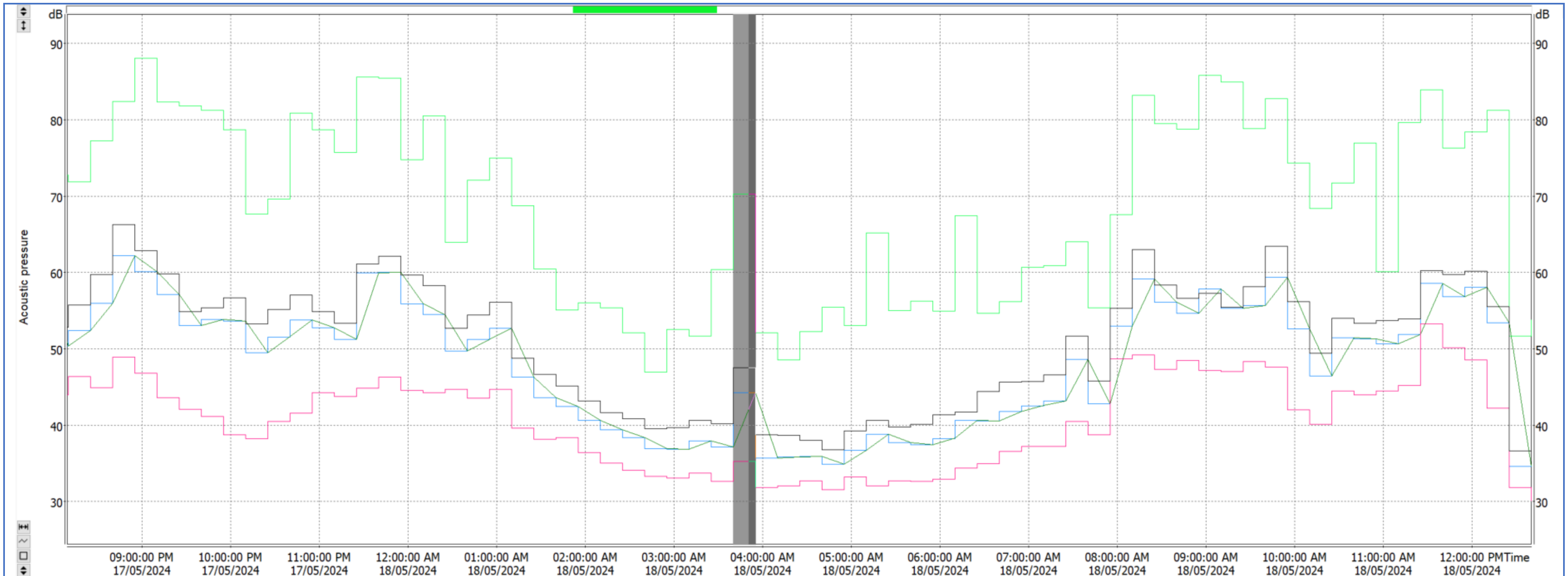
Info	Start	Duration	LAFeq (SR) [dB] Ch4, P1 (A, Fast)	LAFeq (TH) [dB] Ch4, P1 (A, Fast)	LAFeq Ln L90 [dB] Ch4, P1 (A, Fast)	LAFmax (SR) [dB] Ch4, P1 (A, Fast)	LAFeq Ln L10 [dB] Ch4, P1 (A, Fast)
	-	-					
Main cursor	**18/05/2024 12:55:02 AM**	**-**	**51.2**	**51.2**	**43.5**	**72.1**	**54.4**
Inside blocks	18/05/2024 12:40:02 AM	00:15:00.000	51.2	51.2	43.5	72.1	54.4



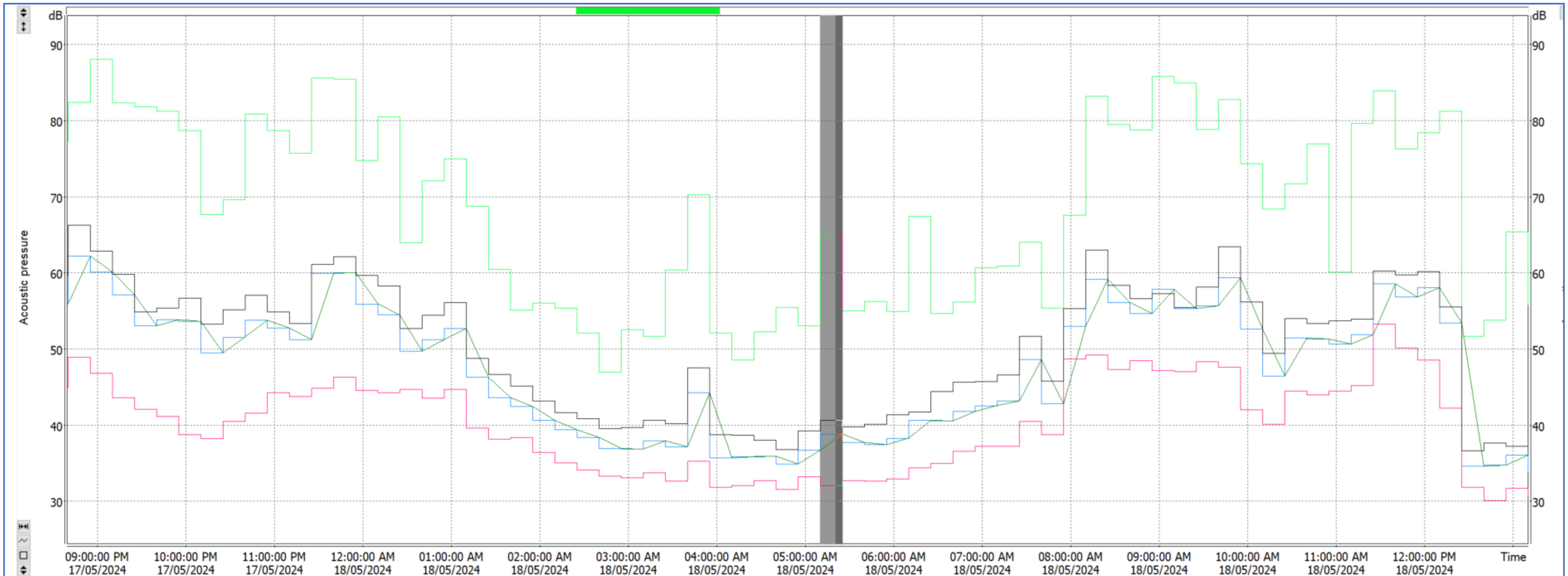
	Start	Duration	LAFeq (SR) [dB]	LAFeq (TH) [dB]	LAFeq Ln L90 [dB]	LAFmax (SR) [dB]	LAFeq Ln L10 [dB]
Info	-	-	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)
Main cursor	**18/05/2024 01:40:02 AM**	**-**	**43.6**	**43.6**	**38.2**	**60.5**	**46.6**
Inside blocks	18/05/2024 01:25:02 AM	00:15:00.000	43.6	43.6	38.2	60.5	46.6



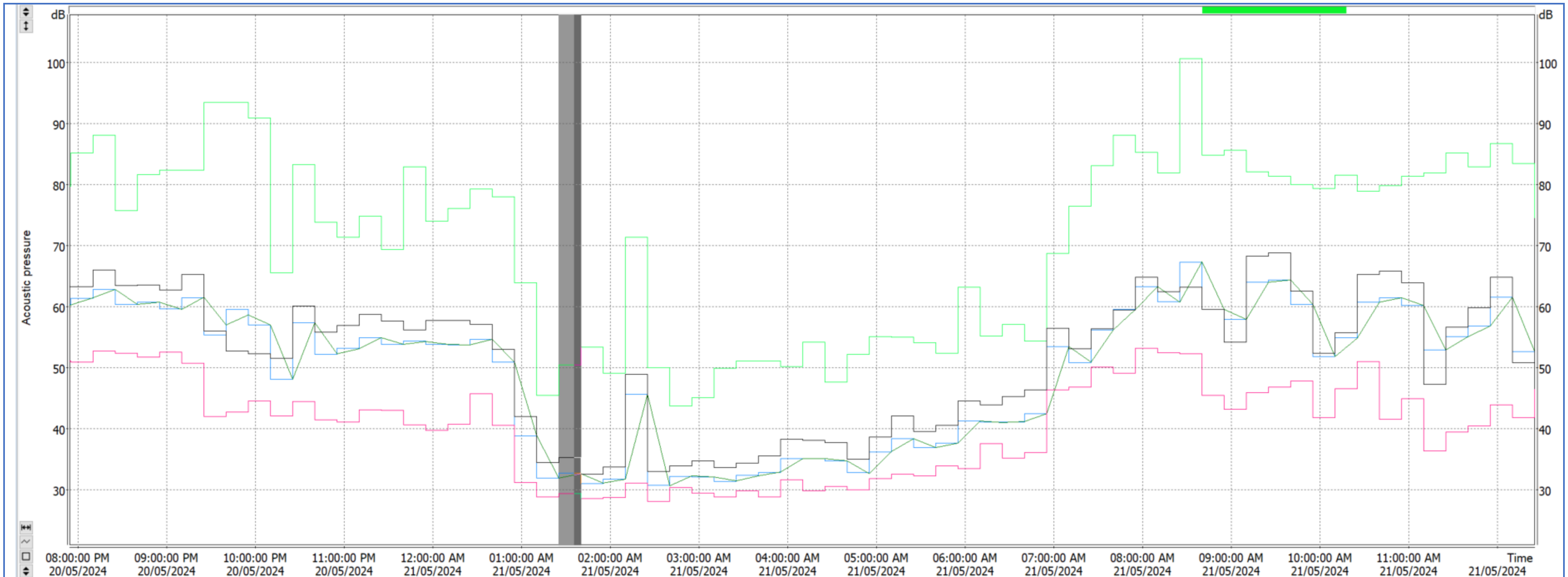
Info	Start	Duration	LAFeq (SR) [dB]	LAFeq (TH) [dB]	LAFeq Ln L90 [dB]	LAFmax (SR) [dB]	LAFeq Ln L10 [dB]
	-	-	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)
Main cursor	**18/05/2024 02:55:02 AM**	**-**	**36.9**	**36.9**	**33.3**	**46.9**	**39.5**
Inside blocks	18/05/2024 02:40:02 AM	00:15:00.000	36.9	36.9	33.3	46.9	39.5



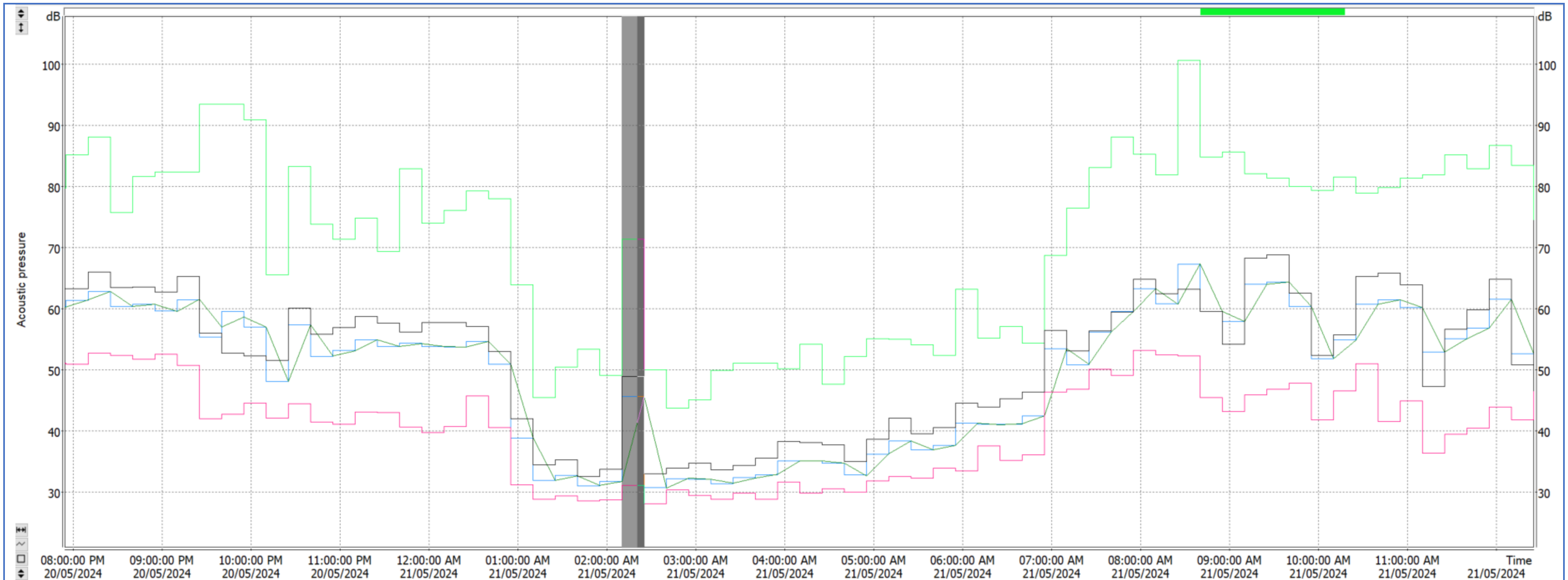
	Start	Duration	LAFeq (SR) [dB]	LAFeq (TH) [dB]	LAFeq Ln L90 [dB]	LAFmax (SR) [dB]	LAFeq Ln L10 [dB]
Info	-	-	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)
Main cursor	**18/05/2024 03:55:02 AM**	**-**	**44.2**	**44.2**	**35.2**	**70.3**	**47.6**
Inside blocks	18/05/2024 03:40:02 AM	00:15:00.000	44.2	44.2	35.2	70.3	47.6



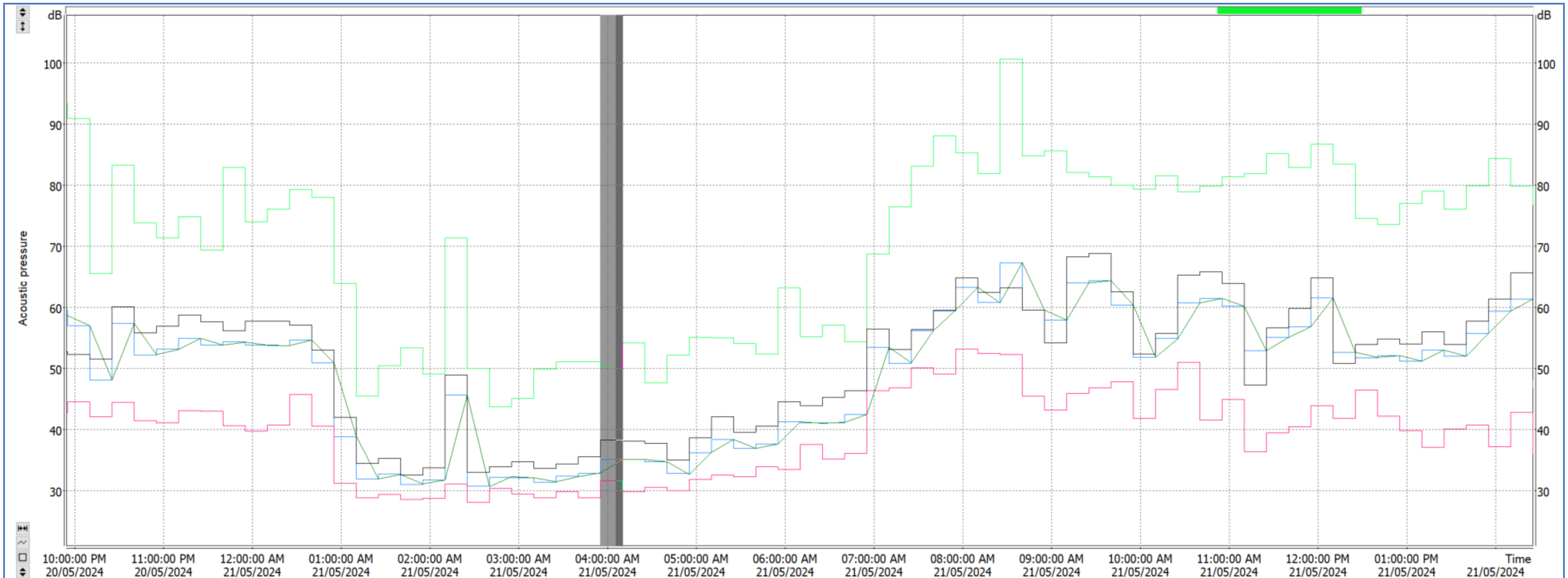
Info	Start	Duration	LAFeq (SR) [dB]	LAFeq (TH) [dB]	LAFeq Ln L90 [dB]	LAFmax (SR) [dB]	LAFeq Ln L10 [dB]
	-	-	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)
Main cursor	**18/05/2024 05:25:02 AM**	**-**	**38.8**	**38.8**	**32.0**	**65.2**	**40.6**
Inside blocks	18/05/2024 05:10:02 AM	00:15:00.000	38.8	38.8	32.0	65.2	40.6



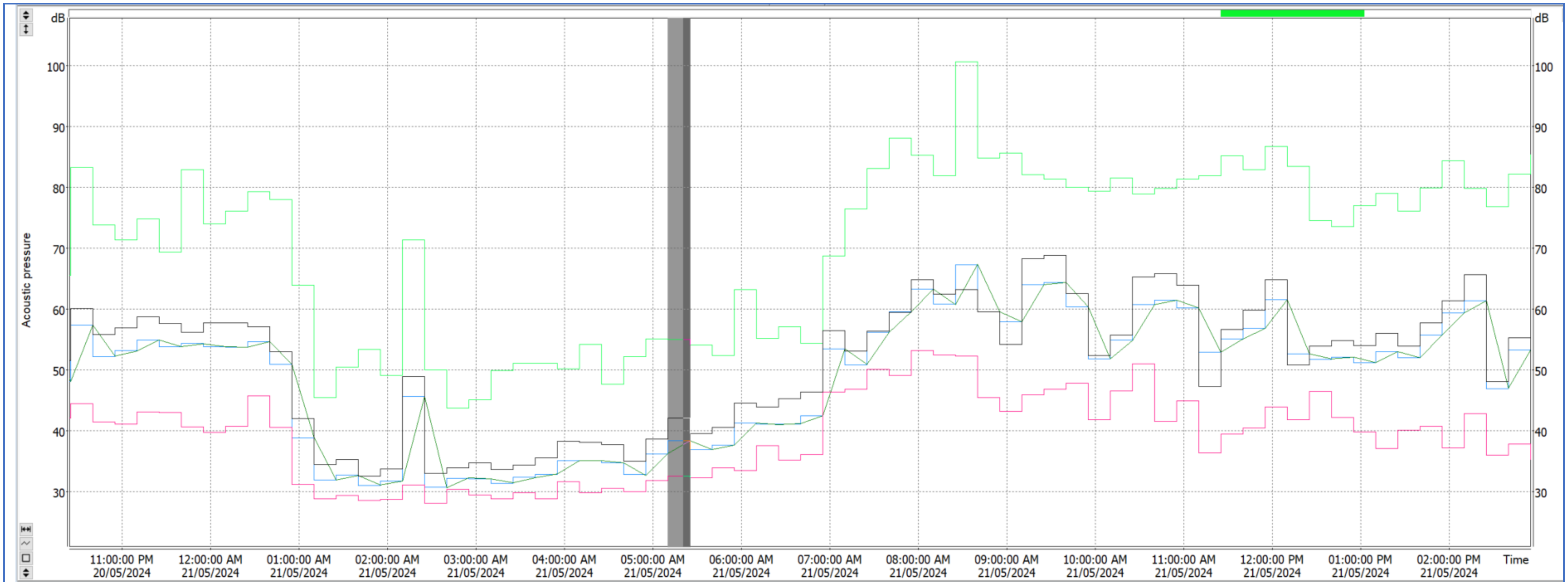
Info	Start	Duration	LAFeq (SR) [dB]	LAFeq (TH) [dB]	LAFeq Ln L90 [dB]	LAFmax (SR) [dB]	LAFeq Ln L10 [dB]
	-	-	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)
Main cursor	**21/05/2024 01:40:02 AM**	**-**	**32.7**	**32.7**	**29.4**	**50.5**	**35.3**
Inside blocks	21/05/2024 01:25:02 AM	00:15:00.000	32.7	32.7	29.4	50.5	35.3



	Start	Duration	LAFeq (SR) [dB]	LAFeq (TH) [dB]	LAFeq Ln L90 [dB]	LAFmax (SR) [dB]	LAFeq Ln L10 [dB]
Info	-	-	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)
Main cursor	**21/05/2024 02:25:02 AM**	**-**	**45.6**	**45.7**	**31.1**	**71.4**	**49.0**
Inside blocks	21/05/2024 02:10:02 AM	00:15:00.000	45.6	45.7	31.1	71.4	49.0

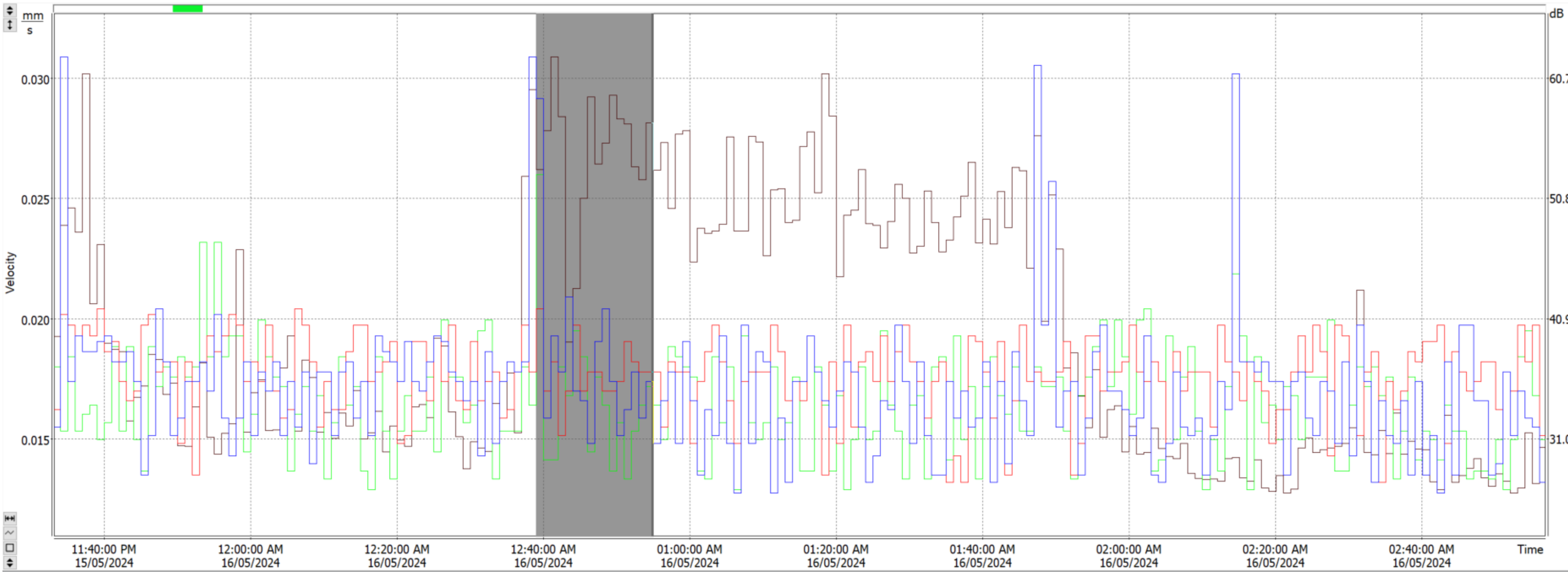


Info	Start	Duration	LAFeq (SR) [dB]	LAFeq (TH) [dB]	LAFeq Ln L90 [dB]	LAFmax (SR) [dB]	LAFeq Ln L10 [dB]
-	-	-	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)
Main cursor	**21/05/2024 04:10:02 AM**	**-**	**35.1**	**35.2**	**31.6**	**50.2**	**38.3**
Inside blocks	21/05/2024 03:55:02 AM	00:15:00.000	35.1	35.2	31.6	50.2	38.3

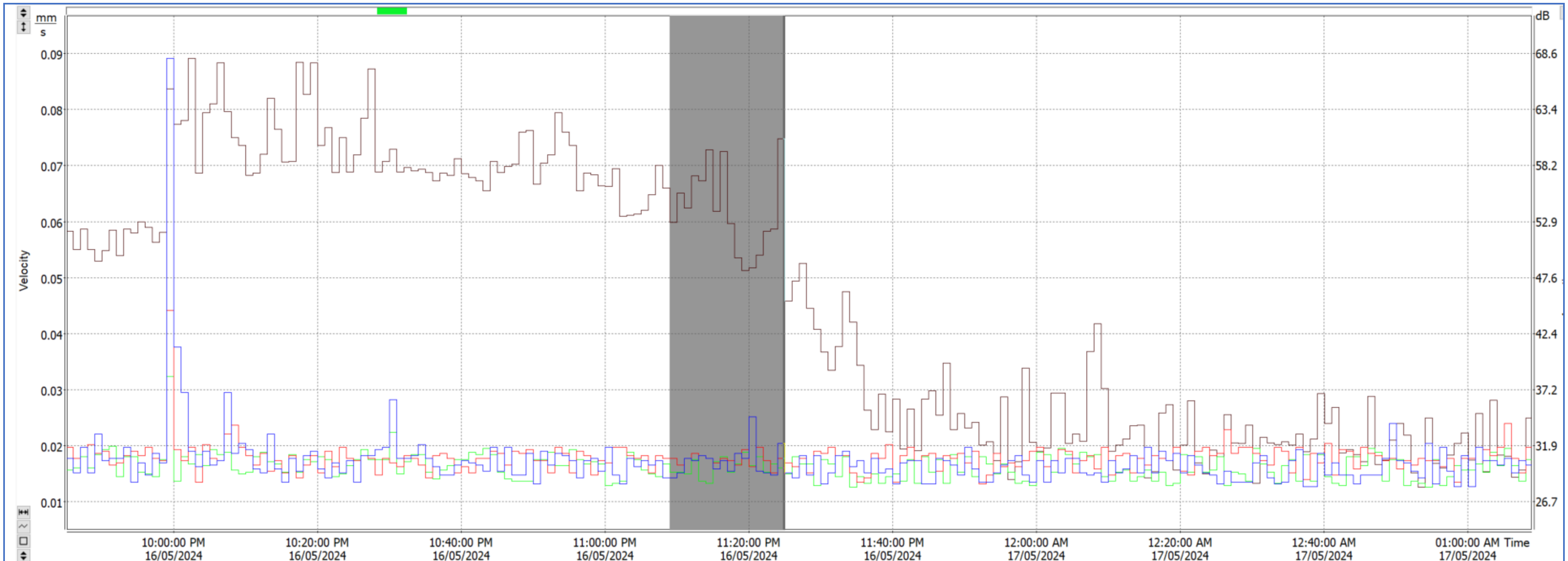


	Start	Duration	LAFeq (SR) [dB]	LAFeq (TH) [dB]	LAFeq Ln L90 [dB]	LAFmax (SR) [dB]	LAFeq Ln L10 [dB]
Info	-	-	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)	Ch4, P1 (A, Fast)
Main cursor	**21/05/2024 05:25:02 AM**	**-**	**38.4**	**38.4**	**32.6**	**55.0**	**42.1**
Inside blocks	21/05/2024 05:10:02 AM	00:15:00.000	38.4	38.4	32.6	55.0	42.1

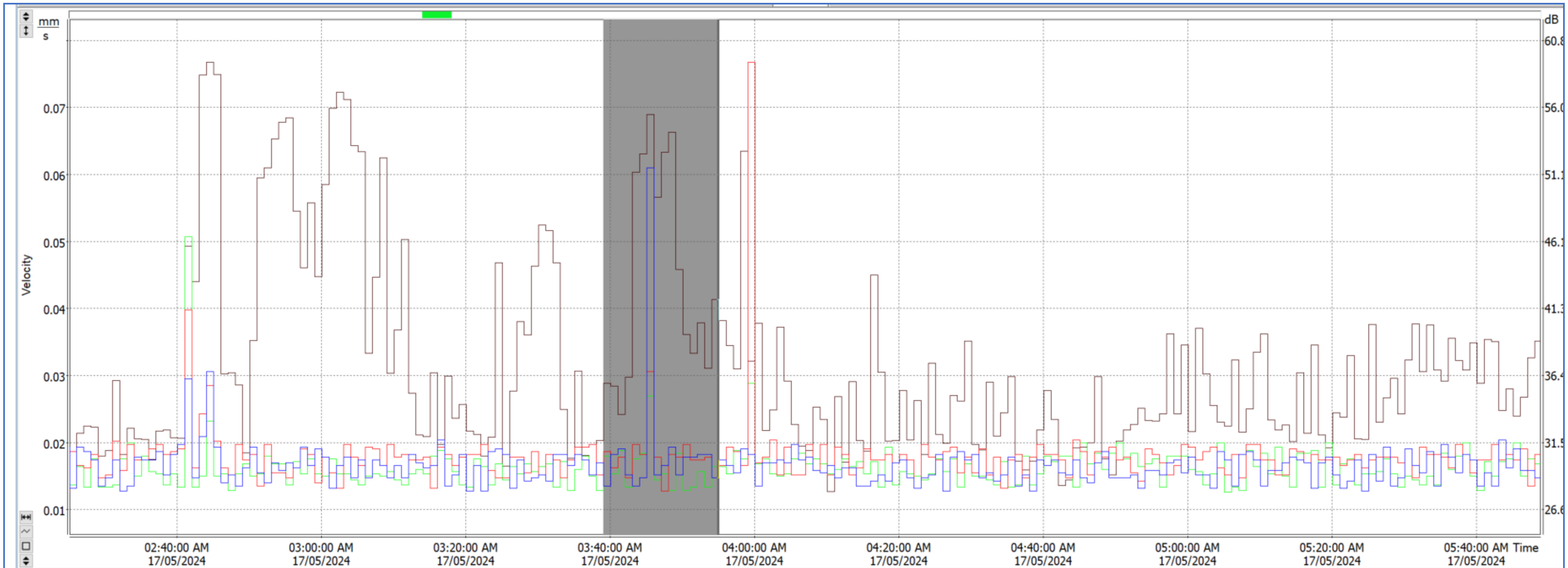
GBN vs. Vibration(Noise exceedances):



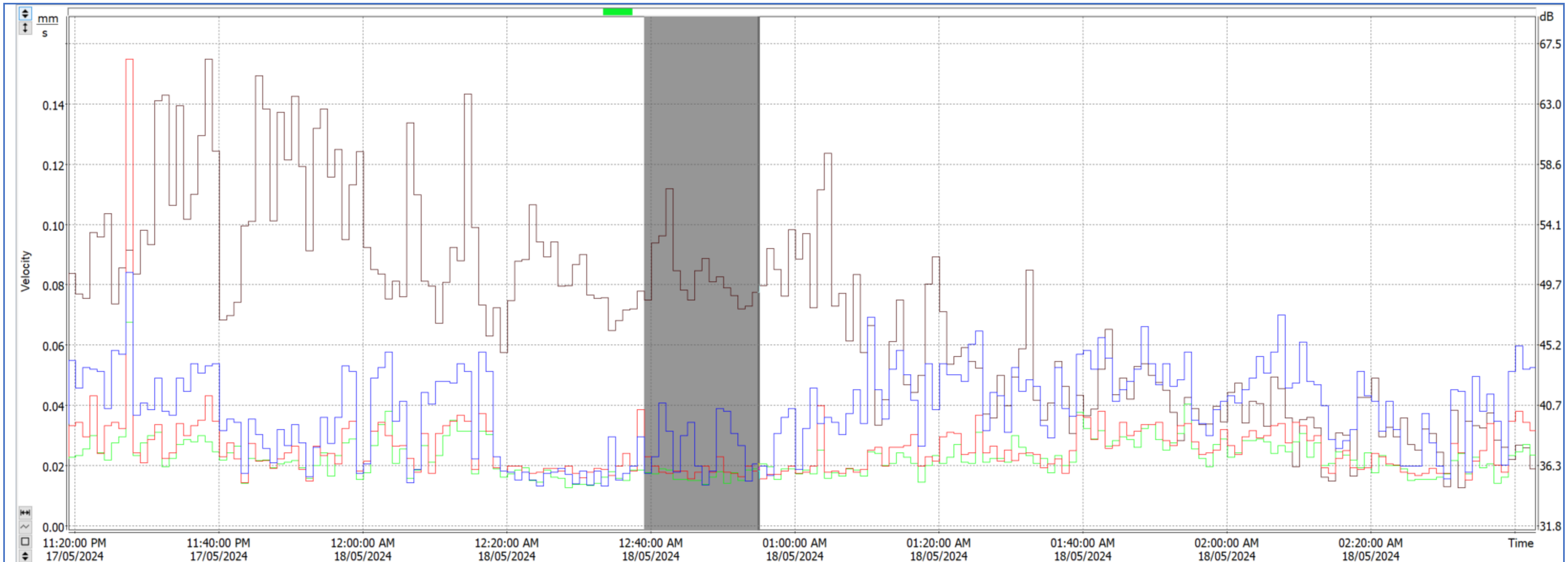
	Start	Duration	LAFeq (SR) [dB]	Peak (TH) [mm/s]	Peak (TH) [mm/s]	Peak (TH) [mm/s]
Info	-	-	Ch4, P1 (A, Fast)	Ch2, P2 (BL DIN315)	Ch1, P2 (BL DIN315)	Ch3, P2 (BL DIN315)
Main cursor	**16/05/2024 12:55:02 AM**	**-**	**57.1**	**0.017**	**0.018**	**0.017**
Inside blocks	16/05/2024 12:39:02 AM	00:16:00.000	56.6	0.026	0.020	0.029



	Start	Duration	LAFeq (SR) [dB]	Peak (TH) [mm/s]	Peak (TH) [mm/s]	Peak (TH) [mm/s]
Info	-	-	Ch4, P1 (A, Fast)	Ch2, P2 (BL DIN315)	Ch1, P2 (BL DIN315)	Ch3, P2 (BL DIN315)
Main cursor	**16/05/2024 11:25:02 PM**	**-**	**60.7**	**0.016**	**0.018**	**0.020**
Inside blocks	16/05/2024 11:09:02 PM	00:16:00.000	55.6	0.019	0.020	0.025



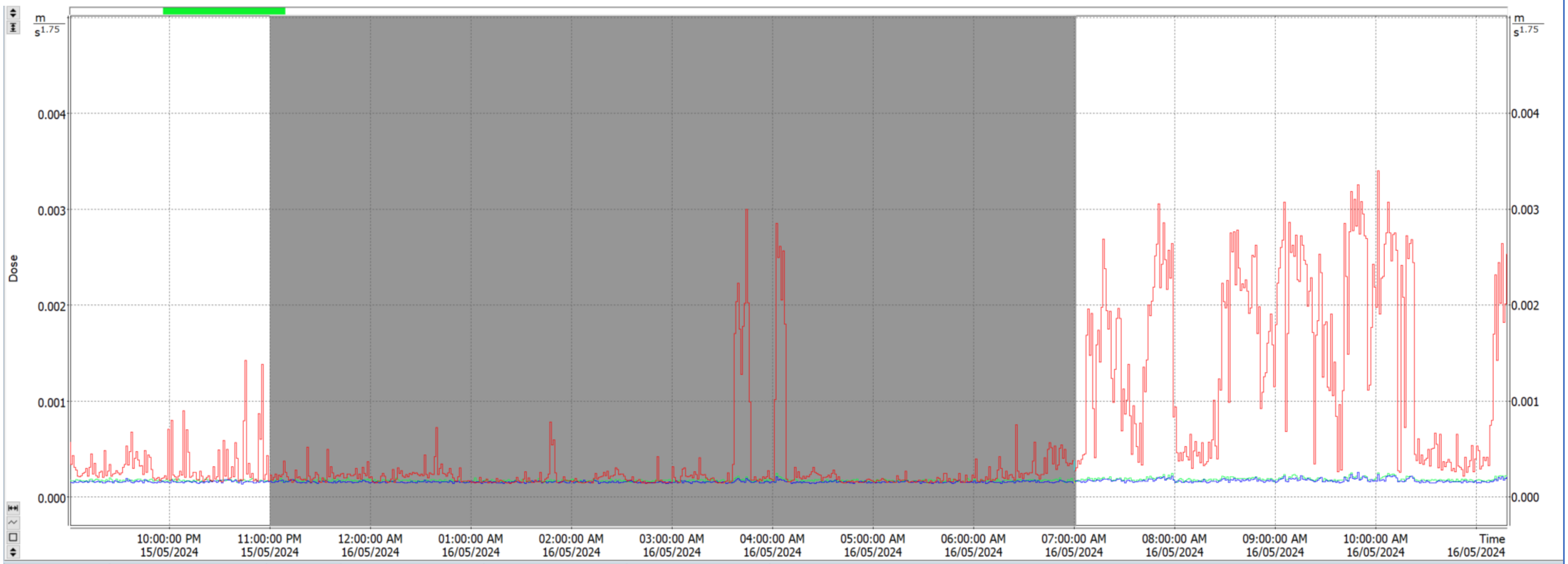
Info	Start	Duration	LAFeq (SR) [dB]	Peak (TH) [mm/s]	Peak (TH) [mm/s]	Peak (TH) [mm/s]
	-	-	Ch4, P1 (A, Fast)	Ch2, P2 (BL DIN315)	Ch1, P2 (BL DIN315)	Ch3, P2 (BL DIN315)
Main cursor	**17/05/2024 03:55:02 AM**	**-**	**41.9**	**0.016**	**0.015**	**0.015**
Inside blocks	17/05/2024 03:39:02 AM	00:16:00.000	49.0	0.027	0.031	0.061



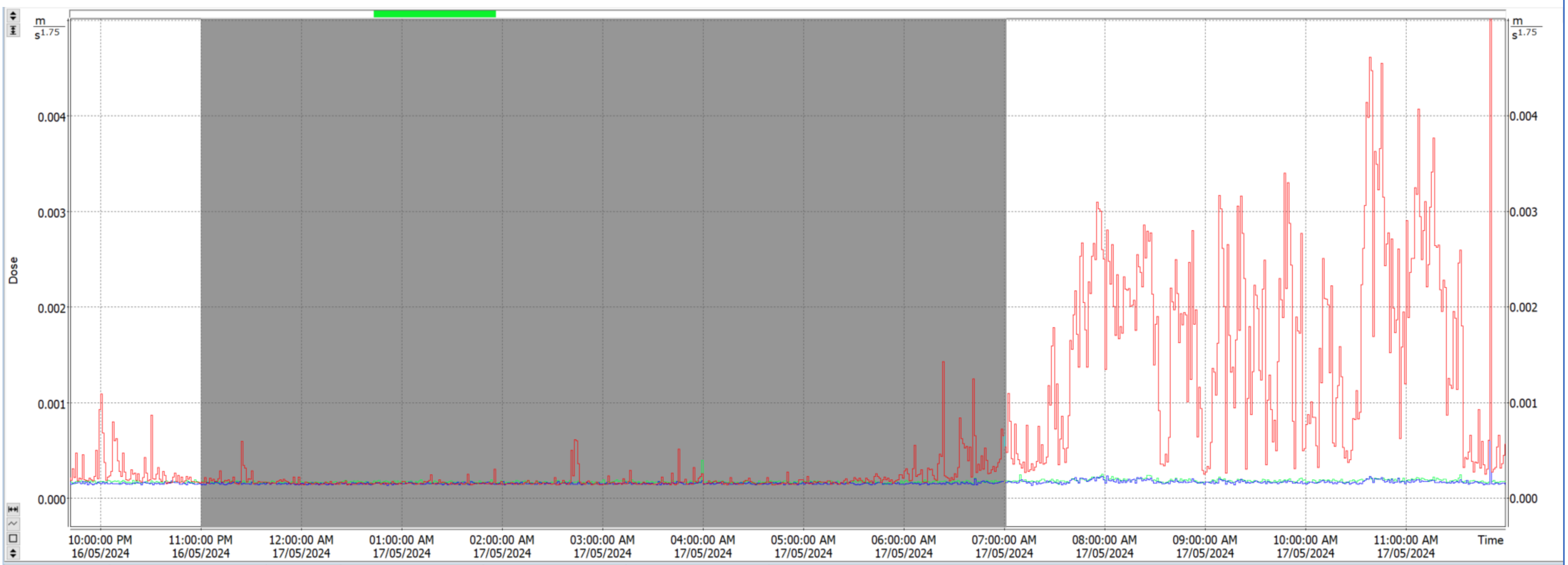
	Start	Duration	LAFeq (SR) [dB]	Peak (TH) [mm/s]	Peak (TH) [mm/s]	Peak (TH) [mm/s]
Info	-	-	Ch4, P1 (A, Fast)	Ch2, P2 (BL DIN315)	Ch1, P2 (BL DIN315)	Ch3, P2 (BL DIN315)
Main cursor	**18/05/2024 12:55:02 AM**	**-**	**49.1**	**0.019**	**0.018**	**0.020**
Inside blocks	18/05/2024 12:39:02 AM	00:16:00.000	51.1	0.019	0.023	0.041

Attachment B: Vibration Graphs

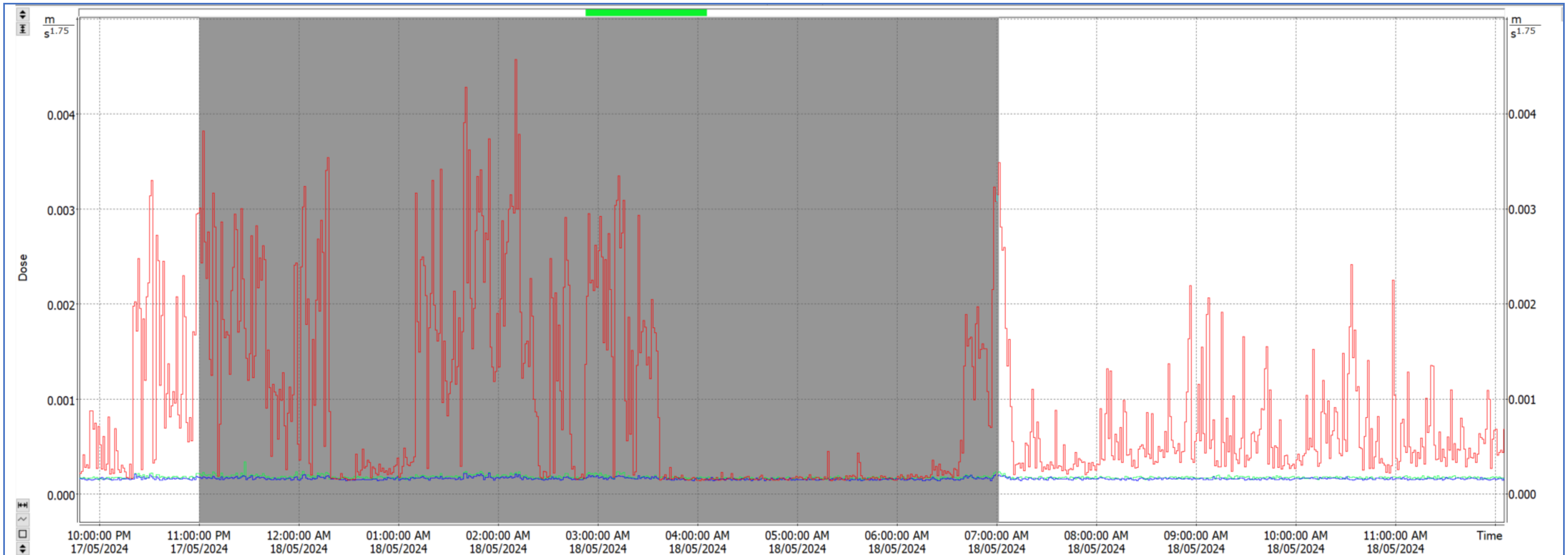
VDV vibration graph/s:



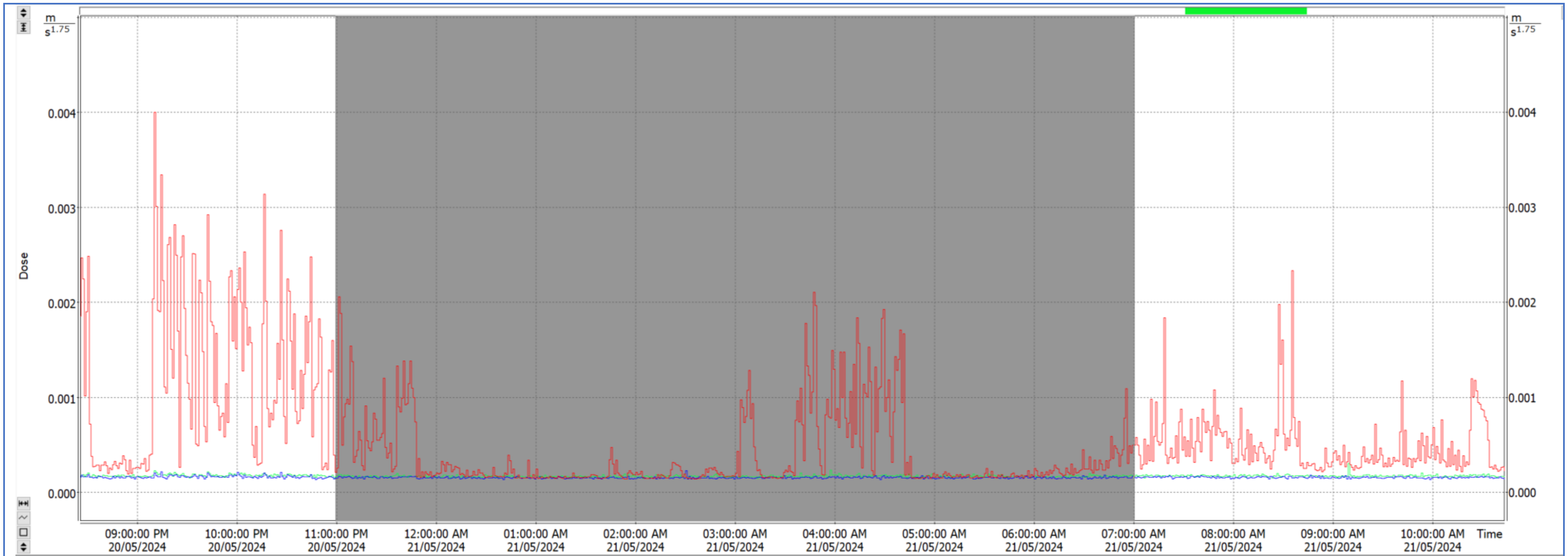
	Start	Duration	VDV (SR) [m/s^1.75]	VDV (SR) [m/s^1.75]	VDV (SR) [m/s^1.75]
Info	-	-	Ch1, P1 (Wd, Lin)	Ch2, P1 (Wd, Lin)	Ch3, P1 (Wb, Lin)
Main cursor	**16/05/2024 07:00:03 AM**	**-**	**0.0002**	**0.0002**	**0.0003**
Inside blocks	15/05/2024 11:00:02 PM	08:01:00.000	0.0008	0.0007	0.005



	Start	Duration	VDV (SR) [m/s^1.75]	VDV (SR) [m/s^1.75]	VDV (SR) [m/s^1.75]
Info	-	-	Ch1, P1 (Wd, Lin)	Ch2, P1 (Wd, Lin)	Ch3, P1 (Wb, Lin)
Main cursor	**17/05/2024 07:00:03 AM**	**-**	**0.0002**	**0.0002**	**0.0005**
Inside blocks	16/05/2024 11:00:02 PM	08:01:00.000	0.0008	0.0007	0.002

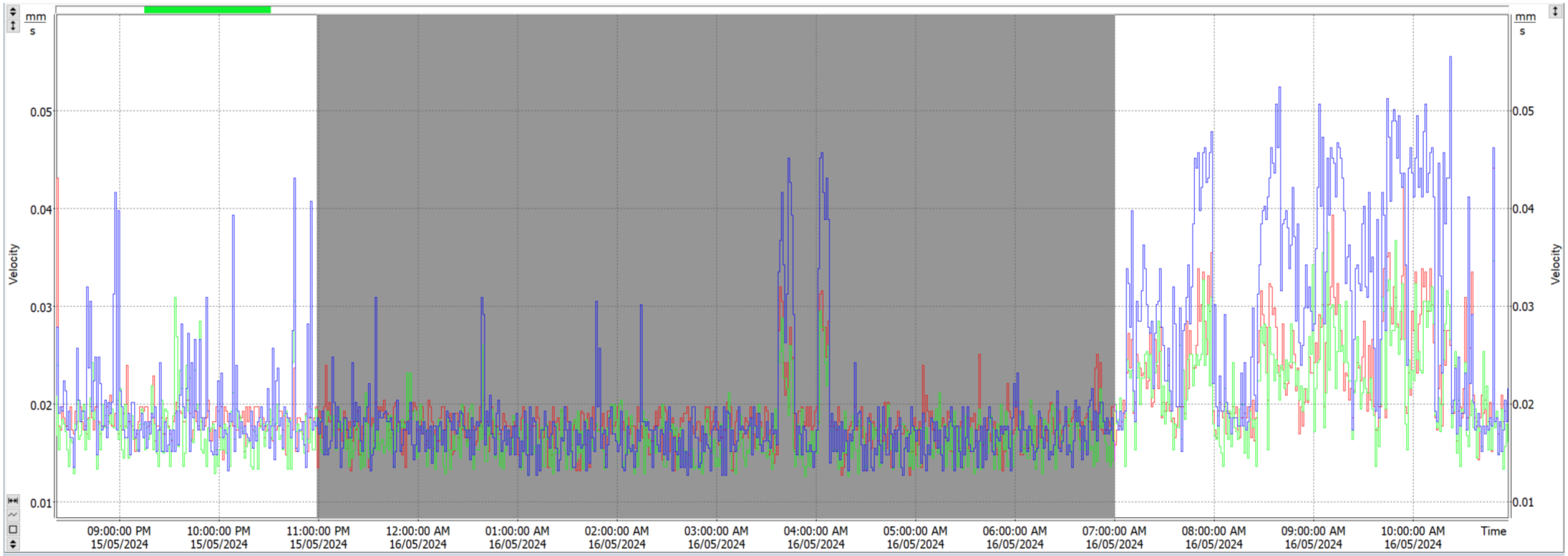


Info	Start	Duration	VDV (SR) [m/s^1.75] Ch1, P1 (Wd, Lin)	VDV (SR) [m/s^1.75] Ch2, P1 (Wd, Lin)	VDV (SR) [m/s^1.75] Ch3, P1 (Wb, Lin)
Main cursor	**18/05/2024 07:00:03 AM**	**-**	**0.0002**	**0.0002**	**0.003**
Inside blocks	17/05/2024 11:00:02 PM	08:01:00.000	0.0009	0.0008	0.009

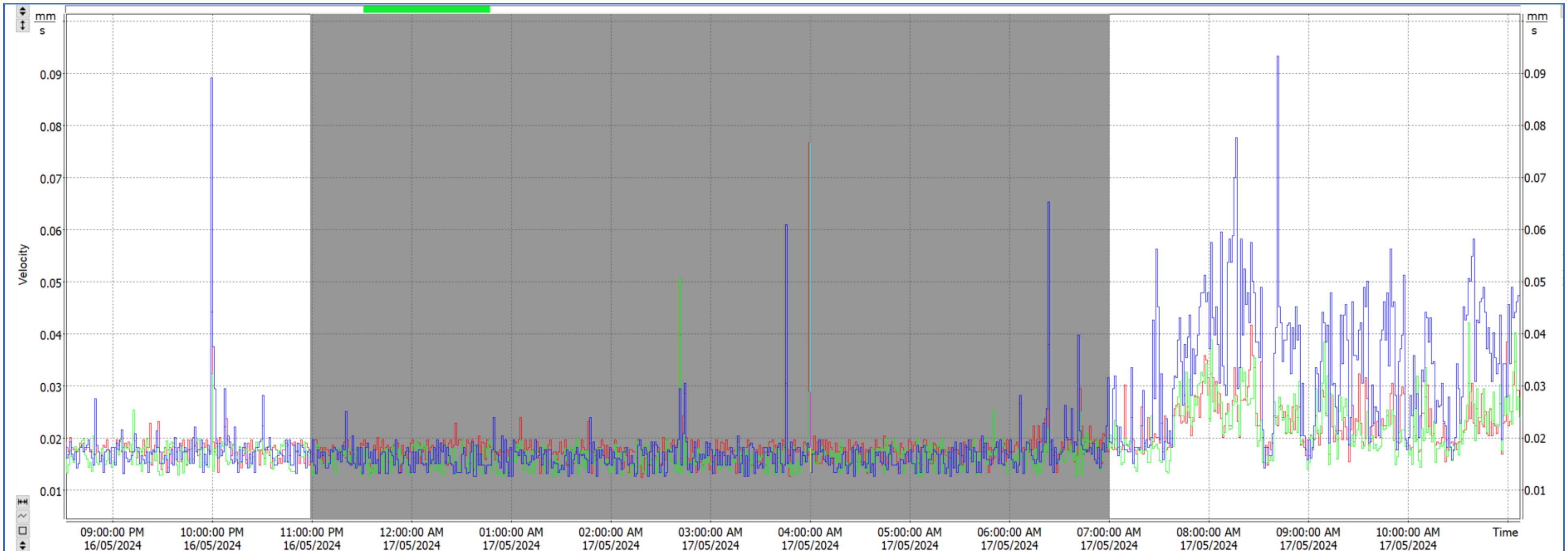


	Start	Duration	VDV (SR) [m/s^1.75]	VDV (SR) [m/s^1.75]	VDV (SR) [m/s^1.75]
Info	-	-	Ch1, P1 (Wd, Lin)	Ch2, P1 (Wd, Lin)	Ch3, P1 (Wb, Lin)
Main cursor	**21/05/2024 06:59:56 AM**	**-**	**0.0002**	**0.0002**	**0.0005**
Inside blocks	20/05/2024 10:59:02 PM	08:01:00.000	0.0008	0.0007	0.004

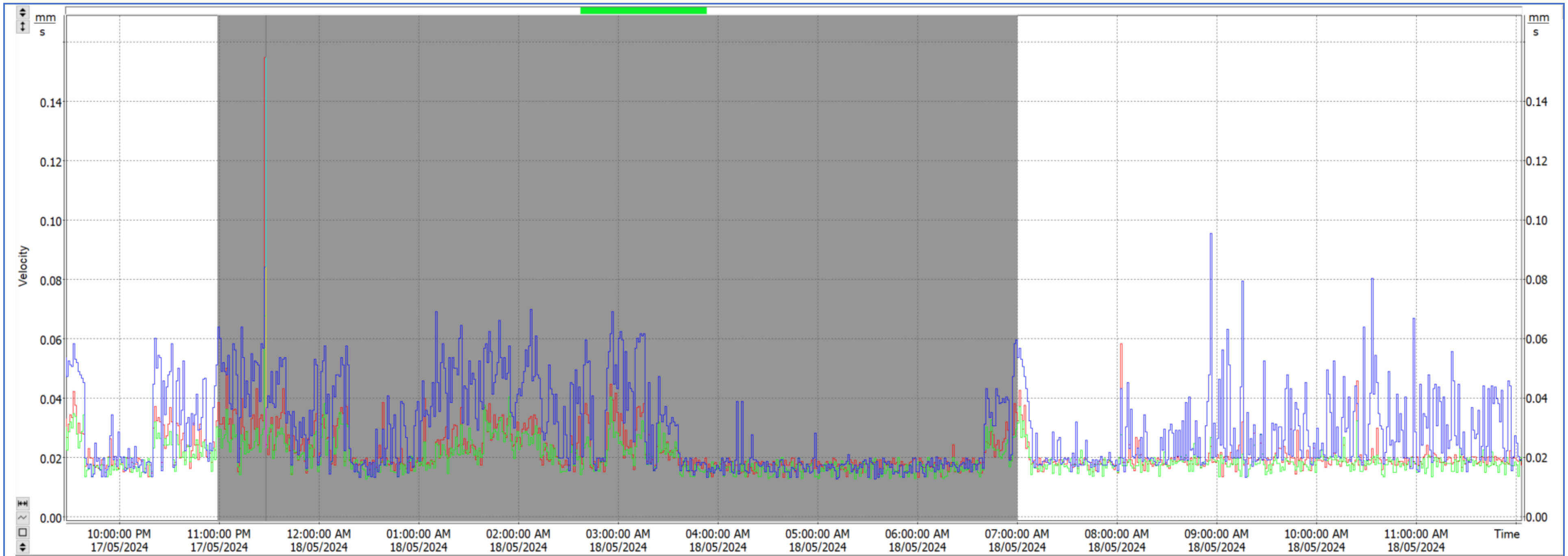
PPV vibration graph/s:



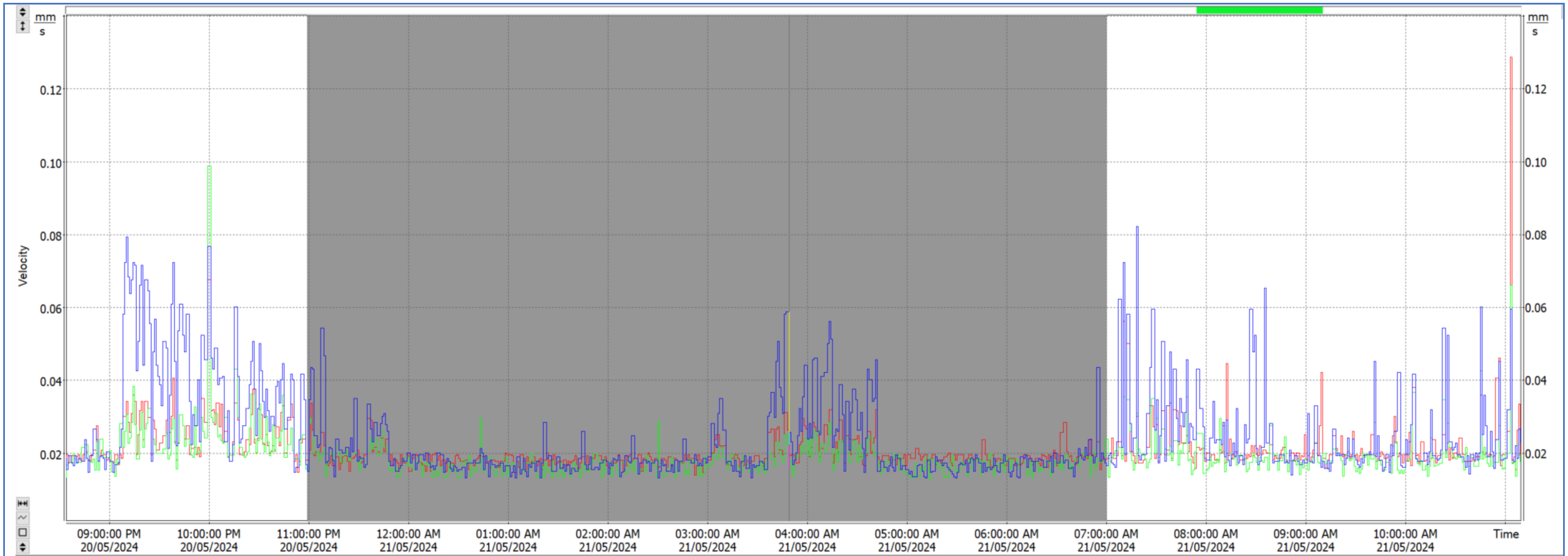
	Start	Duration	Peak (TH) [mm/s]	Peak (TH) [mm/s]	Peak (TH) [mm/s]
Info	-	-	Ch1, P2 (BL DIN315)	Ch2, P2 (BL DIN315)	Ch3, P2 (BL DIN315)
Main cursor	**16/05/2024 07:00:02 AM**	**-**	**0.020**	**0.014**	**0.016**
Inside blocks	15/05/2024 10:59:02 PM	08:01:00.000	0.032	0.030	0.046



	Start	Duration	Peak (TH) [mm/s]	Peak (TH) [mm/s]	Peak (TH) [mm/s]
Info	-	-	Ch1, P2 (BL DIN315)	Ch2, P2 (BL DIN315)	Ch3, P2 (BL DIN315)
Main cursor	**17/05/2024 04:00:02 AM**	**-**	**0.077**	**0.029**	**0.018**
Inside blocks	16/05/2024 10:59:02 PM	08:01:00.000	0.077	0.051	0.065

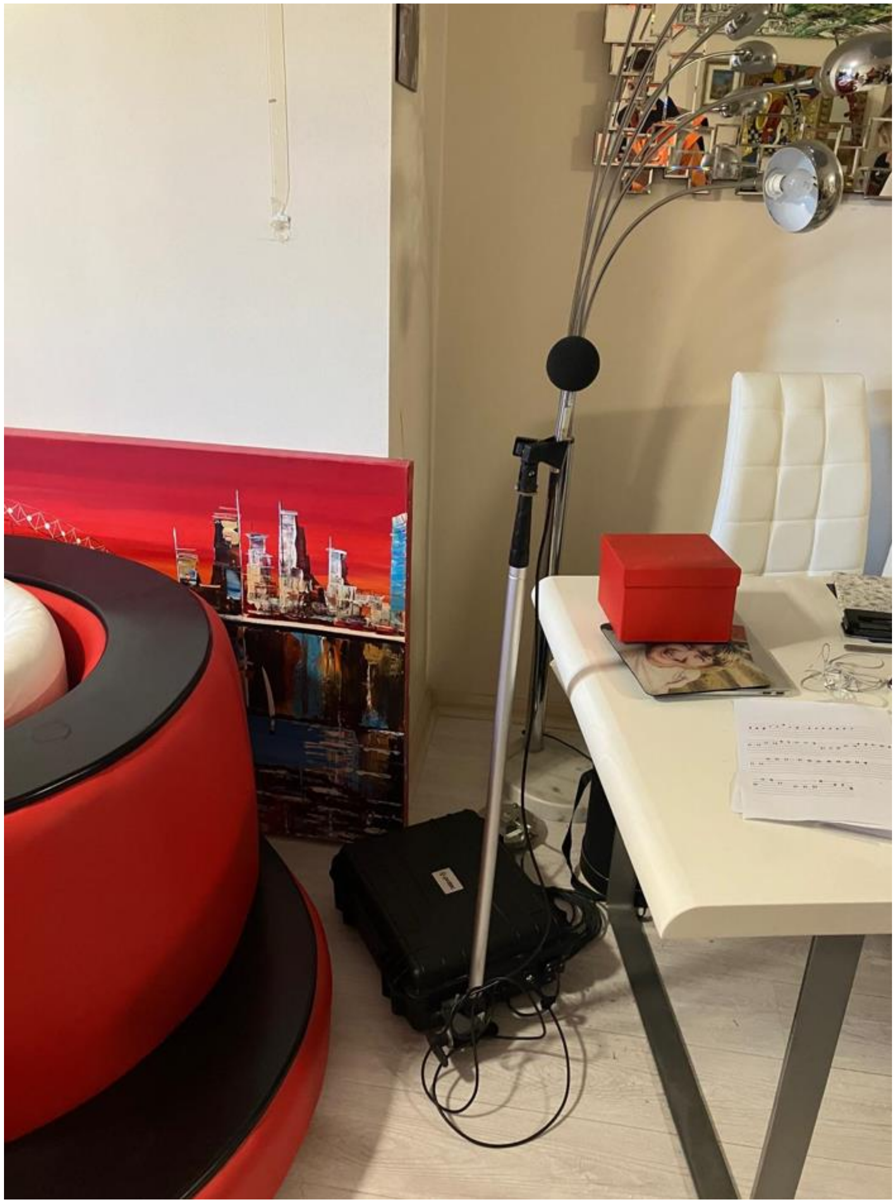


	Start	Duration	Peak (TH) [mm/s]	Peak (TH) [mm/s]	Peak (TH) [mm/s]
Info	-	-	Ch1, P2 (BL DIN315)	Ch2, P2 (BL DIN315)	Ch3, P2 (BL DIN315)
Main cursor	**17/05/2024 11:28:02 PM**	**-**	**0.155**	**0.068**	**0.084**
Inside blocks	17/05/2024 10:59:02 PM	08:01:00.000	0.155	0.068	0.084



	Start	Duration	Peak (TH) [mm/s]	Peak (TH) [mm/s]	Peak (TH) [mm/s]
Info	-	-	Ch1, P2 (BL DIN315)	Ch2, P2 (BL DIN315)	Ch3, P2 (BL DIN315)
Main cursor	**21/05/2024 03:49:02 AM**	**-**	**0.026**	**0.022**	**0.059**
Inside blocks	20/05/2024 10:59:02 PM	08:01:00.000	0.034	0.030	0.059

Attachment C Monitoring set up



Attachment D Night Shift Reports

AFJV XP Shift Report	
Date:	15-May-24
Day:	Wednesday
Shift:	Night Shift

Cut/Benching Legend (C)	
CS	Set Up/Remove Brokk
C	Cutting
CU	Mucking/Clean Up
GE	Geo Inspection/Mapping
CY	Survey
CV	Ventilation (scrubber/bags)
CE	Electrical Breakdown
CM	Mechanical Breakdown
CO	Waiting on Dump Truck

Cut/Benching Legend (C)	
CBB	Benching Brokk
CMB	Muck Bound
CBE	Benching Excavator
CSU	Sump Excavation
CUM	Sump Mucking

Bolting Legend (B)	
BS	Set Up/Remove bolter
B	Meshing and Bolting
BY	Bolt Survey
BE	Electrical Breakdown
BM	Mechanical Breakdown

Shotcrete Legend (S)	
SS	Set up/Remove Shotcrete Rig
S	Shotcreting
SY	Shotcrete Survey
SC	Curing
SB	Electrical Breakdown
SM	Mechanical Breakdown
SO	Waiting on Shotcrete
SP	Depth pins set up

Others	
PM	Plant Maintenance/Servicing
TP	Pre-start/Toolbox
WA	Walk Out
PB	All other plant mech. breakdown
PO	All other plant elect. breakdown
AC	Access/Egress
LA	Labour Resourcing
ES	Excavation Setup (Weepholes, Spear Bolts, Scrubber Moves)
PW	Power Supply

Workforce			
First Name	Surname	Company	Crew
Tai	Skipper	AFJV	XP
Goran	Buric	AFJV	XP
Sylvester	Samuelu	AFJV	XP
John	Witeri	AFJV	XP
Quaid	Jennings	AFJV	XP
Kane	Jewell	AFJV	XP
Liam	Seales	AFJV	XP

Drive Information:	Progress Summary			←1800				←1900				←2000				←2100				←2200				←2300			
XP36	Ch Start Shift	10.6	Excavation				C	C	C	C	C	C	C	C	C	C	CU	CU									
	Ch End Shift	10.7	Bolt																B	B	B	B	B	B	B	B	B
	Heading Area	25.2	Shotcrete																								
	Shift Progress	3BCM	Others	TP	TP	TP																					
XP31	Ch Start Shift	10.8	Excavation																								
	Ch End Shift	10.8	Bolt																								
	Heading Area	19.2	Shotcrete																								
	Shift Progress	0BCM	Others																								
XP34	Ch Start Shift	5.5	Excavation																								
	Ch End Shift	5.8	Bolt				BS	BS	BE	BE	BE	BE	BE	BE	BE	BE	BE	BE	B	B	B	B	B	B	B	B	B
	Heading Area	19.2	Shotcrete																								
	Shift Progress	6BCM	Others	TP	TP	TP																					
XP35	Ch Start Shift	10.8	Excavation			CBB	CBB	CBB	CBB	CBB	CBB	CU	CU	CBB	CBB	CU	CY	CY	CY	CY	CY	CY	CBB	CBB	CBB	CBB	CBB
	Ch End Shift	10.8	Bolt																								
	Heading Area	19.2	Shotcrete																								
	Shift Progress	8BCM	Others	TP	TP																						

Drive	Activity	←2400				←0100				←0200				←0300				←0400				←0500				Total
XP36	Excavation							C	C	C	C	C	C	C	C	CU	CU	CU	CU	CU	CU	CU	CU	CU	CU	7.50
XP36	Bolt	B	B	B	B	B	B																			3.75
XP36	Shotcrete																									0.00
XP36	Others																									0.75
																										12.00
XP31	Excavation																									0.00
XP31	Bolt																									0.00
XP31	Shotcrete																									0.00
XP31	Others																									0.00
																										0.00
XP34	Excavation													C	C	C	C	C	C	C	C	C	CU	CU	CU	3.00
XP34	Bolt	B	B	B	B	B	B	B	B	B	BS	BS	BS													8.25
XP34	Shotcrete																									0.00
XP34	Others																									0.75
																										12.00
XP35	Excavation	CBB	CBB	CBB	CBB	CU	CU	CMB	CMB	CMB	CU	CU	CU	CU	CU	CBB	CBB	CBB	CBB	CBB	CBB	CBB	CBB	CBB	CBB	11.50
XP35	Bolt																									0.00
XP35	Shotcrete																									0.00
XP35	Others																									0.50
																										12.00

Drive:	Code:	Delay Hrs:	Detailed Description of Delay & Non-Added Value Activity
XP36	TP	0.75 Hrs	Travel to workfront
XP34	BS	1.25 Hrs	Set up / pack up bolting
XP34	BE	2.50 Hrs	Called sparkies to fix drill cord / comms cable
XP34	TP	0.75 Hrs	Travel to workfront
XP35	CY	1.50 Hrs	Waiting for survey
XP35	TP	0.50 Hrs	Travel to workfront
[illegible]	[illegible]	[illegible]	[illegible]

Activities This Shift

XP36 - Bolt cut 3, drill endoscope, trim tights
XP35 - Continue benching
XP34 - Bolt cut 1, commence excavation of cut 2

General Tunnelling Works:
XP36 - Endoscope
XP34 - Endoscope, weepholes

AFJV XP Shift Report	
Date:	16-May-24
Day:	Thursday
Shift:	Night Shift

Cut/Benching Legend (C)	
CS	Set Up/Remove Brokk
C	Cutting
CU	Mucking/Clean Up
GE	Geo Inspection/Mapping
CY	Survey
CV	Ventilation (scrubber/bags)
CE	Electrical Breakdown
CM	Mechanical Breakdown
CD	Waiting on Dump Truck

Cut/Benching Legend (C)	
CBB	Benching Brokk
CMB	Muck Bound
CBE	Benching Excavator
CSU	Sump Excavation
CUM	Sump Mucking

Bolting Legend (B)	
BS	Set Up/Remove bolter
B	Meshing and Bolting
BY	Bolt Survey
BE	Electrical Breakdown
BM	Mechanical Breakdown

Shotcrete Legend (S)	
SS	Set up/Remove Shotcrete Rig
S	Shotcreting
SY	Shotcrete Survey
SC	Curing
SB	Electrical Breakdown
SM	Mechanical Breakdown
S0	Waiting on Shotcrete
SP	Depth pins set up

Others	
PM	Plant Maintenance/Servicing
TP	Pre-start/Toolbox
WA	Walk Out
PB	All other plant mech. breakdown
PO	All other plant elect. breakdown
AC	Access/Egress
LA	Labour Resourcing
ES	Excavation Setup (Weepholes, Spear Bolts, Scrubber Moves)
PW	Power Supply

Workforce			
First Name	Surname	Company	Crew
Tai	Skipper	AFJV	XP
Goran	Buric	AFJV	XP
Sylvester	Samuelu	AFJV	XP
John	Witeri	AFJV	XP
Quaid	Jennings	AFJV	XP
Kane	Jewell	AFJV	XP
Liam	Seales	AFJV	XP

Drive Information:	Progress Summary			←1800				←1900				←2000				←2100				←2200				←2300				←2400				←0100				←0200				←0300				←0400				←0500				Total
XP36	Ch Start Shift	10.8	Excavation																																																	0.00
	Ch End Shift	10.8	Bolt																																																	0.00
	Heading Area	25.2	Shotcrete																																																	0.00
	Shift Progress	0BCM	Others	TP	TP	TP	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	LA	12.00
																																																				12.00
XP31	Ch Start Shift	10.8	Excavation																																																	0.00
	Ch End Shift	10.8	Bolt																																																	0.00
	Heading Area	19.2	Shotcrete																																																	0.00
	Shift Progress	0BCM	Others																																																	0.00
																																																				0.00
XP34	Ch Start Shift	6.3	Excavation				C	C	C	C	C	CU	CU	C	C	C	C	C	C	C	CU	CU	C	C	C	C	C	C	C	CU	CU	C	C	C	C	C	C	C	CU	CU	C	C	C	C	C	C	C	C	C	CU	CU	11.25
	Ch End Shift	6.9	Bolt																																																	0.00
	Heading Area	19.2	Shotcrete																																																	0.00
	Shift Progress	12BCM	Others	TP	TP	TP																																														0.75
																																																				12.00
XP35	Ch Start Shift	10.8	Excavation																																																	0.00
	Ch End Shift	10.8	Bolt																																																	0.00
	Heading Area	19.2	Shotcrete				SS	SS	SS	SS	SS	S	S	S	S	S0	S0	S0	S0	S	S	S	S	S	S	S0	S0	S0	S0	S0	S0	S0	S0	S0	S0	S	S	S	S	S0	S0	S0	S	S	S	SC	SC	SC	SC	SC	SC	11.25
	Shift Progress	0BCM	Others	TP	TP	TP																																														0.75
																																																				12.00

Drive:	Code:	Delay Hrs:	Detailed Description of Delay & Non-Added Value Activity
XP36	TP	0.75 Hrs	Prestart time - travel from TBY
XP36	LA	11.25 Hrs	Labour used to assist with shotcrete spray and blind XP35
XP34	TP	0.75 Hrs	Prestart time - travel from TBY
XP35	SS	1.25 Hrs	Shotcrete setting up pump
XP35	SC	1.50 Hrs	Shotcrete curing time
XP35	S0	4.25 Hrs	Large delays due to only 1 agi being available (planned for 2, but 2nd agi had mechanical breakdown).
XP35	TP	0.75 Hrs	Prestart time - travel from TBY

Activities This Shift
XP36: Labour used to assist with spray at XP35 and pour blinding. XP35: Spray bench, 18m, large delays due to AFJV agi mechanical issues XP34: Continue cut 2

AFJV XP Shift Report	
Date:	17-May-24
Day:	Friday
Shift:	Night Shift

Cut/Benching Legend (C)	
CS	Set Up/Remove Brokk
C	Cutting
CU	Mucking/Clean Up
GE	Geo Inspection/Mapping
CY	Survey
CV	Ventilation (scrubber/bags)
CE	Electrical Breakdown
CM	Mechanical Breakdown
C0	Waiting on Dump Truck

Cut/Benching Legend (C)	
CBB	Benching Brokk
CMB	Muck Bound
CBE	Benching Excavator
CSU	Sump Excavation
CUM	Sump Mucking

Bolting Legend (B)	
BS	Set Up/Remove bolter
B	Meshing and Bolting
BY	Bolt Survey
BE	Electrical Breakdown
BM	Mechanical Breakdown

Shotcrete Legend (S)	
SS	Set up/Remove Shotcrete Rig
S	Shotcreting
SY	Shotcrete Survey
SC	Curing
SB	Electrical Breakdown
SM	Mechanical Breakdown
S0	Waiting on Shotcrete
SP	Depth pins set up

Others	
PM	Plant Maintenance/Servicing
TP	Pre-start/Toolbox
WA	Walk Out
PB	All other plant mech. breakdown
PO	All other plant elect. breakdown
AC	Access/Egress
LA	Labour Resourcing
ES	Excavation Setup (Weepholes, Spear Bolts, Scrubber Moves)
PW	Power Supply

Workforce

First Name	Surname	Company	Crew
Tai	Skipper	AFJV	XP
Goran	Buric	AFJV	XP
Sylvester	Samuelu	AFJV	XP
John	Witeri	AFJV	XP
Quaid	Jennings	AFJV	XP
Kane	Jewell	AFJV	XP
Liam	Seales	AFJV	XP

Drive Information:	Progress Summary			←1800				←1900				←2000				←2100				←2200				←2300			
XP36	Ch Start Shift	10.8	Excavation																								
	Ch End Shift	10.8	Bolt																								
	Heading Area	25.2	Shotcrete			SS	SS	SS	SS	SS	S	S	S	S	S	S0	S0	S0	S0	S0	S	S	S	S	S0	S0	S0
	Shift Progress	0BCM	Others	TP	TP																						
XP31	Ch Start Shift	10.8	Excavation																								
	Ch End Shift	10.8	Bolt																								
	Heading Area	19.2	Shotcrete																								
	Shift Progress	0BCM	Others																								
XP34	Ch Start Shift	7.5	Excavation			CMB	CMB	CMB	CMB	CMB	CMB	CMB	CMB	CMB	CMB	CU	CU	C	C	CU	CU	C	C	CU	CU	C	C
	Ch End Shift	8.2	Bolt																								
	Heading Area	19.2	Shotcrete																								
	Shift Progress	13BCM	Others	TP	TP																						
XP35	Ch Start Shift	10.8	Excavation																								
	Ch End Shift	10.8	Bolt																								
	Heading Area	19.2	Shotcrete																								
	Shift Progress	0BCM	Others	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC

Drive	Activity	←2400				←0100				←0200				←0300				←0400				←0500				Total
XP36	Excavation																									0.00
XP36	Bolt																									0.00
XP36	Shotcrete	S0	S0	S	S	S	S	S0	S0	S0	S0	S0	S	S	S	S	S	SC	SC	SC	SC	SC	SC	SC	SC	11.50
XP36	Others																									0.50
																										12.00
XP31	Excavation																									0.00
XP31	Bolt																									0.00
XP31	Shotcrete																									0.00
XP31	Others																									0.00
																										0.00
XP34	Excavation	CU	CU	C	C	CU	CU	C	C	CU	CU	C	C	CU	CU	C	C	CU	CU	C	C	C	C	CU	CU	11.50
XP34	Bolt																									0.00
XP34	Shotcrete																									0.00
XP34	Others																									0.50
																										12.00
XP35	Excavation																									0.00
XP35	Bolt																									0.00
XP35	Shotcrete																									0.00
XP35	Others	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	12.00
																										12.00

Drive:	Code:	Delay Hrs:	Detailed Description of Delay & Non-Added Value Activity
XP36	SS	1.25 Hrs	Set up for spray
XP36	SC	2.00 Hrs	Shotcrete curing
XP36	S0	3.75 Hrs	Waiting on shotcrete to travel from TBY to XP36 - only one agi due to invert pour
XP36	TP	0.50 Hrs	Travel to workfront
XP34	TP	0.50 Hrs	Travel to workfront
XP34	CMB	2.50 Hrs	Muck bound

Activities This Shift

XP36 - Spray heading
XP35 - Await XP36 heading completion - no works
XP34 - Continue cut 2

General Tunnelling Works:
- XP36 - Brokk service, disconnect scrubber and fan, move back and demob ramp

AFJV XP Shift Report	
Date:	20-May-24
Day:	Monday
Shift:	Night Shift

Cut/Benching Legend (C)	
CS	Set Up/Remove Brokk
C	Cutting
CU	Mucking/Clean Up
GE	Geo Inspection/Mapping
CY	Survey
CV	Ventilation (scrubber/bags)
CE	Electrical Breakdown
CM	Mechanical Breakdown
CD	Waiting on Dump Truck

Cut/Benching Legend (C)	
CBB	Benching Brokk
CMB	Muck Bound
CBE	Benching Excavator
CSU	Sump Excavation
CUM	Sump Mucking

Bolting Legend (B)	
BS	Set Up/Remove bolter
B	Meshing and Bolting
BY	Bolt Survey
BE	Electrical Breakdown
BM	Mechanical Breakdown

Shotcrete Legend (S)	
SS	Set up/Remove Shotcrete Rig
S	Shotcreting
SY	Shotcrete Survey
SC	Curing
SE	Electrical Breakdown
SM	Mechanical Breakdown
SD	Waiting on Shotcrete
SP	Depth pins set up

Others	
PM	Plant Maintenance/Servicing
TP	Pre-start/Toolbox
WA	Walk Out
PB	All other plant mech. breakdown
PO	All other plant elect. breakdown
AC	Access/Egress
LA	Labour Resourcing
ES	Excavation Setup (Weepholes, Spear Bolts, Scrubber Moves)
PW	Power Supply

Workforce			
First Name	Surname	Company	Crew
Darren	Vaughn	AFJV	XP
Jefferson	Gayagay	AFJV	XP
Chris	Rogers	AFJV	XP
Joesph	Tapiki	AFJV	XP
Jeff	Mela	AFJV	XP

Drive Information:	Progress Summary			←1800				←1900				←2000				←2100				←2200				←2300				←2400				←0100				←0200				←0300				←0400				←0500				Total
XP34	Ch Start Shift	9.4	Excavation			CU	CU	CU	CU	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	CU	CU	CU	CU	C	C	C	CU	CU	C	C	C	CU	CU	C	C	C	C	CU	CU	C	C	C	C	11.50
	Ch End Shift	9.9	Bolt																																																	0.00
	Heading Area	19.2	Shotcrete																																																	0.00
	Shift Progress	10BCM	Others	TP	TP																																															0.50
																																																				12.00
XP36	Ch Start Shift	10.8	Excavation																																																	0.00
	Ch End Shift	10.8	Bolt																																																	0.00
	Heading Area	25.2	Shotcrete																																																	0.00
	Shift Progress	0BCM	Others																																																	0.00
																																																				0.00
XP37	Ch Start Shift	2.3	Excavation																																																	0.00
	Ch End Shift	2.3	Bolt																																																	0.00
	Heading Area	19.2	Shotcrete																																																	0.00
	Shift Progress	0BCM	Others																																																	0.00
																																																				0.00
XP38	Ch Start Shift	2.3	Excavation																																																	0.00
	Ch End Shift	2.3	Bolt																																																	0.00
	Heading Area	19.2	Shotcrete																																																	0.00
	Shift Progress	0BCM	Others	TP	TP	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	12.00
																																																				12.00

Drive:	Code:	Delay Hrs:	Detailed Description of Delay & Non-Added Value Activity
XP34	TP	0.50 Hrs	Toolbox/prestart
XP38	TP	0.50 Hrs	Toolbox/prestart
XP38	ES	11.50 Hrs	Excavation setup - move scrubber, set up brokk

Activities This Shift

AFJV XP Shift Report	
Date:	21-May-24
Day:	Tuesday
Shift:	Night Shift

Cut/Benching Legend (C)	
CS	Set Up/Remove Brokk
C	Cutting
CU	Mucking/Clean Up
GE	Geo Inspection/Mapping
CY	Survey
CV	Ventilation (scrubber/bags)
CE	Electrical Breakdown
CM	Mechanical Breakdown
CO	Waiting on Dump Truck

Cut/Benching Legend (C)	
CBB	Benching Brokk
CMB	Muck Bound
CBE	Benching Excavator
CSU	Sump Excavation
CUM	Sump Mucking

Bolting Legend (B)	
BS	Set Up/Remove bolter
B	Meshing and Bolting
BY	Bolt Survey
BE	Electrical Breakdown
BM	Mechanical Breakdown

Shotcrete Legend (S)	
SS	Set up/Remove Shotcrete Rig
S	Shotcreting
SY	Shotcrete Survey
SC	Curing
SB	Electrical Breakdown
SM	Mechanical Breakdown
SO	Waiting on Shotcrete
SP	Depth pins set up

Others	
PM	Plant Maintenance/Servicing
TP	Pre-start/Toolbox
WA	Walk Out
PB	All other plant mech. breakdown
PO	All other plant elect. breakdown
AC	Access/Egress
LA	Labour Resourcing
ES	Excavation Setup (Weepholes, Spear Bolts, Scrubber Moves)
PW	Power Supply

Workforce			
First Name	Surname	Company	Crew
Darren	Vaughn	AFJV	XP
Jefferson	Gaypagay	AFJV	XP
Chris	Rogers	AFJV	XP
Joseph	Tapiki	AFJV	XP
Jeff	Mete	AFJV	XP

Drive Information:	Progress Summary			←1800	←1900	←2000	←2100	←2200	←2300	←2400	←0100	←0200	←0300	←0400	←0500	Total
XP34	Ch Start Shift	9.9	Excavation	CE CE CE CE	CE CE CE CE	CE CE CE CE	CE CE CE CE	CE CE CE CE	CE CE CE CE	CE CE CE CE	CE CE CE CE	CE CE CE CE	CE CE CE CE	CE CE CE CE	CE CE CE CE	12.00
	Ch End Shift	9.9	Bolt													0.00
	Heading Area	19.2	Shotcrete													0.00
	Shift Progress	0BCM	Others													0.00
																12.00
XP36	Ch Start Shift	10.8	Excavation													0.00
	Ch End Shift	10.8	Bolt													0.00
	Heading Area	25.2	Shotcrete													0.00
	Shift Progress	0BCM	Others													0.00
																0.00
XP37	Ch Start Shift	2.3	Excavation													0.00
	Ch End Shift	2.3	Bolt													0.00
	Heading Area	19.2	Shotcrete													0.00
	Shift Progress	0BCM	Others	TP TP ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	12.00
																12.00
XP38	Ch Start Shift	2.3	Excavation													0.00
	Ch End Shift	2.3	Bolt													0.00
	Heading Area	19.2	Shotcrete													0.00
	Shift Progress	9BCM	Others	TP TP ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	ES ES ES ES	12.00
																12.00

Drive:	Code:	Delay Hrs:	Detailed Description of Delay & Non-Added Value Activity
XP34	CE	12.00 Hrs	Brokk electrical cable damaged - works stopped
XP37	TP	0.50 Hrs	Travel to workfront
XP37	ES	11.50 Hrs	Excavation setup and general tunnelling works
XP38	TP	0.50 Hrs	Travel to workfront
XP38	ES	11.50 Hrs	Excavation setup and general tunnelling works

Activities This Shift

General Tunnelling Works:

- Removed 2 damaged hop up platforms between XP31 and XP34 and replaced
- Removed stored items on scrubber at XP34
- Cleaned invert of debris/rubbish between XP35-XP37 (sweeper attachment put on skid steer, removed excess muck and loaded into dump truck)
- Gathered untagged electrical lead and placed in white bag for electrical team to test/tag
- Installed 3rd prism on right side of XP34
- Invert clean at XP35 to low point

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	01.04.2024 – 30.04.2024		
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		30 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)	0.5	186	0.4	293	0.35	186
Vibration Dose Value (VDV mm/s1.75)	-	-	-	-	-	-
Below preferred criteria?	YES ☒ NO ☐ If "NO", provide explanation and corrective actions taken in next section					

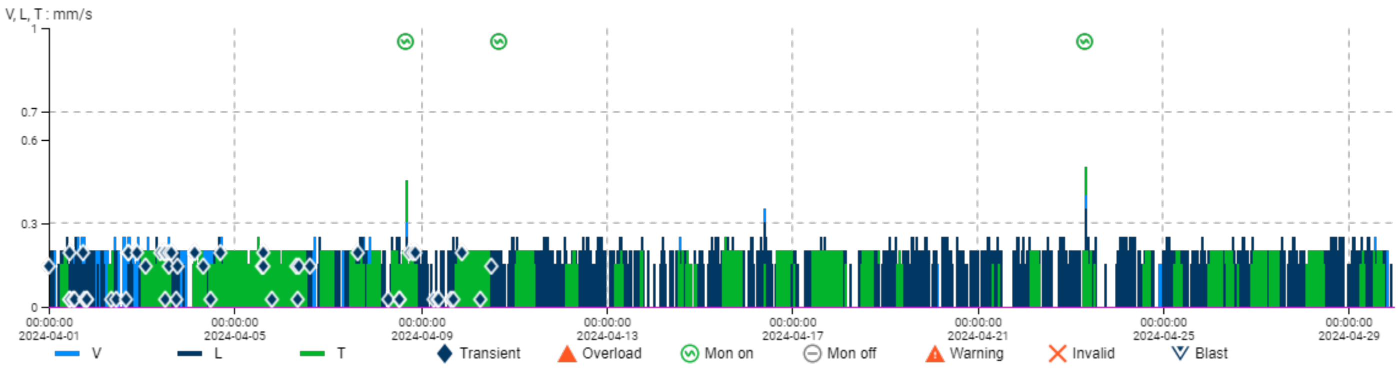
Notes and Diagram/Map, Photos and Graphs
Geophones located inside St Albans Church against wall.

List of activities during the month:

- TBM support activities
- Tunneling

Interval report

Project	FDK
Project maintainer	-
Time frame	2024-04-01 00:00 - 2024-04-30 00:00 (Australia/Sydney)
Measuring point	FDK_3
Description	St Albans Church vib
Sensor type	V12
Sensor serial no.	33730
Master(s) serial no.	107963
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: 0.4 mm/s, L: 0.35 mm/s, T: 0.5 mm/s

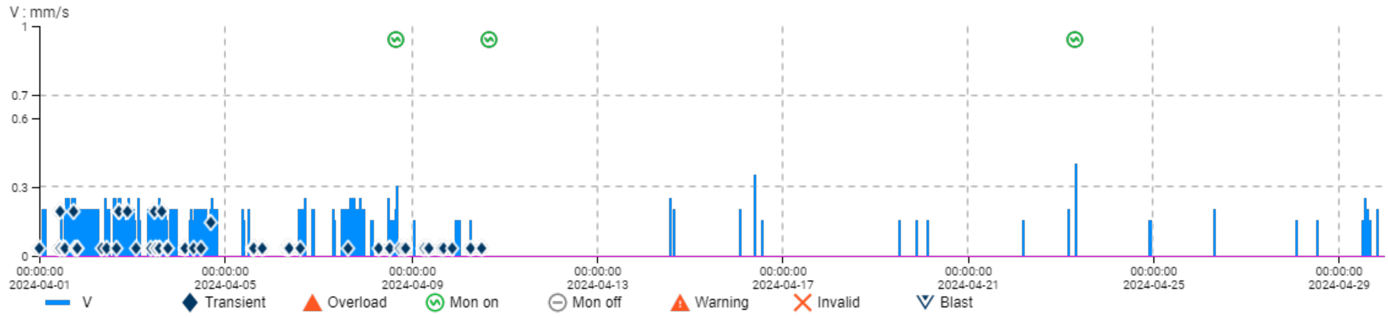


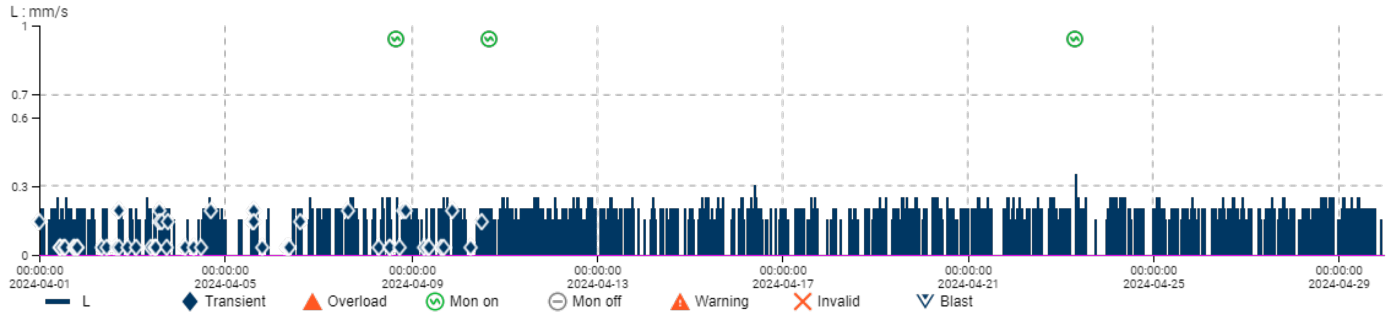
X-span	2024-04-01 00:00 - 2024-04-30 00:00		
Y-span	V, L, T : mm/s: 0 - 1		
	V	**L**	**T**
Max	0.4 mm/s	0.35 mm/s	0.5 mm/s
Date	2024-04-23	2024-04-23	2024-04-23
Time	07:48:00	07:48:00	07:48:00

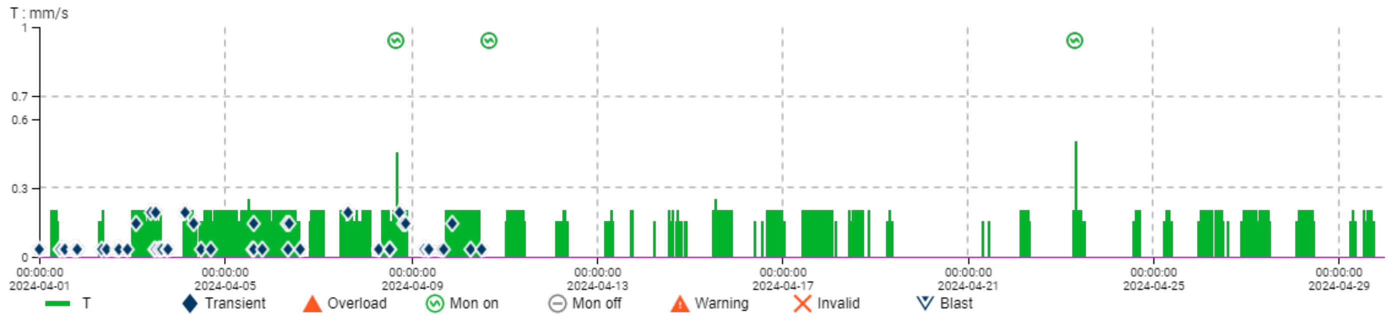
Multi report

Project	FDK
Project maintainer	-
Time frame	2024-04-01 00:00 - 2024-04-30 00:00 (Australia/Sydney)

FDK_3, St Albans Church vib, V12, Serial number: 33730, Calibrated: 2023-07-25, true







X-span	2024-04-01 00:00 - 2024-04-30 00:00
Y-span	V, L, T : mm/s: 0 - 1

	V	L	T
Max	0.4 mm/s	0.35 mm/s	0.5 mm/s
Date	2024-04-23	2024-04-23	2024-04-23
Time	07:48:00	07:48:00	07:48:00
Hz	293	186	186

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	01.03.2024 – 31.03.2024		
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)	0.25	0.5	0.4	114	0.75	28.5
Vibration Dose Value (VDV mm/s1.75)	-	-	-	-	-	-
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.

List of Activities during the month:

- 250T Crane
- excavation

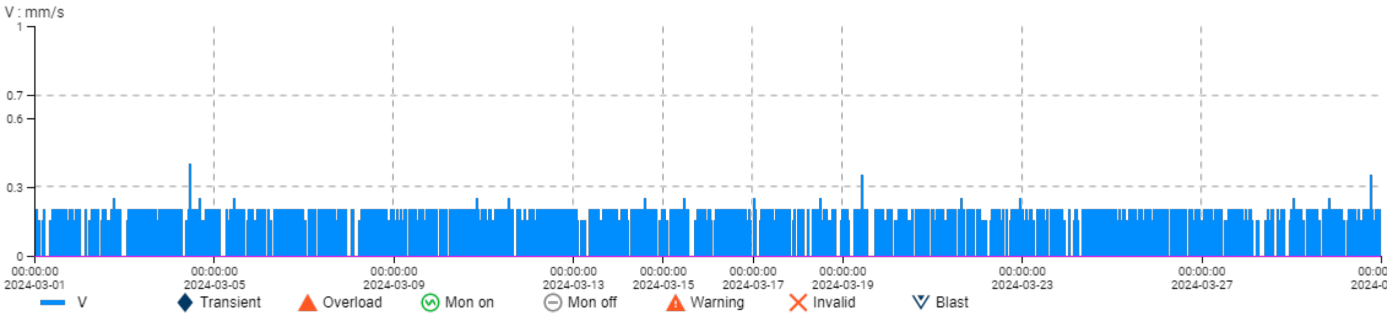
Multi report

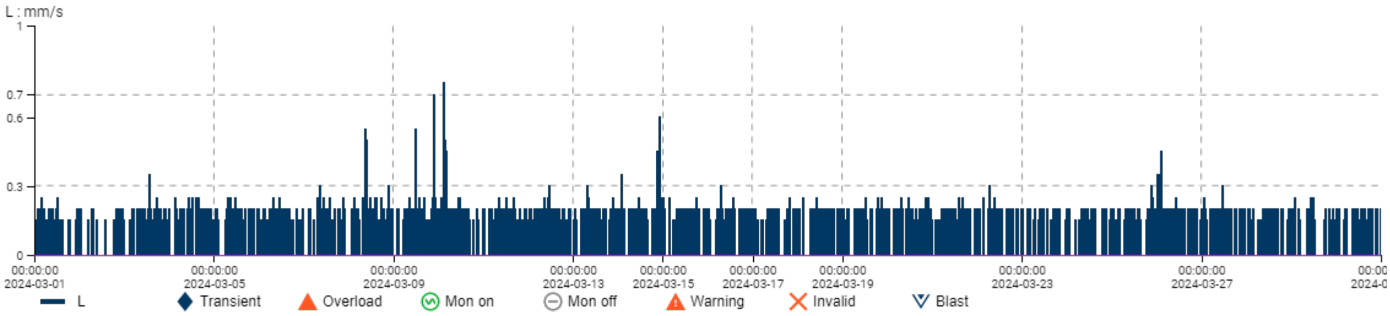
Project NST

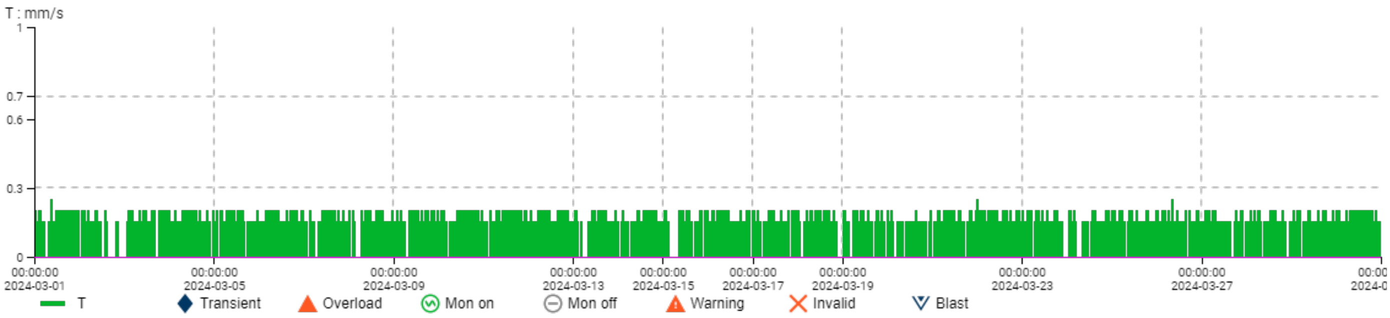
Project maintainer -

Time frame 2024-03-01 00:00 - 2024-03-31 00:00 (Australia/Sydney)

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







X-span 2024-03-01 00:00 - 2024-03-31 00:00

Y-span V, L, T : mm/s: 0 - 1

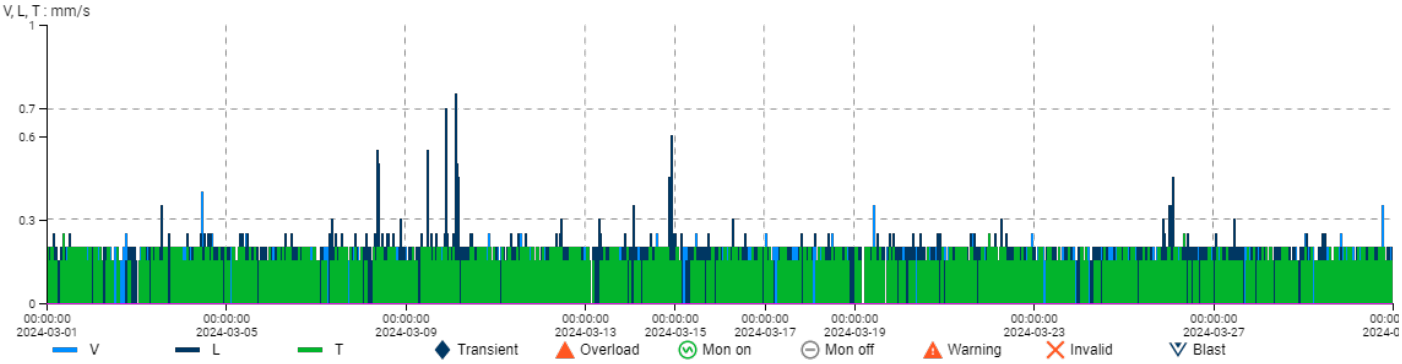
	V	L	T
Max	0.4 mm/s	0.75 mm/s	0.25 mm/s
Date	2024-03-04	2024-03-10	2024-03-01
Time	10:40:00	02:58:00	08:54:00
Hz	114	28.5	0.5

Interval report

Project	NST
Project maintainer	-
Time frame	2024-03-01 00:00 - 2024-03-31 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: 0.4 mm/s, L: 0.75 mm/s, T: 0.25 mm/s



X-span	2024-03-01 00:00 - 2024-03-31 00:00
Y-span	V, L, T : mm/s: 0 - 1

	V	L	T
Max	0.4 mm/s	0.75 mm/s	0.25 mm/s
Date	2024-03-04	2024-03-10	2024-03-01
Time	10:40:00	02:58:00	08:54:00

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	01.03.2024 – 31.03.2024		
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		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)	1.2	97.5	1.85	108	1.05	93
Vibration Dose Value (VDV mm/s1.75)	-	-	-	-	-	-
Below preferred criteria?	YES ☒ NO ☐ If "NO", provide explanation and corrective actions taken in next section					

AFJV Central Tunnel Package

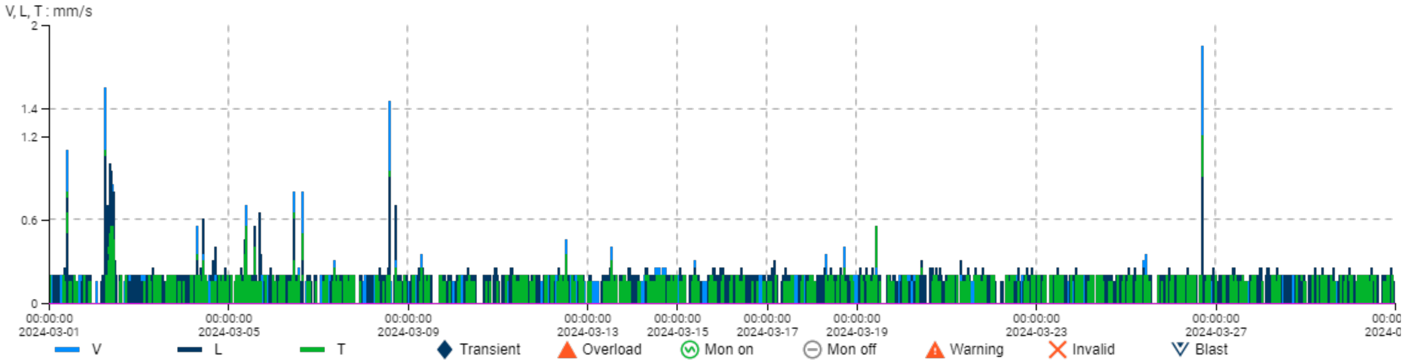
Notes and Diagram/Map, Photos and Graphs
Geophones located inside 16 Burton St against house wall.

Interval report

Project	BWD
Project maintainer	-
Time frame	2024-03-01 00:00 - 2024-03-31 00:00 (Australia/Sydney)

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
Standard	(18) DIN4150-3 + Freq 250 mm/s 1-315Hz
Unit	mm/s
Quantity	Velocity
Interval time	2 minutes

Max	V: 1.85 mm/s, L: 1.05 mm/s, T: 1.2 mm/s



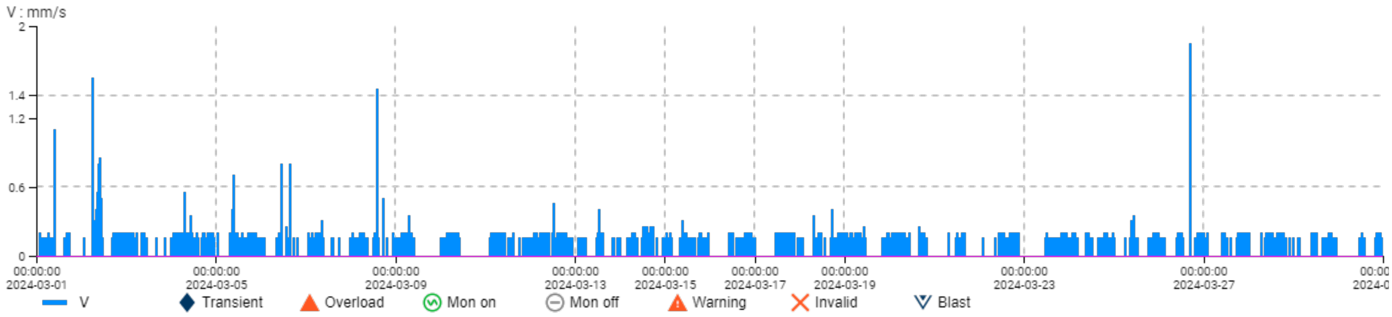
X-span	2024-03-01 00:00 - 2024-03-31 00:00
Y-span	V, L, T : mm/s: 0 - 2

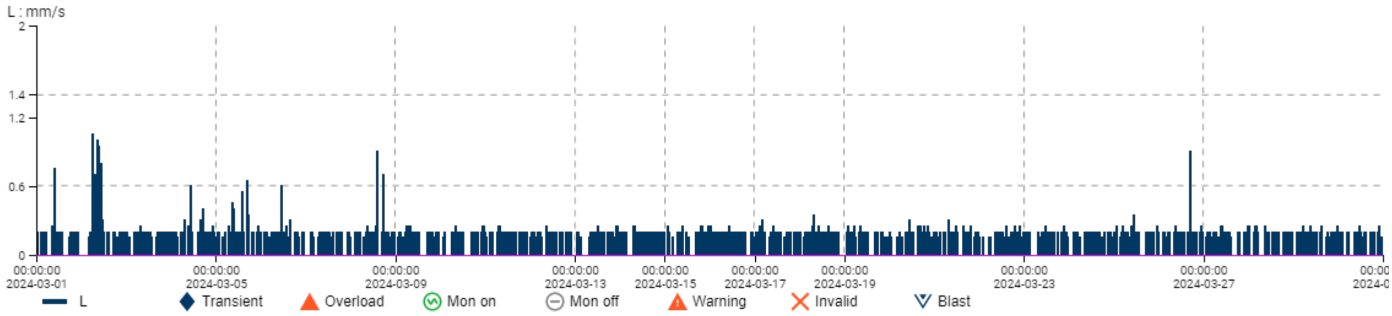
	V	L	T
Max	1.85 mm/s	1.05 mm/s	1.2 mm/s
Date	2024-03-26	2024-03-02	2024-03-26
Time	16:38:00	06:08:00	16:38:00

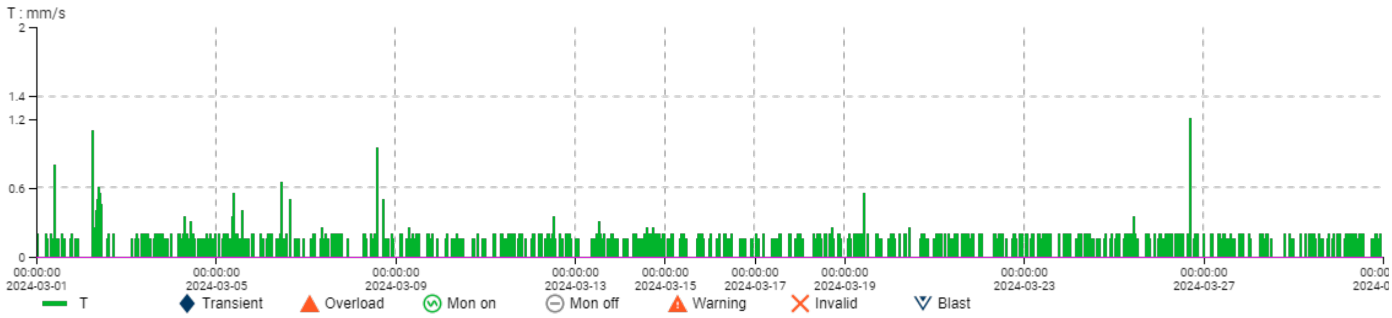
Multi report

Project	BWD
Project maintainer	-
Time frame	2024-03-01 00:00 - 2024-03-31 00:00 (Australia/Sydney)

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







X-span	2024-03-01 00:00 - 2024-03-31 00:00
Y-span	V, L, T : mm/s: 0 - 2

	V	L	T
Max	1.85 mm/s	1.05 mm/s	1.2 mm/s
Date	2024-03-26	2024-03-02	2024-03-26
Time	16:38:00	06:08:00	16:38:00
Hz	108	93	97.5

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 (WQO)	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:	4/07/2024

LEGEND

(yellow)	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 (%)	Electrical Conductivity (mS/cm)	Electrical Conductivity (µS/cm)	Turbidity (NTU)	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)	Additional Comments
							Field Measurement											
WB-D/s	White Bay	-33.866245° S, 151.180450° E	16/01/2024	Aaheli Christian		Post-Rainfall Monitoring	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Sunny	61.4	9.4	Fences around site were fixed, so no access point to do the monitoring with a bucket. Tried doing it from other locations throwing the bucket from afar, but because of the rocks surrounding the contour of the bays site, it was not possible to grab sample. It is considered high risk activity to approach water, and, in order to do that, a person needs to go through the fence to do it. Attempted on January 12 and 15, and wasn't possible.
DC-D/S	Dobroyd Canal / Iron Cove Creek	-33.870604° S, 151.141474° E	16/01/2024	Aaheli Christian	3:00 PM	Post-Rainfall Monitoring	7.69	23.85	13.61	183.4	36.9	36900	26.8	None	Sunny	61.4	9.4	
DC-U/S	Dobroyd Canal / Iron Cove Creek	-33.873828 ° S, 151.128243° E	16/01/2024	Aaheli Christian	2:51 PM	Post-Rainfall Monitoring	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	Sunny	61.4	9.4	Water level is low. Is not practicable to approach water, as fences surround the body of water.
SLP-D/S	St Lukes Park Canal	-33.861571° S , 151.113347° E	16/01/2024	Aaheli Christian	2:37 PM	Post-Rainfall Monitoring	8.36	24.03	11.52	142.1	5.85	5850	54.1	None	Sunny	61.4	9.4	
PC-U/S	Powells Creek	-33.862145° S, 151.086294° E	16/01/2024	Aaheli Christian	2:24 PM	Post-Rainfall Monitoring	8.26	24.02	12.1	147	0.539	539	932	Extremely turbid water	Sunny	61.4	9.4	
PC-D/S	Powells Creek	-33.852589° S, 151.082359° E	16/01/2024	Aaheli Christian	2:13 PM	Post-Rainfall Monitoring	7.56	23.51	11.99	146.5	5.47	5470	29.9	None	Sunny	61.4	9.4	
SC-D/S	Saleyards Creek	-33.852282° S, 151.081934° E	16/01/2024	Aaheli Christian	2:11 PM	Post-Rainfall Monitoring	7.39	24.17	16.04	199.5	7.71	7710	28.9	None	Sunny	61.4	9.4	
HC-D/S	Haslams Creek	-33.834564° S, 151.075772° E	16/01/2024	Aaheli Christian	1:57 PM	Post-Rainfall Monitoring	7.01	23.56	12.64	159	14.1	14100	35.6	None	Sunny	61.4	9.4	
WB-D/s	White Bay	-33.866245° S, 151.180450° E	26/02/2024	Aaheli Christian		Monthly Monitoring	N/A	N/A	N/A	N/A	N/A	N/A	N/A			0	0	Fences around site were fixed, so no access point to do the monitoring with a bucket. Tried doing it from other locations throwing the bucket from afar, but because of the rocks surrounding the contour of the bays site, it was not possible to grab sample. It is considered high risk activity to approach water, and, in order to do that, a person needs to go through the fence to do it.
DC-D/S	Dobroyd Canal / Iron Cove Creek	-33.870604° S, 151.141474° E	26/02/2024	Aaheli Christian	2:55 PM	Monthly Monitoring	8	25.34	10.62	160	50.9	50900	20.5	None	Sunny	0	0	
DC-U/S	Dobroyd Canal / Iron Cove Creek	-33.873828 ° S, 151.128243° E	26/02/2024	Aaheli Christian	2:45 PM	Monthly Monitoring	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	Sunny	0	0	Water level is low. Is not practicable to approach water, as fences surround the body of water.
SLP-D/S	St Lukes Park Canal	-33.861571° S , 151.113347° E	26/02/2024	Aaheli Christian	2:30 PM	Monthly Monitoring	8.22	25.36	8.18	121	46.8	46800	18.1	None	Sunny	0	0	
PC-U/S	Powells Creek	-33.862145° S, 151.086294° E	26/02/2024	Aaheli Christian	2:10 PM	Monthly Monitoring	9.56	25.99	18.07	227.4	1.94	1940	7	None	Sunny	0	0	
PC-D/S	Powells Creek	-33.852589° S, 151.082359° E	26/02/2024	Aaheli Christian	1:50 PM	Monthly Monitoring	7.5	25.45	9.88	138.8	34.6	34600	7.1	None	Sunny	0	0	
SC-D/S	Saleyards Creek	-33.852282° S, 151.081934° E	26/02/2024	Aaheli Christian	1:29 PM	Monthly Monitoring	7.59	25.65	9.94	139	33	33000	10.5	None	Sunny	0	0	
HC-D/S	Haslams Creek	-33.834564° S, 151.075772° E	26/02/2024	Aaheli Christian	1:09 PM	Monthly Monitoring	7.33	25.61	9.31	136.3	43.6	43600	16.4	None	Sunny	0	0	
WB-D/s	White Bay	-33.866245° S, 151.180450° E	26/03/2024	Aaheli Christian	2:00 PM	Monthly Monitoring	8.04	24.74	15.97	246.9	57.9	57900	11.3	None	Sunny	0	0	
DC-D/S	Dobroyd Canal / Iron Cove Creek	-33.870604° S, 151.141474° E	26/03/2024	Aaheli Christian	1:25 PM	Monthly Monitoring	8.07	25.2	10.42	156.7	50.7	50700	42	None		0	0	
DC-US	Dobroyd Canal / Iron Cove Creek	-33.873828 ° S, 151.128243° E	26/03/2024	Aaheli Christian	1:30 PM	Monthly Monitoring	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Sunny	0	0	Water level is low. Is not practicable to approach water, as fences surround the body of water.
SLP-D/S	St Lukes Park Canal	-33.861571° S , 151.113347° E	26/03/2024	Aaheli Christian	1:20 PM	Monthly Monitoring	8.19	25.72	11.13	167.8	49.4	49400	27.8	None	Sunny	0	0	
PC-U/S	Powells Creek	-33.862145° S, 151.086294° E	26/03/2024	Aaheli Christian	1:05 PM	Monthly Monitoring	9.35	24.44	13.67	167.7	2.45	2450	7.6	Almost dry stream	Sunny	0	0	
PC-D/S	Powells Creek	-33.852589° S, 151.082359° E	26/03/2024	Aaheli Christian	12:51 PM	Monthly Monitoring	7.34	24.69	8.52	122.2	42.2	42200	7.6	Clear water	Sunny	0	0	
SC-D/S	Saleyards Creek	-33.852282° S, 151.081934° E	26/03/2024	Aaheli Christian	12:48 PM	Monthly Monitoring	7.33	25.17	8.43	120.9	40.6	40600	9.4	Turbid water	Sunny	0	0	
HC-D/S	Haslams Creek	-33.834564° S, 151.075772° E	26/03/2024	Aaheli Christian	12:30 PM	Monthly Monitoring	6.78	23.79	7.87	115.8	50.8	50800	17		Sunny	0	0	
WB-D/s	White Bay	-33.866245° S, 151.180450° E	8/04/2024	Aaheli Christian	11:48 AM	Post-Rainfall Monitoring	7.82	23.12	10.45	140.9	33.8	33800	6.3	None	Sunny	0	0	
DC-D/S	Dobroyd Canal / Iron Cove Creek	-33.870604° S, 151.141474° E	8/04/2024	Aaheli Christian	11:02 AM	Post-Rainfall Monitoring	7.68	22.16	11.06	135.8	13.8	13800	18.2	None	Sunny	0	0	
DC-US	Dobroyd Canal / Iron Cove Creek	-33.873828 ° S, 151.128243° E	8/04/2024	Aaheli Christian	N/A	Post-Rainfall Monitoring	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	Sunny	0	0	Water level is low. Is not practicable to approach water, as fences surround the body of water.
SLP-D/S	St Lukes Park Canal	-33.861571° S , 151.113347° E	8/04/2024	Aaheli Christian	10:42 AM	Post-Rainfall Monitoring	7.75	22.01	14.15	171.7	11.1	1110	19.7	None	Sunny	0	0	
PC-U/S	Powells Creek	-33.862145° S, 151.086294° E	8/04/2024	Aaheli Christian	10:29 AM	Post-Rainfall Monitoring	8.22	21.5	10.62	123.7	0.928	928	38.7	None	Sunny	0	0	
PC-D/S	Powells Creek	-33.852589° S, 151.082359° E	8/04/2024	Aaheli Christian	10:13 AM	Post-Rainfall Monitoring	7.61	21.55	7.32	86.1	4.2	4200	315	Water has some froth like material floating around	Sunny	0	0	
SC-D/S	Saleyards Creek	-33.852282° S, 151.081934° E	8/04/2024	Aaheli Christian	10:10 AM	Post-Rainfall Monitoring	7.75	21.56	11.03	130	4.55	4550	13.7	None	Sunny	0	0	
HC-D/S	Haslams Creek	-33.834564° S, 151.075772° E	8/04/2024	Aaheli Christian	9:52 AM	Post-Rainfall Monitoring	7.56	21.35	8.33	101.6	15.9	15900	25.7	None	Sunny	0	0	
WB-D/s	White Bay	-33.866245° S, 151.180450° E	14/05/2024	Aaheli Christian	9:25 AM	Monthly Monitoring	8	19.28	10.31	138.8	48.5	48,500	0	None	Sunny	10.6	0.6	Clear water
DC-D/S	Dobroyd Canal / Iron Cove Creek	-33.870604° S, 151.141474° E	14/05/2024	Aaheli Christian	10:06 AM	Monthly Monitoring	7.9	18.63	10.4	135.1	43.5	43,500	8.6	None	Sunny	10.6	0.6	Moderate water flow
DC-US	Dobroyd Canal / Iron Cove Creek	-33.873828 ° S, 151.128243° E	14/05/2024	Aaheli Christian	10:15 AM	Monthly Monitoring	N/A	N/A	N/A	N/A	N/A	N/A	N/A	None	Sunny	10.6	0.6	Very hard to reach water level because of high fencing. Also, low water level.
SLP-D/S	St Lukes Park Canal	-33.861571° S , 151.113347° E	14/05/2024	Aaheli Christian	10:32 AM	Monthly Monitoring	8.21	18.79	11.81	132.6	5.34	5340	7.6	Dirt flowing in the water	Sunny	10.6	0.6	Stagnant flow of water
PC-U/S	Powells Creek	-33.862145° S, 151.086294° E	14/05/2024	Aaheli Christian	12:13 PM	Monthly Monitoring	7.53	19.38	14.5	167.9	18.2	18,200	7.1	Small amount of dirt flowing in the water	Sunny	10.6	0.6	Moderate water flow
PC-D/S	Powells Creek	-33.852589° S, 151.082359° E	14/05/2024	Aaheli Christian	12:19 PM	Monthly Monitoring	7.56	19.36	12.81	151.5	17.2	17,200	8.3	None	Sunny	10.6	0.6	Moderate water flow
SC-D/S	Saleyards Creek	-33.852282° S, 151.081934° E	14/05/2024	Aaheli Christian	12:25 PM	Monthly Monitoring	8.1	21.03	13.62	157.3	0.904	904	200	less water	Sunny	10.6	0.6	Stagnant flow of water
HC-D/S	Haslams Creek	-33.834564° S, 151.075772° E	14/05/2024	Aaheli Christian	12:35 PM	Monthly Monitoring	7.67	19.9	14.33	178.6	28.3	28,300	4.3	None	Sunny	10.6	0.6	Tidal flow
WB-D/s	White Bay	-33.866245° S, 151.180450° E	12/06/2024	Aaheli Christian	11:50 AM	Monthly Monitoring	7.86	17.26	14.36	184.6	46.8	46,800	0	Clear water	Partly cloudy	0	0	Moderate flow
DC-D/S	Dobroyd Canal / Iron Cove Creek	-33.870604° S, 151.141474° E	12/06/2024	Aaheli Christian	1:35 PM	Monthly Monitoring	7.57	16.03	13.77	169.4	42.7	42,700	3.4	Dirt flowing in the water	Partly cloudy	0	0	Moderate flow
DC-US	Dobroyd Canal / Iron Cove Creek	-33.873828 ° S, 151.128243° E	12/06/2024	Aaheli Christian	11:12 AM	Monthly Monitoring	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Clear water	Partly cloudy	0	0	Very less water to sample.
SLP-D/S	St Lukes Park Canal	-33.861571° S , 151.113347° E	12/06/2024	Aaheli Christian	11:14 AM	Monthly Monitoring	7.6	15.81	12.19	140.8	29	29,000	0	Clear water	Partly cloudy	0	0	Stagnant flow of water
PC-U/S	Powells Creek	-33.862145° S, 151.086294° E	12/06/2024	Aaheli Christian	11:00 AM	Monthly Monitoring	8.3	14.92	12.56	129	1.5	1,500	0	Clear water	Partly cloudy	0	0	Stagnant flow of water
PC-D/S	Powells Creek	-33.852589° S, 151.082359° E	12/06/2024	Aaheli Christian	10:44 AM	Monthly Monitoring	7.31	14.22	19.21	210.1	23.7	23,700	0	Clear water	Partly cloudy	0	0	Some debris flowing in the water
SC-D/S	Saleyards Creek	-33.852282° S, 151.081934° E	12/06/2024	Aaheli Christian	10:41 AM	Monthly Monitoring	7.27	14.52	12.29	135.2	23.7	23,700	0	Clear water	Partly cloudy	0	0	Moderate flow of water
HC-D/S	Haslams Creek	-33.834564° S, 151.075772° E	12/06/2024	Aaheli Christian	10:22 AM	Monthly Monitoring	6.93	15.4	14.05	163.6	33	33,000	0	Clear water	Partly cloudy	0	0	Modretae flow of water

APPENDIX D - GROUNDWATER MONITORING

Monitoring Methodology

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 outlines 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 (mBTOC) 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 VWPs (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 constructions 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

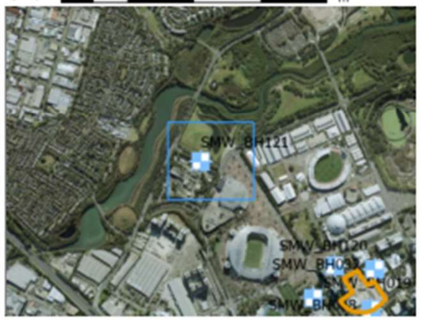
Tunnel North West of SOP

Legend

Site boundary

Groundwater well

0 45 90 m



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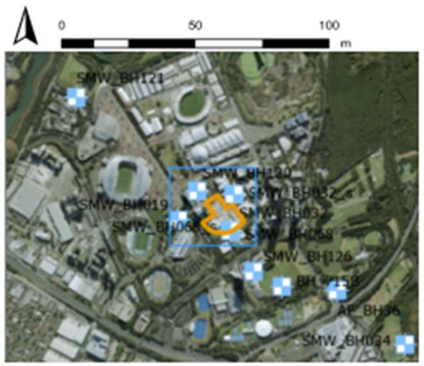
Sydney Metro West - CTP

Sydney Olympic Park

Legend

Site boundary

Groundwater well



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afJV

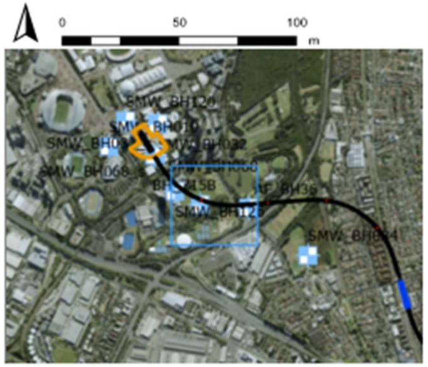
Sydney Metro West - CTP

Tunnel - Sydney Olympic Park to Nort...

Legend

Site boundary

Groundwater well



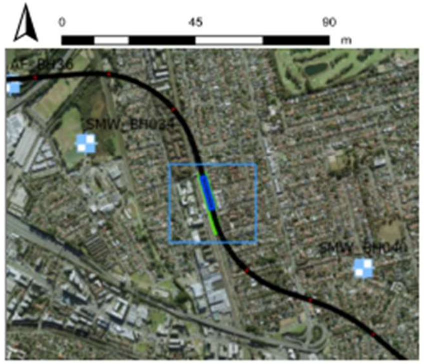
Sydney Metro West - CTP

North Strathfield

Legend

Site boundary

Groundwater well



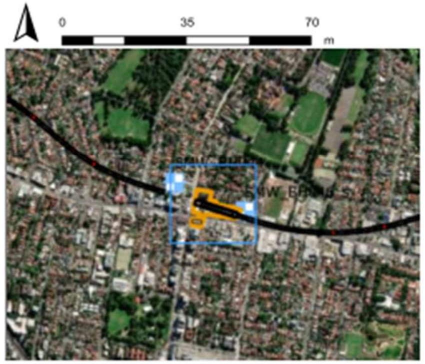
Sydney Metro West - CTP

Burwood North

Legend

Site boundary

Groundwater well



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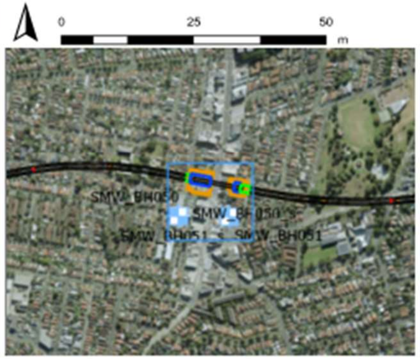
Sydney Metro West - CTP

Five Dock

Legend

Site boundary

Groundwater well



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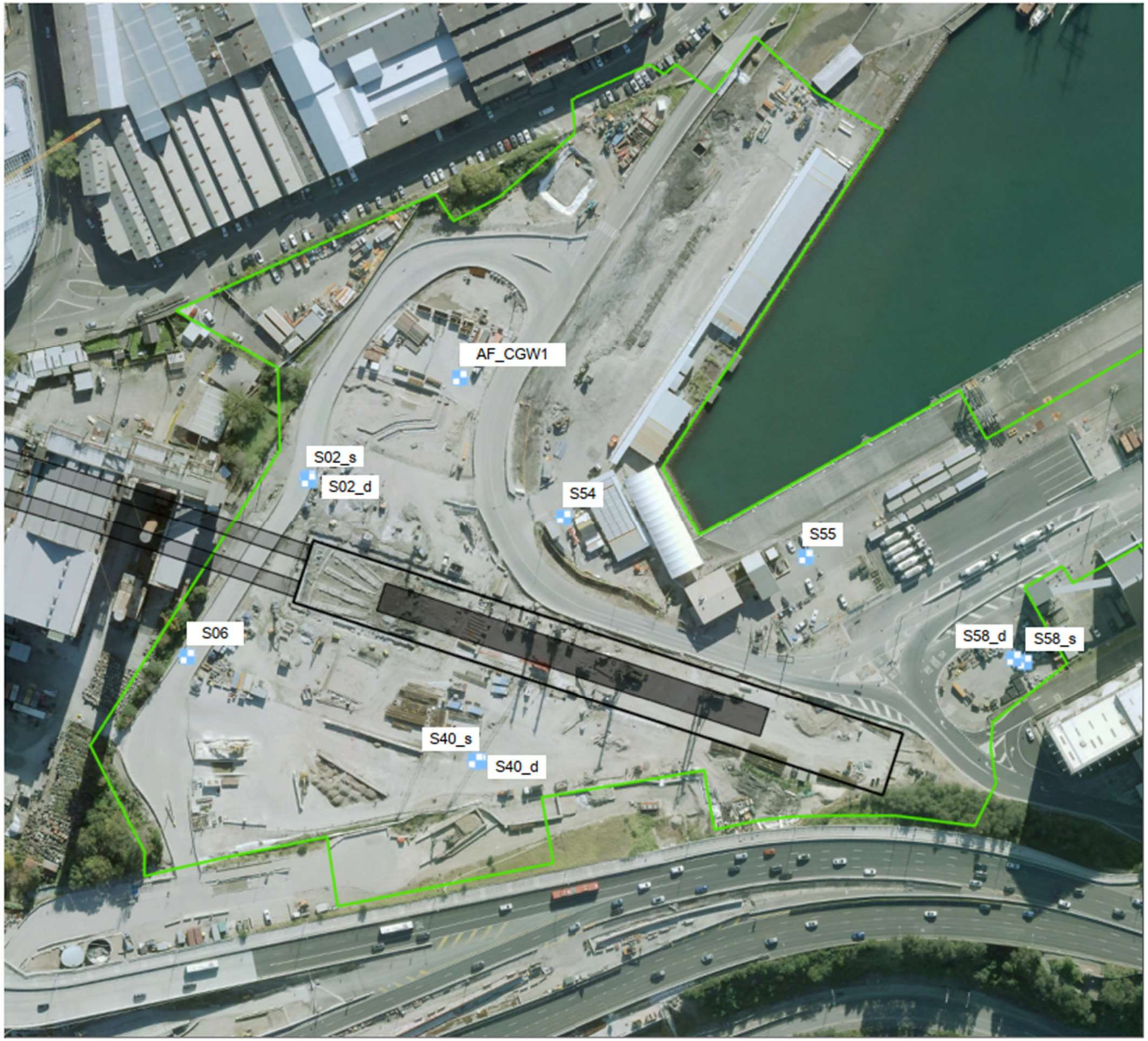


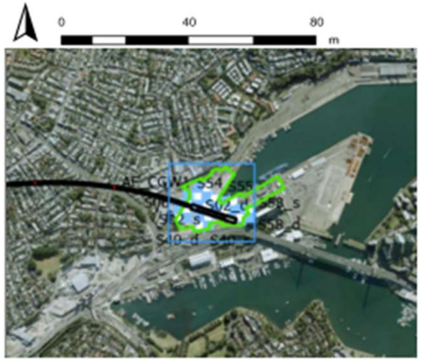
Sydney Metro West - CTP

The Bays

Legend

Site boundary

Groundwater well



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afJV

TABLE 6-3. AFJV GROUNDWATER BORE LOCATION AND MONITORING DETAILS

Location	Bore ID	Depth classification	Ground surface elevation (mAHD)	Screened interval (m)	Screened aquifer	Monitoring*	Comments
Tunnel – NW of SOP	SMW_BH070	Deep Rock	4.85	27–7 - 30.7	Siltstone/ sandstone	Nil	Not found. Possibly decommissioned.
	SMW_BH121	Deep Rock	4.15	–3 - 16	Siltstone	WQ/EC/L	
Sydney Olympic Park	SMW_BH120	Deep Rock	17.38	22–5 - 25.5	Siltstone/ sandstone	WQ/EC/L	
	SMW_BH019	Deep Rock	17.33	22–5 - 25.5	Siltstone	Nil	Not found. Possibly decommissioned.
	SMW_BH015	Deep Rock	22.94	25–2 - 28.2	Siltstone	Nil	Has been decommissioned during construction.
	SMW_BH015_s	Shallow Rock	22.02	1–5 - 4.5	Siltstone/ sandstone	Nil	Has been decommissioned during construction.
	SMW_BH032	Deep Rock	19.74	–8 - 22	Siltstone	EC/L	WQ will be sampled in pre-construction baseline sampling.
	SMW_BH032_s	Shallow Rock	19.76	3.5 – 7.25	Siltstone	EC/L	Likely to be dry and unable to be sampled.
	SMW_BH068	Deep Rock	23.64	22.2 – 25.1	Siltstone/ sandstone	Nil	Located inside site, and decommissioned due to construction purposes.

Location	Bore ID	Depth classification	Ground surface elevation (mAHD)	Screened interval (m)	Screened aquifer	Monitoring*	Comments
	SMW_BH068_s	Shallow Rock	23.36	2.6 – 4.3	Siltstone/ sandstone	Nill	Located inside site, and decommissioned due to construction purposes.
	SMW_BH126	Deep Rock	11.4	9.2 -12.2	Fill/ Siltstone	WQ/EC/L	
Tunnel – SOP to NS	SMW_BH069	Deep Rock	7.96	19.4 – 22.4	Unknown	Nil	No monitoring proposed.
	SMW_BH033	Deep Rock	6.82	8.5 – 11.5	Siltstone	Nil	No monitoring proposed.
	SMW_BH034	Deep Rock	2.44	26.2 – 29.2	Sandstone	Nil	No monitoring proposed.
	SMW_BH036		4.28			WQ/EC/L	
North Strathfield	SMW_BH038	Deep Rock	9.91	26.0 – 32.0	Siltstone/ sandstone	WQ/EC/L	
	SMW_BH009	Deep Rock	18.45	37.45 – 40.45	Sandstone	L	
	SMW_BH009_s	Shallow Rock	18.6	1.0 – 5.0	Gravelly clay/ siltstone	L	
	SMW_BH073	Shallow Rock	18.93	10.2 – 13.2	Siltstone	Nil	D Decommissioned during construction – No monitoring proposed.

Location	Bore ID	Depth classification	Ground surface elevation (mAHD)	Screened interval (m)	Screened aquifer	Monitoring*	Comments
	SMW_BH035	Deep Rock	26.74	33.5 – 45.5	Siltstone/ sandstone	WQ/EC/L	
	SMW_BH035_s	Shallow Rock	26.62	1.7 – 3.2	Siltstone	WQ/EC/L	
Tunnel – NS to B	SMW_BH040	Deep Rock	23.06	45.0 – 54.0	Sandstone	EC/L	
Burwood	SMW_BH044	Deep Rock	22.6	22.5 – 34.5	Siltstone/ sandstone	WQ/EC/L	
	SMW_BH046	Deep Rock	6.47	6.0 – 15.0	Siltstone/ sandstone	Nil	Has been decommissioned due to Concord Oval works.
	SMW_BH046_s	Shallow Sediments	6.47	1.3 – 3.1	Clay	L	Depth measured by live datalogger.
	SMW_BH046_R		7.26			WQ/EC/L	Replaced BH046_S for monitoring purposes.
Five Dock	SMW_BH050	Deep Rock	24.34	9.0 – 24.5	Siltstone/ sandstone	WQ/EC/L	
	SMW_BH050_s	Shallow Sediments	24.35	0.4 – 1.3	Gravelly clay	WQ/EC/L	Likely to be dry and unable to be sampled.
	SMW_BH082	Deep Rock	18.04	9.3 – 12.4	Siltstone/ sandstone	Nil	Has been decommissioned during construction.

Location	Bore ID	Depth classification	Ground surface elevation (mAHD)	Screened interval (m)	Screened aquifer	Monitoring*	Comments
	SMW_BH051	Deep Rock	21.68	7.0 – 10.0	Siltstone/ sandstone	WQ/EC/L	Likely to be dry and unable to be sampled.
	SMW_BH051_s	Shallow Sediments	21.66	0.8 – 2.0	Silty clay	WQ/EC/L	Likely to be dry and unable to be sampled.
The Bays	SMW_ENV020	Deep Sediments	2.94	9.0 – 15.0	Sand/ Sandy clay/ Sand/ Silt	Nil	Has been destroyed during construction.
	SMW_ENV020_s	Shallow Sediments	2.94	2.5 – 5.5	Sand/ Silt/ Silty sand	Nil	Has been destroyed during construction.
	SMW_ENV021	Deep Sediments	3.09	9.4 – 14.4	Core loss/ Sand	Nil	Has been damaged due to pre-excavation grouting. Not sampled.
	SMW_ENV021_s	Shallow Sediments	3.09	2.2 – 4.6	Silty sand/ Sand	Nil	Has been damaged due to pre-excavation grouting. Not sampled.
	SMW_ENV026	Shallow Sediments	4.23	3.5 – 6.5	Sand/ Silty sand	Nil	Has been destroyed during construction.
	SMW_ENV027	Shallow Sediments	3.58	2.0 – 5.0	Fill/ Sand/ Clay	Nil	Has been destroyed during construction.
	SMW_BH066	Deep Rock	4.14	27.2 – 30.2	Sandstone	Nil	Has been destroyed during construction.

Location	Bore ID	Depth classification	Ground surface elevation (mAHD)	Screened interval (m)	Screened aquifer	Monitoring*	Comments
	SMW_BH066_s	Shallow Sediments	4.14	2.0 – 6.0	Fill/ Sand/ Silty sand	Nil	Has been destroyed during construction.
	SMW_ENV034	Deep Sediments	3.17	7.9 – 9.3	Sand/Sandy clay/ Clayey sand	Nil	Has been decommissioned during construction.
	SMW_BH067	Deep Rock	2.93	12.5 – 15.5	Sandstone	Nil	Has been decommissioned during construction.
	SMW_BH067_s	Shallow Rock	2.92	2.5 – 6.0	Sandstone	Nil	Has been destroyed during construction.
	S02_s	Shallow sediment	3.11	0.7 – 6		WQ/EC/L	
	S02_d	Deep Rock	3.11	11 – 15.1	Fill/ Sand/ Silty sand	WQ/EC/L	
	S06	Deep Rock	3.13	13.5 – 20.44	Sandstone	WQ/EC/L	
	S40_s	Shallow sediments	3.60	0.5 – 8	Fill/ Sand/ Silty sand	WQ/EC/L	Under ETP boundary after handover.
	S40_d	Deep rock	3.68	8.7 – 15.2	Sandstone	WQ/EC/L	Under ETP boundary after handover.
	S51	Shallow sediments	4.15	0.8 – 6.2	Fill/ Sand/ Silty sand	Nil	Has been decommissioned due to construction.

Location	Bore ID	Depth classification	Ground surface elevation (mAHD)	Screened interval (m)	Screened aquifer	Monitoring*	Comments
	AF_CGW1	Shallow sediments	4.15	4.5-10	Alluvium	WQ/EC/L	Replacement for S51.Shallow well, unable to extract sample.
	S54	Deep rock	3.59	12 – 17.5	Sandstone	WQ/EC/L	
	S55	Shallow sediments	3.13	0.5 – 6.22	Fill/ Sand/ Silty sand	Nil	Under ETP boundary after handover.
	S58_s	Shallow sediment	3.24	0.7 – 6	Fill/ Sand/ Silty sand	Nil	Under ETP boundary after handover.
	S58_d	Deep rock	3.22	18 – 21.5	Sandstone	Nil	Under ETP boundary after handover.

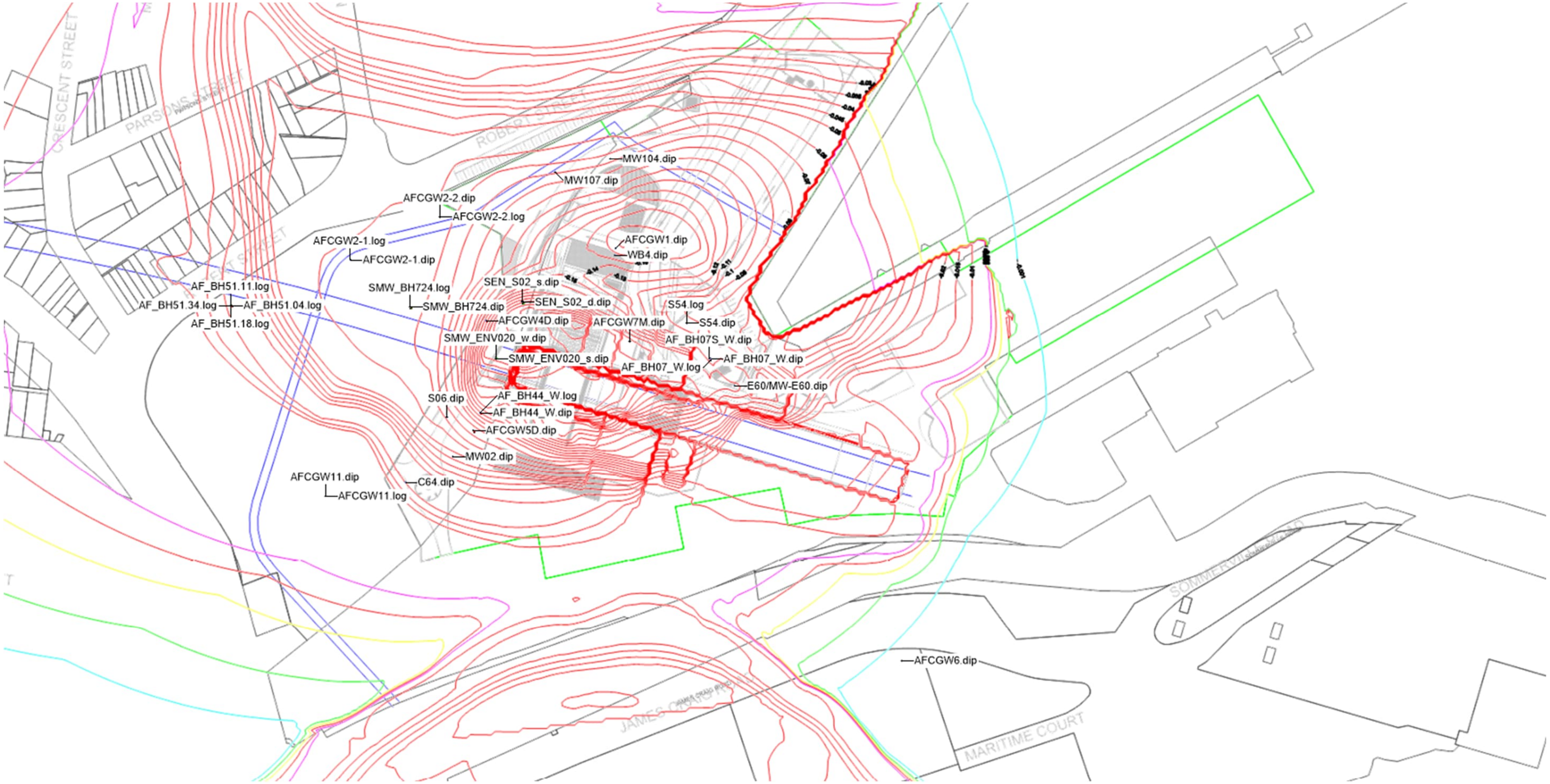
WQ = Water Quality Monitoring. EC = Electrical Conductivity Monitoring. L = Groundwater level monitoring
*Due to a number of monitoring bores being located within the extent of the station boxes or tunnel alignment, which will be destroyed during construction, these monitoring wells will not be monitored during construction. Monitoring may still occur at these locations prior to construction to assist in gathering baseline information.

Month	Location	Borehole Number	Temperature	Ph	Electrical Conductivity(µS/cm)	Dissolved Oxygen(%)	Redox (mV)	Visual (turbidity, odour, sheen)	Water level (mTOC)	Sampled/ Gauged	Monitoring
February	BWD	BH046R	21.3	6.6	10389	31	-238.1	Mild Turbidity	14.915	Sampled	WQ/EC/L
May	BWD	BH046R	20.6	6.7	5844	59.8	-95.3	No turbidity	15.16	Sampled	WQ/EC/L
February	BWD	BH044	20.9	7.7	161.7	63.7	178	No odour, No turbidity	15.75	Sampled	WQ/EC/L
February	FDK	BH_050s	23.5	6.3	403.2	29.7	-217.6	No turbidity	0.27	Sampled	WQ/EC/L
May	FDK	BH_050s	16.3	6.3	566.5	32.8	-147	No turbidity	0.15	Sampled	WQ/EC/L
February	FDK	BH_051d	21.6	6.4	603	33.3	-199	Mild Turbidity	5.24	Sampled	WQ/EC/L
May	FDK	BH_051d	20.8	5.9	2122	38.1	-138.1	No turbidity	3.79	Sampled	WQ/EC/L
May	NST	BH009s	22	6.1	592	16	-165.5	Mild Turbidity	3.37	Sampled	WQ/EC/L
February	NST	BH035d	20.4	6.4	17173	28.1	-213.2	Mild turbidity	35.23	Sampled	WQ/EC/L
February	NST	BH035s	23.7	5.1	4765	33.7	-195.7	Turbid water	1.645	Sampled	WQ/EC/L
February	NST	BH038	21.2	11	1440	62.17	-209.9	No turbidity	12.37	Sampled	WQ/EC/L
May	NST	BH038	19.2	11	1160	16.3	-153.5	No turbidity	11.76	Sampled	WQ/EC/L
March	SOP	BH019	22.2	6.3	9927	38.3	-29.4	No turbidity	21.37	Sampled	WQ/EC/L
June	SOP	BH019	18.6	5.8	189.2	18.4	55.7	Water had yellow colour	15.93	Sampled	WQ/EC/L
March	SOP	BH36	19.9	5.4	1408	34.6	-21.9	No turbidity	3.41	Sampled	WQ/EC/L
June	SOP	BH36	18.7	4.9	1653	35.2	138.3	No turbidity	5.175	Sampled	WQ/EC/L
March	SOP	BH120	21	6.4	147.6	27	-199.1	Turbid water	16.37	Sampled	WQ/EC/L
June	SOP	BH120	19.8	6.5	16570	31.1	124.3	No turbidity	20.75	Sampled	WQ/EC/L
March	SOP	BH126	21.6	7.5	15355	26.9	-138	No turbidity	4.17	Sampled	WQ/EC/L
June	SOP	BH126	20.2	6.5	132.2	16.9	24.5	No turbidity	4.1	Sampled	WQ/EC/L
March	SOP	BH715b	20	6.3	9498	32.5	-157.7	No turbidity	12.87	Sampled	WQ/EC/L
June	SOP	BH715b	18.9	6.5	19007	18.6	-34.6	No turbidity	12.98	Sampled	WQ/EC/L
March	TBY	S02d	21.2	7.4	364.4	41.4	-39.2	Turbid water with rotten egg smell	3.96	Sampled	WQ/EC/L
June	TBY	S02d	17.6	7.5	572	19.6	67.7	No turbidity	3.82	Sampled	WQ/EC/L
June	TBY	S02s	19.5	7.8	397	26.2	66.4	Mild Turbidity	3.19	Sampled	WQ/EC/L
March	TBY	S06	21.5	7.5	682	54.1	-29.7	Turbid water	3.82	Sampled	WQ/EC/L
June	TBY	S06	20.3	7	350.3	30.2	13.5	Turbid water	4	Sampled	WQ/EC/L

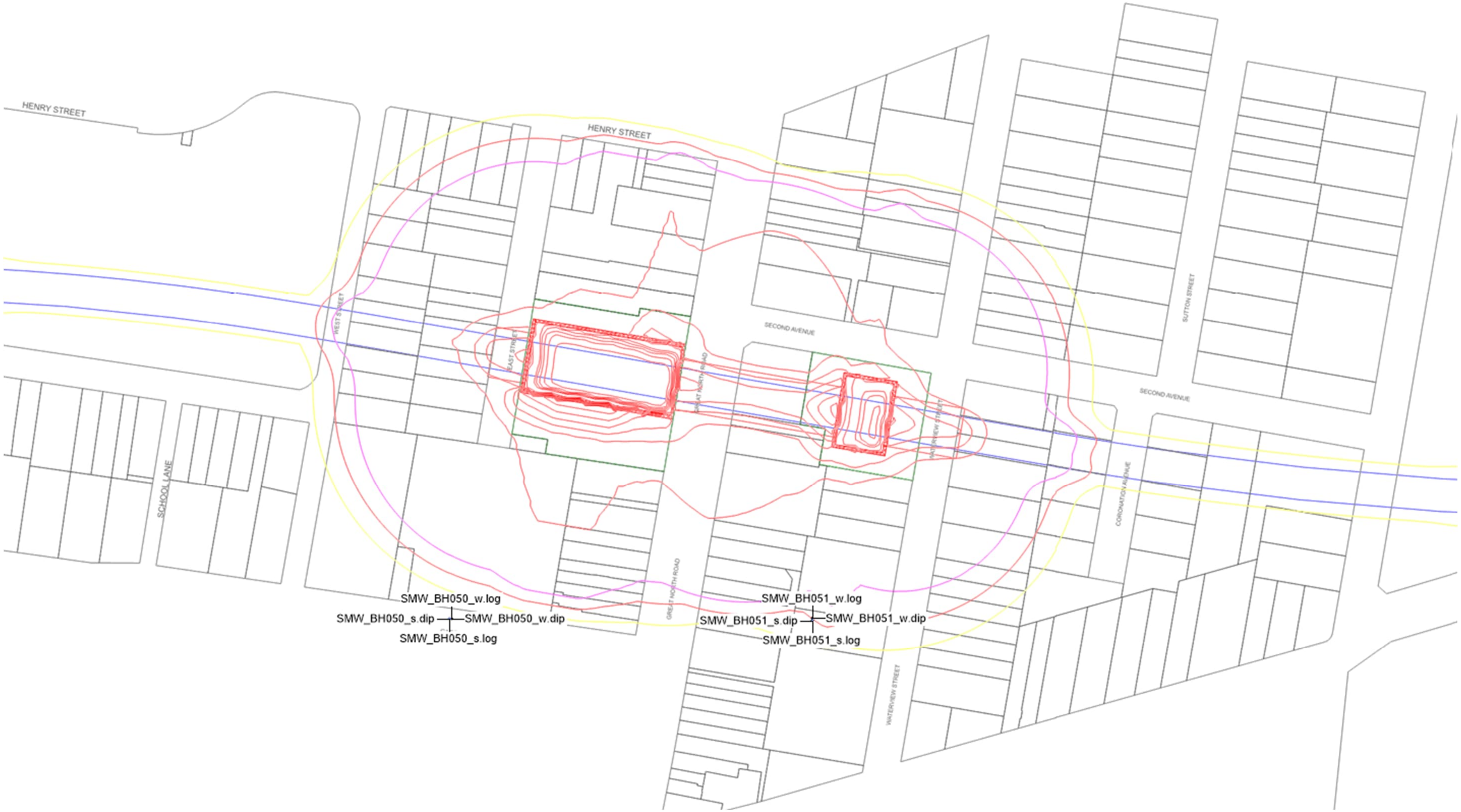
LIVE DATALOGGER BOREHOLES					
TBM Alignment Water Levels	**THE BAYS**	**FIVE DOCK**	**BURWOOD**	**NORTH STRATHFIELD**	**SYDNEY OLYMPIC PARK**
AF_BH22.15 AF_BH22.30 AF_BH22.42 AF_BH26.15 AF_BH26.30 AF_BH26.42 AF_BH30.15 AF_BH30.30 AF_BH30.48 AF_BH36 AF_BH36s AF_BH37 AF_BH37s AF_BH38 AF_BH38s SMW_BH062.032 SMW_BH062.062 SMW_BH062.104 SMW_BH069_w SMW_BH126_w SMW_BH710_v SMW_BH720.20 SMW_BH720.56 SMW_BH722.20 SMW_BH722.43 SMW_BH722.56 BN_W1 SMW_ENV715B_w SOP_W1	AF_BH07_W AF_BH07S_W AF_BH44_W AF_BH51.04 AF_BH51.11 AF_BH51.18 AF_BH51.34 AF_BHCGW2-1 AFGW2-2 AFGW2-1 AFGW5S AFGW7M AFGW9 AFGW11 SMW_BH724 S54 S58_d	SMW_BH050_s SMW_BH050_w SMW_BH051_s SMW_BH051_w R248_3103_BH141A SMW_BH719	SMW_BH044w SMW_BH046s SMW_BH046w BH1326 BH1336 BH714_s BH714_w SMW_BHCINT01 SMW_BHCINT02 SMW_BHCINT03	SMW_BH009_s SMW_BH009_w SMW_BH035_s SMW_BH035_w SMW_BH038_w	SMW_BH019_w SMW_BH032_S SMW_BH032_W SMW_BH068 SMW_BH068S SMW_BH120_W SMW_ENV712d SMW_ENV712s SMW_ENV714_W SMW_ENV715

Location of data loggers:

The Bays:



Five Dock:



HENRY STREET
HENRY STREET
SCHOOL LANE
WEST STREET
EAST STREET
GREAT NORTH ROAD
GREAT NORTH ROAD
SECOND AVENUE
SECOND AVENUE
WATERVIEW STREET
WATERVIEW STREET
CORONATION AVENUE
SUTTON STREET
SMW_BH050_w.log
SMW_BH050_s.dip
SMW_BH050_w.dip
SMW_BH050_s.log
SMW_BH051_w.log
SMW_BH051_s.dip
SMW_BH051_w.dip
SMW_BH051_s.log


HOWLEY STREET
HEATH STREET
FIRST AVENUE
RICKARD STREET
AF_BH22.30.log
AF_BH22.15.log
AF_BH22.42.log

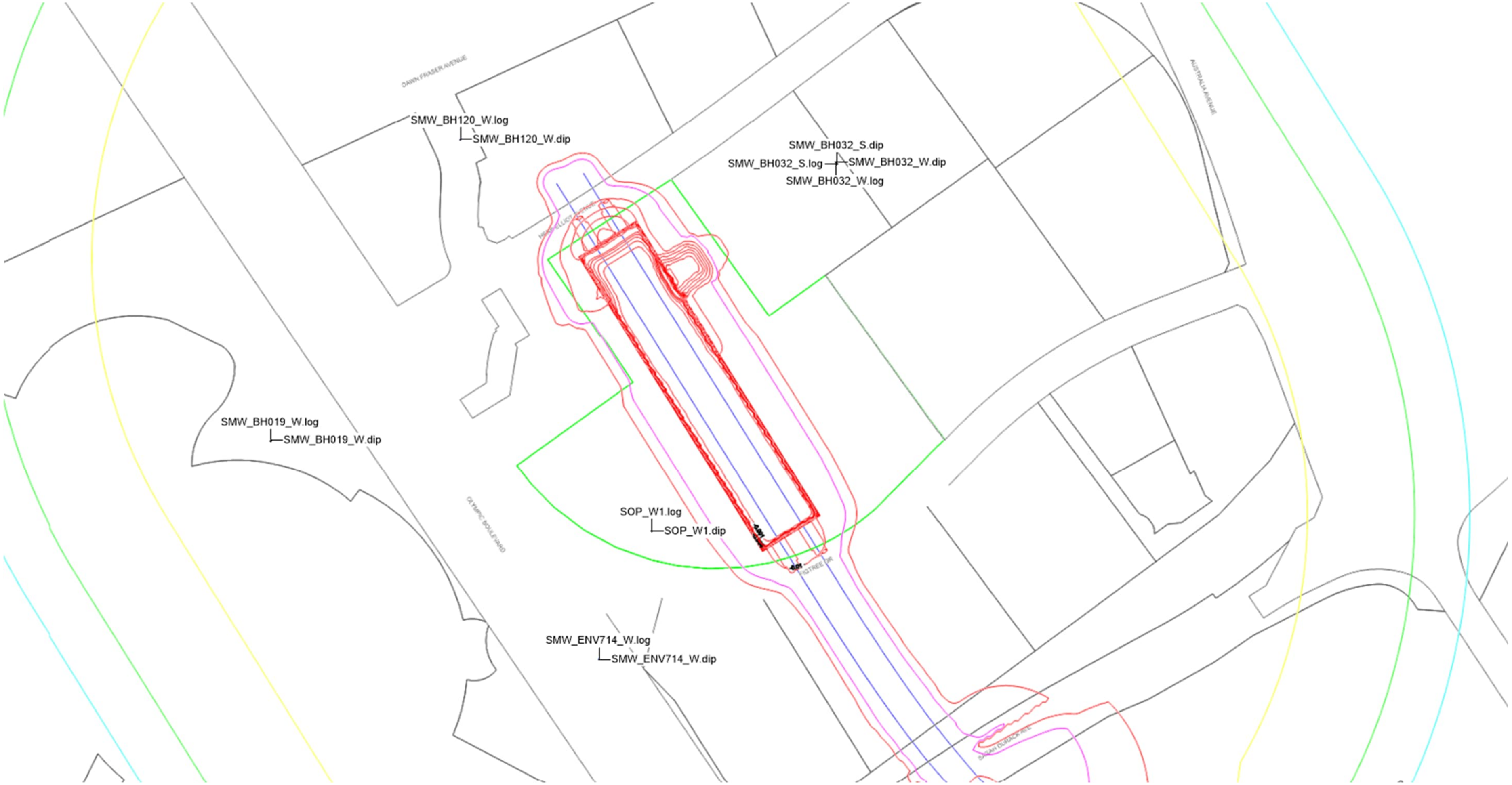
Burwood:


MORETON STREET
SMW_BH044w.dip
SMW_BH044w.log
FRANKIE LANE
BN_W1.log
BN_W1.dip
SMW_BH046s.log
SMW_BH046s.dip
SMW_BH046w.log
SMW_BH046w.dip
BH1326.log
BH1326.dip
BH1333.dip
BH714_w.log
BH714_w.dip
BH714_s.log
BH714_s.dip
SMW_I1.dip
BH1336.log
BH1336.dip
MILTON LANE

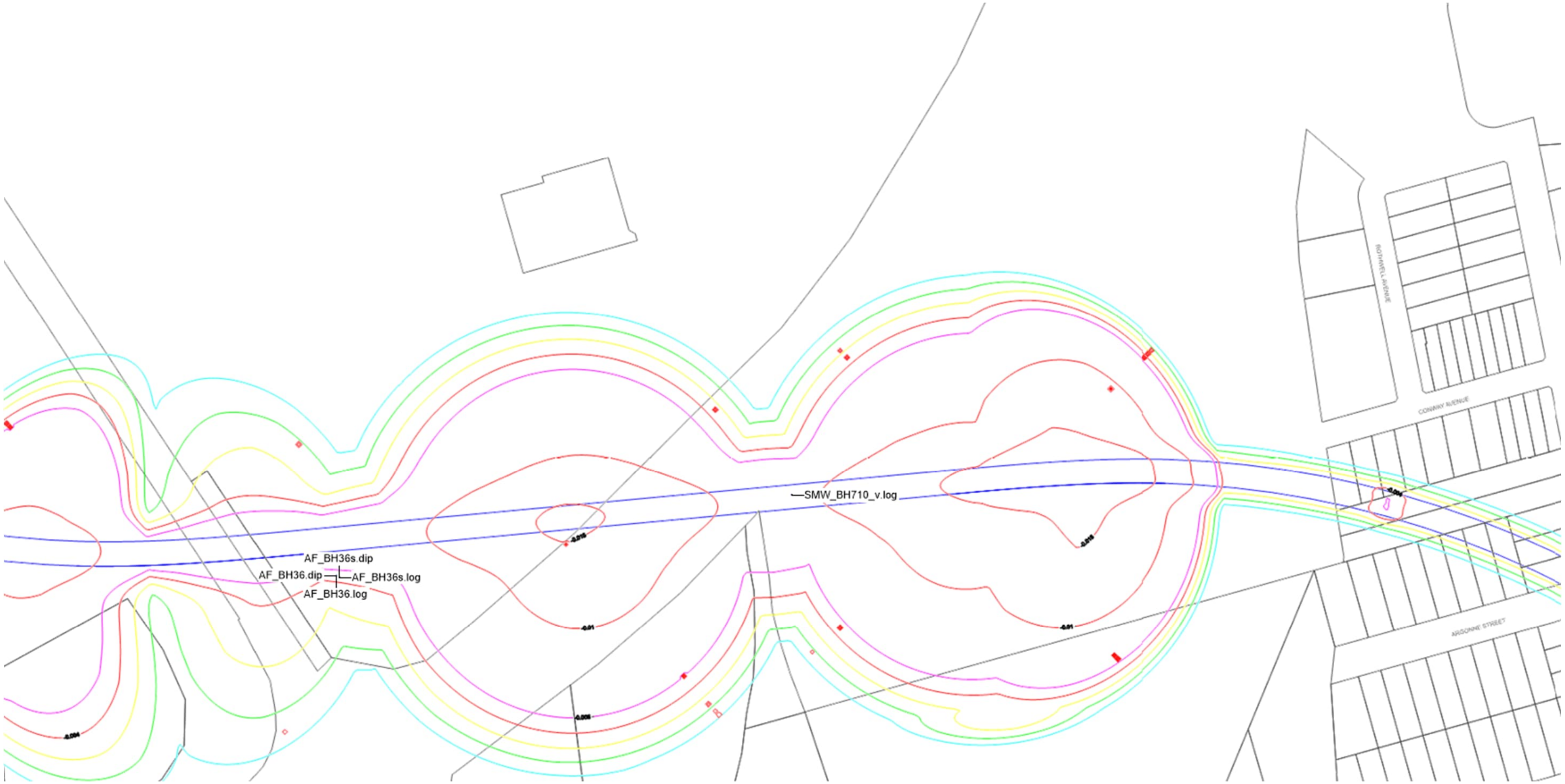
North Strathfield:


AF_BH33_w.log
AF_BH33_w.dip
SMW_BH039.2_v
SMW_BH039.1_v
SMW_BH038_w.log
SMW_BH038_w.dip
SMW_BH035_s.dip
SMW_BH035_w.dip
SMW_BH035_s.log
SMW_BH035_w.log
SMW_BH009_s.log
SMW_BH009_w.log
SMW_BH009_s.dip
SMW_BH009_w.dip
SMW_BH036_v.log

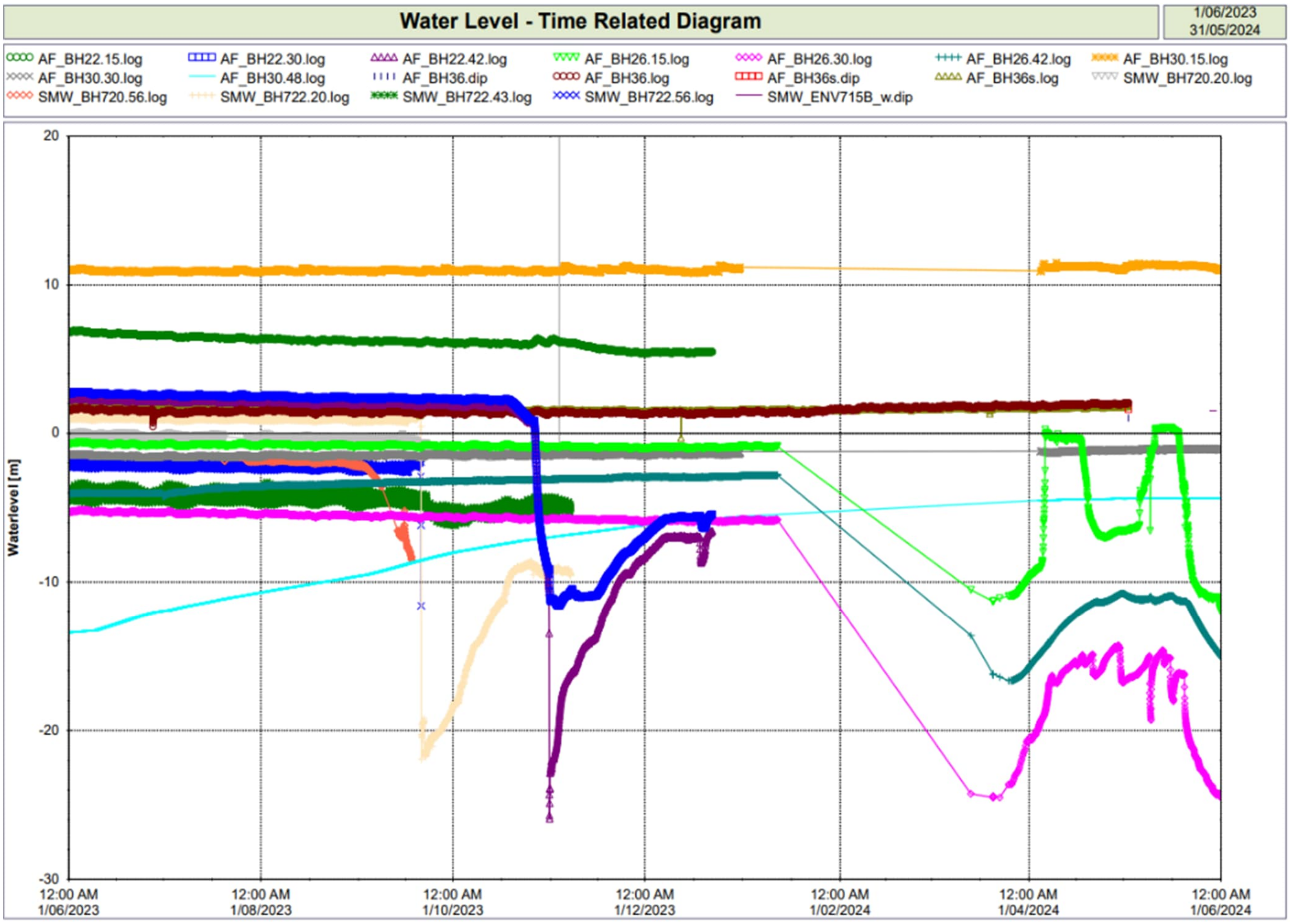
Sydney Olympic Park:

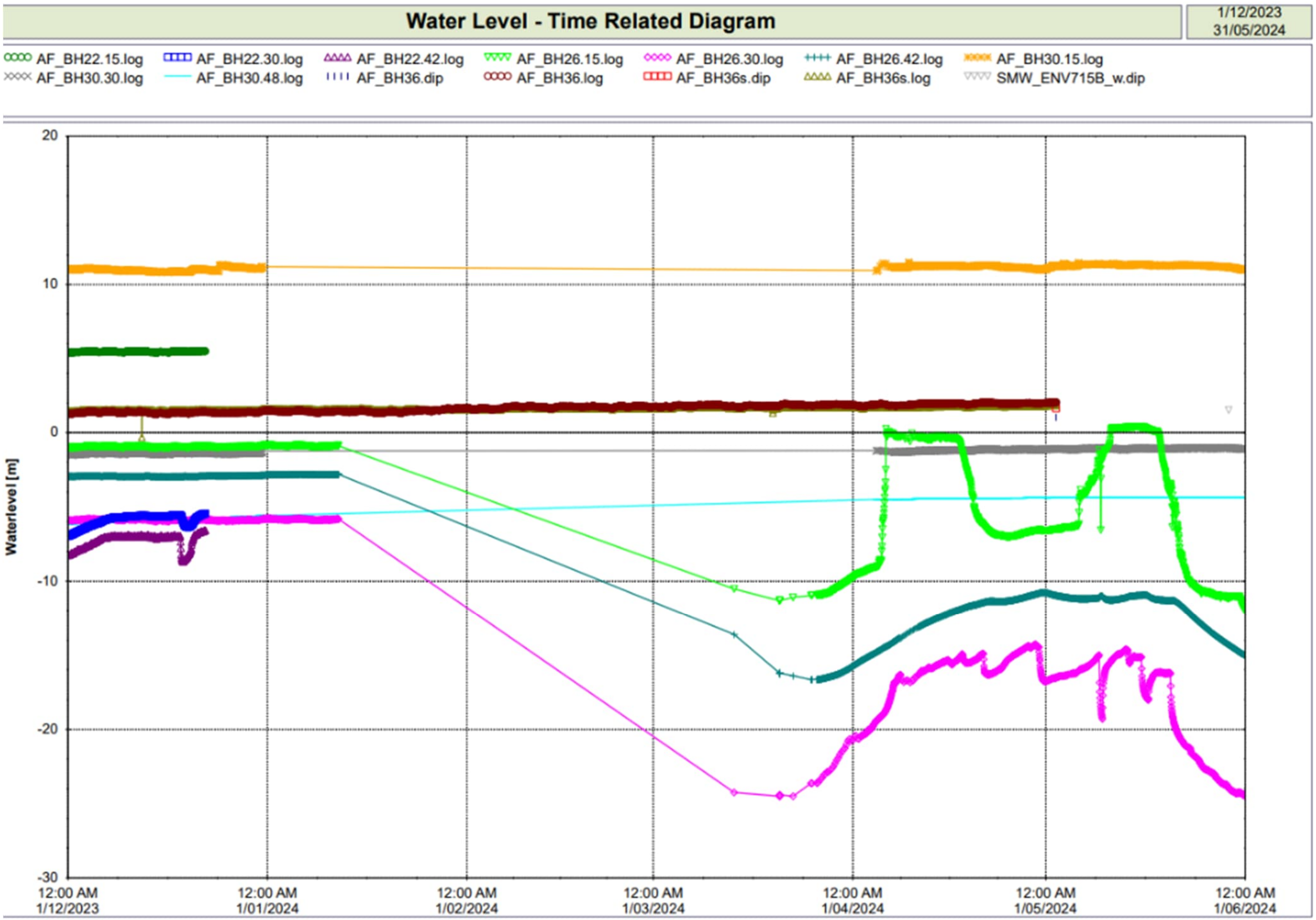

DAWN FRASER AVENUE
SMW_BH120_W.log
SMW_BH120_W.dip
SMW_BH032_S.dip
SMW_BH032_S.log
SMW_BH032_W.dip
SMW_BH032_W.log
AUSTRALIA AVENUE
SMW_BH019_W.log
SMW_BH019_W.dip
OLYMPIC BOULEVARD
SOP_W1.log
SOP_W1.dip
SMW_ENV714_W.log
SMW_ENV714_W.dip

SOP_W1.log
SOP_W1.dip
SMW_ENV714_W.dip
AF_BH38s.dip
AF_BH38.log
AF_BH38s.log
AF_BH38.dip
SMW_BH126_w.log
SMW_BH126_w.dip
AF_BH37.log
AF_BH37s.log
AF_BH37.dip
AF_BH37s.dip
SMW_ENV715B_w.log
SMW_ENV715B_w.dip
SMW_BH069_w.dip
SMW_BH069_w.log
AF_BH36s.dip
AF_BH36.dip
AF_BH36s.log
AF_BH36.log

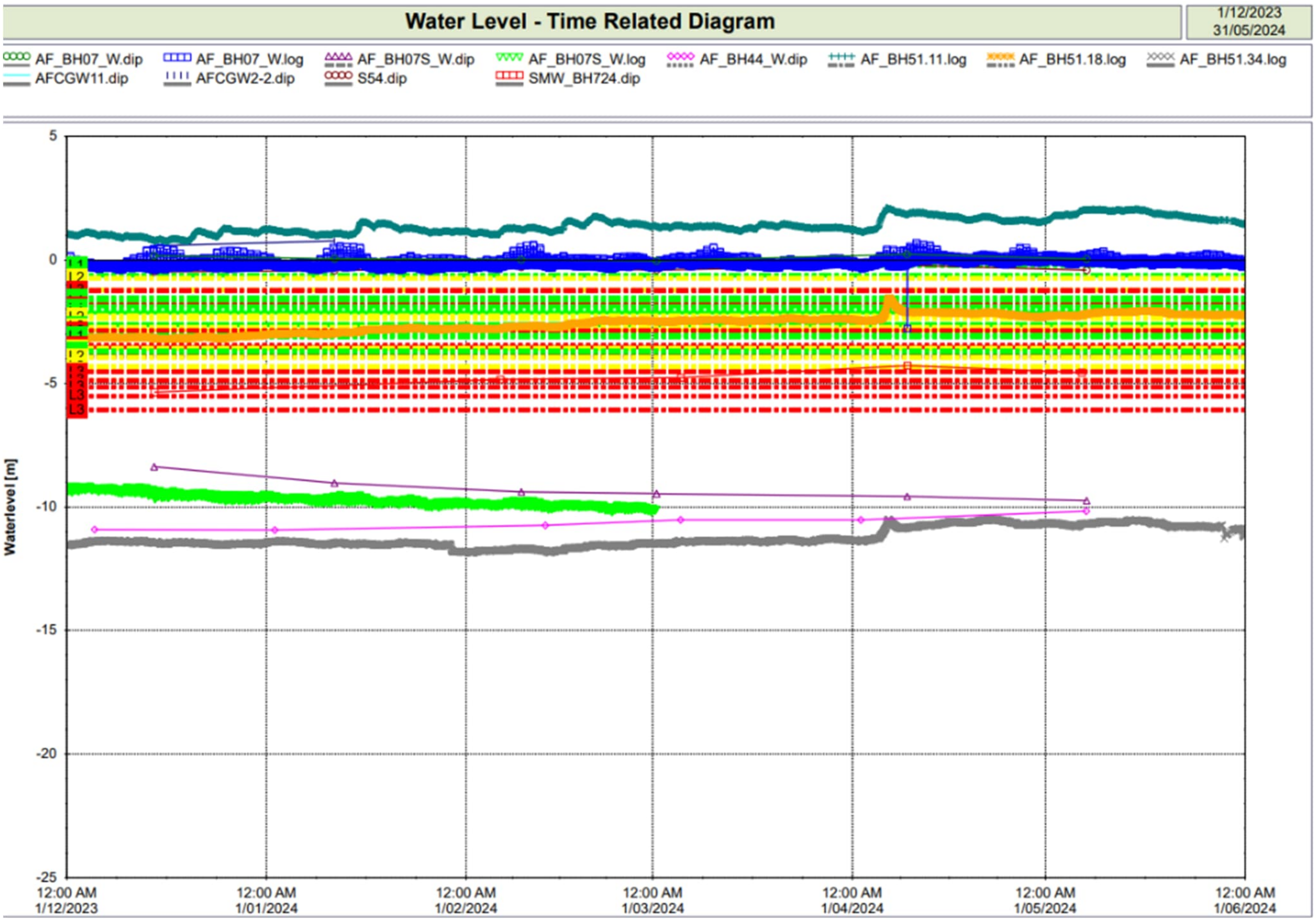

AF_BH36s.dip
AF_BH36.dip
AF_BH36s.log
AF_BH36.log
SMW_BH710_v.log
-0.01
-0.01
ROTHWELL AVENUE
CONWAY AVENUE
ARGONNE STREET

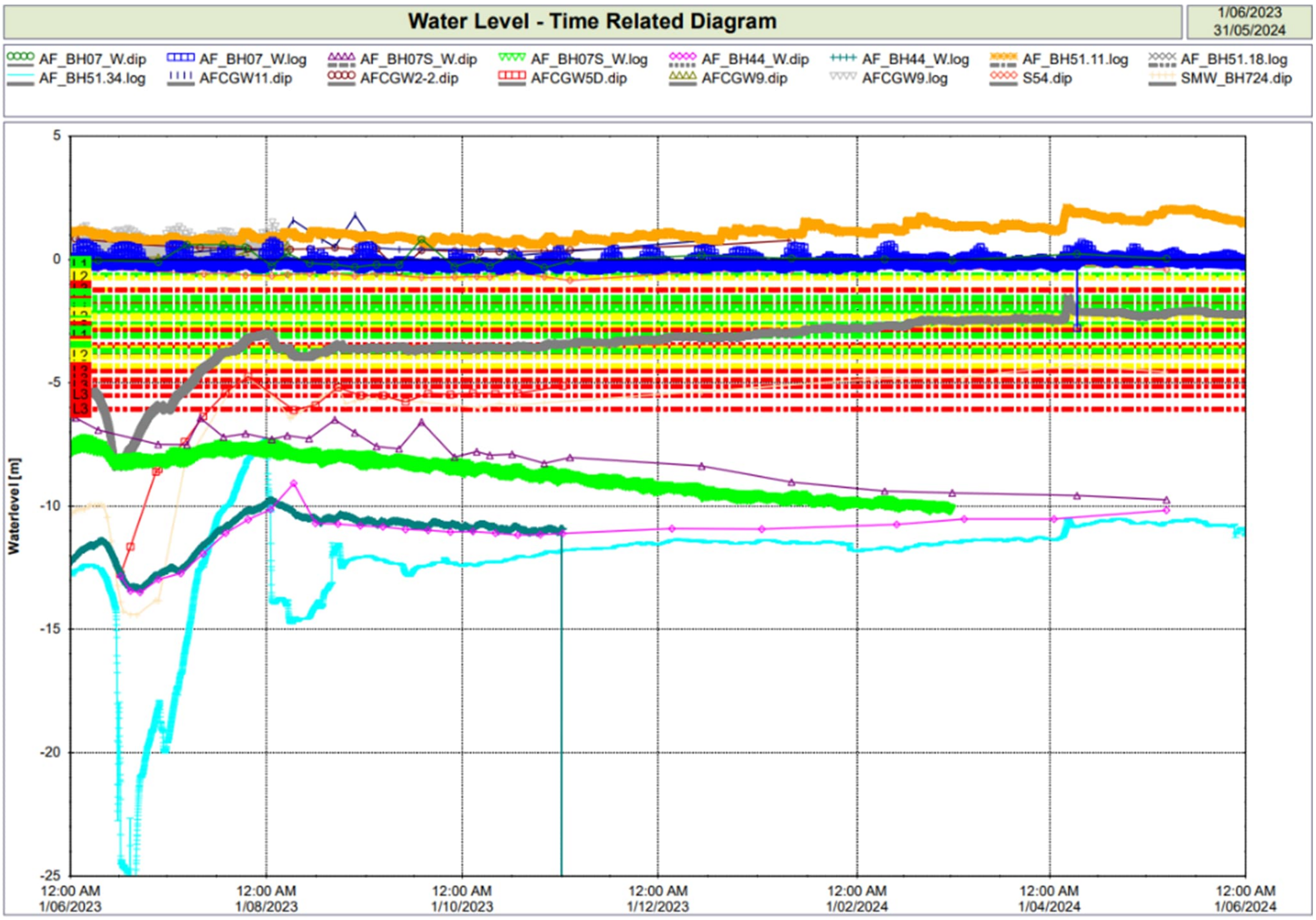
TBM Alignment:



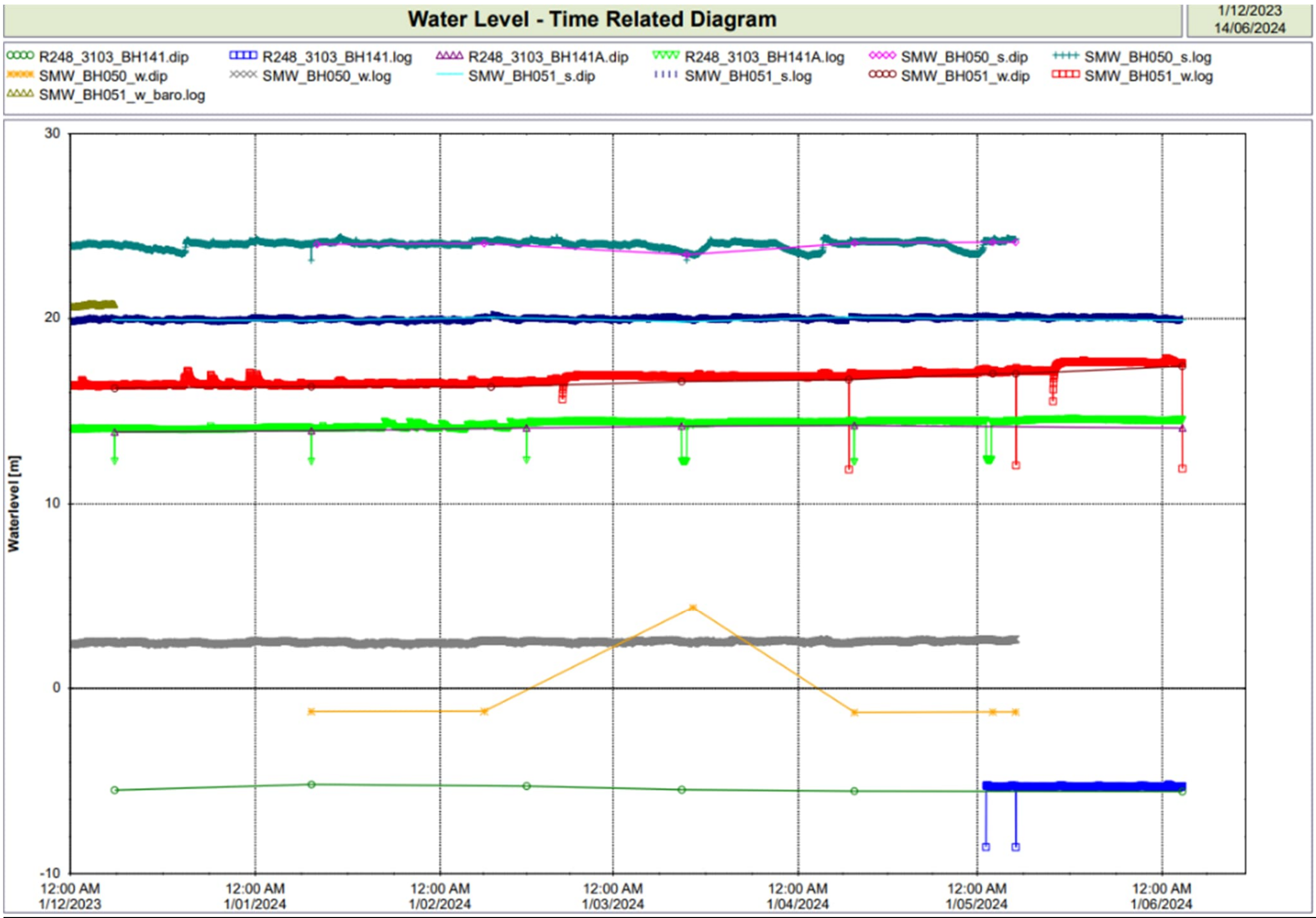


Water Level - Time Related Diagram
1/12/2023
31/05/2024
AF_BH22.15.log
AF_BH22.30.log
AF_BH22.42.log
AF_BH26.15.log
AF_BH26.30.log
AF_BH26.42.log
AF_BH30.15.log
AF_BH30.30.log
AF_BH30.48.log
AF_BH36.dip
AF_BH36.log
AF_BH36s.dip
AF_BH36s.log
SMW_ENV715B_w.dip
Waterlevel [m]
20
10
0
-10
-20
-30
12:00 AM 1/12/2023
12:00 AM 1/01/2024
12:00 AM 1/02/2024
12:00 AM 1/03/2024
12:00 AM 1/04/2024
12:00 AM 1/05/2024
12:00 AM 1/06/2024

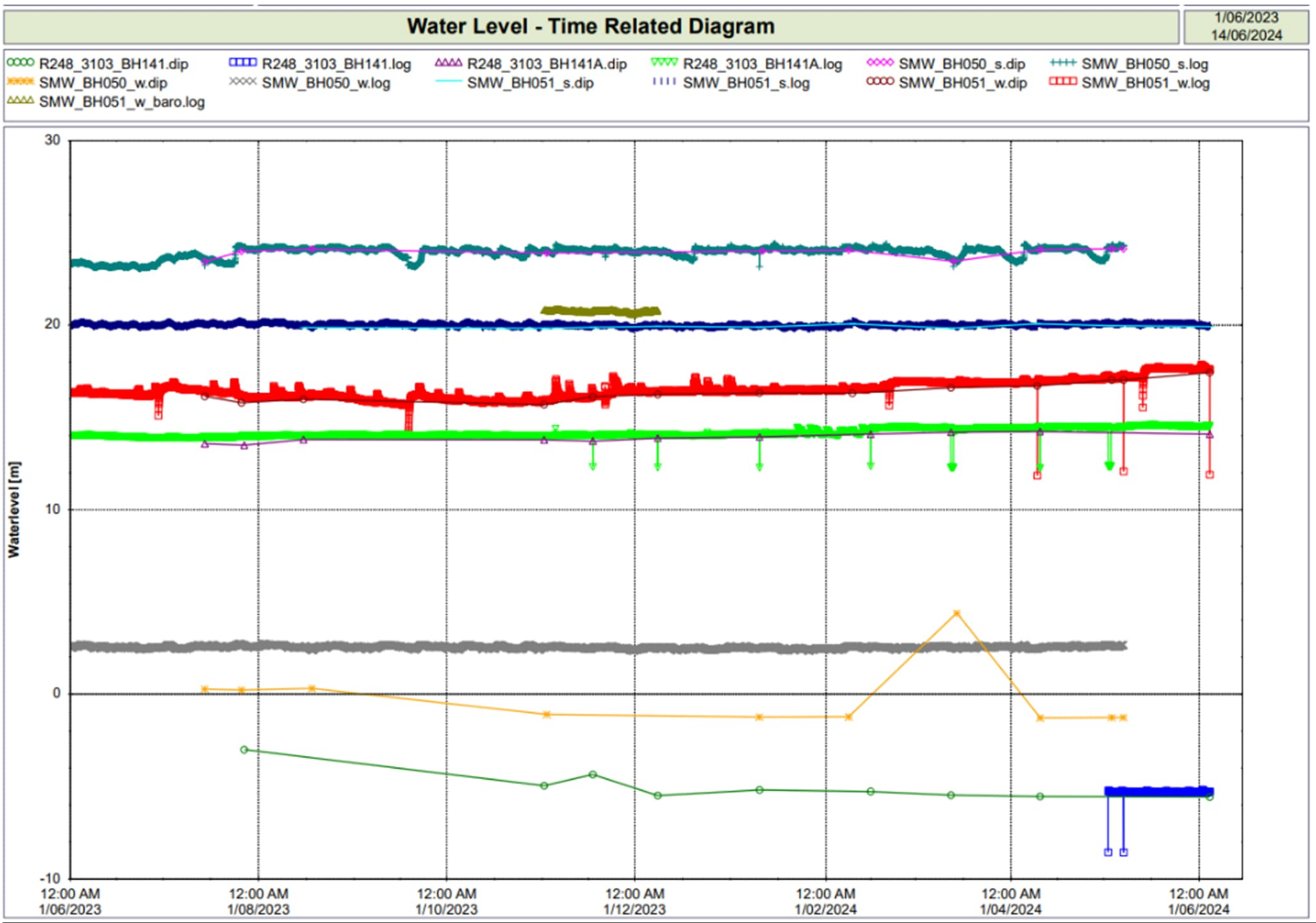

Water Level - Time Related Diagram
1/12/2023
31/05/2024
AF_BH07_W.dip
AF_BH07_W.log
AF_BH07S_W.dip
AF_BH07S_W.log
AF_BH44_W.dip
AF_BH51.11.log
AF_BH51.18.log
AF_BH51.34.log
AFCGW11.dip
AFCGW2-2.dip
S54.dip
SMW_BH724.dip
Waterlevel [m]
5
0
-5
-10
-15
-20
-25
12:00 AM 1/12/2023
12:00 AM 1/01/2024
12:00 AM 1/02/2024
12:00 AM 1/03/2024
12:00 AM 1/04/2024
12:00 AM 1/05/2024
12:00 AM 1/06/2024


Water Level - Time Related Diagram
1/06/2023
31/05/2024
AF_BH07_W.dip
AF_BH07_W.log
AF_BH07S_W.dip
AF_BH07S_W.log
AF_BH44_W.dip
AF_BH44_W.log
AF_BH51.11.log
AF_BH51.18.log
AF_BH51.34.log
AFCGW11.dip
AFCGW2-2.dip
AFCGW5D.dip
AFCGW9.dip
AFCGW9.log
S54.dip
SMW_BH724.dip
Waterlevel [m]
5
0
-5
-10
-15
-20
-25
12:00 AM 1/06/2023
12:00 AM 1/08/2023
12:00 AM 1/10/2023
12:00 AM 1/12/2023
12:00 AM 1/02/2024
12:00 AM 1/04/2024
12:00 AM 1/06/2024

Five Dock:

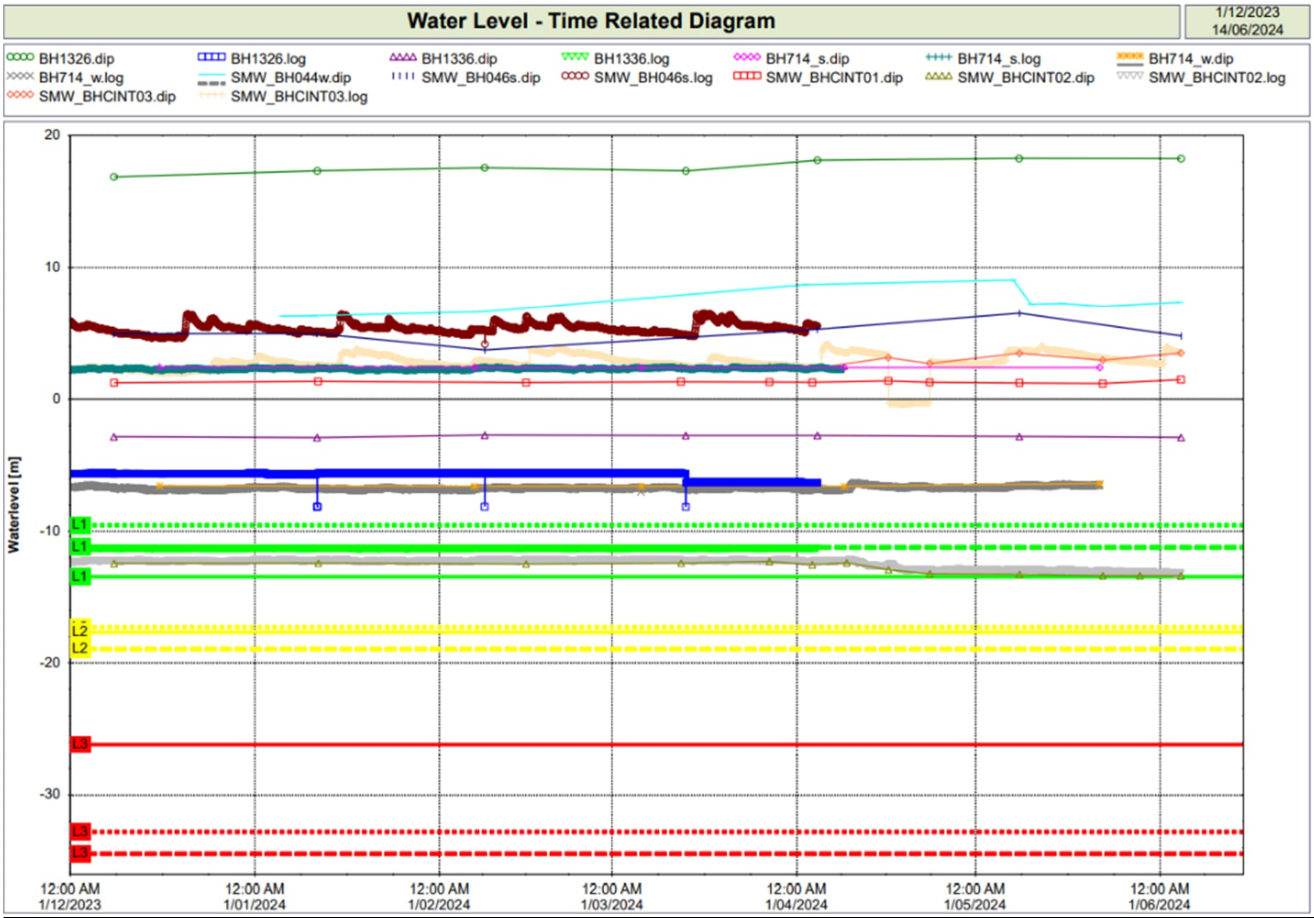


Water Level - Time Related Diagram
1/12/2023
14/06/2024
R248_3103_BH141.dip
R248_3103_BH141.log
R248_3103_BH141A.dip
R248_3103_BH141A.log
SMW_BH050_s.dip
SMW_BH050_s.log
SMW_BH050_w.dip
SMW_BH050_w.log
SMW_BH051_s.dip
SMW_BH051_s.log
SMW_BH051_w.dip
SMW_BH051_w.log
SMW_BH051_w_baro.log
Waterlevel [m]
30
20
10
0
-10
12:00 AM 1/12/2023
12:00 AM 1/01/2024
12:00 AM 1/02/2024
12:00 AM 1/03/2024
12:00 AM 1/04/2024
12:00 AM 1/05/2024
12:00 AM 1/06/2024

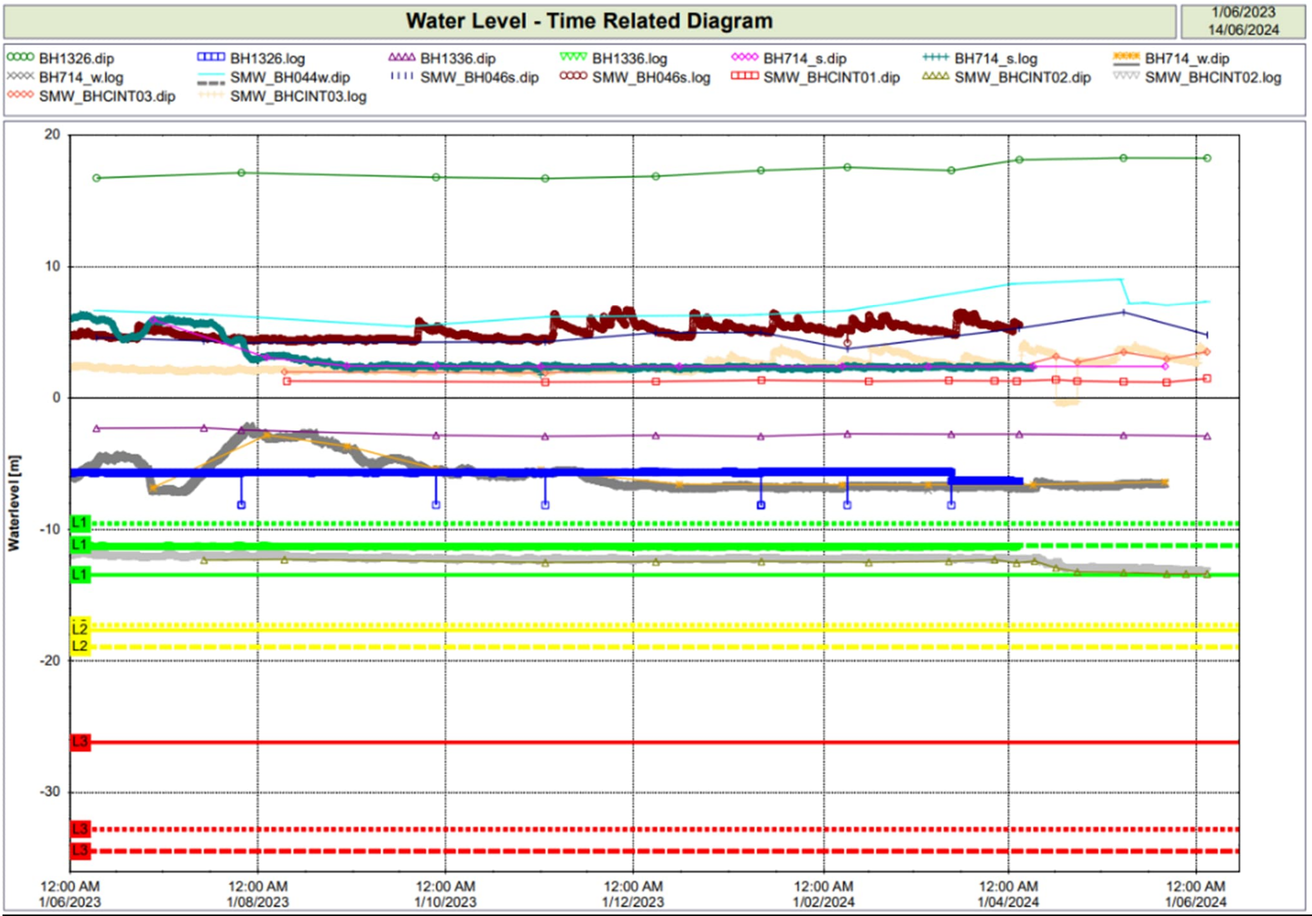


Water Level - Time Related Diagram
1/06/2023
14/06/2024
R248_3103_BH141.dip
R248_3103_BH141.log
R248_3103_BH141A.dip
R248_3103_BH141A.log
SMW_BH050_s.dip
SMW_BH050_s.log
SMW_BH050_w.dip
SMW_BH050_w.log
SMW_BH051_s.dip
SMW_BH051_s.log
SMW_BH051_w.dip
SMW_BH051_w.log
SMW_BH051_w_baro.log
Waterlevel [m]
30
20
10
0
-10
12:00 AM 1/06/2023
12:00 AM 1/08/2023
12:00 AM 1/10/2023
12:00 AM 1/12/2023
12:00 AM 1/02/2024
12:00 AM 1/04/2024
12:00 AM 1/06/2024

<u>Burwood:</u>

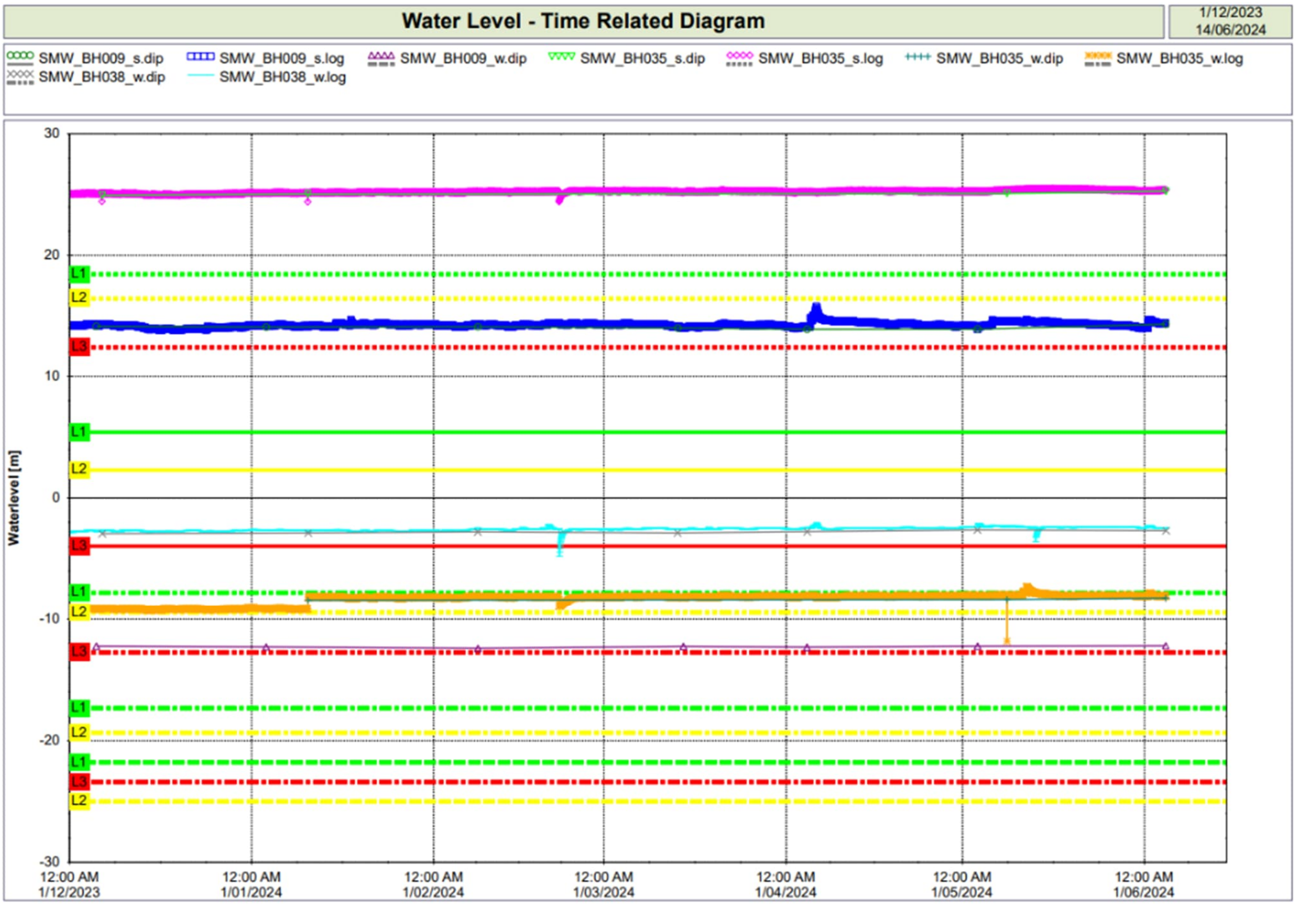


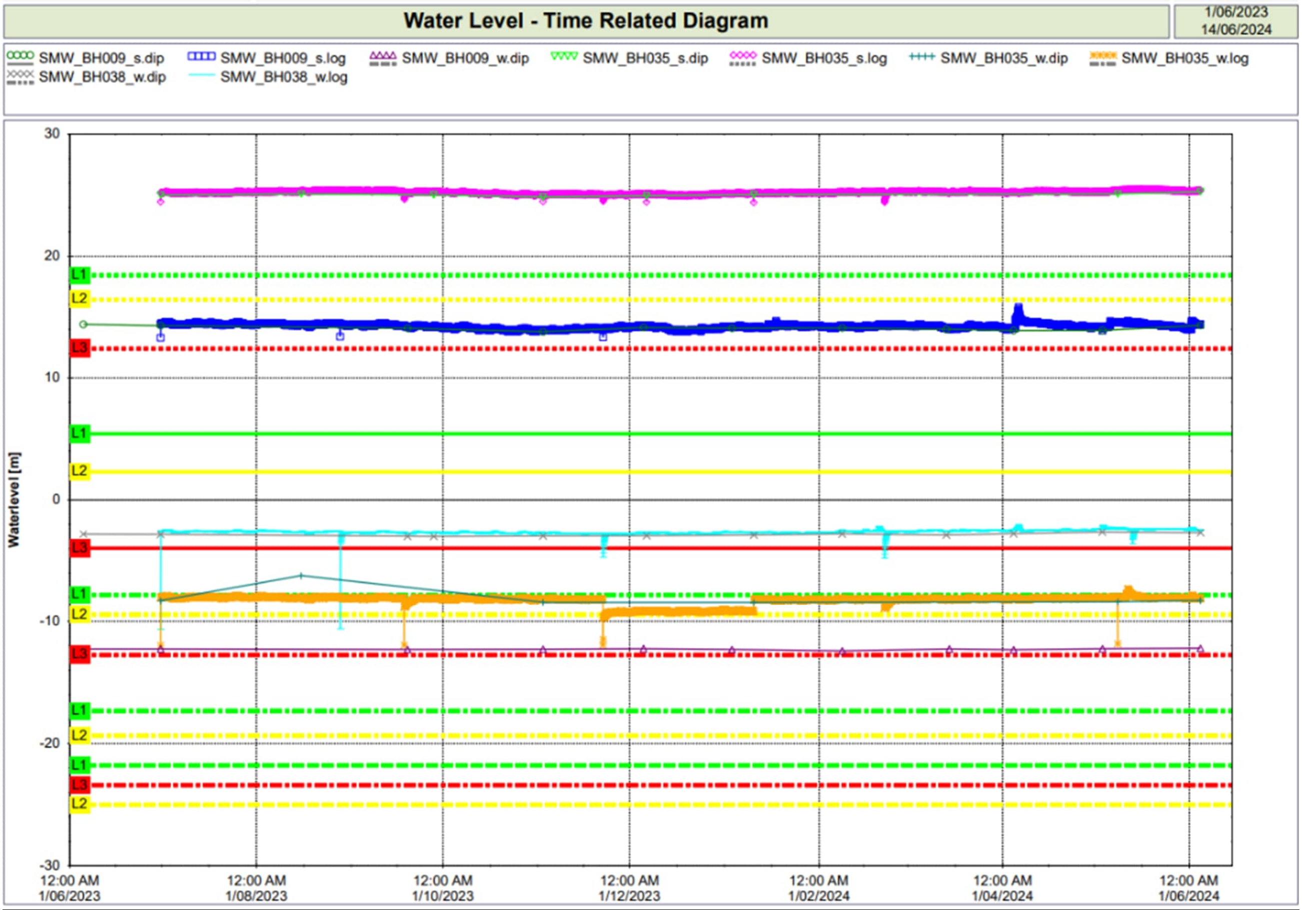
Water Level - Time Related Diagram
1/12/2023
14/06/2024
BH1326.dip
BH1326.log
BH1336.dip
BH1336.log
BH714_s.dip
BH714_s.log
BH714_w.dip
BH714_w.log
SMW_BH044w.dip
SMW_BH046s.dip
SMW_BH046s.log
SMW_BHCINT01.dip
SMW_BHCINT02.dip
SMW_BHCINT02.log
SMW_BHCINT03.dip
SMW_BHCINT03.log
Waterlevel [m]
20
10
0
-10
-20
-30
L1
L1
L1
L2
L2
L3
L3
L3
12:00 AM 1/12/2023
12:00 AM 1/01/2024
12:00 AM 1/02/2024
12:00 AM 1/03/2024
12:00 AM 1/04/2024
12:00 AM 1/05/2024
12:00 AM 1/06/2024



Water Level - Time Related Diagram
1/06/2023
14/06/2024
BH1326.dip
BH1326.log
BH1336.dip
BH1336.log
BH714_s.dip
BH714_s.log
BH714_w.dip
BH714_w.log
SMW_BH044w.dip
SMW_BH046s.dip
SMW_BH046s.log
SMW_BHCINT01.dip
SMW_BHCINT02.dip
SMW_BHCINT02.log
SMW_BHCINT03.dip
SMW_BHCINT03.log
Waterlevel [m]
20
10
0
-10
-20
-30
L1
L2
L3
12:00 AM 1/06/2023
12:00 AM 1/08/2023
12:00 AM 1/10/2023
12:00 AM 1/12/2023
12:00 AM 1/02/2024
12:00 AM 1/04/2024
12:00 AM 1/06/2024

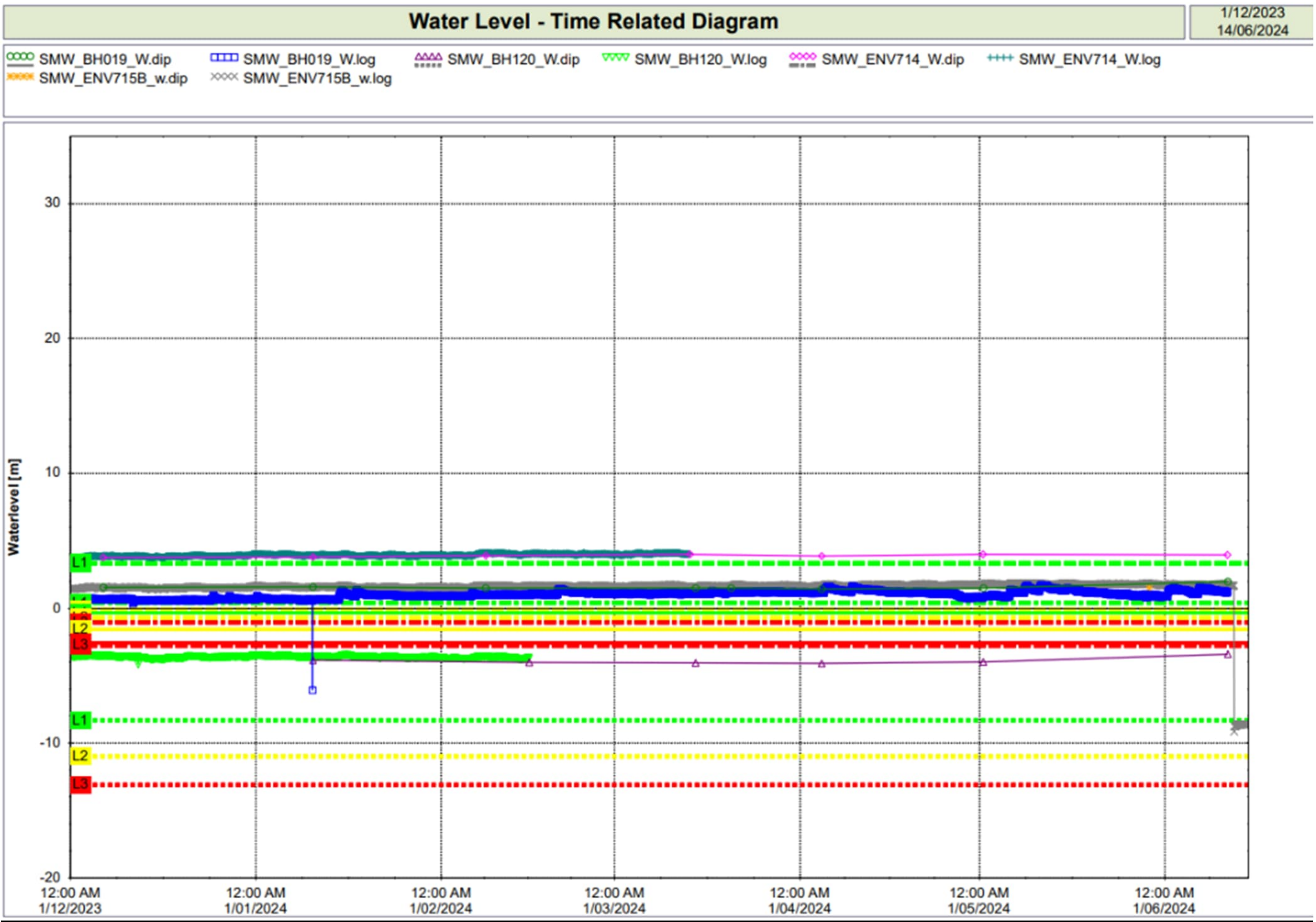
North Strathfield:

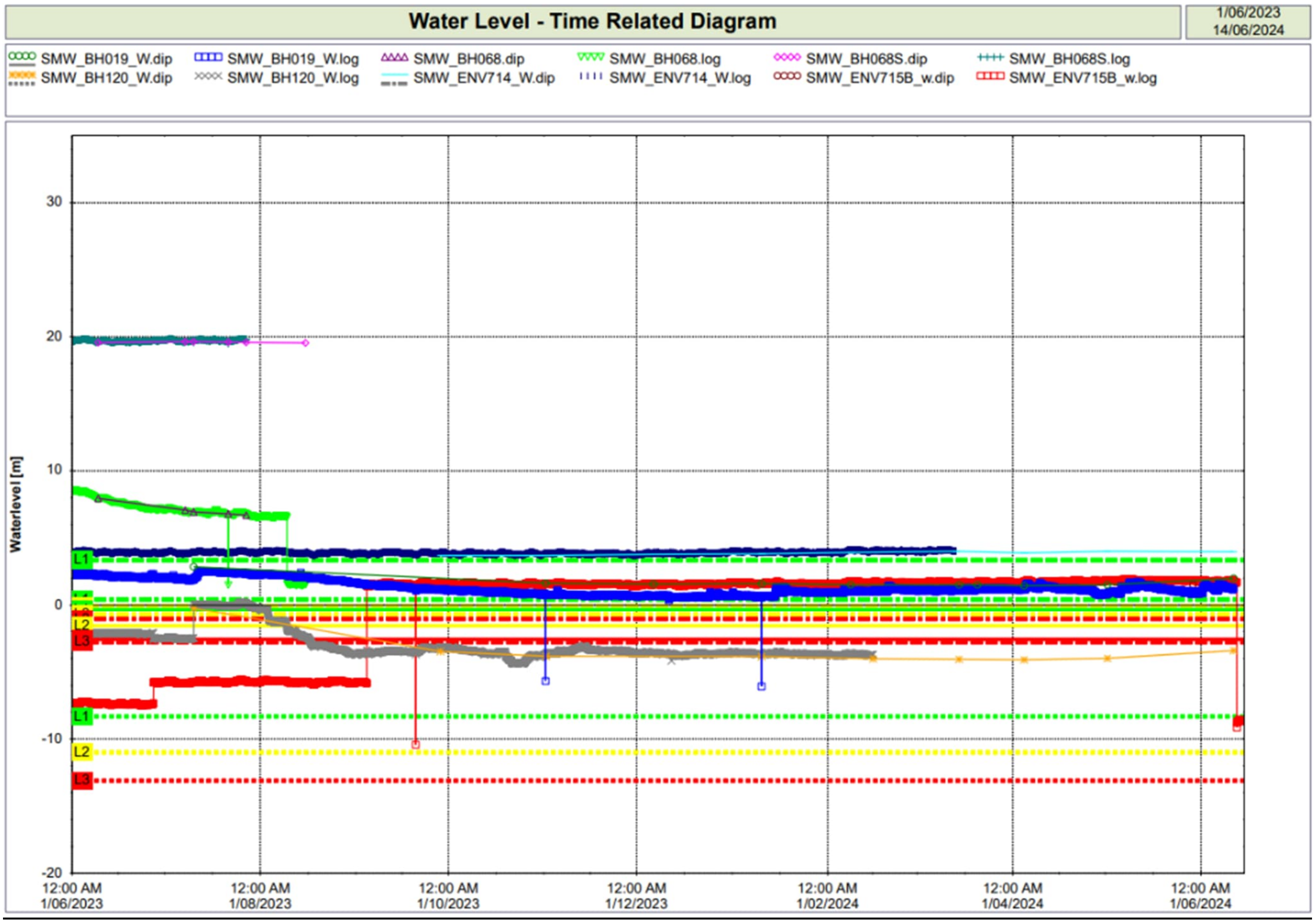




Water Level - Time Related Diagram
1/06/2023
14/06/2024
SMW_BH009_s.dip
SMW_BH009_s.log
SMW_BH009_w.dip
SMW_BH035_s.dip
SMW_BH035_s.log
SMW_BH035_w.dip
SMW_BH035_w.log
SMW_BH038_w.dip
SMW_BH038_w.log
Waterlevel [m]
30
20
10
0
-10
-20
-30
L1
L2
L3
12:00 AM 1/06/2023
12:00 AM 1/08/2023
12:00 AM 1/10/2023
12:00 AM 1/12/2023
12:00 AM 1/02/2024
12:00 AM 1/04/2024
12:00 AM 1/06/2024

Sydney Olympic Park:




Water Level - Time Related Diagram
1/06/2023
14/06/2024
SMW_BH019_W.dip
SMW_BH019_W.log
SMW_BH068.dip
SMW_BH068.log
SMW_BH068S.dip
SMW_BH068S.log
SMW_BH120_W.dip
SMW_BH120_W.log
SMW_ENV714_W.dip
SMW_ENV714_W.log
SMW_ENV715B_w.dip
SMW_ENV715B_w.log
Waterlevel [m]
30
20
10
0
-10
-20
L1
L2
L3
12:00 AM 1/06/2023
12:00 AM 1/08/2023
12:00 AM 1/10/2023
12:00 AM 1/12/2023
12:00 AM 1/02/2024
12:00 AM 1/04/2024
12:00 AM 1/06/2024

Site	Sydney Olympic Park									
Month			Mar-24	Jun-24	Mar-24	Jun-24	Mar-24	Jun-24	Mar-24	Jun-24
Borehole numbers	Trigger values	Unit	SMW_BH120		SMW_BH126		AF_BH36		SMW_BH019	
Calcium - Dissolved	499.2	mg/L	200	310	33	11	1	0.6	12	10
Potassium - Dissolved	504	mg/L	56	70	410	4	8.3	5.6	14	5.6
Sodium - Dissolved	4032	mg/L	3500	4800	2100	6.3	430	360	140	12
Magnesium - Dissolved	568.8	mg/L	460	680	70	1	8.3	4	8.2	2
Hardness	2760	mgCaCO3/L	2400	3600	370	34	38	18	63	34
Hydroxide Alkalinity (OH-) as CaCO3	50	mg/L	<5	<5	<5	<5	<5	<5	<5	<5
Bicarbonate Alkalinity as CaCO3	1800	mg/L	680	660	1800	44	78	32	110	50
Carbonate Alkalinity as CaCO3	50	mg/L	<5	<5	<5	<5	<5	<5	<5	<5
Total Alkalinity as CaCO3	1800	mg/L	680	660	1800	44	78	32	110	50
Sulphate, SO4	660	mg/L	470	550	6	4	380	210	10	5
Chloride, Cl	8100	mg/L	5300	6100	3100	10	300	310	170	13
Ionic Balance	22.8	%	7	18	-7	-9	4	9	5	-4
Ammonia (as N in water)	348	mg/L	0.73	0.91	270	0.13	0.014	0.01	0.66	0.062
Nitrate as N in water	3.72	mg/L	0.59	0.6	0.05	0.2	0.15	0.23	<0.005	0.26
Total Nitrogen in water	372	mg/L	1.4	1.7	320	0.8	0.6	0.6	3.2	2.1
Dichlorodifluoromethane	100	µg/L	<10	<10	<10	<10	<10	<10	<10	<10
Chloromethane	100	µg/L	<10	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	10	µg/L	<10	<10	<10	<10	<10	<10	<10	<10
Bromomethane	10	µg/L	<10	<10	<10	<10	<10	<10	<10	<10
Chloroethane	100	µg/L	<10	<10	<10	<10	<10	<10	<10	<10
Trichlorofluoromethane	100	µg/L	<10	<10	<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Cis-1,2-dichloroethene	3.6	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
2,2-dichloropropane	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloropropene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Cyclohexane	15.6	µg/L	<1	<1	3	<1	<1	<1	<1	<1
Carbon tetrachloride	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Benzene	76.8	µg/L	<1	<1	12	<1	<1	<1	<1	<1
Dibromomethane	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	3.6	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,3-dichloropropane	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromoethane	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	42	µg/L	<1	<1	10	1	<1	<1	<1	<1
Ethylbenzene	2.4	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	2.4	µg/L	<2	<2	<2	<2	<2	<2	<2	<2
Styrene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
o-xylene	1.2	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichloropropane	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene	6	µg/L	<1	<1	1	<1	<1	<1	<1	<1
Bromobenzene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
n-propyl benzene	6	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
2-chlorotoluene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
4-chlorotoluene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Tert-butyl benzene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	2.4	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,3-dichlorobenzene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Sec-butyl benzene	1.2	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
4-isopropyl toluene	10	µg/L	<1	<1	<1	<1	<1	<1	5	<1
1,2-dichlorobenzene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
n-butyl benzene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	1	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	10	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
TRH C6 - C9	264	µg/L	<10	<10	62	<10	62	10	<10	<10
TRH C6 - C10	300	µg/L	<10	<10	73	<10	75	28	<10	<10
TRH C6 - C10 lessBTEX (F1)	216	µg/L	<10	<10	61	<10	62	28	<10	<10
Benzene	76.8	µg/L	<1	<1	12	<1	13	<1	<1	<1
Toluene	3.6	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	2.4	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	2.4	µg/L	<2	<2	<2	<2	<2	<2	<2	<2
o-xylene	1.2	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Naphthalene	28.8	µg/L	<1	<1	4	<1	3	<1	<1	<1
TRH C10 - C14	996	µg/L	<50	<50	510	<50	510	<50	<50	<50
TRH C15 - C28	1800	µg/L	<100	<100	1400	<100	1400	<100	110	<100
TRH C29 - C36	132	µg/L	<100	<100	150	<100	150	<100	<100	<100
Total +ve TRH (C10-C36)	2760	µg/L	<50	<50	2000	<50	2000	<50	110	<50
TRH >C10 - C16	1320	µg/L	<50	<50	690	<50	690	<50	<50	<50
TRH >C10 - C16less Naphthalene (F2)	1320	µg/L	<50	<50	690	<50	690	<50	<50	<50
TRH >C16 - C34	1440	µg/L	<100	<100	1200	130	1200	<100	160	120
TRH >C34 - C40	240	µg/L	<100	<100	<100	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	2760	µg/L	<50	<50	1900	130	1900	<50	160	120
Naphthalene	28.8	µg/L	<0.1	<0.1	0.3	0.6	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	0.12	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	0.12	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	20	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Month			Mar-24	Jun-24	Mar-24	Jun-24	Mar-24	Jun-24	Mar-24	Jun-24
Borehole numbers	Trigger values	Unit	SMW_BH120		SMW_BH126		AF_BH36		SMW_BH019	
Dibenzo(a,h)anthracene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	50	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total +vePAH's	21.6	µg/L	<0.1	<0.1	0.27	0.62	<0.1	<0.1	<0.1	<0.1
Perfluorobutanesulfonic acid	0.264	µg/L	<0.01	<0.01	0.85	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	0.192	µg/L	<0.01	<0.01	0.13	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	0.468	µg/L	<0.01	<0.01	0.22	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	0.012	µg/L	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	0.276	µg/L	<0.01	<0.01	0.23	0.01	<0.01	<0.01	0.01	<0.01
Perfluorodecanesulfonic acid	0.192	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	2.4	µg/L	<0.02	<0.02	1.5	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	0.528	µg/L	<0.02	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	1.068	µg/L	<0.01	<0.01	0.71	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	0.264	µg/L	<0.01	<0.01	0.18	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	0.78	µg/L	<0.01	<0.01	0.46	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	0.12	µg/L	<0.01	<0.01	0.06	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	0.2	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	0.2	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	0.5	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	0.1	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	0.192	µg/L	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	0.2	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	0.2	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	0.5	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamidoethanol	0.5	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamidoethanol	5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf-amid oacetic acid	0.2	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	0.12	µg/L	<0.02	<0.02	0.1	<0.02	<0.02	<0.02	<0.02	<0.02
Total Positive PFHxS & PFOS	0.708	µg/L	<0.01	<0.01	0.45	0.01	<0.01	<0.01	0.01	<0.01
Total Positive PFOA & PFOS	1.032	µg/L	<0.01	<0.01	0.69	0.01	<0.01	<0.01	0.01	<0.01
Total Positive PFAS	5.64	µg/L	<0.01	<0.01	4.5	0.01	<0.01	<0.01	0.01	<0.01
Arsenic-Dissolved	32.4	µg/L	<1	<1	3	<1	<1	<1	3	4
Boron-Dissolved	2280	µg/L	100	100	1600	20	200	280	60	30
Barium-Dissolved	6840	µg/L	56	66	1100	32	9	10	580	16
Beryllium-Dissolved	5	µg/L	<0.5	<0.5	<0.5	<0.5	1	1	<0.5	<0.5
Cadmium-Dissolved	0.12	µg/L	<0.1	0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	19.2	µg/L	<1	<1	19	3	<1	2	<1	2
Copper-Dissolved	13.2	µg/L	<1	2	3	9	3	4	2	8
Cobalt-Dissolved	13.2	µg/L	14	14	9	2	33	16	<1	<1
Mercury-Dissolved	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	357.6	µg/L	290	230	43	14	2000	680	48	25
Molybdenum-Dissolved	74.4	µg/L	<1	12	3	1	<1	<1	<1	<1
Nickel-Dissolved	58.8	µg/L	16	67	29	7	25	12	2	2
Lead-Dissolved	1	µg/L	<1	<1	<1	2	<1	<1	<1	<1
Antimony-Dissolved	4.8	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Selenium-Dissolved	2.4	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Tin-Dissolved	10	µg/L	<1	<1	<1	2	<1	<1	<1	<1
Zinc-Dissolved	216	µg/L	2	16	10	35	67	46	3	31
Iron-Dissolved	6936	µg/L	760	<10	290	580	30	270	480	310
Arsenic-Total	9.6	µg/L	<1	<1	5	1	10	4	5	4
Boron-Total	2040	µg/L	70	100	1800	30	230	230	50	30
Barium-Total	7080	µg/L	71	100	1100	42	140	94	680	24
Beryllium-Total	1.08	µg/L	<0.5	<0.5	<0.5	<0.5	7	4	<0.5	<0.5
Cadmium-Total	0.48	µg/L	<0.1	<0.1	<0.1	<0.1	0.3	0.2	<0.1	<0.1
Chromium-Total	63.6	µg/L	6	5	41	7	31	12	2	3
Copper-Total	49.2	µg/L	24	7	19	19	120	63	12	15
Cobalt-Total	50.4	µg/L	14	16	16	3	70	37	<1	<1
Mercury-Total	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Total	312	µg/L	280	250	85	21	3000	1400	64	53
Molybdenum-Total	74.4	µg/L	2	16	3	1	2	<1	2	<1
Nickel-Total	64.8	µg/L	18	89	36	9	80	35	4	3
Lead-Total	74.4	µg/L	2	<1	16	6	72	37	2	2
Antimony-Total	6	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Selenium-Total	2.4	µg/L	<1	<1	<1	<1	<1	<1	<1	<1
Tin-Total	3.6	µg/L	<1	<1	2	<1	1	<1	<1	<1
Zinc-Total	360	µg/L	12	28	99	54	310	180	41	49
Iron-Total	20400	µg/L	2000	840	7600	1700	52000	17000	1200	890

Site	Tunnel SOP-NS			
Month			May-24	Jun-24
Borehole numbers	Trigger values	Unit	BH_715B	
Calcium - Dissolved	**168**	**mg/L**	210	200
Potassium - Dissolved	**79.2**	**mg/L**	44	69
Sodium - Dissolved	**5040**	**mg/L**	4400	4200
Magnesium - Dissolved	**492**	**mg/L**	590	470
Hardness	**2400**	**mgCaCO3/L**	3000	2500
Hydroxide Alkalinity (OH-) as CaCO3	**50**	**mg/L**	<5	<5
Bicarbonate Alkalinity as CaCO3	**648**	**mg/L**	640	570
Carbonate Alkalinity as CaCO3	**32.4**	**mg/L**	<5	<5
Total Alkalinity as CaCO3	**648**	**mg/L**	640	570
Sulphate, SO4	**660**	**mg/L**	680	900
Chloride, Cl	**7560**	**mg/L**	8400	6700
Ionic Balance	**14.4**	**%**	-2	4
Ammonia (as N in water)	**2.4**	**mg/L**	1.4	0.74
Nitrate as N in water	**2.04**	**mg/L**	<0.005	0.01
Total Nitrogen in water	**3.72**	**mg/L**	1.5	0.9
Dichlorodifluoromethane	**100**	**µg/L**	<10	<10
Chloromethane	**100**	**µg/L**	<10	<10
Vinyl Chloride	**10**	**µg/L**	<10	<10
Bromomethane	**10**	**µg/L**	<10	<10
Chloroethane	**100**	**µg/L**	<10	<10
Trichlorofluoromethane	**100**	**µg/L**	<10	<10
1,1-Dichloroethene	**10**	**µg/L**	<1	<1
Trans-1,2-dichloroethene	**10**	**µg/L**	<1	<1
1,1-dichloroethane	**10**	**µg/L**	<1	<1
Cis-1,2-dichloroethene	**10**	**µg/L**	<1	<1
Bromochloromethane	**10**	**µg/L**	<1	<1
Chloroform	**10**	**µg/L**	<1	<1
2,2-dichloropropane	**10**	**µg/L**	<1	<1
1,2-dichloroethane	**10**	**µg/L**	<1	<1
1,1,1-trichloroethane	**10**	**µg/L**	<1	<1
1,1-dichloropropene	**10**	**µg/L**	<1	<1
Cyclohexane	**10**	**µg/L**	<1	<1
Carbon tetrachloride	**1**	**µg/L**	<1	<1
Benzene	**1**	**µg/L**	<1	<1
Dibromomethane	**10**	**µg/L**	<1	<1
1,2-dichloropropane	**10**	**µg/L**	<1	<1
Trichloroethene	**1**	**µg/L**	<1	<1
Bromodichloromethane	**1**	**µg/L**	<1	<1
trans-1,3-dichloropropene	**10**	**µg/L**	<1	<1
cis-1,3-dichloropropene	**10**	**µg/L**	<1	<1
1,1,2-trichloroethane	**10**	**µg/L**	<1	<1
Toluene	**1.2**	**µg/L**	<1	<1
1,3-dichloropropane	**10**	**µg/L**	<1	<1
Dibromochloromethane	**10**	**µg/L**	<1	<1
1,2-dibromoethane	**10**	**µg/L**	<1	<1
Tetrachloroethene	**10**	**µg/L**	<1	<1
1,1,1,2-tetrachloroethane	**10**	**µg/L**	<1	<1
Chlorobenzene	**10**	**µg/L**	<1	<1
Ethylbenzene	**10**	**µg/L**	<1	<1
Bromoform	**10**	**µg/L**	<1	<1
m+p-xylene	**20**	**µg/L**	<2	<2
Styrene	**10**	**µg/L**	<1	<1
1,1,2,2-tetrachloroethane	**10**	**µg/L**	<1	<1
o-xylene	**10**	**µg/L**	<1	<1
1,2,3-trichloropropane	**10**	**µg/L**	<1	<1
Isopropylbenzene	**10**	**µg/L**	<1	<1
Bromobenzene	**10**	**µg/L**	<1	<1
n-propyl benzene	**10**	**µg/L**	<1	<1
2-chlorotoluene	**10**	**µg/L**	<1	<1
4-chlorotoluene	**10**	**µg/L**	<1	<1
1,3,5-trimethyl benzene	**10**	**µg/L**	<1	<1

Month			May-24	Jun-24
Borehole numbers	Trigger values	Unit	BH_715B	
Tert-butyl benzene	10	µg/L	<1	<1
1,2,4-trimethyl benzene	10	µg/L	<1	<1
1,3-dichlorobenzene	10	µg/L	<1	<1
Sec-butyl benzene	10	µg/L	<1	<1
1,4-dichlorobenzene	10	µg/L	<1	<1
4-isopropyl toluene	10	µg/L	<1	<1
1,2-dichlorobenzene	10	µg/L	<1	<1
n-butyl benzene	10	µg/L	<1	<1
1,2-dibromo-3-chloropropane	1	µg/L	<1	<1
1,2,4-trichlorobenzene	10	µg/L	<1	<1
Hexachlorobutadiene	1	µg/L	<1	<1
1,2,3-trichlorobenzene	10	µg/L	<1	<1
TRH C6 - C9	100	µg/L	<10	<10
TRH C6 - C10	100	µg/L	<10	<10
TRH C6 - C10 lessBTEX (F1)	100	µg/L	<10	<10
Benzene	1	µg/L	<1	<1
Toluene	1.2	µg/L	<1	<1
Ethylbenzene	10	µg/L	<1	<1
m+p-xylene	20	µg/L	<2	<2
o-xylene	10	µg/L	<1	<1
Naphthalene	10	µg/L	<1	<1
TRH C10 - C14	216	µg/L	<50	<50
TRH C15 - C28	180	µg/L	<100	<100
TRH C29 - C36	1000	µg/L	<100	<100
Total +ve TRH (C10-C36)	396	µg/L	<50	<50
TRH >C10 - C16	228	µg/L	<50	<50
TRH >C10 - C16less Naphthalene (F2)	228	µg/L	<50	<50
TRH >C16 - C34	168	µg/L	<100	<100
TRH >C34 - C40	1000	µg/L	<100	<100
Total +ve TRH (>C10-C40)	384	µg/L	<50	<50
Naphthalene	10	µg/L	<0.1	<0.1
Acenaphthylene	10	µg/L	<0.1	<0.1
Acenaphthene	10	µg/L	<0.1	<0.1
Fluorene	10	µg/L	<0.1	<0.1
Phenanthrene	1	µg/L	<0.1	<0.1
Anthracene	1	µg/L	<0.1	<0.1
Fluoranthene	1	µg/L	<0.1	<0.1
Pyrene	10	µg/L	<0.1	<0.1
Benzo(a)anthracene	10	µg/L	<0.1	<0.1
Chrysene	10	µg/L	<0.1	<0.1
Benzo(b,j+k)fluoranthene	20	µg/L	<0.1	<0.2
Benzo(a)pyrene	1	µg/L	<0.2	<0.1
Indeno(1,2,3-c,d)pyrene	10	µg/L	<0.1	<0.1
Dibenzo(a,h)anthracene	10	µg/L	<0.1	<0.1
Benzo(g,h,i)perylene	10	µg/L	<0.1	<0.1
Benzo(a)pyrene TEQ	50	µg/L	<0.1	<0.5
Total +vePAH's	10	µg/L	<0.5	<0.1
Perfluorobutanesulfonic acid	0.024	µg/L	<0.1	<0.01
Perfluoropentanesulfonic acid	0.1	µg/L	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	0.024	µg/L	<0.01	<0.01
Perfluoroheptanesulfonic acid	0.1	µg/L	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	0.1	µg/L	<0.01	<0.01
Perfluorodecanesulfonic acid	0.2	µg/L	<0.01	<0.02
Perfluorobutanoic acid	0.2	µg/L	<0.02	<0.02
Perfluoropentanoic acid	0.2	µg/L	<0.02	<0.02
Perfluorohexanoic acid	0.012	µg/L	<0.02	<0.01
Perfluoroheptanoic acid	0.1	µg/L	<0.01	<0.01
Perfluorooctanoic acid PFOA	0.1	µg/L	<0.01	<0.01
Perfluorononanoic acid	0.1	µg/L	<0.01	<0.01
Perfluorodecanoic acid	0.2	µg/L	<0.01	<0.02
Perfluoroundecanoic acid	0.2	µg/L	<0.02	<0.02
Perfluorododecanoic acid	0.5	µg/L	<0.02	<0.05

Month			May-24	Jun-24
Borehole numbers	Trigger values	Unit	BH_715B	
Perfluorotridecanoic acid	**1**	**µg/L**	<0.05	<0.1
Perfluorotetradecanoic acid	**5**	**µg/L**	<0.1	<0.5
4:2 FTS	**0.1**	**µg/L**	<0.5	<0.01
6:2 FTS	**0.1**	**µg/L**	<0.01	<0.01
8:2 FTS	**0.2**	**µg/L**	<0.01	<0.02
10:2 FTS	**0.2**	**µg/L**	<0.02	<0.02
Perfluorooctane sulfonamide	**1**	**µg/L**	<0.02	<0.1
N-Methyl perfluorooctane sulfonamide	**0.5**	**µg/L**	<0.1	<0.05
N-Ethyl perfluorooctanesulfonamide	**1**	**µg/L**	<0.05	<0.1
N-Me perfluorooctanesulfonamidoethanol	**0.5**	**µg/L**	<0.1	<0.05
N-Et perfluorooctanesulfonamidoethanol	**5**	**µg/L**	<0.05	<0.5
MePerfluorooctanesulf-amid oacetic acid	**0.2**	**µg/L**	<0.5	<0.02
EtPerfluorooctanesulf-amid oacetic acid	**0.2**	**µg/L**	<0.02	<0.02
Total Positive PFHxS & PFOS	**0.024**	**µg/L**	<0.01	<0.01
Total Positive PFOA & PFOS	**0.1**	**µg/L**	<0.01	<0.01
Total Positive PFAS	**0.024**	**µg/L**	<0.01	<0.01
Arsenic-Dissolved	**2.4**	**µg/L**	<1	<1
Boron-Dissolved	**408**	**µg/L**	50	210
Barium-Dissolved	**240**	**µg/L**	49	54
Beryllium-Dissolved	**0.84**	**µg/L**	<0.5	<0.5
Cadmium-Dissolved	**0.24**	**µg/L**	<0.1	<0.1
Chromium-Dissolved	**1**	**µg/L**	2	<1
Copper-Dissolved	**7.2**	**µg/L**	<1	<1
Cobalt-Dissolved	**28.8**	**µg/L**	5	35
Mercury-Dissolved	**0.05**	**µg/L**	<0.05	<0.05
Manganese-Dissolved	**1440**	**µg/L**	1200	2100
Molybdenum-Dissolved	**31.2**	**µg/L**	<1	3
Nickel-Dissolved	**168**	**µg/L**	5	10
Lead-Dissolved	**1**	**µg/L**	<1	<1
Antimony-Dissolved	**4.8**	**µg/L**	<1	<1
Selenium-Dissolved	**1**	**µg/L**	<1	<1
Tin-Dissolved	**10**	**µg/L**	<1	<1
Zinc-Dissolved	**132**	**µg/L**	13	10
Iron-Dissolved	**4200**	**µg/L**	1800	320
Arsenic-Total	**14.4**	**µg/L**	1	1
Boron-Total	**408**	**µg/L**	80	230
Barium-Total	**1032**	**µg/L**	130	110
Beryllium-Total	**20.4**	**µg/L**	<0.5	<0.5
Cadmium-Total	**2.04**	**µg/L**	<0.1	<0.1
Chromium-Total	**46.8**	**µg/L**	13	4
Copper-Total	**372**	**µg/L**	12	10
Cobalt-Total	**120**	**µg/L**	22	40
Mercury-Total	**0.6**	**µg/L**	<0.05	<0.05
Manganese-Total	**4560**	**µg/L**	1400	2400
Molybdenum-Total	**30**	**µg/L**	5	5
Nickel-Total	**192**	**µg/L**	21	16
Lead-Total	**204**	**µg/L**	4	1
Antimony-Total	**3.6**	**µg/L**	<1	<1
Selenium-Total	**2.4**	**µg/L**	<1	<1
Tin-Total	**1.2**	**µg/L**	<1	1
Zinc-Total	**1032**	**µg/L**	89	37
Iron-Total	**91200**	**µg/L**	5800	4600

Site			Burwood		
Month			Feb-24	May-24	Feb-24
Borehole numbers	Trigger values	Unit	SMW_BH046R		SMW_BH044
Calcium - Dissolved	**192**	**mg/L**	86	130	20
Potassium - Dissolved	**42**	**mg/L**	30	32	3
Sodium - Dissolved	**2640**	**mg/L**	1600	1500	20
Magnesium - Dissolved	**324**	**mg/L**	210	200	1
Hardness	**1800**	**mgCaCO3/L**	1100	1100	54
Hydroxide Alkalinity (OH-) as CaCO3	**117.6**	**mg/L**	<5	<5	<5
Bicarbonate Alkalinity as CaCO3	**636**	**mg/L**	630	650	52
Carbonate Alkalinity as CaCO3	**50**	**mg/L**	<5	<5	<5
Total Alkalinity as CaCO3	**834**	**mg/L**	630	650	52
Sulphate, SO4	**648**	**mg/L**	390	500	14
Chloride, Cl	**4800**	**mg/L**	2300	2800	24
Ionic Balance	**10.596**	**%**	3	-6	0
Ammonia (as N in water)	**0.552**	**mg/L**	0.24	0.31	<0.005
Nitrate as N in water	**0.756**	**mg/L**	0.096	0.45	0.67
Total Nitrogen in water	**1.44**	**mg/L**	0.9	0.9	1
Dichlorodifluoromethane	**100**	**µg/L**	<10	<10	<10
Chloromethane	**100**	**µg/L**	<10	<10	<10
Vinyl Chloride	**10**	**µg/L**	<10	<10	<10
Bromomethane	**10**	**µg/L**	<10	<10	<10
Chloroethane	**100**	**µg/L**	<10	<10	<10
Trichlorofluoromethane	**100**	**µg/L**	<10	<10	<10
1,1-Dichloroethene	**10**	**µg/L**	<1	<1	<1
Trans-1,2-dichloroethene	**10**	**µg/L**	<1	<1	<1
1,1-dichloroethane	**10**	**µg/L**	<1	<1	<1
Cis-1,2-dichloroethene	**10**	**µg/L**	<1	<1	<1
Bromochloromethane	**10**	**µg/L**	<1	<1	<1
Chloroform	**1.2**	**µg/L**	<1	<1	<1
2,2-dichloropropane	**10**	**µg/L**	<1	<1	<1
1,2-dichloroethane	**10**	**µg/L**	<1	<1	<1
1,1,1-trichloroethane	**10**	**µg/L**	<1	<1	<1
1,1-dichloropropene	**10**	**µg/L**	<1	<1	<1
Cyclohexane	**10**	**µg/L**	<1	<1	<1
Carbon tetrachloride	**1**	**µg/L**	<1	<1	<1
Benzene	**1**	**µg/L**	<1	<1	<1
Dibromomethane	**10**	**µg/L**	<1	<1	<1
1,2-dichloropropane	**10**	**µg/L**	<1	<1	<1
Trichloroethene	**1**	**µg/L**	<1	<1	<1
Bromodichloromethane	**1**	**µg/L**	<1	<1	<1
trans-1,3-dichloropropene	**10**	**µg/L**	<1	<1	<1
cis-1,3-dichloropropene	**10**	**µg/L**	<1	<1	<1
1,1,2-trichloroethane	**10**	**µg/L**	<1	<1	<1
Toluene	**10**	**µg/L**	<1	<1	<1
1,3-dichloropropane	**10**	**µg/L**	<1	<1	<1
Dibromochloromethane	**10**	**µg/L**	<1	<1	<1
1,2-dibromoethane	**10**	**µg/L**	<1	<1	<1
Tetrachloroethene	**10**	**µg/L**	<1	<1	<1
1,1,1,2-tetrachloroethane	**10**	**µg/L**	<1	<1	<1
Chlorobenzene	**10**	**µg/L**	<1	<1	<1
Ethylbenzene	**10**	**µg/L**	<1	<1	<1
Bromoform	**10**	**µg/L**	<1	<1	<1
m+p-xylene	**20**	**µg/L**	<2	<2	<2
Styrene	**10**	**µg/L**	<1	<1	<1
1,1,2,2-tetrachloroethane	**10**	**µg/L**	<1	<1	<1
o-xylene	**10**	**µg/L**	<1	<1	<1
1,2,3-trichloropropane	**10**	**µg/L**	<1	<1	<1
Isopropylbenzene	**10**	**µg/L**	<1	<1	<1
Bromobenzene	**10**	**µg/L**	<1	<1	<1
n-propyl benzene	**10**	**µg/L**	<1	<1	<1
2-chlorotoluene	**10**	**µg/L**	<1	<1	<1
4-chlorotoluene	**10**	**µg/L**	<1	<1	<1
1,3,5-trimethyl benzene	**10**	**µg/L**	<1	<1	<1

Month			Feb-24	May-24	Feb-24
Borehole numbers	Trigger values	Unit	SMW_BH046R		SMW_BH044
Tert-butyl benzene	**10**	**µg/L**	<1	<1	<1
1,2,4-trimethyl benzene	**10**	**µg/L**	<1	<1	<1
1,3-dichlorobenzene	**10**	**µg/L**	<1	<1	<1
Sec-butyl benzene	**10**	**µg/L**	<1	<1	<1
1,4-dichlorobenzene	**10**	**µg/L**	<1	<1	<1
4-isopropyl toluene	**10**	**µg/L**	<1	<1	<1
1,2-dichlorobenzene	**10**	**µg/L**	<1	<1	<1
n-butyl benzene	**10**	**µg/L**	<1	<1	<1
1,2-dibromo-3-chloropropane	**1**	**µg/L**	<1	<1	<1
1,2,4-trichlorobenzene	**10**	**µg/L**	<1	<1	<1
Hexachlorobutadiene	**1**	**µg/L**	<1	<1	<1
1,2,3-trichlorobenzene	**10**	**µg/L**	<1	<1	<1
TRH C6 - C9	**100**	**µg/L**	<10	<10	<10
TRH C6 - C10	**100**	**µg/L**	<10	<10	<10
TRH C6 - C10 lessBTEX (F1)	**100**	**µg/L**	<10	<10	<10
Benzene	**1**	**µg/L**	<1	<1	<1
Toluene	**10**	**µg/L**	<1	<1	<1
Ethylbenzene	**10**	**µg/L**	<1	<1	<1
m+p-xylene	**20**	**µg/L**	<2	<2	<2
o-xylene	**10**	**µg/L**	<1	<1	<1
Naphthalene	**10**	**µg/L**	<1	<1	<1
TRH C10 - C14	**500**	**µg/L**	<50	<50	<50
TRH C15 - C28	**516**	**µg/L**	<100	<100	110
TRH C29 - C36	**1000**	**µg/L**	<100	<100	<100
Total +ve TRH (C10-C36)	**864**	**µg/L**	<50	<50	110
TRH >C10 - C16	**684**	**µg/L**	<50	<50	<50
TRH >C10 - C16less Naphthalene (F2)	**684**	**µg/L**	<50	<50	<50
TRH >C16 - C34	**228**	**µg/L**	<100	<100	190
TRH >C34 - C40	**1000**	**µg/L**	<100	<100	<100
Total +ve TRH (>C10-C40)	**912**	**µg/L**	<50	<50	190
Naphthalene	**10**	**µg/L**	0.2	<0.1	0.1
Acenaphthylene	**10**	**µg/L**	<0.1	<0.1	0.8
Acenaphthene	**10**	**µg/L**	<0.1	<0.1	<0.1
Fluorene	**10**	**µg/L**	<0.1	<0.1	<0.1
Phenanthrene	**1**	**µg/L**	<0.1	<0.1	0.4
Anthracene	**1**	**µg/L**	<0.1	<0.1	0.4
Fluoranthene	**1**	**µg/L**	<0.1	<0.1	2
Pyrene	**10**	**µg/L**	<0.1	<0.1	2.1
Benzo(a)anthracene	**10**	**µg/L**	<0.1	<0.1	1.6
Chrysene	**10**	**µg/L**	<0.1	<0.1	1.1
Benzo(b,j+k)fluoranthene	**20**	**µg/L**	<0.2	<0.2	4.5
Benzo(a)pyrene	**1**	**µg/L**	<0.1	<0.1	3.4
Indeno(1,2,3-c,d)pyrene	**10**	**µg/L**	<0.1	<0.1	2.1
Dibenzo(a,h)anthracene	**10**	**µg/L**	<0.1	<0.1	0.7
Benzo(g,h,i)perylene	**10**	**µg/L**	<0.1	<0.1	2.2
Benzo(a)pyrene TEQ	**50**	**µg/L**	<0.5	<0.5	5
Total +vePAH's	**10**	**µg/L**	0.16	<0.1	22
Perfluorobutanesulfonic acid	**0.1**	**µg/L**	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	**0.1**	**µg/L**	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	**0.1**	**µg/L**	<0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	**0.1**	**µg/L**	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	**0.1**	**µg/L**	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	**0.2**	**µg/L**	<0.02	<0.02	<0.02
Perfluorobutanoic acid	**0.2**	**µg/L**	<0.02	<0.02	<0.02
Perfluoropentanoic acid	**0.2**	**µg/L**	<0.02	<0.02	<0.02
Perfluorohexanoic acid	**0.1**	**µg/L**	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	**0.1**	**µg/L**	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	**0.1**	**µg/L**	<0.01	<0.01	<0.01
Perfluorononanoic acid	**0.1**	**µg/L**	<0.01	<0.01	<0.01
Perfluorodecanoic acid	**0.2**	**µg/L**	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	**0.2**	**µg/L**	<0.02	<0.02	<0.02
Perfluorododecanoic acid	**0.5**	**µg/L**	<0.05	<0.05	<0.05

Month			Feb-24	May-24	Feb-24
Borehole numbers	Trigger values	Unit	SMW_BH046R		SMW_BH044
Perfluorotridecanoic acid	**1**	**µg/L**	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	**5**	**µg/L**	<0.5	<0.5	<0.5
4:2 FTS	**0.1**	**µg/L**	<0.01	<0.01	<0.01
6:2 FTS	**0.36**	**µg/L**	<0.01	<0.01	<0.01
8:2 FTS	**0.2**	**µg/L**	<0.02	<0.02	<0.02
10:2 FTS	**0.2**	**µg/L**	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	**1**	**µg/L**	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	**0.5**	**µg/L**	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	**1**	**µg/L**	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamidoethanol	**0.5**	**µg/L**	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamidoethanol	**5**	**µg/L**	<0.5	<0.5	<0.5
MePerfluorooctanesulf-amid oacetic acid	**0.2**	**µg/L**	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	**0.2**	**µg/L**	<0.02	<0.02	<0.02
Total Positive PFHxS & PFOS	**0.1**	**µg/L**	<0.01	<0.01	<0.01
Total Positive PFOA & PFOS	**0.1**	**µg/L**	<0.01	<0.01	<0.01
Total Positive PFAS	**0.36**	**µg/L**	<0.01	<0.01	<0.01
Arsenic-Dissolved	**20.4**	**µg/L**	4	<1	2
Boron-Dissolved	**120**	**µg/L**	50	70	<20
Barium-Dissolved	**43.2**	**µg/L**	33	34	15
Beryllium-Dissolved	**5**	**µg/L**	<0.5	<0.5	<0.5
Cadmium-Dissolved	**0.48**	**µg/L**	<0.1	<0.1	<0.1
Chromium-Dissolved	**1**	**µg/L**	<1	<1	<1
Copper-Dissolved	**39.6**	**µg/L**	1	140	7
Cobalt-Dissolved	**1.2**	**µg/L**	3	35	<1
Mercury-Dissolved	**0.05**	**µg/L**	<0.05	<0.05	<0.05
Manganese-Dissolved	**1092**	**µg/L**	740	610	<5
Molybdenum-Dissolved	**6**	**µg/L**	3	15	1
Nickel-Dissolved	**33.6**	**µg/L**	8	69	<1
Lead-Dissolved	**1**	**µg/L**	<1	<1	<1
Antimony-Dissolved	**3.6**	**µg/L**	<1	<1	1
Selenium-Dissolved	**1**	**µg/L**	<1	1	<1
Tin-Dissolved	**1.2**	**µg/L**	<1	<1	<1
Zinc-Dissolved	**18**	**µg/L**	10	38	9
Iron-Dissolved	**2400**	**µg/L**	140	<10	20
Arsenic-Total	**10.8**	**µg/L**	39	14	<1
Boron-Total	**108**	**µg/L**	70	70	20
Barium-Total	**192**	**µg/L**	71	110	23
Beryllium-Total	**1.2**	**µg/L**	4	1	<0.5
Cadmium-Total	**0.12**	**µg/L**	0.3	0.1	<0.1
Chromium-Total	**19.2**	**µg/L**	11	7	4
Copper-Total	**348**	**µg/L**	65	280	14
Cobalt-Total	**7.2**	**µg/L**	33	54	<1
Mercury-Total	**0.05**	**µg/L**	<0.05	<0.05	<0.05
Manganese-Total	**1200**	**µg/L**	920	680	25
Molybdenum-Total	**6**	**µg/L**	4	19	1
Nickel-Total	**31.2**	**µg/L**	49	96	4
Lead-Total	**10.8**	**µg/L**	38	11	3
Antimony-Total	**3.6**	**µg/L**	<1	1	1
Selenium-Total	**1**	**µg/L**	1	2	<1
Tin-Total	**7.2**	**µg/L**	<1	<1	1
Zinc-Total	**103.2**	**µg/L**	130	120	34
Iron-Total	**13200**	**µg/L**	22000	8700	850

Site			Five Dock			
Month			Feb-24	May-24	Feb-24	May-24
Borehole numbers	Trigger values	Unit	SMW_BH051		SMW_BH050s	
Calcium - Dissolved	**92.4**	**mg/L**	21	16	53	56
Potassium - Dissolved	**24**	**mg/L**	10	12	6.7	6.8
Sodium - Dissolved	**1356**	**mg/L**	430	490	31	24
Magnesium - Dissolved	**55920**	**mg/L**	30	38	2	3
Hardness	**600**	**mgCaCO3/L**	170	190	140	150
Hydroxide Alkalinity (OH-) as CaCO3	**50**	**mg/L**	<5	<5	<5	<5
Bicarbonate Alkalinity as CaCO3	**930**	**mg/L**	110	98	190	270
Carbonate Alkalinity as CaCO3	**50**	**mg/L**	<5	<5	<5	<5
Total Alkalinity as CaCO3	**930**	**mg/L**	110	98	190	270
Sulphate, SO4	**576**	**mg/L**	160	210	13	12
Chloride, Cl	**2160**	**mg/L**	550	840	10	12
Ionic Balance	**7.344**	**%**	3	-8	0	-17
Ammonia (as N in water)	**11.88**	**mg/L**	0.082	0.38	0.057	0.013
Nitrate as N in water	**2.04**	**mg/L**	1.4	0.58	0.077	0.16
Total Nitrogen in water	**12**	**mg/L**	3.1	1.5	0.2	0.2
Dichlorodifluoromethane	**100**	**µg/L**	<10	<10	<10	<10
Chloromethane	**100**	**µg/L**	<10	<10	<10	<10
Vinyl Chloride	**10**	**µg/L**	<10	<10	<10	<10
Bromomethane	**10**	**µg/L**	<10	<10	<10	<10
Chloroethane	**100**	**µg/L**	<10	<10	<10	<10
Trichlorofluoromethane	**100**	**µg/L**	<10	<10	<10	<10
1,1-Dichloroethene	**10**	**µg/L**	<1	<1	<1	<1
Trans-1,2-dichloroethene	**10**	**µg/L**	<1	<1	<1	<1
1,1-dichloroethane	**10**	**µg/L**	<1	<1	<1	<1
Cis-1,2-dichloroethene	**10**	**µg/L**	<1	<1	<1	<1
Bromochloromethane	**10**	**µg/L**	<1	<1	<1	<1
Chloroform	**10**	**µg/L**	<1	<1	<1	<1
2,2-dichloropropane	**10**	**µg/L**	<1	<1	<1	<1
1,2-dichloroethane	**10**	**µg/L**	<1	<1	<1	<1
1,1,1-trichloroethane	**10**	**µg/L**	<1	<1	<1	<1
1,1-dichloropropene	**10**	**µg/L**	<1	<1	<1	<1
Cyclohexane	**10**	**µg/L**	<1	<1	<1	<1
Carbon tetrachloride	**1**	**µg/L**	<1	<1	<1	<1
Benzene	**1**	**µg/L**	<1	<1	<1	<1
Dibromomethane	**10**	**µg/L**	<1	<1	<1	<1
1,2-dichloropropane	**10**	**µg/L**	<1	<1	<1	<1
Trichloroethene	**1**	**µg/L**	<1	<1	<1	<1
Bromodichloromethane	**1**	**µg/L**	<1	<1	<1	<1
trans-1,3-dichloropropene	**10**	**µg/L**	<1	<1	<1	<1
cis-1,3-dichloropropene	**10**	**µg/L**	<1	<1	<1	<1
1,1,2-trichloroethane	**10**	**µg/L**	<1	<1	<1	<1
Toluene	**10**	**µg/L**	<1	<1	<1	<1
1,3-dichloropropane	**10**	**µg/L**	<1	<1	<1	<1
Dibromochloromethane	**10**	**µg/L**	<1	<1	<1	<1
1,2-dibromoethane	**10**	**µg/L**	<1	<1	<1	<1
Tetrachloroethene	**10**	**µg/L**	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	**10**	**µg/L**	<1	<1	<1	<1
Chlorobenzene	**10**	**µg/L**	<1	<1	<1	<1
Ethylbenzene	**10**	**µg/L**	<1	<1	<1	<1
Bromoform	**10**	**µg/L**	<1	<1	<1	<1
m+p-xylene	**20**	**µg/L**	<2	<2	<2	<2
Styrene	**10**	**µg/L**	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	**10**	**µg/L**	<1	<1	<1	<1
o-xylene	**10**	**µg/L**	<1	<1	<1	<1
1,2,3-trichloropropane	**10**	**µg/L**	<1	<1	<1	<1
Isopropylbenzene	**10**	**µg/L**	<1	<1	<1	<1
Bromobenzene	**10**	**µg/L**	<1	<1	<1	<1
n-propyl benzene	**10**	**µg/L**	<1	<1	<1	<1
2-chlorotoluene	**10**	**µg/L**	<1	<1	<1	<1
4-chlorotoluene	**10**	**µg/L**	<1	<1	<1	<1
1,3,5-trimethyl benzene	**10**	**µg/L**	<1	<1	<1	<1
Tert-butyl benzene	**10**	**µg/L**	<1	<1	<1	<1
1,2,4-trimethyl benzene	**10**	**µg/L**	<1	<1	<1	<1
1,3-dichlorobenzene	**10**	**µg/L**	<1	<1	<1	<1
Sec-butyl benzene	**10**	**µg/L**	<1	<1	<1	<1
1,4-dichlorobenzene	**10**	**µg/L**	<1	<1	<1	<1
4-isopropyl toluene	**10**	**µg/L**	<1	<1	<1	<1
1,2-dichlorobenzene	**10**	**µg/L**	<1	<1	<1	<1
n-butyl benzene	**10**	**µg/L**	<1	<1	<1	<1

Month			Feb-24	May-24	Feb-24	May-24
Borehole numbers	Trigger values	Unit	SMW_BH051		SMW_BH050s	
1,2-dibromo-3-chloropropane	1	µg/L	<1	<1	<1	<1
1,2,4-trichlorobenzene	10	µg/L	<1	<1	<1	<1
Hexachlorobutadiene	1	µg/L	<1	<1	<1	<1
1,2,3-trichlorobenzene	10	µg/L	<1	<1	<1	<1
TRH C6 - C9	100	µg/L	<10	<10	<10	<10
TRH C6 - C10	48	µg/L	<10	<10	<10	<10
TRH C6 - C10 lessBTEX (F1)	48	µg/L	<10	<10	<10	<10
Benzene	1	µg/L	<1	<1	<1	<1
Toluene	10	µg/L	<1	<1	<1	<1
Ethylbenzene	10	µg/L	<1	<1	<1	<1
m+p-xylene	20	µg/L	<2	<2	<2	<2
o-xylene	10	µg/L	<1	<1	<1	<1
Naphthalene	10	µg/L	<1	<1	<1	<1
TRH C10 - C14	500	µg/L	<50	<50	<50	<50
TRH C15 - C28	156	µg/L	<100	130	<100	<100
TRH C29 - C36	1000	µg/L	<100	100	<100	<100
Total +ve TRH (C10-C36)	156	µg/L	<50	240	<50	<50
TRH >C10 - C16	500	µg/L	<50	<50	<50	<50
TRH >C10 - C16less Naphthalene (F2)	500	µg/L	<50	<50	<50	<50
TRH >C16 - C34	216	µg/L	110	210	<100	<100
TRH >C34 - C40	1000	µg/L	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	216	µg/L	110	210	<50	<50
Naphthalene	10	µg/L	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	10	µg/L	<0.1	<0.1	<0.1	<0.1
Acenaphthene	10	µg/L	<0.1	<0.1	<0.1	<0.1
Fluorene	10	µg/L	<0.1	<0.1	<0.1	<0.1
Phenanthrene	1	µg/L	<0.1	<0.1	<0.1	<0.1
Anthracene	1	µg/L	<0.1	<0.1	<0.1	<0.1
Fluoranthene	1	µg/L	<0.1	<0.1	<0.1	<0.1
Pyrene	10	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	10	µg/L	<0.1	<0.1	<0.1	<0.1
Chrysene	10	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	20	µg/L	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	1	µg/L	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	10	µg/L	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	10	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	10	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	50	µg/L	<0.5	<0.5	<0.5	<0.5
Total +vePAH's	10	µg/L	<0.1	<0.1	<0.1	<0.1
Perfluorobutanesulfonic acid	0.036	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	0.1	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	0.048	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	0.1	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	0.024	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	0.552	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	0.2	µg/L	<0.02	<0.02	0.03	<0.02
Perfluoropentanoic acid	0.168	µg/L	<0.02	<0.02	0.02	<0.02
Perfluorohexanoic acid	0.18	µg/L	0.03	<0.01	0.01	0.01
Perfluoroheptanoic acid	0.036	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	0.06	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	0.1	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	0.2	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	0.2	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	0.5	µg/L	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	1	µg/L	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	5	µg/L	<0.5	<0.5	<0.5	<0.5
4:2 FTS	0.1	µg/L	<0.01	<0.01	<0.01	<0.01
6:2 FTS	0.156	µg/L	<0.01	<0.01	0.02	<0.01
8:2 FTS	0.2	µg/L	<0.02	<0.02	<0.02	<0.02
10:2 FTS	0.2	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	1	µg/L	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	0.5	µg/L	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	1	µg/L	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamidoethanol	0.5	µg/L	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamidoethanol	5	µg/L	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf-amid oacetic acid	0.2	µg/L	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	0.2	µg/L	<0.02	<0.02	<0.02	<0.02

Month			Feb-24	May-24	Feb-24	May-24
Borehole numbers	Trigger values	Unit	SMW_BH051		SMW_BH050s	
Total Positive PFHxS & PFOS	**0.1**	**µg/L**	<0.01	<0.01	<0.01	<0.01
Total Positive PFOA & PFOS	**0.1**	**µg/L**	<0.01	<0.01	<0.01	<0.01
Total Positive PFAS	**0.552**	**µg/L**	0.02	<0.01	0.1	0.01
Arsenic-Dissolved	**3.6**	**µg/L**	1	<1	1	<1
Boron-Dissolved	**72**	**µg/L**	30	30	100	70
Barium-Dissolved	**82.8**	**µg/L**	18	22	440	370
Beryllium-Dissolved	**5**	**µg/L**	<0.5	<0.5	<0.5	<0.5
Cadmium-Dissolved	**0.12**	**µg/L**	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	**1**	**µg/L**	<1	<1	<1	<1
Copper-Dissolved	**13.2**	**µg/L**	13	10	<1	<1
Cobalt-Dissolved	**156**	**µg/L**	61	76	<1	<1
Mercury-Dissolved	**0.05**	**µg/L**	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	**52800**	**µg/L**	18000	31000	80	6
Molybdenum-Dissolved	**3.6**	**µg/L**	1	<1	1	<1
Nickel-Dissolved	**312**	**µg/L**	36	44	2	<1
Lead-Dissolved	**1**	**µg/L**	<1	<1	<1	<1
Antimony-Dissolved	**1.2**	**µg/L**	<1	<1	<1	<1
Selenium-Dissolved	**1**	**µg/L**	<1	<1	<1	<1
Tin-Dissolved	**10**	**µg/L**	<1	<1	<1	<1
Zinc-Dissolved	**288**	**µg/L**	100	130	12	12
Iron-Dissolved	**1440**	**µg/L**	20	80	<10	<10
Arsenic-Total	**10.8**	**µg/L**	1	<1	3	2
Boron-Total	**84**	**µg/L**	50	50	100	100
Barium-Total	**276**	**µg/L**	42	38	470	530
Beryllium-Total	**3.6**	**µg/L**	<0.5	<0.5	<0.5	<0.5
Cadmium-Total	**1.8**	**µg/L**	0.1	0.2	<0.1	<0.1
Chromium-Total	**60**	**µg/L**	8	3	4	3
Copper-Total	**240**	**µg/L**	25	15	5	8
Cobalt-Total	**300**	**µg/L**	79	160	1	<1
Mercury-Total	**0.096**	**µg/L**	<0.05	<0.05	<0.05	<0.05
Manganese-Total	**84000**	**µg/L**	30000	57000	75	44
Molybdenum-Total	**4.8**	**µg/L**	1	<1	1	1
Nickel-Total	**372**	**µg/L**	46	90	7	3
Lead-Total	**57.6**	**µg/L**	6	3	6	6
Antimony-Total	**2.4**	**µg/L**	<1	<1	1	<1
Selenium-Total	**1**	**µg/L**	<1	<1	<1	<1
Tin-Total	**8.4**	**µg/L**	1	<1	<1	<1
Zinc-Total	**996**	**µg/L**	120	210	29	48
Iron-Total	**15600**	**µg/L**	1900	1600	7900	8500

Site	North Strathfield							
Month			Feb-24	Feb-24	May-24	Feb-24	Feb-24	May-24
Borehole numbers	Trigger values	Unit	SMW_BH035 s	SMW_BH009S		SMW_BH035	SMW_B H038	
Calcium - Dissolved	**681.6**	**mg/L**	34	190	27	470	190	120
Potassium - Dissolved	**54**	**mg/L**	9.8	8.6	4	47	5.6	6.9
Sodium - Dissolved	**3120**	**mg/L**	600	170	66	2600	200	300
Magnesium - Dissolved	**7308**	**mg/L**	50	48	8.1	360	<0.5	<0.5
Hardness	**2520**	**mgCaCO3/L**	290	670	100	2700	460	300
Hydroxide Alkalinity (OH-) as CaCO3	**768**	**mg/L**	<5	<5	<5	<5	170	150
Bicarbonate Alkalinity as CaCO3	**778.8**	**mg/L**	19	81	70	670	<5	<5
Carbonate Alkalinity as CaCO3	**74.4**	**mg/L**	<5	<5	<5	<5	38	43
Total Alkalinity as CaCO3	**840**	**mg/L**	19	81	70	670	210	190
Sulphate, SO4	**600**	**mg/L**	480	730	150	11	160	250
Chloride, Cl	**6948**	**mg/L**	920	73	52	4600	280	480
Ionic Balance	**8.4**	**%**	-6	5	-9	8	8	-8
Ammonia (as N in water)	**1.68**	**mg/L**	0.18	0.12	0.12	2.2	0.095	0.01
Nitrate as N in water	**2.4**	**mg/L**	0.01	0.14	0.3	2.7	0.36	0.33
Total Nitrogen in water	**3.6**	**mg/L**	0.5	0.4	0.7	5.2	1	1
Dichlorodifluoromethane	**100**	**µg/L**	<10	<10	<10	<10	<10	<10
Chloromethane	**100**	**µg/L**	<10	<10	<10	<10	<10	<10
Vinyl Chloride	**10**	**µg/L**	<10	<10	<10	<10	<10	<10
Bromomethane	**10**	**µg/L**	<10	<10	<10	<10	<10	<10
Chloroethane	**100**	**µg/L**	<10	<10	<10	<10	<10	<10
Trichlorofluoromethane	**100**	**µg/L**	<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Cis-1,2-dichloroethene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Bromochloromethane	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Chloroform	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
2,2-dichloropropane	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,1-dichloropropene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Cyclohexane	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	**1**	**µg/L**	<1	<1	<1	<1	<1	<1
Benzene	**1**	**µg/L**	<1	<1	<1	<1	<1	<1
Dibromomethane	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Trichloroethene	**1**	**µg/L**	<1	<1	<1	<1	<1	<1
Bromodichloromethane	**1**	**µg/L**	<1	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Toluene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,3-dichloropropane	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Dibromochloromethane	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,2-dibromoethane	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Tetrachloroethene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Chlorobenzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Ethylbenzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Bromoform	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
m+p-xylene	**20**	**µg/L**	<2	<2	<2	<2	<2	<2
Styrene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
o-xylene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,2,3-trichloropropane	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Isopropylbenzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Bromobenzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
n-propyl benzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
2-chlorotoluene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
4-chlorotoluene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Tert-butyl benzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,3-dichlorobenzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Sec-butyl benzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
4-isopropyl toluene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
n-butyl benzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	**1**	**µg/L**	<1	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	**1**	**µg/L**	<1	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
TRH C6 - C9	**100**	**µg/L**	<10	<10	<10	<10	<10	<10
TRH C6 - C10	**100**	**µg/L**	<10	<10	<10	<10	<10	<10
TRH C6 - C10 lessBTEX (F1)	**100**	**µg/L**	<10	<10	<10	<10	<10	<10
Benzene	**1**	**µg/L**	<1	<1	<1	<1	<1	<1
Toluene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
Ethylbenzene	**10**	**µg/L**	<1	<1	<1	<1	<1	<1
m+p-xylene	**20**	**µg/L**	<2	<2	<2	<2	<2	<2

Month			Feb-24	Feb-24	May-24	Feb-24	Feb-24	May-24
Borehole numbers	Trigger values	Unit	SMW_BH035 s	SMW_BH009S		SMW_BH035	SMW_B H038	
o-xylene	10	µg/L	<1	<1	<1	<1	<1	<1
Naphthalene	10	µg/L	<1	<1	<1	<1	<1	<1
TRH C10 - C14	96	µg/L	<50	<50	<50	<50	<50	<50
TRH C15 - C28	360	µg/L	<100	<100	<100	<100	<100	<100
TRH C29 - C36	516	µg/L	<100	<100	130	<100	<100	<100
Total +ve TRH (C10-C36)	972	µg/L	<50	<50	130	<50	<50	<50
TRH >C10 - C16	76.8	µg/L	<50	<50	<50	<50	<50	<50
TRH >C10 - C16less Naphthalene (F2)	76.8	µg/L	<50	<50	<50	<50	<50	<50
TRH >C16 - C34	684	µg/L	<100	<100	170	<100	<100	<100
TRH >C34 - C40	252	µg/L	<100	<100	120	<100	<100	<100
Total +ve TRH (>C10-C40)	1008	µg/L	<50	<50	290	<50	<50	<50
Naphthalene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	20	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	50	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total +vePAH's	10	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorobutanesulfonic acid	0.06	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	0.1	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	0.036	µg/L	0.02	0.02	0.02	<0.01	<0.01	<0.01
Perfluoroheptanesulfonic acid	0.1	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	0.06	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	1.26	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	0.024	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	0.036	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	0.02
Perfluorohexanoic acid	0.12	µg/L	<0.01	0.02	0.02	<0.01	0.02	0.02
Perfluoroheptanoic acid	0.012	µg/L	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	0.036	µg/L	<0.01	0.02	0.04	<0.01	0.01	0.01
Perfluorononanoic acid	0.1	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	0.2	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	0.2	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	0.5	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4:2 FTS	0.1	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
6:2 FTS	1.188	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
8:2 FTS	0.2	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
10:2 FTS	0.2	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide	1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	0.5	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamidoethanol	0.5	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamidoethanol	5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf-amid oacetic acid	0.2	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	0.2	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Total Positive PFHxS & PFOS	0.072	µg/L	0.02	0.02	0.02	<0.01	<0.01	<0.01
Total Positive PFOA & PFOS	0.06	µg/L	<0.01	0.02	0.04	<0.01	0.01	0.01
Total Positive PFAS	1.26	µg/L	0.02	0.06	0.08	<0.01	0.04	0.05
Arsenic-Dissolved	4.8	µg/L	<1	<1	<1	<1	<1	<1
Boron-Dissolved	120	µg/L	50	100	90	50	<20	20
Barium-Dissolved	3720	µg/L	39	53	52	5000	110	94
Beryllium-Dissolved	5	µg/L	4	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium-Dissolved	0.48	µg/L	0.4	0.7	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	69.6	µg/L	<1	<1	<1	<1	9	10
Copper-Dissolved	9.6	µg/L	12	3	4	2	6	4
Cobalt-Dissolved	114	µg/L	110	390	38	2	<1	<1
Mercury-Dissolved	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	3480	µg/L	5100	13000	2300	230	<5	<5
Molybdenum-Dissolved	50.4	µg/L	<1	<1	<1	<1	7	9
Nickel-Dissolved	126	µg/L	99	180	22	14	<1	<1
Lead-Dissolved	49.2	µg/L	<1	<1	<1	<1	<1	<1
Antimony-Dissolved	2.4	µg/L	<1	<1	<1	<1	2	1
Selenium-Dissolved	1	µg/L	<1	<1	<1	<1	<1	<1
Tin-Dissolved	10	µg/L	<1	<1	<1	<1	<1	<1
Zinc-Dissolved	583.2	µg/L	770	690	120	10	<1	5
Iron-Dissolved	5760	µg/L	40	280	<10	<10	<10	<10
Arsenic-Total	62.4	µg/L	15	14	9	<1	<1	<1

Month			Feb-24	Feb-24	May-24	Feb-24	Feb-24	May-24
Borehole numbers	Trigger values	Unit	SMW_BH035 s	SMW_BH009S		SMW_BH035	SMW_B H038	
Boron-Total	**120**	**µg/L**	30	100	100	50	<20	30
Barium-Total	**11640**	**µg/L**	700	1600	1500	8600	120	120
Beryllium-Total	**37.2**	**µg/L**	33	6	3	<0.5	<0.5	<0.5
Cadmium-Total	**1.632**	**µg/L**	0.7	1.3	0.7	<0.1	<0.1	<0.1
Chromium-Total	**102**	**µg/L**	64	18	14	12	12	14
Copper-Total	**816**	**µg/L**	440	110	99	6	5	10
Cobalt-Total	**336**	**µg/L**	170	440	100	2	<1	<1
Mercury-Total	**1.128**	**µg/L**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Total	**10200**	**µg/L**	8300	18000	4900	230	<5	15
Molybdenum-Total	**58.8**	**µg/L**	<1	2	1	2	9	9
Nickel-Total	**168**	**µg/L**	170	210	44	17	1	3
Lead-Total	**312**	**µg/L**	83	43	36	2	<1	1
Antimony-Total	**2.4**	**µg/L**	<1	<1	<1	<1	1	2
Selenium-Total	**4.8**	**µg/L**	1	<1	<1	<1	<1	<1
Tin-Total	**14.4**	**µg/L**	<1	1	<1	1	<1	<1
Zinc-Total	**1320**	**µg/L**	1600	960	350	18	6	22
Iron-Total	**120000**	**µg/L**	83000	42000	17000	1100	40	500

Site	The Bays					
Month			Jun-24	Mar-24	Jun-24	Jun-24
Borehole numbers	Trigger values	Unit	S_02s	S_02d		S06
Calcium - Dissolved	**564**	**mg/L**	63	28	64	39
Potassium - Dissolved	**540**	**mg/L**	10	17	8.9	7.4
Sodium - Dissolved	**13200**	**mg/L**	79	320	76	16
Magnesium - Dissolved	**1680**	**mg/L**	4	9.8	9	6.1
Hardness	**8400**	**mgCaCO3/L**	180	110	200	120
Hydroxide Alkalinity (OH-) as CaCO3	**50**	**mg/L**	<5	<5	<5	<5
Bicarbonate Alkalinity as CaCO3	**972**	**mg/L**	270	260	140	190
Carbonate Alkalinity as CaCO3	**50**	**mg/L**	<5	<5	<5	<5
Total Alkalinity as CaCO3	**972**	**mg/L**	270	260	140	190
Sulphate, SO4	**3000**	**mg/L**	38	75	36	10
Chloride, Cl	**20400**	**mg/L**	160	300	150	24
Ionic Balance	**16.8**	**%**	-19	4	-2	-16
Ammonia (as N in water)	**6.48**	**mg/L**	0.63	0.33	0.96	0.5
Nitrate as N in water	**1.2**	**mg/L**	0.02	0.13	0.59	0.11
Total Nitrogen in water	**7.44**	**mg/L**	1.1	0.9	1.8	0.9
Dichlorodifluoromethane	**100**	**µg/L**	<10	<10	<10	<10
Chloromethane	**100**	**µg/L**	<10	<10	<10	<10
Vinyl Chloride	**10**	**µg/L**	<10	<10	<10	<10
Bromomethane	**10**	**µg/L**	<10	<10	<10	<10
Chloroethane	**100**	**µg/L**	<10	<10	<10	<10
Trichlorofluoromethane	**100**	**µg/L**	<10	<10	<10	<10
1,1-Dichloroethene	**10**	**µg/L**	<1	<1	<1	<1
Trans-1,2-dichloroethene	**10**	**µg/L**	<1	<1	<1	<1
1,1-dichloroethane	**10**	**µg/L**	<1	<1	<1	<1
Cis-1,2-dichloroethene	**10**	**µg/L**	<1	<1	<1	<1
Bromochloromethane	**10**	**µg/L**	<1	<1	<1	<1
Chloroform	**1.2**	**µg/L**	2	<1	<1	<1
2,2-dichloropropane	**10**	**µg/L**	<1	<1	<1	<1
1,2-dichloroethane	**10**	**µg/L**	<1	<1	<1	<1
1,1,1-trichloroethane	**10**	**µg/L**	<1	<1	<1	<1
1,1-dichloropropene	**10**	**µg/L**	<1	<1	<1	<1
Cyclohexane	**10**	**µg/L**	<1	<1	<1	<1
Carbon tetrachloride	**1**	**µg/L**	<1	<1	<1	<1
Benzene	**1**	**µg/L**	<1	<1	<1	<1
Dibromomethane	**10**	**µg/L**	<1	<1	<1	<1
1,2-dichloropropane	**10**	**µg/L**	<1	<1	<1	<1
Trichloroethene	**1**	**µg/L**	<1	<1	<1	<1
Bromodichloromethane	**1**	**µg/L**	<1	<1	<1	<1
trans-1,3-dichloropropene	**10**	**µg/L**	<1	<1	<1	<1
cis-1,3-dichloropropene	**10**	**µg/L**	<1	<1	<1	<1
1,1,2-trichloroethane	**10**	**µg/L**	<1	<1	<1	<1
Toluene	**10**	**µg/L**	<1	<1	<1	<1
1,3-dichloropropane	**10**	**µg/L**	<1	<1	<1	<1
Dibromochloromethane	**10**	**µg/L**	<1	<1	<1	<1
1,2-dibromoethane	**10**	**µg/L**	<1	<1	<1	<1
Tetrachloroethene	**10**	**µg/L**	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	**10**	**µg/L**	<1	<1	<1	<1
Chlorobenzene	**10**	**µg/L**	<1	<1	<1	<1
Ethylbenzene	**10**	**µg/L**	<1	<1	<1	<1
Bromoform	**10**	**µg/L**	<1	<1	<1	<1
m+p-xylene	**20**	**µg/L**	<2	<2	<2	<2
Styrene	**10**	**µg/L**	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	**10**	**µg/L**	<1	<1	<1	<1
o-xylene	**10**	**µg/L**	<1	<1	<1	<1
1,2,3-trichloropropane	**10**	**µg/L**	<1	<1	<1	<1
Isopropylbenzene	**10**	**µg/L**	<1	<1	<1	<1
Bromobenzene	**10**	**µg/L**	<1	<1	<1	<1
n-propyl benzene	**10**	**µg/L**	<1	<1	<1	<1
2-chlorotoluene	**10**	**µg/L**	<1	<1	<1	<1
4-chlorotoluene	**10**	**µg/L**	<1	<1	<1	<1
1,3,5-trimethyl benzene	**10**	**µg/L**	<1	<1	<1	<1
Tert-butyl benzene	**10**	**µg/L**	<1	<1	<1	<1
1,2,4-trimethyl benzene	**10**	**µg/L**	<1	<1	<1	<1
1,3-dichlorobenzene	**10**	**µg/L**	<1	<1	<1	<1

Month			Jun-24	Mar-24	Jun-24	Jun-24
Borehole numbers	Trigger values	Unit	S_02s	S_02d		S06
Sec-butyl benzene	10	µg/L	<1	<1	<1	<1
1,4-dichlorobenzene	10	µg/L	<1	<1	<1	<1
4-isopropyl toluene	10	µg/L	<1	<1	<1	<1
1,2-dichlorobenzene	10	µg/L	<1	<1	<1	<1
n-butyl benzene	10	µg/L	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	1	µg/L	<1	<1	<1	<1
1,2,4-trichlorobenzene	10	µg/L	<1	<1	<1	<1
Hexachlorobutadiene	1	µg/L	<1	<1	<1	<1
1,2,3-trichlorobenzene	10	µg/L	<1	<1	<1	<1
TRH C6 - C9	68.4	µg/L	<10	<10	<10	<10
TRH C6 - C10	68.4	µg/L	<10	<10	<10	<10
TRH C6 - C10 lessBTEX (F1)	68.4	µg/L	<10	<10	<10	<10
Benzene	1	µg/L	<1	<1	<1	<1
Toluene	10	µg/L	<1	<1	<1	<1
Ethylbenzene	10	µg/L	<1	<1	<1	<1
m+p-xylene	20	µg/L	<2	<2	<2	<2
o-xylene	10	µg/L	<1	<1	<1	<1
Naphthalene	10	µg/L	<1	<1	<1	<1
TRH C10 - C14	132	µg/L	<50	110	<50	67
TRH C15 - C28	528	µg/L	200	830	<100	230
TRH C29 - C36	468	µg/L	250	780	110	<100
Total +ve TRH (C10-C36)	684	µg/L	450	1700	110	300
TRH >C10 - C16	204	µg/L	<50	120	<50	110
TRH >C10 - C16less Naphthalene (F2)	204	µg/L	<50	120	<50	110
TRH >C16 - C34	516	µg/L	380	1400	170	250
TRH >C34 - C40	408	µg/L	140	440	<100	<100
Total +ve TRH (>C10-C40)	924	µg/L	530	1900	170	360
Naphthalene	10	µg/L	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	10	µg/L	<0.1	<0.1	<0.1	<0.1
Acenaphthene	10	µg/L	<0.1	<0.1	<0.1	<0.1
Fluorene	10	µg/L	<0.1	<0.1	<0.1	<0.1
Phenanthrene	0.72	µg/L	0.2	0.4	<0.1	<0.1
Anthracene	1	µg/L	<0.1	0.1	<0.1	<0.1
Fluoranthene	0.48	µg/L	0.4	0.7	<0.1	<0.1
Pyrene	10	µg/L	0.4	0.8	<0.1	<0.1
Benzo(a)anthracene	0.36	µg/L	0.3	0.4	<0.1	<0.1
Chrysene	0.36	µg/L	0.2	0.4	<0.1	<0.1
Benzo(b,j+k)fluoranthene	0.6	µg/L	0.5	0.7	<0.2	<0.2
Benzo(a)pyrene	0.36	µg/L	0.3	0.4	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	0.24	µg/L	0.2	0.3	<0.1	<0.1
Dibenzo(a,h)anthracene	10	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	0.36	µg/L	0.2	0.4	<0.1	<0.1
Benzo(a)pyrene TEQ	50	µg/L	<0.5	0.6	<0.5	<0.5
Total +vePAH's	3.72	µg/L	2.7	4.6	<0.1	<0.1
Perfluorobutanesulfonic acid	0.156	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluoropentanesulfonic acid	0.168	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	0.96	µg/L	<0.01	<0.01	<0.01	0.03
Perfluoroheptanesulfonic acid	0.048	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	1.2	µg/L	0.01	<0.01	<0.01	0.04
Perfluorodecanesulfonic acid	0.744	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	0.036	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	0.048	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	0.216	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluoroheptanoic acid	0.036	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	0.072	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid	0.1	µg/L	<0.01	<0.01	<0.01	<0.01
Perfluorodecanoic acid	0.2	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid	0.2	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid	0.5	µg/L	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid	1	µg/L	<0.1	<0.1	<0.1	<0.1
Perfluorotetradecanoic acid	5	µg/L	<0.5	<0.5	<0.5	<0.5
4:2 FTS	0.1	µg/L	<0.01	<0.01	<0.01	<0.01
6:2 FTS	0.744	µg/L	<0.01	<0.01	<0.01	<0.01
8:2 FTS	0.2	µg/L	<0.02	<0.02	<0.02	<0.02
10:2 FTS	0.2	µg/L	<0.02	<0.02	<0.02	<0.02

Month			Jun-24	Mar-24	Jun-24	Jun-24
Borehole numbers	Trigger values	Unit	S_02s	S_02d		S06
Perfluorooctane sulfonamide	**1**	**µg/L**	<0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	**0.5**	**µg/L**	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctanesulfonamide	**1**	**µg/L**	<0.1	<0.1	<0.1	<0.1
N-Me perfluorooctanesulfonamidoethanol	**0.5**	**µg/L**	<0.05	<0.05	<0.05	<0.05
N-Et perfluorooctanesulfonamidoethanol	**5**	**µg/L**	<0.5	<0.5	<0.5	<0.5
MePerfluorooctanesulf-amid oacetic acid	**0.2**	**µg/L**	<0.02	<0.02	<0.02	<0.02
EtPerfluorooctanesulf-amid oacetic acid	**0.2**	**µg/L**	<0.02	<0.02	<0.02	<0.02
Total Positive PFHxS & PFOS	**2.16**	**µg/L**	0.01	<0.01	<0.01	0.07
Total Positive PFOA & PFOS	**1.32**	**µg/L**	0.01	<0.01	<0.01	0.04
Total Positive PFAS	**2.88**	**µg/L**	0.01	<0.01	<0.01	0.07
Arsenic-Dissolved	**96**	**µg/L**	2	<1	<1	<1
Boron-Dissolved	**5160**	**µg/L**	40	1100	100	200
Barium-Dissolved	**432**	**µg/L**	39	51	40	30
Beryllium-Dissolved	**1.2**	**µg/L**	<0.5	<0.5	<0.5	<0.5
Cadmium-Dissolved	**0.48**	**µg/L**	<0.1	<0.1	<0.1	0.2
Chromium-Dissolved	**44.4**	**µg/L**	2	<1	2	2
Copper-Dissolved	**1032**	**µg/L**	<1	<1	2	1
Cobalt-Dissolved	**31.2**	**µg/L**	<1	<1	<1	<1
Mercury-Dissolved	**0.24**	**µg/L**	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	**1320**	**µg/L**	66	68	66	41
Molybdenum-Dissolved	**40.8**	**µg/L**	4	9	2	2
Nickel-Dissolved	**444**	**µg/L**	<1	<1	<1	<1
Lead-Dissolved	**180**	**µg/L**	<1	<1	<1	<1
Antimony-Dissolved	**4.8**	**µg/L**	2	2	2	<1
Selenium-Dissolved	**1.2**	**µg/L**	<1	<1	<1	<1
Tin-Dissolved	**2.4**	**µg/L**	<1	<1	<1	<1
Zinc-Dissolved	**344.4**	**µg/L**	3	<1	5	6
Iron-Dissolved	**396000**	**µg/L**	<10	20	40	<10
Arsenic-Total	**504**	**µg/L**	12	28	2	3
Boron-Total	**5160**	**µg/L**	60	1200	100	200
Barium-Total	**15600**	**µg/L**	380	1100	67	97
Beryllium-Total	**66**	**µg/L**	1	5	<0.5	<0.5
Cadmium-Total	**32.4**	**µg/L**	0.5	1.7	<0.1	0.1
Chromium-Total	**492**	**µg/L**	38	170	5	9
Copper-Total	**1140**	**µg/L**	110	440	19	26
Cobalt-Total	**684**	**µg/L**	15	56	<1	3
Mercury-Total	**1.044**	**µg/L**	<0.05	<0.1	<0.05	<0.05
Manganese-Total	**9960**	**µg/L**	900	2400	120	170
Molybdenum-Total	**105.6**	**µg/L**	4	18	2	3
Nickel-Total	**612**	**µg/L**	26	95	2	6
Lead-Total	**21600**	**µg/L**	87	290	4	13
Antimony-Total	**9.6**	**µg/L**	4	6	3	2
Selenium-Total	**3.6**	**µg/L**	<1	1	<1	<1
Tin-Total	**26.4**	**µg/L**	3	17	1	2
Zinc-Total	**6000**	**µg/L**	920	3500	95	170
Iron-Total	**648000**	**µg/L**	26000	120000	2500	6400

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 344589

Client Details

Client	CTP AFJV
Attention	Aaheli Chattopadhyay
Address	7 Figtree Dr, SYDNEY OLYMPIC PARK, NSW, 2127

Sample Details

Your Reference	**CTP Groundwater Monitoring - 21-02-23**
Number of Samples	4 Water
Date samples received	21/02/2024
Date completed instructions received	21/02/2024

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	28/02/2024
Date of Issue	28/02/2024

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Results Approved By
Amanda Chui, LC/Air Toxics Supervisor
Diego Bigolin, Inorganics Supervisor
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Jue Wang, Chemist (FAS)

Authorised By
Nancy Zhang, Laboratory Manager

VOCs in water					
Our Reference		344589-1	344589-2	344589-3	344589-4
Your Reference	UNITS	BH_046	BH044	BH050_s	BH051_d
Date Sampled		21/02/2024	21/02/2024	21/02/2024	21/02/2024
Type of sample		Water	Water	Water	Water
Date Extracted	-	23/02/2024	23/02/2024	23/02/2024	23/02/2024
Date Analysed	-	26/02/2024	26/02/2024	26/02/2024	26/02/2024
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

VOCs in water					
Our Reference		344589-1	344589-2	344589-3	344589-4
Your Reference	UNITS	BH_046	BH044	BH050_s	BH051_d
Date Sampled		21/02/2024	21/02/2024	21/02/2024	21/02/2024
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	%	97	99	97	99
Surrogate Toluene-d8	%	97	100	101	97
Surrogate 4-Bromofluorobenzene	%	99	98	96	98

vTRH(C6-C10)/BTEXN in Water					
Our Reference		344589-1	344589-2	344589-3	344589-4
Your Reference	UNITS	BH_046	BH044	BH050_s	BH051_d
Date Sampled		21/02/2024	21/02/2024	21/02/2024	21/02/2024
Type of sample		Water	Water	Water	Water
Date extracted	-	23/02/2024	23/02/2024	23/02/2024	23/02/2024
Date analysed	-	26/02/2024	26/02/2024	26/02/2024	26/02/2024
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	%	97	99	97	99
Surrogate Toluene-d8	%	97	100	101	97
Surrogate 4-Bromofluorobenzene	%	99	98	96	98

svTRH (C10-C40) in Water					
Our Reference		344589-1	344589-2	344589-3	344589-4
Your Reference	UNITS	BH_046	BH044	BH050_s	BH051_d
Date Sampled		21/02/2024	21/02/2024	21/02/2024	21/02/2024
Type of sample		Water	Water	Water	Water
Date extracted	-	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Date analysed	-	23/02/2024	23/02/2024	23/02/2024	23/02/2024
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	110	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	110	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	190	<100	110
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	190	<50	110
Surrogate o-Terphenyl	%	82	87	82	83

PAHs in Water					
Our Reference		344589-1	344589-2	344589-3	344589-4
Your Reference	UNITS	BH_046	BH044	BH050_s	BH051_d
Date Sampled		21/02/2024	21/02/2024	21/02/2024	21/02/2024
Type of sample		Water	Water	Water	Water
Date extracted	-	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Date analysed	-	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Naphthalene	µg/L	0.2	0.1	<0.1	<0.1
Acenaphthylene	µg/L	<0.1	0.8	<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	0.4	<0.1	<0.1
Anthracene	µg/L	<0.1	0.4	<0.1	<0.1
Fluoranthene	µg/L	<0.1	2.0	<0.1	<0.1
Pyrene	µg/L	<0.1	2.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	1.6	<0.1	<0.1
Chrysene	µg/L	<0.1	1.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	4.5	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	3.4	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	2.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	0.7	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	2.2	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	5.0	<0.5	<0.5
Total +ve PAH's	µg/L	0.16	22	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	96	101	98	98

All metals in water-dissolved					
Our Reference		344589-1	344589-2	344589-3	344589-4
Your Reference	UNITS	BH_046	BH044	BH050_s	BH051_d
Date Sampled		21/02/2024	21/02/2024	21/02/2024	21/02/2024
Type of sample		Water	Water	Water	Water
Date prepared	-	26/02/2024	26/02/2024	26/02/2024	26/02/2024
Date analysed	-	26/02/2024	26/02/2024	26/02/2024	26/02/2024
Arsenic-Dissolved	µg/L	4	2	1	1
Boron-Dissolved	µg/L	50	<20	100	30
Barium-Dissolved	µg/L	33	15	440	18
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5	<0.5
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1
Copper-Dissolved	µg/L	1	7	<1	13
Cobalt-Dissolved	µg/L	3	<1	<1	61
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	740	<5	80	18,000
Molybdenum-Dissolved	µg/L	3	1	1	1
Nickel-Dissolved	µg/L	8	<1	2	36
Lead-Dissolved	µg/L	<1	<1	<1	<1
Antimony-Dissolved	µg/L	<1	1	<1	<1
Selenium-Dissolved	µg/L	<1	<1	<1	<1
Tin-Dissolved	µg/L	<1	<1	<1	<1
Zinc-Dissolved	µg/L	10	9	12	100
Iron-Dissolved	µg/L	140	20	<10	20

All metals in water - total					
Our Reference		344589-1	344589-2	344589-3	344589-4
Your Reference	UNITS	BH_046	BH044	BH050_s	BH051_d
Date Sampled		21/02/2024	21/02/2024	21/02/2024	21/02/2024
Type of sample		Water	Water	Water	Water
Date prepared	-	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Date analysed	-	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Arsenic-Total	µg/L	39	<1	3	1
Boron-Total	µg/L	70	20	100	50
Barium-Total	µg/L	71	23	470	42
Beryllium-Total	µg/L	4	<0.5	<0.5	<0.5
Cadmium-Total	µg/L	0.3	<0.1	<0.1	0.1
Chromium-Total	µg/L	11	4	4	8
Copper-Total	µg/L	65	14	5	25
Cobalt-Total	µg/L	33	<1	1	79
Mercury-Total	µg/L	<0.05	<0.05	<0.05	<0.05
Manganese-Total	µg/L	920	25	75	30,000
Molybdenum-Total	µg/L	4	1	1	1
Nickel-Total	µg/L	49	4	7	46
Lead-Total	µg/L	38	3	6	6
Antimony-Total	µg/L	<1	1	1	<1
Selenium-Total	µg/L	1	<1	<1	<1
Tin-Total	µg/L	<1	1	<1	1
Zinc-Total	µg/L	130	34	29	120
Iron-Total	µg/L	22,000	850	7,900	1,900

Metals in Waters - Total					
Our Reference		344589-1	344589-2	344589-3	344589-4
Your Reference	UNITS	BH_046	BH044	BH050_s	BH051_d
Date Sampled		21/02/2024	21/02/2024	21/02/2024	21/02/2024
Type of sample		Water	Water	Water	Water
Date prepared	-	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Date analysed	-	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Phosphorus - Total	mg/L	0.2	0.1	0.1	0.4

Miscellaneous Inorganics					
Our Reference		344589-1	344589-2	344589-3	344589-4
Your Reference	UNITS	BH_046	BH044	BH050_s	BH051_d
Date Sampled		21/02/2024	21/02/2024	21/02/2024	21/02/2024
Type of sample		Water	Water	Water	Water
Date prepared	-	21/02/2024	21/02/2024	21/02/2024	21/02/2024
Date analysed	-	21/02/2024	21/02/2024	21/02/2024	21/02/2024
Ammonia as N in water	mg/L	0.24	<0.005	0.057	0.082
Nitrate as N in water	mg/L	0.096	0.67	0.077	1.4
Total Nitrogen in water	mg/L	0.9	1.0	0.2	3.1

Ion Balance					
Our Reference		344589-1	344589-2	344589-3	344589-4
Your Reference	UNITS	BH_046	BH044	BH050_s	BH051_d
Date Sampled		21/02/2024	21/02/2024	21/02/2024	21/02/2024
Type of sample		Water	Water	Water	Water
Date prepared	-	21/02/2024	21/02/2024	21/02/2024	21/02/2024
Date analysed	-	21/02/2024	21/02/2024	21/02/2024	21/02/2024
Calcium - Dissolved	mg/L	86	20	53	21
Potassium - Dissolved	mg/L	30	3	6.7	10
Sodium - Dissolved	mg/L	1,600	20	31	430
Magnesium - Dissolved	mg/L	210	1	2	30
Hardness	$mgCaCO_3/L$	1,100	54	140	170
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	630	52	190	110
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	630	52	190	110
Sulphate, SO4	mg/L	390	14	13	160
Chloride, Cl	mg/L	2,300	24	10	550
Ionic Balance	%	3.0	0	0	3.0

PFAS in Waters Extended					
Our Reference		344589-1	344589-2	344589-3	344589-4
Your Reference	UNITS	BH_046	BH044	BH050_s	BH051_d
Date Sampled		21/02/2024	21/02/2024	21/02/2024	21/02/2024
Type of sample		Water	Water	Water	Water
Date prepared	-	23/02/2024	23/02/2024	23/02/2024	23/02/2024
Date analysed	-	23/02/2024	23/02/2024	23/02/2024	23/02/2024
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	<0.01	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	0.03	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	0.01	0.02
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	0.02	<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 perfluorooctanesulfon amide	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	%	99	96	96	96
Surrogate $^{13}C_2$ PFOA	%	95	97	94	95
Extracted ISTD $^{13}C_3$ PFBS	%	106	103	102	105
Extracted ISTD $^{18}O_2$ PFHxS	%	105	109	101	103
Extracted ISTD $^{13}C_4$ PFOS	%	108	110	103	109
Extracted ISTD $^{13}C_4$ PFBA	%	97	104	107	95

PFAS in Waters Extended					
Our Reference		344589-1	344589-2	344589-3	344589-4
Your Reference	UNITS	BH_046	BH044	BH050_s	BH051_d
Date Sampled		21/02/2024	21/02/2024	21/02/2024	21/02/2024
Type of sample		Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	101	105	104	106
Extracted ISTD $^{13}C_2$ *PFHxA*	%	106	108	104	107
Extracted ISTD $^{13}C_4$ *PFHpA*	%	106	109	109	112
Extracted ISTD $^{13}C_4$ *PFOA*	%	113	114	113	118
Extracted ISTD $^{13}C_5$ *PFNA*	%	107	107	104	108
Extracted ISTD $^{13}C_2$ *PFDA*	%	112	112	102	106
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	110	113	102	107
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	104	107	96	104
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	84	96	67	85
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	98	115	110	131
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	102	131	118	132
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	116	120	114	119
Extracted ISTD $^{13}C_8$ *FOSA*	%	115	120	110	112
Extracted ISTD d_3 *N MeFOSA*	%	107	110	104	109
Extracted ISTD d_5 *N EtFOSA*	%	113	114	102	110
Extracted ISTD d_7 *N MeFOSE*	%	104	108	106	105
Extracted ISTD d_9 *N EtFOSE*	%	101	105	99	102
Extracted ISTD d_3 *N MeFOSAA*	%	104	111	119	122
Extracted ISTD d_5 *N EtFOSAA*	%	114	126	114	113
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01	0.1	0.02

Dissolved Gases in Water					
Our Reference		344589-1	344589-2	344589-3	344589-4
Your Reference	UNITS	BH_046	BH044	BH050_s	BH051_d
Date Sampled		21/02/2024	21/02/2024	21/02/2024	21/02/2024
Type of sample		Water	Water	Water	Water
Date prepared	-	28/02/2024	28/02/2024	28/02/2024	28/02/2024
Date analysed	-	28/02/2024	28/02/2024	28/02/2024	28/02/2024
Methane	µg/L	<5	<5	23	<5

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.
Metals-020	Determination of various metals by ICP-AES.
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. Salt forms (e.g. FeO, PbO, ZnO) are determinined stoichiometrically from the base metal concentration.
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.

Method ID	Methodology Summary
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.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date Extracted	-			23/02/2024	[NT]	[NT]	[NT]	[NT]	23/02/2024	[NT]
Date Analysed	-			26/02/2024	[NT]	[NT]	[NT]	[NT]	26/02/2024	[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]	90	[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]	94	[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]	89	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[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]	89	[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]	94	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	84	[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]	92	[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]	93	[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]	93	[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]	95	[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]	96	[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]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	95	[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	100	[NT]	[NT]	[NT]	[NT]	91	[NT]
Surrogate Toluene-d8	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			23/02/2024	[NT]	[NT]	[NT]	[NT]	23/02/2024	[NT]
Date analysed	-			26/02/2024	[NT]	[NT]	[NT]	[NT]	26/02/2024	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	94	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	94	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	96	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	91	[NT]
Surrogate Toluene-d8	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			22/02/2024	[NT]	[NT]	[NT]	[NT]	22/02/2024	[NT]
Date analysed	-			23/02/2024	[NT]	[NT]	[NT]	[NT]	23/02/2024	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	124	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	115	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	124	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	115	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
Surrogate o-Terphenyl	%		Org-020	80	[NT]	[NT]	[NT]	[NT]	97	[NT]

QUALITY CONTROL: PAHs in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			22/02/2024	[NT]	[NT]	[NT]	[NT]	22/02/2024	[NT]
Date analysed	-			22/02/2024	[NT]	[NT]	[NT]	[NT]	22/02/2024	[NT]
Naphthalene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[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]	94	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	103	[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]	118	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	121	[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]	92	[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]	118	[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	97	[NT]	[NT]	[NT]	[NT]	97	[NT]

QUALITY CONTROL: All metals in water-dissolved					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date prepared	-			26/02/2024	1	26/02/2024	26/02/2024		26/02/2024	[NT]
Date analysed	-			26/02/2024	1	26/02/2024	26/02/2024		26/02/2024	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	4	2	67	101	[NT]
Boron-Dissolved	µg/L	20	Metals-022	<20	1	50	40	22	81	[NT]
Barium-Dissolved	µg/L	1	Metals-022	<1	1	33	32	3	103	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	1	<0.5	<0.5	0	120	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	101	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	101	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	1	1	0	99	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	3	3	0	98	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	[NT]		89	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	740	730	1	98	[NT]
Molybdenum-Dissolved	µg/L	1	Metals-022	<1	1	3	3	0	99	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	8	8	0	101	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	99	[NT]
Antimony-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	102	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	106	[NT]
Tin-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	99	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	10	9	11	105	[NT]
Iron-Dissolved	µg/L	10	Metals-022	<10	1	140	140	0	99	[NT]

QUALITY CONTROL: All metals in water - total					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			22/02/2024	1	22/02/2024	22/02/2024		22/02/2024	[NT]
Date analysed	-			22/02/2024	1	22/02/2024	22/02/2024		22/02/2024	[NT]
Arsenic-Total	µg/L	1	Metals-022	<1	1	39	39	0	102	[NT]
Boron-Total	µg/L	20	Metals-022	<20	1	70	70	0	119	[NT]
Barium-Total	µg/L	1	Metals-022	<1	1	71	71	0	103	[NT]
Beryllium-Total	µg/L	0.5	Metals-022	<0.5	1	4	4	0	86	[NT]
Cadmium-Total	µg/L	0.1	Metals-022	<0.1	1	0.3	0.2	40	100	[NT]
Chromium-Total	µg/L	1	Metals-022	<1	1	11	11	0	90	[NT]
Copper-Total	µg/L	1	Metals-022	<1	1	65	64	2	98	[NT]
Cobalt-Total	µg/L	1	Metals-022	<1	1	33	33	0	99	[NT]
Mercury-Total	µg/L	0.05	Metals-021	<0.05	1	<0.05	[NT]		103	[NT]
Manganese-Total	µg/L	5	Metals-022	<5	1	920	930	1	89	[NT]
Molybdenum-Total	µg/L	1	Metals-022	<1	1	4	4	0	95	[NT]
Nickel-Total	µg/L	1	Metals-022	<1	1	49	49	0	94	[NT]
Lead-Total	µg/L	1	Metals-022	<1	1	38	38	0	106	[NT]
Antimony-Total	µg/L	1	Metals-022	<1	1	<1	1	0	112	[NT]
Selenium-Total	µg/L	1	Metals-022	<1	1	1	1	0	100	[NT]
Tin-Total	µg/L	1	Metals-022	<1	1	<1	<1	0	100	[NT]
Zinc-Total	µg/L	1	Metals-022	<1	1	130	140	7	95	[NT]
Iron-Total	µg/L	10	Metals-022	<10	1	22000	23000	4	98	[NT]

QUALITY CONTROL: Metals in Waters - Total					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	344589-2
Date prepared	-			22/02/2024	3	22/02/2024	22/02/2024		22/02/2024	22/02/2024
Date analysed	-			22/02/2024	3	22/02/2024	22/02/2024		22/02/2024	22/02/2024
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	3	0.1	0.1	0	96	90

QUALITY CONTROL: Miscellaneous Inorganics					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	344589-3
Date prepared	-			21/02/2024	2	21/02/2024	21/02/2024		21/02/2024	21/02/2024
Date analysed	-			21/02/2024	2	21/02/2024	21/02/2024		21/02/2024	21/02/2024
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	2	<0.005	[NT]		103	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	2	0.67	0.66	2	101	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	2	1.0	[NT]		104	99

QUALITY CONTROL: Ion Balance					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			21/02/2024	1	21/02/2024	21/02/2024		21/02/2024	[NT]
Date analysed	-			21/02/2024	1	21/02/2024	21/02/2024		21/02/2024	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	86	79	8	101	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	30	31	3	94	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	1600	1600	0	102	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	210	210	0	103	[NT]
Hardness	mgCaCO 3 /L	3	Metals-020	[NT]	1	1100	1000	10	[NT]	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	630	[NT]		[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	630	[NT]		100	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	390	[NT]		108	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	1	2300	[NT]		96	[NT]
Ionic Balance	%		Inorg-040	[NT]	1	3.0	[NT]		[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	344589-2
Date prepared	-			23/02/2024	1	23/02/2024	23/02/2024		23/02/2024	23/02/2024
Date analysed	-			23/02/2024	1	23/02/2024	23/02/2024		23/02/2024	23/02/2024
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	97	103
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	109
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	105	109
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	107
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	104	106
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	104	111
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	102	104
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	101	102
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	105
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	103
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	98	102
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	102
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	103	106
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	107	103
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	96	100
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	94	100
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	103	105
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	106	108
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	101	104
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	110	109
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	103	105
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	102	102
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	103	106
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	99	99
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	115	111
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	114	119
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	107	109
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	98	99
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	98	1	99	100	1	98	99
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	94	1	95	97	2	93	97

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	344589-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	106	1	106	108	2	108	104
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	105	1	105	104	1	107	103
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	109	1	108	109	1	106	106
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	107	1	97	97	0	106	103
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	106	1	101	104	3	104	103
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	108	1	106	107	1	108	104
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	110	1	106	105	1	108	110
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	117	1	113	112	1	114	112
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	111	1	107	110	3	108	107
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	111	1	112	110	2	110	109
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	108	1	110	107	3	105	112
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	109	1	104	111	7	108	102
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	87	1	84	91	8	91	86
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	111	1	98	100	2	111	115
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	115	1	102	104	2	114	125
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	118	1	116	118	2	114	120
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	116	1	115	117	2	112	114
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	110	1	107	113	5	109	107
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	113	1	113	115	2	110	112
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	108	1	104	107	3	107	105

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	344589-2
Extracted ISTD d_9 N EtFOSE	%		Org-029	105	1	101	104	3	104	100
Extracted ISTD d_3 N MeFOSAA	%		Org-029	113	1	104	110	6	108	109
Extracted ISTD d_5 N EtFOSAA	%		Org-029	123	1	114	121	6	117	119

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	4	23/02/2024	23/02/2024		[NT]	[NT]
Date analysed	-			[NT]	4	23/02/2024	23/02/2024		[NT]	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	[NT]	4	<0.01	<0.01	0	[NT]	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	[NT]	4	<0.01	<0.01	0	[NT]	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	[NT]	4	<0.01	<0.01	0	[NT]	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	[NT]	4	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	[NT]	4	<0.01	<0.01	0	[NT]	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	[NT]	4	<0.02	<0.02	0	[NT]	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	[NT]	4	<0.02	<0.02	0	[NT]	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	[NT]	4	<0.02	<0.02	0	[NT]	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	[NT]	4	0.02	0.03	40	[NT]	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	[NT]	4	<0.01	<0.01	0	[NT]	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	[NT]	4	<0.01	<0.01	0	[NT]	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	[NT]	4	<0.01	<0.01	0	[NT]	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	[NT]	4	<0.02	<0.02	0	[NT]	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	[NT]	4	<0.02	<0.02	0	[NT]	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	[NT]	4	<0.05	<0.05	0	[NT]	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	[NT]	4	<0.1	<0.1	0	[NT]	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	[NT]	4	<0.5	<0.5	0	[NT]	[NT]
4:2 FTS	µg/L	0.01	Org-029	[NT]	4	<0.01	<0.01	0	[NT]	[NT]
6:2 FTS	µg/L	0.01	Org-029	[NT]	4	<0.01	<0.01	0	[NT]	[NT]
8:2 FTS	µg/L	0.02	Org-029	[NT]	4	<0.02	<0.02	0	[NT]	[NT]
10:2 FTS	µg/L	0.02	Org-029	[NT]	4	<0.02	<0.02	0	[NT]	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	[NT]	4	<0.1	<0.1	0	[NT]	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	[NT]	4	<0.05	<0.05	0	[NT]	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	[NT]	4	<0.1	<0.1	0	[NT]	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	[NT]	4	<0.05	<0.05	0	[NT]	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	[NT]	4	<0.5	<0.5	0	[NT]	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	[NT]	4	<0.02	<0.02	0	[NT]	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	[NT]	4	<0.02	<0.02	0	[NT]	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	[NT]	4	96	94	2	[NT]	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	[NT]	4	95	95	0	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	[NT]	4	105	109	4	[NT]	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	[NT]	4	103	105	2	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	[NT]	4	109	110	1	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	[NT]	4	95	98	3	[NT]	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	[NT]	4	106	108	2	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	[NT]	4	107	107	0	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	[NT]	4	112	112	0	[NT]	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	[NT]	4	118	117	1	[NT]	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	[NT]	4	108	110	2	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	[NT]	4	106	110	4	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	[NT]	4	107	106	1	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	[NT]	4	104	107	3	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	[NT]	4	85	80	6	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	[NT]	4	131	128	2	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	[NT]	4	132	135	2	[NT]	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	[NT]	4	119	116	3	[NT]	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	[NT]	4	112	112	0	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	[NT]	4	109	106	3	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	[NT]	4	110	108	2	[NT]	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	[NT]	4	105	105	0	[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	[NT]	4	102	105	3	[NT]	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	[NT]	4	122	120	2	[NT]	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	[NT]	4	113	119	5	[NT]	[NT]

QUALITY CONTROL: Dissolved Gases in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			28/02/2024	1	28/02/2024	28/02/2024		28/02/2024	[NT]
Date analysed	-			28/02/2024	1	28/02/2024	28/02/2024		28/02/2024	[NT]
Methane	µg/L	5	AT-006	<5	1	<5	<5	0	92	[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.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 344976

Client Details

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

Sample Details

Your Reference	**CTP Groundwater Monitoring - 22-02-23**
Number of Samples	5 Water
Date samples received	27/02/2024
Date completed instructions received	26/02/2024

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	05/03/2024
Date of Issue	05/03/2024

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Dragana Tomas, Senior Chemist
Jenny He, Senior Chemist
Jue Wang, Chemist (FAS)
Loren Bardwell, Development Chemist
Priya Samarawickrama, Senior Chemist
Sean McAlary, Chemist (FAS)

Authorised By
Nancy Zhang, Laboratory Manager

VOCs in water						
Our Reference		344976-1	344976-2	344976-3	344976-4	344976-5
Your Reference	UNITS	SMW_BH035s	SMW_BH035	SMW_BH038	SMW_BH009s	DS-1
Date Sampled		22/02/2024	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Type of sample		Water	Water	Water	Water	Water
Date Extracted	-	27/02/2024	27/02/2024	27/02/2024	27/02/2024	27/02/2024
Date Analysed	-	28/02/2024	28/02/2024	28/02/2024	28/02/2024	28/02/2024
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

VOCs in water						
Our Reference		344976-1	344976-2	344976-3	344976-4	344976-5
Your Reference	UNITS	SMW_BH035s	SMW_BH035	SMW_BH038	SMW_BH009s	DS-1
Date Sampled		22/02/2024	22/02/2024	22/02/2024	22/02/2024	22/02/2024
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	%	111	110	109	108	108
Surrogate Toluene-d8	%	99	99	98	99	97
Surrogate 4-Bromofluorobenzene	%	98	99	98	95	97

vTRH(C6-C10)/BTEXN in Water						
Our Reference		344976-1	344976-2	344976-3	344976-4	344976-5
Your Reference	UNITS	SMW_BH035s	SMW_BH035	SMW_BH038	SMW_BH009s	DS-1
Date Sampled		22/02/2024	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	27/02/2024	27/02/2024	27/02/2024	27/02/2024	27/02/2024
Date analysed	-	28/02/2024	28/02/2024	28/02/2024	28/02/2024	28/02/2024
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	%	111	110	109	108	108
Surrogate Toluene-d8	%	99	99	98	99	97
Surrogate 4-Bromofluorobenzene	%	98	99	98	95	97

svTRH (C10-C40) in Water						
Our Reference		344976-1	344976-2	344976-3	344976-4	344976-5
Your Reference	UNITS	SMW_BH035s	SMW_BH035	SMW_BH038	SMW_BH009s	DS-1
Date Sampled		22/02/2024	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	28/02/2024	28/02/2024	28/02/2024	28/02/2024	28/02/2024
Date analysed	-	29/02/2024	29/02/2024	29/02/2024	29/02/2024	29/02/2024
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	<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	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	84	78	72	68	87

PAHs in Water						
Our Reference		344976-1	344976-2	344976-3	344976-4	344976-5
Your Reference	UNITS	SMW_BH035s	SMW_BH035	SMW_BH038	SMW_BH009s	DS-1
Date Sampled		22/02/2024	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	28/02/2024	28/02/2024	28/02/2024	28/02/2024	28/02/2024
Date analysed	-	29/02/2024	29/02/2024	29/02/2024	29/02/2024	29/02/2024
Naphthalene	µg/L	<0.1	<0.1	<0.1	<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	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	91	109	98	74	122

All metals in water-dissolved						
Our Reference		344976-1	344976-2	344976-3	344976-4	344976-5
Your Reference	UNITS	SMW_BH035s	SMW_BH035	SMW_BH038	SMW_BH009s	DS-1
Date Sampled		22/02/2024	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	28/02/2024	28/02/2024	28/02/2024	28/02/2024	28/02/2024
Date analysed	-	28/02/2024	28/02/2024	28/02/2024	28/02/2024	28/02/2024
Arsenic-Dissolved	µg/L	<1	<1	<1	<1	<1
Boron-Dissolved	µg/L	50	50	<20	100	<20
Barium-Dissolved	µg/L	39	5,000	110	53	100
Beryllium-Dissolved	µg/L	4	<0.5	<0.5	<0.5	<0.5
Cadmium-Dissolved	µg/L	0.4	<0.1	<0.1	0.7	<0.1
Chromium-Dissolved	µg/L	<1	<1	9	<1	8
Copper-Dissolved	µg/L	12	2	6	3	6
Cobalt-Dissolved	µg/L	110	2	<1	390	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	5,100	230	<5	13,000	<5
Molybdenum-Dissolved	µg/L	<1	<1	7	<1	7
Nickel-Dissolved	µg/L	99	14	<1	180	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Antimony-Dissolved	µg/L	<1	<1	2	<1	2
Selenium-Dissolved	µg/L	<1	<1	<1	<1	<1
Tin-Dissolved	µg/L	<1	<1	<1	<1	<1
Zinc-Dissolved	µg/L	770	10	<1	690	<1
Iron-Dissolved	µg/L	40	<10	<10	280	<10

All metals in water - total						
Our Reference		344976-1	344976-2	344976-3	344976-4	344976-5
Your Reference	UNITS	SMW_BH035s	SMW_BH035	SMW_BH038	SMW_BH009s	DS-1
Date Sampled		22/02/2024	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	28/02/2024	28/02/2024	28/02/2024	28/02/2024	28/02/2024
Date analysed	-	29/02/2024	29/02/2024	29/02/2024	29/02/2024	29/02/2024
Arsenic-Total	µg/L	15	<1	<1	14	<1
Boron-Total	µg/L	30	50	<20	100	<20
Barium-Total	µg/L	700	8,600	120	1,600	120
Beryllium-Total	µg/L	33	<0.5	<0.5	6	<0.5
Cadmium-Total	µg/L	0.7	<0.1	<0.1	1.3	<0.1
Chromium-Total	µg/L	64	12	12	18	12
Copper-Total	µg/L	440	6	5	110	6
Cobalt-Total	µg/L	170	2	<1	440	<1
Mercury-Total	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Total	µg/L	8,300	230	<5	18,000	<5
Molybdenum-Total	µg/L	<1	2	9	2	8
Nickel-Total	µg/L	170	17	1	210	2
Lead-Total	µg/L	83	2	<1	43	<1
Antimony-Total	µg/L	<1	<1	1	<1	2
Selenium-Total	µg/L	1	<1	<1	<1	<1
Tin-Total	µg/L	<1	1	<1	1	<1
Zinc-Total	µg/L	1,600	18	6	960	8
Iron-Total	µg/L	83,000	1,100	40	42,000	120

Metals in Waters - Total						
Our Reference		344976-1	344976-2	344976-3	344976-4	344976-5
Your Reference	UNITS	SMW_BH035s	SMW_BH035	SMW_BH038	SMW_BH009s	DS-1
Date Sampled		22/02/2024	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	28/02/2024	28/02/2024	28/02/2024	28/02/2024	28/02/2024
Date analysed	-	29/02/2024	29/02/2024	29/02/2024	29/02/2024	29/02/2024
Phosphorus - Total	mg/L	2.5	<0.05	<0.05	0.92	<0.05

Miscellaneous Inorganics						
Our Reference		344976-1	344976-2	344976-3	344976-4	344976-5
Your Reference	UNITS	SMW_BH035s	SMW_BH035	SMW_BH038	SMW_BH009s	DS-1
Date Sampled		22/02/2024	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	27/02/2024	27/02/2024	27/02/2024	27/02/2024	27/02/2024
Date analysed	-	27/02/2024	27/02/2024	27/02/2024	27/02/2024	27/02/2024
Ammonia as N in water	mg/L	0.18	2.2	0.095	0.12	0.10
Nitrate as N in water	mg/L	0.01	2.7	0.36	0.14	0.41
Total Nitrogen in water	mg/L	0.5	5.2	1	0.4	0.9

Ion Balance						
Our Reference		344976-1	344976-2	344976-3	344976-4	344976-5
Your Reference	UNITS	SMW_BH035s	SMW_BH035	SMW_BH038	SMW_BH009s	DS-1
Date Sampled		22/02/2024	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	27/02/2024	27/02/2024	27/02/2024	27/02/2024	27/02/2024
Date analysed	-	27/02/2024	27/02/2024	27/02/2024	27/02/2024	27/02/2024
Calcium - Dissolved	mg/L	34	470	190	190	97
Potassium - Dissolved	mg/L	9.8	47	5.6	8.6	5.0
Sodium - Dissolved	mg/L	600	2,600	200	170	170
Magnesium - Dissolved	mg/L	50	360	<0.5	48	<0.5
Hardness	$mgCaCO_3/L$	290	2,700	460	670	240
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	170	<5	130
Bicarbonate Alkalinity as $CaCO_3$	mg/L	19	670	<5	81	<5
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	38	<5	47
Total Alkalinity as $CaCO_3$	mg/L	19	670	210	81	180
Sulphate, SO4	mg/L	480	11	160	730	150
Chloride, Cl	mg/L	920	4,600	280	73	240
Ionic Balance	%	-6.0	8.0	8.0	5.0	-4.0

PFAS in Waters Extended						
Our Reference		344976-1	344976-2	344976-3	344976-4	344976-5
Your Reference	UNITS	SMW_BH035s	SMW_BH035	SMW_BH038	SMW_BH009s	DS-1
Date Sampled		22/02/2024	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	27/02/2024	27/02/2024	27/02/2024	27/02/2024	27/02/2024
Date analysed	-	27/02/2024	27/02/2024	27/02/2024	27/02/2024	27/02/2024
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	0.02	<0.01	<0.01	0.02	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	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	0.02	0.02	0.03
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01	0.01	0.02	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 perfluorooctanesulfon amide	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	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ PFOS	%	102	106	105	100	107
Surrogate $^{13}C_2$ PFOA	%	98	95	97	95	94
Extracted ISTD $^{13}C_3$ PFBS	%	102	95	91	98	95
Extracted ISTD $^{18}O_2$ PFHxS	%	98	95	94	97	96
Extracted ISTD $^{13}C_4$ PFOS	%	97	90	90	92	89
Extracted ISTD $^{13}C_4$ PFBA	%	51	96	93	94	92

PFAS in Waters Extended						
Our Reference	UNITS	344976-1	344976-2	344976-3	344976-4	344976-5
Your Reference		SMW_BH035s	SMW_BH035	SMW_BH038	SMW_BH009s	DS-1
Date Sampled		22/02/2024	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ PFPeA	%	92	95	94	97	95
Extracted ISTD $^{13}C_2$ PFHxA	%	96	95	93	95	92
Extracted ISTD $^{13}C_4$ PFHpA	%	98	97	95	99	97
Extracted ISTD $^{13}C_4$ PFOA	%	103	99	100	102	103
Extracted ISTD $^{13}C_5$ PFNA	%	96	93	93	98	96
Extracted ISTD $^{13}C_2$ PFDA	%	97	92	95	94	95
Extracted ISTD $^{13}C_2$ PFUnDA	%	101	94	97	98	96
Extracted ISTD $^{13}C_2$ PFDoDA	%	92	86	86	91	89
Extracted ISTD $^{13}C_2$ PFTeDA	%	76	65	64	75	71
Extracted ISTD $^{13}C_2$ 4:2FTS	%	94	86	95	101	99
Extracted ISTD $^{13}C_2$ 6:2FTS	%	98	84	103	102	100
Extracted ISTD $^{13}C_2$ 8:2FTS	%	102	92	103	107	107
Extracted ISTD $^{13}C_8$ FOSA	%	102	97	98	103	99
Extracted ISTD d_3 N MeFOSA	%	98	95	95	98	99
Extracted ISTD d_5 N EtFOSA	%	100	90	90	98	94
Extracted ISTD d_7 N MeFOSE	%	99	94	92	96	94
Extracted ISTD d_9 N EtFOSE	%	101	96	96	100	99
Extracted ISTD d_3 N MeFOSAA	%	109	95	104	107	108
Extracted ISTD d_5 N EtFOSAA	%	105	90	106	107	104
Total Positive PFHxS & PFOS	µg/L	0.02	<0.01	<0.01	0.02	0.01
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01	0.01	0.02	0.01
Total Positive PFAS	µg/L	0.02	<0.01	0.04	0.06	0.07

Dissolved Gases in Water						
Our Reference		344976-1	344976-2	344976-3	344976-4	344976-5
Your Reference	UNITS	SMW_BH035s	SMW_BH035	SMW_BH038	SMW_BH009s	DS-1
Date Sampled		22/02/2024	22/02/2024	22/02/2024	22/02/2024	22/02/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	28/02/2024	28/02/2024	28/02/2024	28/02/2024	28/02/2024
Date analysed	-	28/02/2024	28/02/2024	28/02/2024	28/02/2024	28/02/2024
Methane	µg/L	7	7	<5	<5	<5

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.
Metals-020	Determination of various metals by ICP-AES.
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. Salt forms (e.g. FeO, PbO, ZnO) are determinined stoichiometrically from the base metal concentration.
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.

Method ID	Methodology Summary
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.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date Extracted	-			27/02/2024	[NT]	[NT]	[NT]	[NT]	27/02/2024	[NT]
Date Analysed	-			28/02/2024	[NT]	[NT]	[NT]	[NT]	28/02/2024	[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]	97	[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]	100	[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]	102	[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]	102	[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]	103	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	100	[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]	100	[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]	97	[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]	99	[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]	99	[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]	99	[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]

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[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	112	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate Toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	95	[NT]	[NT]	[NT]	[NT]	99	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			27/02/2024	[NT]	[NT]	[NT]	[NT]	27/02/2024	[NT]
Date analysed	-			28/02/2024	[NT]	[NT]	[NT]	[NT]	28/02/2024	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	100	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	99	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	112	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate Toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	95	[NT]	[NT]	[NT]	[NT]	99	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	344976-5
Date extracted	-			28/02/2024	1	28/02/2024	28/02/2024		28/02/2024	28/02/2024
Date analysed	-			28/02/2024	1	29/02/2024	29/02/2024		28/02/2024	29/02/2024
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	109	105
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	108	112
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	86	107
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	109	105
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	108	112
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	86	107
Surrogate o-Terphenyl	%		Org-020	85	1	84	82	2	95	96

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	4	28/02/2024	28/02/2024		[NT]	[NT]
Date analysed	-			[NT]	4	29/02/2024	29/02/2024		[NT]	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	[NT]	4	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	[NT]	4	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	[NT]	4	<100	<100	0	[NT]	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	[NT]	4	<50	<50	0	[NT]	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	[NT]	4	<100	<100	0	[NT]	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	[NT]	4	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	4	68	87	25	[NT]	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	344976-5
Date extracted	-			28/02/2024	4	28/02/2024	28/02/2024		28/02/2024	28/02/2024
Date analysed	-			29/02/2024	4	29/02/2024	29/02/2024		29/02/2024	29/02/2024
Naphthalene	µg/L	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	111	119
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	107	111
Fluorene	µg/L	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	107	88
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	115	116
Anthracene	µg/L	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	112	131
Pyrene	µg/L	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	111	124
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	98	101
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	4	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	121	133
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	132	4	74	121	48	107	127

QUALITY CONTROL: All metals in water-dissolved					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			28/02/2024	2	28/02/2024	28/02/2024		28/02/2024	[NT]
Date analysed	-			28/02/2024	2	28/02/2024	28/02/2024		28/02/2024	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	101	[NT]
Boron-Dissolved	µg/L	20	Metals-022	<20	2	50	40	22	111	[NT]
Barium-Dissolved	µg/L	1	Metals-022	<1	2	5000	5000	0	104	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	2	<0.5	<0.5	0	81	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	2	<0.1	<0.1	0	97	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	98	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	2	2	2	0	95	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	2	2	2	0	101	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	2	<0.05	[NT]		107	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	2	230	230	0	94	[NT]
Molybdenum-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	95	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	2	14	13	7	95	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	103	[NT]
Antimony-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	101	[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	97	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	2	10	11	10	95	[NT]
Iron-Dissolved	µg/L	10	Metals-022	<10	2	<10	<10	0	95	[NT]

QUALITY CONTROL: All metals in water - total					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			28/02/2024	1	28/02/2024	28/02/2024		28/02/2024	[NT]
Date analysed	-			29/02/2024	1	29/02/2024	29/02/2024		29/02/2024	[NT]
Arsenic-Total	µg/L	1	Metals-022	<1	1	15	[NT]		105	[NT]
Boron-Total	µg/L	20	Metals-022	<20	1	30	[NT]		119	[NT]
Barium-Total	µg/L	1	Metals-022	<1	1	700	[NT]		106	[NT]
Beryllium-Total	µg/L	0.5	Metals-022	<0.5	1	33	[NT]		88	[NT]
Cadmium-Total	µg/L	0.1	Metals-022	<0.1	1	0.7	[NT]		103	[NT]
Chromium-Total	µg/L	1	Metals-022	<1	1	64	[NT]		104	[NT]
Copper-Total	µg/L	1	Metals-022	<1	1	440	[NT]		101	[NT]
Cobalt-Total	µg/L	1	Metals-022	<1	1	170	[NT]		103	[NT]
Mercury-Total	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	101	[NT]
Manganese-Total	µg/L	5	Metals-022	<5	1	8300	[NT]		99	[NT]
Molybdenum-Total	µg/L	1	Metals-022	<1	1	<1	[NT]		98	[NT]
Nickel-Total	µg/L	1	Metals-022	<1	1	170	[NT]		101	[NT]
Lead-Total	µg/L	1	Metals-022	<1	1	83	[NT]		105	[NT]
Antimony-Total	µg/L	1	Metals-022	<1	1	<1	[NT]		104	[NT]
Selenium-Total	µg/L	1	Metals-022	<1	1	1	[NT]		105	[NT]
Tin-Total	µg/L	1	Metals-022	<1	1	<1	[NT]		100	[NT]
Zinc-Total	µg/L	1	Metals-022	<1	1	1600	[NT]		105	[NT]
Iron-Total	µg/L	10	Metals-022	<10	1	83000	[NT]		100	[NT]

QUALITY CONTROL: All metals in water - total					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	4	28/02/2024	28/02/2024		[NT]	[NT]
Date analysed	-			[NT]	4	29/02/2024	29/02/2024		[NT]	[NT]
Arsenic-Total	µg/L	1	Metals-022	[NT]	4	14	13	7	[NT]	[NT]
Boron-Total	µg/L	20	Metals-022	[NT]	4	100	100	0	[NT]	[NT]
Barium-Total	µg/L	1	Metals-022	[NT]	4	1600	1300	21	[NT]	[NT]
Beryllium-Total	µg/L	0.5	Metals-022	[NT]	4	6	5	18	[NT]	[NT]
Cadmium-Total	µg/L	0.1	Metals-022	[NT]	4	1.3	1.3	0	[NT]	[NT]
Chromium-Total	µg/L	1	Metals-022	[NT]	4	18	16	12	[NT]	[NT]
Copper-Total	µg/L	1	Metals-022	[NT]	4	110	110	0	[NT]	[NT]
Cobalt-Total	µg/L	1	Metals-022	[NT]	4	440	430	2	[NT]	[NT]
Mercury-Total	µg/L	0.05	Metals-021	[NT]	4	<0.05	[NT]		[NT]	[NT]
Manganese-Total	µg/L	5	Metals-022	[NT]	4	18000	17000	6	[NT]	[NT]
Molybdenum-Total	µg/L	1	Metals-022	[NT]	4	2	2	0	[NT]	[NT]
Nickel-Total	µg/L	1	Metals-022	[NT]	4	210	210	0	[NT]	[NT]
Lead-Total	µg/L	1	Metals-022	[NT]	4	43	38	12	[NT]	[NT]
Antimony-Total	µg/L	1	Metals-022	[NT]	4	<1	<1	0	[NT]	[NT]
Selenium-Total	µg/L	1	Metals-022	[NT]	4	<1	<1	0	[NT]	[NT]
Tin-Total	µg/L	1	Metals-022	[NT]	4	1	<1	0	[NT]	[NT]
Zinc-Total	µg/L	1	Metals-022	[NT]	4	960	920	4	[NT]	[NT]
Iron-Total	µg/L	10	Metals-022	[NT]	4	42000	38000	10	[NT]	[NT]

QUALITY CONTROL: Metals in Waters - Total					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			28/02/2024	4	28/02/2024	28/02/2024		28/02/2024	[NT]
Date analysed	-			29/02/2024	4	29/02/2024	29/02/2024		29/02/2024	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	4	0.92	0.84	9	114	[NT]

QUALITY CONTROL: Miscellaneous Inorganics					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	344976-2
Date prepared	-			27/02/2024	1	27/02/2024	27/02/2024		27/02/2024	27/02/2024
Date analysed	-			27/02/2024	1	27/02/2024	27/02/2024		27/02/2024	27/02/2024
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	0.18	0.17	6	88	#
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.01	0.01	0	100	#
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	0.5	0.5	0	101	[NT]

QUALITY CONTROL: Ion Balance					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	344976-4
Date prepared	-			27/02/2024	1	27/02/2024	27/02/2024		27/02/2024	27/02/2024
Date analysed	-			27/02/2024	1	27/02/2024	27/02/2024		27/02/2024	27/02/2024
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	34	[NT]		107	#
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	9.8	[NT]		98	90
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	600	[NT]		88	#
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	50	[NT]		104	116
Hardness	mgCaCO 3 /L	3	Metals-020	[NT]	1	290	[NT]		[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	19	17	11	[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	19	17	11	105	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	480	[NT]		101	#
Chloride, Cl	mg/L	1	Inorg-081	<1	1	920	[NT]		93	#
Ionic Balance	%		Inorg-040	[NT]	1	-6.0	[NT]		[NT]	[NT]

QUALITY CONTROL: Ion Balance					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	2	27/02/2024	27/02/2024		[NT]	[NT]
Date analysed	-			[NT]	2	27/02/2024	27/02/2024		[NT]	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	[NT]	2	470	480	2	[NT]	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	[NT]	2	47	47	0	[NT]	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	[NT]	2	2600	2400	8	[NT]	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	[NT]	2	360	370	3	[NT]	[NT]
Hardness	mgCaCO 3 /L	3	Metals-020	[NT]	2	2700	2700	0	[NT]	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	[NT]	2	<5	[NT]		[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	[NT]	2	670	[NT]		[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	[NT]	2	<5	[NT]		[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	[NT]	2	670	[NT]		[NT]	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	[NT]	2	11	[NT]		[NT]	[NT]
Chloride, Cl	mg/L	1	Inorg-081	[NT]	2	4600	[NT]		[NT]	[NT]
Ionic Balance	%		Inorg-040	[NT]	2	8.0	[NT]		[NT]	[NT]

QUALITY CONTROL: Ion Balance					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	3	27/02/2024	27/02/2024		[NT]	[NT]
Date analysed	-			[NT]	3	27/02/2024	27/02/2024		[NT]	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	[NT]	3	190	[NT]		[NT]	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	[NT]	3	5.6	[NT]		[NT]	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	[NT]	3	200	[NT]		[NT]	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	[NT]	3	<0.5	[NT]		[NT]	[NT]
Hardness	mgCaCO 3 /L	3	Metals-020	[NT]	3	460	[NT]		[NT]	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	[NT]	3	170	[NT]		[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	[NT]	3	<5	[NT]		[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	[NT]	3	38	[NT]		[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	[NT]	3	210	[NT]		[NT]	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	[NT]	3	160	160	0	[NT]	[NT]
Chloride, Cl	mg/L	1	Inorg-081	[NT]	3	280	280	0	[NT]	[NT]
Ionic Balance	%		Inorg-040	[NT]	3	8.0	[NT]		[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			27/02/2024	[NT]	[NT]	[NT]	[NT]	27/02/2024	[NT]
Date analysed	-			27/02/2024	[NT]	[NT]	[NT]	[NT]	27/02/2024	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	95	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	95	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	93	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	101	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	103	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	101	[NT]
4:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	101	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	97	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	106	[NT]
10:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	102	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	103	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	109	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	103	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	94	[NT]

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	98	[NT]	[NT]	[NT]	[NT]	97	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	96	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	91	[NT]	[NT]	[NT]	[NT]	88	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	97	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	97	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	97	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	96	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	90	[NT]	[NT]	[NT]	[NT]	91	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	68	[NT]	[NT]	[NT]	[NT]	69	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	110	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	96	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	96	[NT]

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	97	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	109	[NT]	[NT]	[NT]	[NT]	107	[NT]

QUALITY CONTROL: Dissolved Gases in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			28/02/2024	1	28/02/2024	28/02/2024		28/02/2024	[NT]
Date analysed	-			28/02/2024	1	28/02/2024	28/02/2024		28/02/2024	[NT]
Methane	µg/L	5	AT-006	<5	1	7	8	13	98	[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.

ION_BALANCE:# Percent recovery is not applicable due to the high concentration of the analyte/s in the sample/s. However an acceptable recovery was obtained for the LCS.

MISC_INORG:# Percent recovery is not applicable due to the high concentration of the analyte/s in the sample/s. However an acceptable recovery was obtained for the LCS.

MISC_INORG:Nitrate as N in water:Samples were out of the recommended holding time for this analysis.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200   fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 347050

Client Details

Client	CTP AFJV
Attention	Aaheli Chattopadhyay
Address	7 Figtree Dr, SYDNEY OLYMPIC PARK, NSW, 2127

Sample Details

Your Reference	**CTP Groundwater Monitoring - 19-03-23**
Number of Samples	7 Water
Date samples received	21/03/2024
Date completed instructions received	21/03/2024

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	28/03/2024
Date of Issue	28/03/2024

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Results Approved By
Amanda Chui, LC/Air Toxics Supervisor
Dragana Tomas, Senior Chemist
Hannah Nguyen, Metals Supervisor
Loren Bardwell, Development Chemist
Priya Samarawickrama, Senior Chemist
Timothy Toll, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

VOCs in water						
Our Reference		347050-1	347050-2	347050-3	347050-4	347050-5
Your Reference	UNITS	S06	S02d	BH120	BH019	BH126
Date Sampled		19/03/2024	19/03/2024	19/03/2024	19/03/2024	19/03/2024
Type of sample		Water	Water	Water	Water	Water
Date Extracted	-	22/03/2024	22/03/2024	22/03/2024	22/03/2024	22/03/2024
Date Analysed	-	25/03/2024	25/03/2024	25/03/2024	25/03/2024	25/03/2024
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	2	<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	3
Carbon tetrachloride	µg/L	<1	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1	12
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	10
Ethylbenzene	µg/L	<1	<1	<1	<1	<1

VOCs in water						
Our Reference		347050-1	347050-2	347050-3	347050-4	347050-5
Your Reference	UNITS	S06	S02d	BH120	BH019	BH126
Date Sampled		19/03/2024	19/03/2024	19/03/2024	19/03/2024	19/03/2024
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	5	<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	110	109	108	109
Surrogate Toluene-d8	%	100	100	101	101	101
Surrogate 4-Bromofluorobenzene	%	103	105	105	107	107

VOCs in water			
Our Reference		347050-6	347050-7
Your Reference	UNITS	AFBH36	DS-1
Date Sampled		19/03/2024	19/03/2024
Type of sample		Water	Water
Date Extracted	-	22/03/2024	22/03/2024
Date Analysed	-	25/03/2024	25/03/2024
Dichlorodifluoromethane	µg/L	<10	<10
Chloromethane	µg/L	<10	<10
Vinyl Chloride	µg/L	<10	<10
Bromomethane	µg/L	<10	<10
Chloroethane	µg/L	<10	<10
Trichlorofluoromethane	µg/L	<10	<10
1,1-Dichloroethene	µg/L	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1
1,1-dichloroethane	µg/L	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1
Bromochloromethane	µg/L	<1	<1
Chloroform	µg/L	<1	<1
2,2-dichloropropane	µg/L	<1	<1
1,2-dichloroethane	µg/L	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1
1,1-dichloropropene	µg/L	<1	<1
Cyclohexane	µg/L	<1	<1
Carbon tetrachloride	µg/L	<1	<1
Benzene	µg/L	<1	<1
Dibromomethane	µg/L	<1	<1
1,2-dichloropropane	µg/L	<1	<1
Trichloroethene	µg/L	<1	<1
Bromodichloromethane	µg/L	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1
Toluene	µg/L	<1	<1
1,3-dichloropropane	µg/L	<1	<1
Dibromochloromethane	µg/L	<1	<1
1,2-dibromoethane	µg/L	<1	<1
Tetrachloroethene	µg/L	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1
Chlorobenzene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1

VOCs in water			
Our Reference		347050-6	347050-7
Your Reference	UNITS	AFBH36	DS-1
Date Sampled		19/03/2024	19/03/2024
Type of sample		Water	Water
Bromoform	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
Styrene	µg/L	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1
o-xylene	µg/L	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1
Isopropylbenzene	µg/L	<1	<1
Bromobenzene	µg/L	<1	<1
n-propyl benzene	µg/L	<1	<1
2-chlorotoluene	µg/L	<1	<1
4-chlorotoluene	µg/L	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1
Tert-butyl benzene	µg/L	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1
Sec-butyl benzene	µg/L	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1
4-isopropyl toluene	µg/L	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1
n-butyl benzene	µg/L	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1
Hexachlorobutadiene	µg/L	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	108	107
Surrogate Toluene-d8	%	101	101
Surrogate 4-Bromofluorobenzene	%	105	104

vTRH(C6-C10)/BTEXN in Water						
Our Reference		347050-1	347050-2	347050-3	347050-4	347050-5
Your Reference	UNITS	S06	S02d	BH120	BH019	BH126
Date Sampled		19/03/2024	19/03/2024	19/03/2024	19/03/2024	19/03/2024
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	22/03/2024	22/03/2024	22/03/2024	22/03/2024	22/03/2024
Date analysed	-	25/03/2024	25/03/2024	25/03/2024	25/03/2024	25/03/2024
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	62
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	73
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	61
Benzene	µg/L	<1	<1	<1	<1	12
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	4
Surrogate Dibromofluoromethane	%	105	110	109	108	109
Surrogate Toluene-d8	%	100	100	101	101	101
Surrogate 4-Bromofluorobenzene	%	103	105	105	107	107

vTRH(C6-C10)/BTEXN in Water			
Our Reference		347050-6	347050-7
Your Reference	UNITS	AFBH36	DS-1
Date Sampled		19/03/2024	19/03/2024
Type of sample		Water	Water
Date extracted	-	22/03/2024	22/03/2024
Date analysed	-	25/03/2024	25/03/2024
TRH C_6 - C_9	µg/L	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10
Benzene	µg/L	<1	<1
Toluene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
o-xylene	µg/L	<1	<1
Naphthalene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	108	107
Surrogate Toluene-d8	%	101	101
Surrogate 4-Bromofluorobenzene	%	105	104

svTRH (C10-C40) in Water						
Our Reference		347050-1	347050-2	347050-3	347050-4	347050-5
Your Reference	UNITS	S06	S02d	BH120	BH019	BH126
Date Sampled		19/03/2024	19/03/2024	19/03/2024	19/03/2024	19/03/2024
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	22/03/2024	22/03/2024	22/03/2024	22/03/2024	22/03/2024
Date analysed	-	23/03/2024	23/03/2024	23/03/2024	23/03/2024	23/03/2024
TRH C_{10} - C_{14}	µg/L	83	110	<50	<50	510
TRH C_{15} - C_{28}	µg/L	340	830	<100	110	1,400
TRH C_{29} - C_{36}	µg/L	170	780	<100	<100	150
Total +ve TRH (C10-C36)	µg/L	590	1,700	<50	110	2,000
TRH >C_{10} - C_{16}	µg/L	94	120	<50	<50	690
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	94	120	<50	<50	690
TRH >C_{16} - C_{34}	µg/L	430	1,400	<100	160	1,200
TRH >C_{34} - C_{40}	µg/L	110	440	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	630	1,900	<50	160	1,900
Surrogate o-Terphenyl	%	105	93	95	92	131

svTRH (C10-C40) in Water			
Our Reference		347050-6	347050-7
Your Reference	UNITS	AFBH36	DS-1
Date Sampled		19/03/2024	19/03/2024
Type of sample		Water	Water
Date extracted	-	22/03/2024	22/03/2024
Date analysed	-	23/03/2024	23/03/2024
TRH C_{10} - C_{14}	µg/L	<50	85
TRH C_{15} - C_{28}	µg/L	<100	220
TRH C_{29} - C_{36}	µg/L	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	300
TRH >C_{10} - C_{16}	µg/L	<50	66
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	66
TRH >C_{16} - C_{34}	µg/L	<100	220
TRH >C_{34} - C_{40}	µg/L	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	290
Surrogate o-Terphenyl	%	83	92

PAHs in Water						
Our Reference		347050-1	347050-2	347050-3	347050-4	347050-5
Your Reference	UNITS	S06	S02d	BH120	BH019	BH126
Date Sampled		19/03/2024	19/03/2024	19/03/2024	19/03/2024	19/03/2024
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	22/03/2024	22/03/2024	22/03/2024	22/03/2024	22/03/2024
Date analysed	-	22/03/2024	22/03/2024	22/03/2024	22/03/2024	22/03/2024
Naphthalene	µg/L	<0.1	<0.1	<0.1	<0.1	0.3
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	0.2	0.4	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	0.4	0.7	<0.1	<0.1	<0.1
Pyrene	µg/L	0.4	0.8	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.3	0.4	<0.1	<0.1	<0.1
Chrysene	µg/L	0.3	0.4	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	0.5	0.7	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	0.3	0.4	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	0.2	0.3	<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	0.3	0.4	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	0.6	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	3.0	4.6	<0.1	<0.1	0.27
Surrogate p-Terphenyl-d14	%	101	92	109	94	102

PAHs in Water			
Our Reference		347050-6	347050-7
Your Reference	UNITS	AFBH36	DS-1
Date Sampled		19/03/2024	19/03/2024
Type of sample		Water	Water
Date extracted	-	22/03/2024	22/03/2024
Date analysed	-	22/03/2024	22/03/2024
Naphthalene	µg/L	<0.1	<0.1
Acenaphthylene	µg/L	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	104	96

All metals in water-dissolved						
Our Reference		347050-1	347050-2	347050-3	347050-4	347050-5
Your Reference	UNITS	S06	S02d	BH120	BH019	BH126
Date Sampled		19/03/2024	19/03/2024	19/03/2024	19/03/2024	19/03/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	22/03/2024	22/03/2024	22/03/2024	22/03/2024	22/03/2024
Date analysed	-	22/03/2024	22/03/2024	22/03/2024	22/03/2024	22/03/2024
Arsenic-Dissolved	µg/L	1	<1	<1	3	3
Boron-Dissolved	µg/L	350	1,100	100	60	1,600
Barium-Dissolved	µg/L	74	51	56	580	1,100
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	19
Copper-Dissolved	µg/L	3	<1	<1	2	3
Cobalt-Dissolved	µg/L	<1	<1	14	<1	9
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	110	68	290	48	43
Molybdenum-Dissolved	µg/L	13	9	<1	<1	3
Nickel-Dissolved	µg/L	2	<1	16	2	29
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Antimony-Dissolved	µg/L	2	2	<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	<1	2	3	10
Iron-Dissolved	µg/L	<10	20	760	480	290

All metals in water-dissolved			
Our Reference		347050-6	347050-7
Your Reference	UNITS	AFBH36	DS-1
Date Sampled		19/03/2024	19/03/2024
Type of sample		Water	Water
Date prepared	-	22/03/2024	22/03/2024
Date analysed	-	22/03/2024	22/03/2024
Arsenic-Dissolved	µg/L	<1	<1
Boron-Dissolved	µg/L	200	80
Barium-Dissolved	µg/L	9	87
Beryllium-Dissolved	µg/L	1	<0.5
Cadmium-Dissolved	µg/L	0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1
Copper-Dissolved	µg/L	3	2
Cobalt-Dissolved	µg/L	33	16
Mercury-Dissolved	µg/L	<0.05	<0.05
Manganese-Dissolved	µg/L	2,000	320
Molybdenum-Dissolved	µg/L	<1	9
Nickel-Dissolved	µg/L	25	95
Lead-Dissolved	µg/L	<1	<1
Antimony-Dissolved	µg/L	<1	<1
Selenium-Dissolved	µg/L	<1	<1
Tin-Dissolved	µg/L	<1	<1
Zinc-Dissolved	µg/L	67	23
Iron-Dissolved	µg/L	30	540

All metals in water - total						
Our Reference		347050-1	347050-2	347050-3	347050-4	347050-5
Your Reference	UNITS	S06	S02d	BH120	BH019	BH126
Date Sampled		19/03/2024	19/03/2024	19/03/2024	19/03/2024	19/03/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	22/03/2024	22/03/2024	22/03/2024	22/03/2024	22/03/2024
Date analysed	-	22/03/2024	22/03/2024	22/03/2024	22/03/2024	22/03/2024
Arsenic-Total	µg/L	25	28	<1	5	5
Boron-Total	µg/L	310	1,200	70	50	1,800
Barium-Total	µg/L	620	1,100	71	680	1,100
Beryllium-Total	µg/L	3	5	<0.5	<0.5	<0.5
Cadmium-Total	µg/L	0.8	1.7	<0.1	<0.1	<0.1
Chromium-Total	µg/L	67	170	6	2	41
Copper-Total	µg/L	130	440	24	12	19
Cobalt-Total	µg/L	27	56	14	<1	16
Mercury-Total	µg/L	<0.05	<0.1	<0.05	<0.05	<0.05
Manganese-Total	µg/L	1,500	2,400	280	64	85
Molybdenum-Total	µg/L	13	18	2	2	3
Nickel-Total	µg/L	44	95	18	4	36
Lead-Total	µg/L	180	290	2	2	16
Antimony-Total	µg/L	4	6	<1	<1	<1
Selenium-Total	µg/L	<1	1	<1	<1	<1
Tin-Total	µg/L	10	17	<1	<1	2
Zinc-Total	µg/L	810	3,500	12	41	99
Iron-Total	µg/L	68,000	120,000	2,000	1,200	7,600

All metals in water - total			
Our Reference		347050-6	347050-7
Your Reference	UNITS	AFBH36	DS-1
Date Sampled		19/03/2024	19/03/2024
Type of sample		Water	Water
Date prepared	-	22/03/2024	22/03/2024
Date analysed	-	22/03/2024	22/03/2024
Arsenic-Total	µg/L	10	<1
Boron-Total	µg/L	230	60
Barium-Total	µg/L	140	120
Beryllium-Total	µg/L	7	<0.5
Cadmium-Total	µg/L	0.3	<0.1
Chromium-Total	µg/L	31	26
Copper-Total	µg/L	120	40
Cobalt-Total	µg/L	70	17
Mercury-Total	µg/L	<0.05	<0.05
Manganese-Total	µg/L	3,000	340
Molybdenum-Total	µg/L	2	11
Nickel-Total	µg/L	80	100
Lead-Total	µg/L	72	5
Antimony-Total	µg/L	<1	<1
Selenium-Total	µg/L	<1	<1
Tin-Total	µg/L	1	1
Zinc-Total	µg/L	310	61
Iron-Total	µg/L	52,000	4,500

Metals in Waters - Total						
Our Reference		347050-1	347050-2	347050-3	347050-4	347050-5
Your Reference	UNITS	S06	S02d	BH120	BH019	BH126
Date Sampled		19/03/2024	19/03/2024	19/03/2024	19/03/2024	19/03/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	22/03/2024	22/03/2024	22/03/2024	22/03/2024	22/03/2024
Date analysed	-	22/03/2024	22/03/2024	22/03/2024	22/03/2024	22/03/2024
Phosphorus - Total	mg/L	1.3	2.9	0.05	1.5	0.3

Metals in Waters - Total			
Our Reference		347050-6	347050-7
Your Reference	UNITS	AFBH36	DS-1
Date Sampled		19/03/2024	19/03/2024
Type of sample		Water	Water
Date prepared	-	22/03/2024	22/03/2024
Date analysed	-	22/03/2024	22/03/2024
Phosphorus - Total	mg/L	3.8	0.1

Miscellaneous Inorganics						
Our Reference		347050-1	347050-2	347050-3	347050-4	347050-5
Your Reference	UNITS	S06	S02d	BH120	BH019	BH126
Date Sampled		19/03/2024	19/03/2024	19/03/2024	19/03/2024	19/03/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	21/03/2024	21/03/2024	21/03/2024	21/03/2024	21/03/2024
Date analysed	-	21/03/2024	21/03/2024	21/03/2024	21/03/2024	21/03/2024
Ammonia as N in water	mg/L	0.68	0.33	0.73	0.66	270
Nitrate as N in water	mg/L	0.74	0.13	0.59	<0.005	0.05
Total Nitrogen in water	mg/L	1.7	0.9	1.4	3.2	320

Miscellaneous Inorganics			
Our Reference		347050-6	347050-7
Your Reference	UNITS	AFBH36	DS-1
Date Sampled		19/03/2024	19/03/2024
Type of sample		Water	Water
Date prepared	-	21/03/2024	21/03/2024
Date analysed	-	21/03/2024	21/03/2024
Ammonia as N in water	mg/L	0.014	1.0
Nitrate as N in water	mg/L	0.15	0.28
Total Nitrogen in water	mg/L	0.6	1.4

Ion Balance						
Our Reference		347050-1	347050-2	347050-3	347050-4	347050-5
Your Reference	UNITS	S06	S02d	BH120	BH019	BH126
Date Sampled		19/03/2024	19/03/2024	19/03/2024	19/03/2024	19/03/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	21/03/2024	21/03/2024	21/03/2024	21/03/2024	21/03/2024
Date analysed	-	21/03/2024	21/03/2024	21/03/2024	21/03/2024	21/03/2024
Calcium - Dissolved	mg/L	49	28	200	12	33
Potassium - Dissolved	mg/L	26	17	56	14	410
Sodium - Dissolved	mg/L	75	320	3,500	140	2,100
Magnesium - Dissolved	mg/L	15	9.8	460	8.2	70
Hardness	mgCaCO 3 /L	180	110	2,400	63	370
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	<5	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	320	260	680	110	1,800
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	<5	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	320	260	680	110	1,800
Sulphate, SO4	mg/L	63	75	470	10	6
Chloride, Cl	mg/L	77	300	5,300	170	3,100
Ionic Balance	%	-13	4.0	7.0	5.0	-7.0

Ion Balance			
Our Reference		347050-6	347050-7
Your Reference	UNITS	AFBH36	DS-1
Date Sampled		19/03/2024	19/03/2024
Type of sample		Water	Water
Date prepared	-	21/03/2024	21/03/2024
Date analysed	-	21/03/2024	21/03/2024
Calcium - Dissolved	mg/L	1	200
Potassium - Dissolved	mg/L	8.3	55
Sodium - Dissolved	mg/L	430	3,400
Magnesium - Dissolved	mg/L	8.3	450
Hardness	mgCaCO 3 /L	38	2,400
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	78	620
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	78	620
Sulphate, SO4	mg/L	380	500
Chloride, Cl	mg/L	300	5,200
Ionic Balance	%	4.0	7.0

PFAS in Waters Extended						
Our Reference		347050-1	347050-2	347050-3	347050-4	347050-5
Your Reference	UNITS	S06	S02d	BH120	BH019	BH126
Date Sampled		19/03/2024	19/03/2024	19/03/2024	19/03/2024	19/03/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	21/03/2024	21/03/2024	21/03/2024	21/03/2024	21/03/2024
Date analysed	-	21/03/2024	21/03/2024	21/03/2024	21/03/2024	21/03/2024
Perfluorobutanesulfonic acid	µg/L	0.02	<0.01	<0.01	<0.01	0.85
Perfluoropentanesulfonic acid	µg/L	0.02	<0.01	<0.01	<0.01	0.13
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.13	<0.01	<0.01	<0.01	0.22
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01	<0.01	<0.01	0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.17	<0.01	<0.01	0.01	0.23
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	1.5
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	0.1
Perfluorohexanoic acid	µg/L	0.03	<0.01	<0.01	<0.01	0.71
Perfluoroheptanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	0.18
Perfluorooctanoic acid PFOA	µg/L	0.01	<0.01	<0.01	<0.01	0.46
Perfluorononanoic acid	µg/L	<0.01	<0.01	<0.01	<0.01	0.06
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 perfluorooctanesulfon amide	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	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	0.1
Surrogate $^{13}C_8$ PFOS	%	100	98	99	98	101
Surrogate $^{13}C_2$ PFOA	%	100	97	103	96	100
Extracted ISTD $^{13}C_3$ PFBS	%	95	92	93	91	97
Extracted ISTD $^{18}O_2$ PFHxS	%	95	95	97	97	92
Extracted ISTD $^{13}C_4$ PFOS	%	93	97	94	96	96
Extracted ISTD $^{13}C_4$ PFBA	%	89	98	93	70	33

PFAS in Waters Extended						
Our Reference		347050-1	347050-2	347050-3	347050-4	347050-5
Your Reference	UNITS	S06	S02d	BH120	BH019	BH126
Date Sampled		19/03/2024	19/03/2024	19/03/2024	19/03/2024	19/03/2024
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	101	102	92	99	76
Extracted ISTD $^{13}C_2$ *PFHxA*	%	99	99	92	97	72
Extracted ISTD $^{13}C_4$ *PFHpA*	%	101	101	95	102	84
Extracted ISTD $^{13}C_4$ *PFOA*	%	100	100	92	101	96
Extracted ISTD $^{13}C_5$ *PFNA*	%	99	98	94	98	97
Extracted ISTD $^{13}C_2$ *PFDA*	%	102	101	92	97	100
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	99	103	96	99	110
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	105	106	97	101	104
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	96	109	94	88	75
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	110	112	78	127	102
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	118	112	64	113	140
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	117	117	80	111	146
Extracted ISTD $^{13}C_8$ *FOSA*	%	95	97	98	98	88
Extracted ISTD d_3 *N MeFOSA*	%	89	89	89	92	90
Extracted ISTD d_5 *N EtFOSA*	%	89	88	93	91	91
Extracted ISTD d_7 *N MeFOSE*	%	91	91	92	93	87
Extracted ISTD d_9 *N EtFOSE*	%	92	95	93	94	90
Extracted ISTD d_3 *N MeFOSAA*	%	118	119	96	111	110
Extracted ISTD d_5 *N EtFOSAA*	%	111	117	89	106	119
Total Positive PFHxS & PFOS	µg/L	0.30	<0.01	<0.01	0.01	0.45
Total Positive PFOA & PFOS	µg/L	0.18	<0.01	<0.01	0.01	0.69
Total Positive PFAS	µg/L	0.38	<0.01	<0.01	0.01	4.5

PFAS in Waters Extended			
Our Reference		347050-6	347050-7
Your Reference	UNITS	AFBH36	DS-1
Date Sampled		19/03/2024	19/03/2024
Type of sample		Water	Water
Date prepared	-	21/03/2024	21/03/2024
Date analysed	-	21/03/2024	21/03/2024
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	102	101
Surrogate $^{13}C_2$ *PFOA*	%	100	101
Extracted ISTD $^{13}C_3$ *PFBS*	%	93	91
Extracted ISTD $^{18}O_2$ *PFHxS*	%	92	92
Extracted ISTD $^{13}C_4$ *PFOS*	%	91	92
Extracted ISTD $^{13}C_4$ *PFBA*	%	76	79

PFAS in Waters Extended			
Our Reference		347050-6	347050-7
Your Reference	UNITS	AFBH36	DS-1
Date Sampled		19/03/2024	19/03/2024
Type of sample		Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	93	79
Extracted ISTD $^{13}C_2$ *PFHxA*	%	93	83
Extracted ISTD $^{13}C_4$ *PFHpA*	%	95	87
Extracted ISTD $^{13}C_4$ *PFOA*	%	93	88
Extracted ISTD $^{13}C_5$ *PFNA*	%	93	89
Extracted ISTD $^{13}C_2$ *PFDA*	%	97	88
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	101	95
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	96	92
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	74	66
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	92	73
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	91	76
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	103	87
Extracted ISTD $^{13}C_8$ *FOSA*	%	98	94
Extracted ISTD d_3 *N MeFOSA*	%	92	90
Extracted ISTD d_5 *N EtFOSA*	%	92	89
Extracted ISTD d_7 *N MeFOSE*	%	90	90
Extracted ISTD d_9 *N EtFOSE*	%	96	90
Extracted ISTD d_3 *N MeFOSAA*	%	99	82
Extracted ISTD d_5 *N EtFOSAA*	%	106	86
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01

Dissolved Gases in Water						
Our Reference		347050-1	347050-2	347050-3	347050-4	347050-5
Your Reference	UNITS	S06	S02d	BH120	BH019	BH126
Date Sampled		19/03/2024	19/03/2024	19/03/2024	19/03/2024	19/03/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	27/03/2024	27/03/2024	27/03/2024	27/03/2024	27/03/2024
Date analysed	-	27/03/2024	27/03/2024	27/03/2024	27/03/2024	27/03/2024
Methane	µg/L	3,200	170	<5	250	2,000

Dissolved Gases in Water			
Our Reference		347050-6	347050-7
Your Reference	UNITS	AFBH36	DS-1
Date Sampled		19/03/2024	19/03/2024
Type of sample		Water	Water
Date prepared	-	27/03/2024	27/03/2024
Date analysed	-	27/03/2024	27/03/2024
Methane	µg/L	<5	9

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.
Metals-020	Determination of various metals by ICP-AES.
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. Salt forms (e.g. FeO, PbO, ZnO) are determinined stoichiometrically from the base metal concentration.
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.

Method ID	Methodology Summary
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.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date Extracted	-			22/03/2024	5	22/03/2024	25/03/2024		22/03/2024	[NT]
Date Analysed	-			25/03/2024	5	25/03/2024	26/03/2024		25/03/2024	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	5	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	5	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	5	<10	<10	0	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	5	<10	<10	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	5	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	5	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	5	<1	<1	0	88	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	5	<1	<1	0	89	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	5	<1	<1	0	84	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	5	<1	<1	0	86	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	5	3	3	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	5	12	13	8	90	[NT]
Dibromomethane	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	5	<1	<1	0	108	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	5	<1	<1	0	88	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	5	<1	<1	0	90	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	5	<1	<1	0	94	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	5	<1	<1	0	88	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	5	10	10	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	5	<1	<1	0	97	[NT]
Bromoform	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	5	<2	<2	0	97	[NT]
Styrene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
o-xylene	µg/L	1	Org-023	<1	5	<1	<1	0	97	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	5	1	1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	5	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	109	5	109	108	1	103	[NT]
Surrogate Toluene-d8	%		Org-023	102	5	101	100	1	101	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	105	5	107	100	7	108	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			22/03/2024	5	22/03/2024	25/03/2024		22/03/2024	[NT]
Date analysed	-			25/03/2024	5	25/03/2024	26/03/2024		25/03/2024	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	5	62	62	0	94	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	5	73	75	3	94	[NT]
Benzene	µg/L	1	Org-023	<1	5	12	13	8	90	[NT]
Toluene	µg/L	1	Org-023	<1	5	<1	<1	0	90	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	5	<1	<1	0	97	[NT]
m+p-xylene	µg/L	2	Org-023	<2	5	<2	<2	0	97	[NT]
o-xylene	µg/L	1	Org-023	<1	5	<1	<1	0	97	[NT]
Naphthalene	µg/L	1	Org-023	<1	5	4	3	29	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	109	5	109	108	1	103	[NT]
Surrogate Toluene-d8	%		Org-023	102	5	101	100	1	101	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	105	5	107	100	7	108	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	347050-2
Date extracted	-			22/03/2024	1	22/03/2024	22/03/2024		22/03/2024	22/03/2024
Date analysed	-			23/03/2024	1	23/03/2024	23/03/2024		23/03/2024	23/03/2024
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	83	84	1	117	113
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	340	330	3	115	84
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	170	220	26	100	#
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	94	86	9	117	113
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	430	460	7	115	84
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	110	130	17	100	#
Surrogate o-Terphenyl	%		Org-020	94	1	105	96	9	102	104

QUALITY CONTROL: PAHs in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	347050-2
Date extracted	-			22/03/2024	1	22/03/2024	22/03/2024		22/03/2024	22/03/2024
Date analysed	-			22/03/2024	1	22/03/2024	22/03/2024		22/03/2024	22/03/2024
Naphthalene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	126	117
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	103	95
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	120	112
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	0.2	0.4	67	116	100
Anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	0.2	67	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	1	0.4	0.8	67	106	83
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	0.4	0.8	67	110	87
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	1	0.3	0.5	50	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	1	0.3	0.5	50	92	76
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	1	0.5	0.8	46	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	1	0.3	0.5	50	114	97
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	1	0.2	0.4	67	[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	0.3	<0.1	100	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	102	1	101	102	1	102	98

QUALITY CONTROL: PAHs in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	7	22/03/2024	22/03/2024		[NT]	[NT]
Date analysed	-			[NT]	7	22/03/2024	22/03/2024		[NT]	[NT]
Naphthalene	µg/L	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Fluorene	µg/L	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Anthracene	µg/L	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Pyrene	µg/L	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	[NT]	7	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	[NT]	7	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	7	96	94	2	[NT]	[NT]

QUALITY CONTROL: All metals in water-dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	347050-3
Date prepared	-			22/03/2024	1	22/03/2024	22/03/2024		22/03/2024	22/03/2024
Date analysed	-			22/03/2024	1	22/03/2024	22/03/2024		22/03/2024	22/03/2024
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	1	[NT]		99	101
Boron-Dissolved	µg/L	20	Metals-022	<20	1	350	[NT]		96	##
Barium-Dissolved	µg/L	1	Metals-022	<1	1	74	[NT]		101	94
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	1	<0.5	[NT]		87	113
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	[NT]		99	97
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		95	113
Copper-Dissolved	µg/L	1	Metals-022	<1	1	3	[NT]		95	99
Cobalt-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		102	111
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	96	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	1	110	[NT]		98	#
Molybdenum-Dissolved	µg/L	1	Metals-022	<1	1	13	[NT]		94	108
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	2	[NT]		99	108
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		97	86
Antimony-Dissolved	µg/L	1	Metals-022	<1	1	2	[NT]		95	94
Selenium-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		98	97
Tin-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		97	97
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	3	[NT]		101	104
Iron-Dissolved	µg/L	10	Metals-022	<10	1	<10	[NT]		100	#

QUALITY CONTROL: All metals in water-dissolved					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	2	22/03/2024	22/03/2024		[NT]	[NT]
Date analysed	-			[NT]	2	22/03/2024	22/03/2024		[NT]	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Boron-Dissolved	µg/L	20	Metals-022	[NT]	2	1100	1100	0	[NT]	[NT]
Barium-Dissolved	µg/L	1	Metals-022	[NT]	2	51	51	0	[NT]	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	[NT]	2	<0.5	<0.5	0	[NT]	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	2	<0.1	<0.1	0	[NT]	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Copper-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	2	<0.05	[NT]		[NT]	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	[NT]	2	68	67	1	[NT]	[NT]
Molybdenum-Dissolved	µg/L	1	Metals-022	[NT]	2	9	9	0	[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Lead-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Antimony-Dissolved	µg/L	1	Metals-022	[NT]	2	2	2	0	[NT]	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Tin-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	2	<1	<1	0	[NT]	[NT]
Iron-Dissolved	µg/L	10	Metals-022	[NT]	2	20	20	0	[NT]	[NT]

QUALITY CONTROL: All metals in water - total						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	347050-2
Date prepared	-			22/03/2024	1	22/03/2024	22/03/2024		22/03/2024	22/03/2024
Date analysed	-			22/03/2024	1	22/03/2024	22/03/2024		22/03/2024	22/03/2024
Arsenic-Total	µg/L	1	Metals-022	<1	1	25	[NT]		101	[NT]
Boron-Total	µg/L	20	Metals-022	<20	1	310	[NT]		96	[NT]
Barium-Total	µg/L	1	Metals-022	<1	1	620	[NT]		96	[NT]
Beryllium-Total	µg/L	0.5	Metals-022	<0.5	1	3	[NT]		82	[NT]
Cadmium-Total	µg/L	0.1	Metals-022	<0.1	1	0.8	[NT]		99	[NT]
Chromium-Total	µg/L	1	Metals-022	<1	1	67	[NT]		89	[NT]
Copper-Total	µg/L	1	Metals-022	<1	1	130	[NT]		90	[NT]
Cobalt-Total	µg/L	1	Metals-022	<1	1	27	[NT]		92	[NT]
Mercury-Total	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	91	#
Manganese-Total	µg/L	5	Metals-022	<5	1	1500	[NT]		92	[NT]
Molybdenum-Total	µg/L	1	Metals-022	<1	1	13	[NT]		91	[NT]
Nickel-Total	µg/L	1	Metals-022	<1	1	44	[NT]		93	[NT]
Lead-Total	µg/L	1	Metals-022	<1	1	180	[NT]		100	[NT]
Antimony-Total	µg/L	1	Metals-022	<1	1	4	[NT]		100	[NT]
Selenium-Total	µg/L	1	Metals-022	<1	1	<1	[NT]		100	[NT]
Tin-Total	µg/L	1	Metals-022	<1	1	10	[NT]		96	[NT]
Zinc-Total	µg/L	1	Metals-022	<1	1	810	[NT]		96	[NT]
Iron-Total	µg/L	10	Metals-022	<10	1	68000	[NT]		95	[NT]

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	22/03/2024	22/03/2024		[NT]	[NT]
Date analysed	-			[NT]	3	22/03/2024	22/03/2024		[NT]	[NT]
Arsenic-Total	µg/L	1	Metals-022	[NT]	3	<1	<1	0	[NT]	[NT]
Boron-Total	µg/L	20	Metals-022	[NT]	3	70	70	0	[NT]	[NT]
Barium-Total	µg/L	1	Metals-022	[NT]	3	71	68	4	[NT]	[NT]
Beryllium-Total	µg/L	0.5	Metals-022	[NT]	3	<0.5	<0.5	0	[NT]	[NT]
Cadmium-Total	µg/L	0.1	Metals-022	[NT]	3	<0.1	<0.1	0	[NT]	[NT]
Chromium-Total	µg/L	1	Metals-022	[NT]	3	6	6	0	[NT]	[NT]
Copper-Total	µg/L	1	Metals-022	[NT]	3	24	21	13	[NT]	[NT]
Cobalt-Total	µg/L	1	Metals-022	[NT]	3	14	14	0	[NT]	[NT]
Mercury-Total	µg/L	0.05	Metals-021	[NT]	3	<0.05	[NT]		[NT]	[NT]
Manganese-Total	µg/L	5	Metals-022	[NT]	3	280	290	4	[NT]	[NT]
Molybdenum-Total	µg/L	1	Metals-022	[NT]	3	2	1	67	[NT]	[NT]
Nickel-Total	µg/L	1	Metals-022	[NT]	3	18	18	0	[NT]	[NT]
Lead-Total	µg/L	1	Metals-022	[NT]	3	2	3	40	[NT]	[NT]
Antimony-Total	µg/L	1	Metals-022	[NT]	3	<1	<1	0	[NT]	[NT]
Selenium-Total	µg/L	1	Metals-022	[NT]	3	<1	<1	0	[NT]	[NT]
Tin-Total	µg/L	1	Metals-022	[NT]	3	<1	<1	0	[NT]	[NT]
Zinc-Total	µg/L	1	Metals-022	[NT]	3	12	11	9	[NT]	[NT]
Iron-Total	µg/L	10	Metals-022	[NT]	3	2000	2000	0	[NT]	[NT]

QUALITY CONTROL: Metals in Waters - Total					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	347050-4
Date prepared	-			22/03/2024	3	22/03/2024	22/03/2024		22/03/2024	22/03/2024
Date analysed	-			22/03/2024	3	22/03/2024	22/03/2024		22/03/2024	22/03/2024
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	3	0.05	<0.05	0	102	119

QUALITY CONTROL: Miscellaneous Inorganics					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	347050-2
Date prepared	-			21/03/2024	1	21/03/2024	21/03/2024		21/03/2024	21/03/2024
Date analysed	-			21/03/2024	1	21/03/2024	21/03/2024		21/03/2024	21/03/2024
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	0.68	0.70	3	102	88
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.74	0.74	0	99	73
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	1.7	1.7	0	109	[NT]

QUALITY CONTROL: Miscellaneous Inorganics					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	347050-6
Date prepared	-			[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	21/03/2024
Date analysed	-			[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	21/03/2024
Ammonia as N in water	mg/L	0.005	Inorg-057	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	82

QUALITY CONTROL: Ion Balance					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	347050-4
Date prepared	-			21/03/2024	3	21/03/2024	21/03/2024		21/03/2024	21/03/2024
Date analysed	-			21/03/2024	3	21/03/2024	21/03/2024		21/03/2024	21/03/2024
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	3	200	200	0	98	125
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	3	56	56	0	99	118
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	3	3500	3500	0	84	#
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	3	460	460	0	100	109
Hardness	mgCaCO 3 /L	3	Metals-020	[NT]	3	2400	2400	0	[NT]	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	3	<5	[NT]		[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	3	680	[NT]		[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	3	<5	[NT]		[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	3	680	[NT]		105	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	3	470	[NT]		112	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	3	5300	[NT]		93	[NT]
Ionic Balance	%		Inorg-040	[NT]	3	7.0	[NT]		[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			21/03/2024	[NT]	[NT]	[NT]	[NT]	21/03/2024	[NT]
Date analysed	-			21/03/2024	[NT]	[NT]	[NT]	[NT]	21/03/2024	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	97	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	98	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	89	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	93	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	94	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	95	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	95	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	99	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	100	[NT]
4:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	92	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	92	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	86	[NT]
10:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	86	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	99	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	97	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	103	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	102	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate $^{13}C_8$ PFOS	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	96	[NT]
Surrogate $^{13}C_2$ PFOA	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	98	[NT]

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	92	[NT]	[NT]	[NT]	[NT]	92	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	91	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	93	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	93	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	93	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	95	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	98	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	89	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	63	[NT]	[NT]	[NT]	[NT]	64	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	92	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	106	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	93	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	89	[NT]	[NT]	[NT]	[NT]	88	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	90	[NT]	[NT]	[NT]	[NT]	86	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	89	[NT]	[NT]	[NT]	[NT]	93	[NT]

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	90	[NT]	[NT]	[NT]	[NT]	88	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	97	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: Dissolved Gases in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			27/03/2024	1	27/03/2024	27/03/2024		27/03/2024	[NT]
Date analysed	-			27/03/2024	1	27/03/2024	27/03/2024		27/03/2024	[NT]
Methane	μg/L	5	AT-006	<5	1	3200	3200	0	86	[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

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 - The RPD for duplicate results is accepted due to the non homogenous nature of sample/s 347050-1,1d.

TRH Water(C10-C40) NEPM - # Percent recovery for the matrix spike is not possible to report as the high concentration of analytes in sample 347050-2ms have caused interference.

All metals in water - dissolved:
- The preserved sample provided was not identified as either total or dissolved, therefore the unpreserved sample was filtered through 0.45µm filter at the lab. Note: there is a possibility some elements may be underestimated.
- # 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.
- ## Low spike recovery was obtained for this sample. The sample was re-diluted 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:
- The preserved sample provided was not identified as either total or dissolved, therefore the analysis was conducted from the unpreserved sample.
Note: there is a possibility some elements may be underestimated
- # 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.
- The PQL for 347050-2 has been raised due to the low spike recovery. This may reflect other samples where similar in matrix and similar analytical interferences occur.

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.

Dissolved Gas
Sample 5 subsampled from amber.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200   fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 351221

Client Details

Client	CTP AFJV
Attention	Aaheli Chattopadhyay
Address	7 Figtree Dr, SYDNEY OLYMPIC PARK, NSW, 2127

Sample Details

Your Reference	**CTP Groundwater Monitoring**
Number of Samples	7 Water
Date samples received	14/05/2024
Date completed instructions received	14/05/2024

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	21/05/2024
Date of Issue	21/05/2024

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Results Approved By
Amanda Chui, LC/Air Toxics Supervisor
Diego Bigolin, Inorganics Supervisor
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Greta Petzold, Operation Manager
Liam Timmins, Organics Supervisor
Sean McAlary, Chemist (FAS)
Tabitha Roberts, Chemist

Authorised By
Nancy Zhang, Laboratory Manager

VOCs in water						
Our Reference		351221-1	351221-2	351221-3	351221-4	351221-5
Your Reference	UNITS	BH050S	BH009S	BH038	BH715B	BH051D
Date Sampled		13/05/2024	13/05/2024	13/05/2024	13/05/2024	13/05/2024
Type of sample		Water	Water	Water	Water	Water
Date Extracted	-	16/05/2024	16/05/2024	16/05/2024	16/05/2024	16/05/2024
Date Analysed	-	17/05/2024	17/05/2024	17/05/2024	17/05/2024	17/05/2024
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

VOCs in water						
Our Reference		351221-1	351221-2	351221-3	351221-4	351221-5
Your Reference	UNITS	BH050S	BH009S	BH038	BH715B	BH051D
Date Sampled		13/05/2024	13/05/2024	13/05/2024	13/05/2024	13/05/2024
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	%	98	104	100	103	99
Surrogate Toluene-d8	%	99	98	102	99	100
Surrogate 4-Bromofluorobenzene	%	97	93	99	98	96

VOCs in water			
Our Reference		351221-6	351221-7
Your Reference	UNITS	DS-1	BD046S
Date Sampled		13/05/2024	14/05/2024
Type of sample		Water	Water
Date Extracted	-	16/05/2024	16/05/2024
Date Analysed	-	17/05/2024	17/05/2024
Dichlorodifluoromethane	µg/L	<10	<10
Chloromethane	µg/L	<10	<10
Vinyl Chloride	µg/L	<10	<10
Bromomethane	µg/L	<10	<10
Chloroethane	µg/L	<10	<10
Trichlorofluoromethane	µg/L	<10	<10
1,1-Dichloroethene	µg/L	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1
1,1-dichloroethane	µg/L	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1
Bromochloromethane	µg/L	<1	<1
Chloroform	µg/L	<1	<1
2,2-dichloropropane	µg/L	<1	<1
1,2-dichloroethane	µg/L	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1
1,1-dichloropropene	µg/L	<1	<1
Cyclohexane	µg/L	<1	<1
Carbon tetrachloride	µg/L	<1	<1
Benzene	µg/L	<1	<1
Dibromomethane	µg/L	<1	<1
1,2-dichloropropane	µg/L	<1	<1
Trichloroethene	µg/L	<1	<1
Bromodichloromethane	µg/L	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1
Toluene	µg/L	<1	<1
1,3-dichloropropane	µg/L	<1	<1
Dibromochloromethane	µg/L	<1	<1
1,2-dibromoethane	µg/L	<1	<1
Tetrachloroethene	µg/L	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1
Chlorobenzene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1

VOCs in water			
Our Reference		351221-6	351221-7
Your Reference	UNITS	DS-1	BD046S
Date Sampled		13/05/2024	14/05/2024
Type of sample		Water	Water
Bromoform	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
Styrene	µg/L	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1
o-xylene	µg/L	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1
Isopropylbenzene	µg/L	<1	<1
Bromobenzene	µg/L	<1	<1
n-propyl benzene	µg/L	<1	<1
2-chlorotoluene	µg/L	<1	<1
4-chlorotoluene	µg/L	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1
Tert-butyl benzene	µg/L	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1
Sec-butyl benzene	µg/L	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1
4-isopropyl toluene	µg/L	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1
n-butyl benzene	µg/L	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1
Hexachlorobutadiene	µg/L	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	100	99
Surrogate Toluene-d8	%	99	99
Surrogate 4-Bromofluorobenzene	%	98	99

vTRH(C6-C10)/BTEXN in Water						
Our Reference		351221-1	351221-2	351221-3	351221-4	351221-5
Your Reference	UNITS	BH050S	BH009S	BH038	BH715B	BH051D
Date Sampled		13/05/2024	13/05/2024	13/05/2024	13/05/2024	13/05/2024
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	16/05/2024	16/05/2024	16/05/2024	16/05/2024	16/05/2024
Date analysed	-	17/05/2024	17/05/2024	17/05/2024	17/05/2024	17/05/2024
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	%	98	104	100	103	99
Surrogate Toluene-d8	%	99	98	102	99	100
Surrogate 4-Bromofluorobenzene	%	97	93	99	98	96

vTRH(C6-C10)/BTEXN in Water			
Our Reference		351221-6	351221-7
Your Reference	UNITS	DS-1	BD046S
Date Sampled		13/05/2024	14/05/2024
Type of sample		Water	Water
Date extracted	-	16/05/2024	16/05/2024
Date analysed	-	17/05/2024	17/05/2024
TRH C_6 - C_9	µg/L	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10
Benzene	µg/L	<1	<1
Toluene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
o-xylene	µg/L	<1	<1
Naphthalene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	100	99
Surrogate Toluene-d8	%	99	99
Surrogate 4-Bromofluorobenzene	%	98	99

svTRH (C10-C40) in Water						
Our Reference		351221-1	351221-2	351221-3	351221-4	351221-5
Your Reference	UNITS	BH050S	BH009S	BH038	BH715B	BH051D
Date Sampled		13/05/2024	13/05/2024	13/05/2024	13/05/2024	13/05/2024
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	16/05/2024	16/05/2024	16/05/2024	16/05/2024	16/05/2024
Date analysed	-	16/05/2024	17/05/2024	17/05/2024	17/05/2024	17/05/2024
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	130
TRH C_{29} - C_{36}	µg/L	<100	130	<100	<100	100
Total +ve TRH (C10-C36)	µg/L	<50	130	<50	<50	240
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	170	<100	<100	210
TRH >C_{34} - C_{40}	µg/L	<100	120	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	290	<50	<50	210
Surrogate o-Terphenyl	%	92	86	87	96	85

svTRH (C10-C40) in Water			
Our Reference		351221-6	351221-7
Your Reference	UNITS	DS-1	BD046S
Date Sampled		13/05/2024	14/05/2024
Type of sample		Water	Water
Date extracted	-	16/05/2024	16/05/2024
Date analysed	-	17/05/2024	17/05/2024
TRH C_{10} - C_{14}	µg/L	<50	<50
TRH C_{15} - C_{28}	µg/L	140	<100
TRH C_{29} - C_{36}	µg/L	130	<100
Total +ve TRH (C10-C36)	µg/L	260	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50
TRH >C_{16} - C_{34}	µg/L	230	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100
Total +ve TRH (>C10-C40)	µg/L	230	<50
Surrogate o-Terphenyl	%	83	94

PAHs in Water						
Our Reference		351221-1	351221-2	351221-3	351221-4	351221-5
Your Reference	UNITS	BH050S	BH009S	BH038	BH715B	BH051D
Date Sampled		13/05/2024	13/05/2024	13/05/2024	13/05/2024	13/05/2024
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	16/05/2024	16/05/2024	16/05/2024	16/05/2024	16/05/2024
Date analysed	-	16/05/2024	16/05/2024	16/05/2024	16/05/2024	16/05/2024
Naphthalene	µg/L	<0.1	<0.1	<0.1	<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	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	104	91	93	92	87

PAHs in Water			
Our Reference		351221-6	351221-7
Your Reference	UNITS	DS-1	BD046S
Date Sampled		13/05/2024	14/05/2024
Type of sample		Water	Water
Date extracted	-	16/05/2024	16/05/2024
Date analysed	-	16/05/2024	16/05/2024
Naphthalene	µg/L	<0.1	<0.1
Acenaphthylene	µg/L	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	96	97

All metals in water-dissolved						
Our Reference		351221-1	351221-2	351221-3	351221-4	351221-5
Your Reference	UNITS	BH050S	BH009S	BH038	BH715B	BH051D
Date Sampled		13/05/2024	13/05/2024	13/05/2024	13/05/2024	13/05/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	15/05/2024	15/05/2024	15/05/2024	15/05/2024	15/05/2024
Date analysed	-	15/05/2024	15/05/2024	15/05/2024	15/05/2024	15/05/2024
Arsenic-Dissolved	μg/L	<1	<1	<1	<1	<1
Boron-Dissolved	μg/L	70	90	20	50	30
Barium-Dissolved	μg/L	370	52	94	49	22
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	10	2	<1
Copper-Dissolved	μg/L	<1	4	4	<1	10
Cobalt-Dissolved	μg/L	<1	38	<1	5	76
Mercury-Dissolved	μg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	μg/L	6	2,300	<5	1,200	31,000
Molybdenum-Dissolved	μg/L	<1	<1	9	<1	<1
Nickel-Dissolved	μg/L	<1	22	<1	5	44
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	12	120	5	13	130
Iron-Dissolved	μg/L	<10	<10	<10	1,800	80

All metals in water-dissolved			
Our Reference		351221-6	351221-7
Your Reference	UNITS	DS-1	BD046S
Date Sampled		13/05/2024	14/05/2024
Type of sample		Water	Water
Date prepared	-	15/05/2024	15/05/2024
Date analysed	-	15/05/2024	15/05/2024
Arsenic-Dissolved	µg/L	<1	<1
Boron-Dissolved	µg/L	40	70
Barium-Dissolved	µg/L	25	34
Beryllium-Dissolved	µg/L	<0.5	<0.5
Cadmium-Dissolved	µg/L	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1
Copper-Dissolved	µg/L	9	140
Cobalt-Dissolved	µg/L	100	35
Mercury-Dissolved	µg/L	<0.05	<0.05
Manganese-Dissolved	µg/L	39,000	610
Molybdenum-Dissolved	µg/L	<1	15
Nickel-Dissolved	µg/L	57	69
Lead-Dissolved	µg/L	<1	<1
Antimony-Dissolved	µg/L	<1	<1
Selenium-Dissolved	µg/L	<1	1
Tin-Dissolved	µg/L	<1	<1
Zinc-Dissolved	µg/L	150	38
Iron-Dissolved	µg/L	120	<10

All metals in water - total						
Our Reference		351221-1	351221-2	351221-3	351221-4	351221-5
Your Reference	UNITS	BH050S	BH009S	BH038	BH715B	BH051D
Date Sampled		13/05/2024	13/05/2024	13/05/2024	13/05/2024	13/05/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	15/05/2024	15/05/2024	15/05/2024	15/05/2024	15/05/2024
Date analysed	-	15/05/2024	15/05/2024	15/05/2024	15/05/2024	15/05/2024
Arsenic-Total	µg/L	2	9	<1	1	<1
Boron-Total	µg/L	100	100	30	80	50
Barium-Total	µg/L	530	1,500	120	130	38
Beryllium-Total	µg/L	<0.5	3	<0.5	<0.5	<0.5
Cadmium-Total	µg/L	<0.1	0.7	<0.1	<0.1	0.2
Chromium-Total	µg/L	3	14	14	13	3
Copper-Total	µg/L	8	99	10	12	15
Cobalt-Total	µg/L	<1	100	<1	22	160
Mercury-Total	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Total	µg/L	44	4,900	15	1,400	57,000
Molybdenum-Total	µg/L	1	1	9	5	<1
Nickel-Total	µg/L	3	44	3	21	90
Lead-Total	µg/L	6	36	1	4	3
Antimony-Total	µg/L	<1	<1	2	<1	<1
Selenium-Total	µg/L	<1	<1	<1	<1	<1
Tin-Total	µg/L	<1	<1	<1	<1	<1
Zinc-Total	µg/L	48	350	22	89	210
Iron-Total	µg/L	8,500	17,000	500	5,800	1,600

All metals in water - total			
Our Reference		351221-6	351221-7
Your Reference	UNITS	DS-1	BD046S
Date Sampled		13/05/2024	14/05/2024
Type of sample		Water	Water
Date prepared	-	15/05/2024	15/05/2024
Date analysed	-	15/05/2024	15/05/2024
Arsenic-Total	µg/L	<1	14
Boron-Total	µg/L	50	70
Barium-Total	µg/L	37	110
Beryllium-Total	µg/L	<0.5	1
Cadmium-Total	µg/L	0.1	0.1
Chromium-Total	µg/L	3	7
Copper-Total	µg/L	14	280
Cobalt-Total	µg/L	150	54
Mercury-Total	µg/L	<0.05	<0.05
Manganese-Total	µg/L	55,000	680
Molybdenum-Total	µg/L	<1	19
Nickel-Total	µg/L	85	96
Lead-Total	µg/L	3	11
Antimony-Total	µg/L	<1	1
Selenium-Total	µg/L	<1	2
Tin-Total	µg/L	<1	<1
Zinc-Total	µg/L	200	120
Iron-Total	µg/L	1,500	8,700

Metals in Waters - Total						
Our Reference		351221-1	351221-2	351221-3	351221-4	351221-5
Your Reference	UNITS	BH050S	BH009S	BH038	BH715B	BH051D
Date Sampled		13/05/2024	13/05/2024	13/05/2024	13/05/2024	13/05/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	15/05/2024	15/05/2024	15/05/2024	15/05/2024	15/05/2024
Date analysed	-	15/05/2024	15/05/2024	15/05/2024	15/05/2024	15/05/2024
Phosphorus - Total	mg/L	0.1	0.59	<0.05	0.2	0.2

Metals in Waters - Total			
Our Reference		351221-6	351221-7
Your Reference	UNITS	DS-1	BD046S
Date Sampled		13/05/2024	14/05/2024
Type of sample		Water	Water
Date prepared	-	15/05/2024	15/05/2024
Date analysed	-	15/05/2024	15/05/2024
Phosphorus - Total	mg/L	0.2	0.08

Miscellaneous Inorganics						
Our Reference	UNITS	351221-1	351221-2	351221-3	351221-4	351221-5
Your Reference		BH050S	BH009S	BH038	BH715B	BH051D
Date Sampled		13/05/2024	13/05/2024	13/05/2024	13/05/2024	13/05/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	15/05/2024	15/05/2024	15/05/2024	15/05/2024	15/05/2024
Date analysed	-	15/05/2024	15/05/2024	15/05/2024	15/05/2024	15/05/2024
Ammonia as N in water	mg/L	0.013	0.12	0.010	1.4	0.38
Nitrate as N in water	mg/L	0.16	0.30	0.33	<0.005	0.58
Total Nitrogen in water	mg/L	0.2	0.7	1	1.5	1.5

Miscellaneous Inorganics			
Our Reference	UNITS	351221-6	351221-7
Your Reference		DS-1	BD046S
Date Sampled		13/05/2024	14/05/2024
Type of sample		Water	Water
Date prepared	-	15/05/2024	15/05/2024
Date analysed	-	15/05/2024	15/05/2024
Ammonia as N in water	mg/L	0.36	0.31
Nitrate as N in water	mg/L	0.46	0.45
Total Nitrogen in water	mg/L	1.4	0.9

Ion Balance						
Our Reference		351221-1	351221-2	351221-3	351221-4	351221-5
Your Reference	UNITS	BH050S	BH009S	BH038	BH715B	BH051D
Date Sampled		13/05/2024	13/05/2024	13/05/2024	13/05/2024	13/05/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	14/05/2024	14/05/2024	14/05/2024	14/05/2024	14/05/2024
Date analysed	-	14/05/2024	14/05/2024	14/05/2024	14/05/2024	14/05/2024
Calcium - Dissolved	mg/L	56	27	120	210	16
Potassium - Dissolved	mg/L	6.8	4	6.9	44	12
Sodium - Dissolved	mg/L	24	66	300	4,400	490
Magnesium - Dissolved	mg/L	3	8.1	<0.5	590	38
Hardness (calc) equivalent $CaCO_3$	mg/L	150	100	300	3,000	190
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	150	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	270	70	<5	640	98
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	43	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	270	70	190	640	98
Sulphate, SO4	mg/L	12	150	250	680	210
Chloride, Cl	mg/L	12	52	480	8,400	840
Ionic Balance	%	-17	-9.0	-8.0	-2.0	-8.0

Ion Balance			
Our Reference		351221-6	351221-7
Your Reference	UNITS	DS-1	BD046S
Date Sampled		13/05/2024	14/05/2024
Type of sample		Water	Water
Date prepared	-	14/05/2024	14/05/2024
Date analysed	-	14/05/2024	14/05/2024
Calcium - Dissolved	mg/L	17	130
Potassium - Dissolved	mg/L	14	32
Sodium - Dissolved	mg/L	640	1,500
Magnesium - Dissolved	mg/L	50	200
Hardness (calc) equivalent $CaCO_3$	mg/L	250	1,100
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	110	650
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	110	650
Sulphate, SO4	mg/L	260	500
Chloride, Cl	mg/L	990	2,800
Ionic Balance	%	-3.0	-6.0

PFAS in Waters Extended						
Our Reference		351221-1	351221-2	351221-3	351221-4	351221-5
Your Reference	UNITS	BH050S	BH009S	BH038	BH715B	BH051D
Date Sampled		13/05/2024	13/05/2024	13/05/2024	13/05/2024	13/05/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	15/05/2024	15/05/2024	15/05/2024	15/05/2024	15/05/2024
Date analysed	-	15/05/2024	15/05/2024	15/05/2024	15/05/2024	15/05/2024
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	0.02	<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	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02	<0.02	<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	0.02	<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	0.04	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 perfluorooctanesulfon amide	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	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	100	99	101	103	103
Surrogate $^{13}C_2$ *PFOA*	%	95	97	98	97	97
Extracted ISTD $^{13}C_3$ *PFBS*	%	109	107	108	103	108
Extracted ISTD $^{18}O_2$ *PFHxS*	%	105	103	108	105	111
Extracted ISTD $^{13}C_4$ *PFOS*	%	97	97	101	99	102
Extracted ISTD $^{13}C_4$ *PFBA*	%	108	95	96	93	94

PFAS in Waters Extended						
Our Reference		351221-1	351221-2	351221-3	351221-4	351221-5
Your Reference	UNITS	BH050S	BH009S	BH038	BH715B	BH051D
Date Sampled		13/05/2024	13/05/2024	13/05/2024	13/05/2024	13/05/2024
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	116	111	113	106	115
Extracted ISTD $^{13}C_2$ *PFHxA*	%	101	103	101	96	106
Extracted ISTD $^{13}C_4$ *PFHpA*	%	106	109	108	100	109
Extracted ISTD $^{13}C_4$ *PFOA*	%	109	106	107	105	113
Extracted ISTD $^{13}C_5$ *PFNA*	%	114	113	122	114	119
Extracted ISTD $^{13}C_2$ *PFDA*	%	110	106	108	112	112
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	113	123	122	115	123
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	99	102	99	101	106
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	90	87	88	88	99
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	119	124	119	78	127
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	120	123	125	89	129
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	145	156	151	128	165
Extracted ISTD $^{13}C_8$ *FOSA*	%	101	98	98	98	100
Extracted ISTD d_3 *N MeFOSA*	%	103	101	104	103	104
Extracted ISTD d_5 *N EtFOSA*	%	96	94	94	95	100
Extracted ISTD d_7 *N MeFOSE*	%	108	102	105	100	105
Extracted ISTD d_9 *N EtFOSE*	%	105	101	103	102	105
Extracted ISTD d_3 *N MeFOSAA*	%	117	121	115	97	122
Extracted ISTD d_5 *N EtFOSAA*	%	119	117	121	103	131
Total Positive PFHxS & PFOS	µg/L	<0.01	0.02	<0.01	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	0.04	0.01	<0.01	<0.01
Total Positive PFAS	µg/L	0.01	0.08	0.05	<0.01	<0.01

PFAS in Waters Extended			
Our Reference		351221-6	351221-7
Your Reference	UNITS	DS-1	BD046S
Date Sampled		13/05/2024	14/05/2024
Type of sample		Water	Water
Date prepared	-	15/05/2024	15/05/2024
Date analysed	-	15/05/2024	15/05/2024
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02
Perfluorohexanoic acid	µg/L	0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	104	99
Surrogate $^{13}C_2$ *PFOA*	%	98	102
Extracted ISTD $^{13}C_3$ *PFBS*	%	104	106
Extracted ISTD $^{18}O_2$ *PFHxS*	%	103	110
Extracted ISTD $^{13}C_4$ *PFOS*	%	96	100
Extracted ISTD $^{13}C_4$ *PFBA*	%	91	76

PFAS in Waters Extended			
Our Reference		351221-6	351221-7
Your Reference	UNITS	DS-1	BD046S
Date Sampled		13/05/2024	14/05/2024
Type of sample		Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	117	100
Extracted ISTD $^{13}C_2$ *PFHxA*	%	103	101
Extracted ISTD $^{13}C_4$ *PFHpA*	%	110	109
Extracted ISTD $^{13}C_4$ *PFOA*	%	109	105
Extracted ISTD $^{13}C_5$ *PFNA*	%	118	117
Extracted ISTD $^{13}C_2$ *PFDA*	%	109	109
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	126	128
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	103	100
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	90	89
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	129	89
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	127	109
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	154	131
Extracted ISTD $^{13}C_8$ *FOSA*	%	97	100
Extracted ISTD d_3 *N MeFOSA*	%	103	103
Extracted ISTD d_5 *N EtFOSA*	%	95	90
Extracted ISTD d_7 *N MeFOSE*	%	100	95
Extracted ISTD d_9 *N EtFOSE*	%	104	109
Extracted ISTD d_3 *N MeFOSAA*	%	120	123
Extracted ISTD d_5 *N EtFOSAA*	%	122	123
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01
Total Positive PFAS	µg/L	0.01	<0.01

Dissolved Gases in Water						
Our Reference		351221-1	351221-2	351221-3	351221-4	351221-5
Your Reference	UNITS	BH050S	BH009S	BH038	BH715B	BH051D
Date Sampled		13/05/2024	13/05/2024	13/05/2024	13/05/2024	13/05/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	21/05/2024	21/05/2024	21/05/2024	21/05/2024	21/05/2024
Date analysed	-	21/05/2024	21/05/2024	21/05/2024	21/05/2024	21/05/2024
Methane	µg/L	<5	<5	5	38	5

Dissolved Gases in Water			
Our Reference		351221-6	351221-7
Your Reference	UNITS	DS-1	BD046S
Date Sampled		13/05/2024	14/05/2024
Type of sample		Water	Water
Date prepared	-	21/05/2024	21/05/2024
Date analysed	-	21/05/2024	21/05/2024
Methane	µg/L	<5	5

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.
Metals-020	Determination of various metals by ICP-AES.
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. Salt forms (e.g. FeO, PbO, ZnO) are determined stoichiometrically from the base metal concentration.
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.

Method ID	Methodology Summary
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.

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date Extracted	-			16/05/2024	[NT]	[NT]	[NT]	[NT]	16/05/2024	[NT]
Date Analysed	-			17/05/2024	[NT]	[NT]	[NT]	[NT]	17/05/2024	[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]	105	[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]	107	[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]	106	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	107	[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]	106	[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]	94	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	107	[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]	106	[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]	106	[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]	106	[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]	106	[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]	106	[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]

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	105	[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	96	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate Toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate					Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			16/05/2024	[NT]	[NT]	[NT]	[NT]	16/05/2024	[NT]
Date analysed	-			17/05/2024	[NT]	[NT]	[NT]	[NT]	17/05/2024	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	106	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	106	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	106	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	96	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate Toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			16/05/2024	1	16/05/2024	16/05/2024		16/05/2024	[NT]
Date analysed	-			16/05/2024	1	16/05/2024	16/05/2024		16/05/2024	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	114	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	111	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	114	[NT]
TRH $>C_{10}$ - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	114	[NT]
TRH $>C_{16}$ - C_{34}	µg/L	100	Org-020	<100	1	<100	110	10	111	[NT]
TRH $>C_{34}$ - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	114	[NT]
Surrogate o-Terphenyl	%		Org-020	92	1	92	101	9	105	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	351221-2
Date extracted	-			16/05/2024	1	16/05/2024	16/05/2024		16/05/2024	16/05/2024
Date analysed	-			16/05/2024	1	16/05/2024	16/05/2024		16/05/2024	16/05/2024
Naphthalene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	80	107
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	80	95
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	75	105
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	79	96
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	77	100
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	78	106
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	69	87
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	66	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	79	1	104	102	2	85	74

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			[NT]	[NT]	[NT]	[NT]	[NT]	16/05/2024	[NT]
Date analysed	-			[NT]	[NT]	[NT]	[NT]	[NT]	16/05/2024	[NT]
Naphthalene	µg/L	0.1	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	82	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	82	[NT]
Fluorene	µg/L	0.1	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	78	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	82	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	80	[NT]
Pyrene	µg/L	0.1	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	81	[NT]
Chrysene	µg/L	0.1	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	72	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	63	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	[NT]	[NT]	[NT]	[NT]	88	[NT]

QUALITY CONTROL: All metals in water-dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date prepared	-			15/05/2024	2	15/05/2024	15/05/2024		15/05/2024	[NT]
Date analysed	-			15/05/2024	2	15/05/2024	15/05/2024		15/05/2024	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	100	[NT]
Boron-Dissolved	µg/L	20	Metals-022	<20	2	90	90	0	107	[NT]
Barium-Dissolved	µg/L	1	Metals-022	<1	2	52	52	0	98	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	2	<0.5	<0.5	0	111	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	2	<0.1	<0.1	0	100	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	93	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	2	4	4	0	96	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	2	38	37	3	97	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	2	<0.05	<0.05	0	99	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	2	2300	2200	4	93	[NT]
Molybdenum-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	96	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	2	22	22	0	96	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	103	[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	102	[NT]
Tin-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	100	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	2	120	110	9	101	[NT]
Iron-Dissolved	µg/L	10	Metals-022	<10	2	<10	<10	0	92	[NT]

QUALITY CONTROL: All metals in water - total						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date prepared	-			15/05/2024	5	15/05/2024	15/05/2024		15/05/2024	[NT]
Date analysed	-			15/05/2024	5	15/05/2024	15/05/2024		15/05/2024	[NT]
Arsenic-Total	µg/L	1	Metals-022	<1	5	<1	[NT]		100	[NT]
Boron-Total	µg/L	20	Metals-022	<20	5	50	[NT]		112	[NT]
Barium-Total	µg/L	1	Metals-022	<1	5	38	[NT]		100	[NT]
Beryllium-Total	µg/L	0.5	Metals-022	<0.5	5	<0.5	[NT]		114	[NT]
Cadmium-Total	µg/L	0.1	Metals-022	<0.1	5	0.2	[NT]		102	[NT]
Chromium-Total	µg/L	1	Metals-022	<1	5	3	[NT]		96	[NT]
Copper-Total	µg/L	1	Metals-022	<1	5	15	[NT]		99	[NT]
Cobalt-Total	µg/L	1	Metals-022	<1	5	160	[NT]		99	[NT]
Mercury-Total	µg/L	0.05	Metals-021	<0.05	5	<0.05	<0.05	0	103	[NT]
Manganese-Total	µg/L	5	Metals-022	<5	5	57000	[NT]		95	[NT]
Molybdenum-Total	µg/L	1	Metals-022	<1	5	<1	[NT]		96	[NT]
Nickel-Total	µg/L	1	Metals-022	<1	5	90	[NT]		98	[NT]
Lead-Total	µg/L	1	Metals-022	<1	5	3	[NT]		107	[NT]
Antimony-Total	µg/L	1	Metals-022	<1	5	<1	[NT]		104	[NT]
Selenium-Total	µg/L	1	Metals-022	<1	5	<1	[NT]		104	[NT]
Tin-Total	µg/L	1	Metals-022	<1	5	<1	[NT]		99	[NT]
Zinc-Total	µg/L	1	Metals-022	<1	5	210	[NT]		104	[NT]
Iron-Total	µg/L	10	Metals-022	<10	5	1600	[NT]		96	[NT]

QUALITY CONTROL: Metals in Waters - Total					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			15/05/2024	[NT]	[NT]	[NT]	[NT]	15/05/2024	[NT]
Date analysed	-			15/05/2024	[NT]	[NT]	[NT]	[NT]	15/05/2024	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CONTROL: Miscellaneous Inorganics					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	351221-2
Date prepared	-			15/05/2024	1	15/05/2024	15/05/2024		15/05/2024	15/05/2024
Date analysed	-			15/05/2024	1	15/05/2024	15/05/2024		15/05/2024	15/05/2024
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	0.013	0.008	48	95	103
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.16	0.16	0	116	105
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	0.2	0.2	0	85	87

QUALITY CONTROL: Ion Balance					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	351221-2
Date prepared	-			14/05/2024	1	14/05/2024	14/05/2024		14/05/2024	14/05/2024
Date analysed	-			14/05/2024	1	14/05/2024	14/05/2024		14/05/2024	14/05/2024
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	56	[NT]		104	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	6.8	[NT]		97	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	24	[NT]		106	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	3	[NT]		102	[NT]
Hardness (calc) equivalent $CaCO_3$	mg/L	3	Metals-020	[NT]	1	150	[NT]		[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	270	250	8	[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	270	250	8	117	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	12	11	9	110	101
Chloride, Cl	mg/L	1	Inorg-081	<1	1	12	12	0	99	95
Ionic Balance	%		Inorg-040	[NT]	1	-17	[NT]		[NT]	[NT]

QUALITY CONTROL: Ion Balance					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	2	14/05/2024	14/05/2024		[NT]	[NT]
Date analysed	-			[NT]	2	14/05/2024	14/05/2024		[NT]	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	[NT]	2	27	26	4	[NT]	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	[NT]	2	4	4	0	[NT]	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	[NT]	2	66	66	0	[NT]	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	[NT]	2	8.1	7.8	4	[NT]	[NT]
Hardness (calc) equivalent $CaCO_3$	mg/L	3	Metals-020	[NT]	2	100	98	2	[NT]	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	[NT]	2	<5	[NT]		[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	[NT]	2	70	[NT]		[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	[NT]	2	<5	[NT]		[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	[NT]	2	70	[NT]		[NT]	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	[NT]	2	150	[NT]		[NT]	[NT]
Chloride, Cl	mg/L	1	Inorg-081	[NT]	2	52	[NT]		[NT]	[NT]
Ionic Balance	%		Inorg-040	[NT]	2	-9.0	[NT]		[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	351221-2
Date prepared	-			15/05/2024	1	15/05/2024	15/05/2024		15/05/2024	15/05/2024
Date analysed	-			15/05/2024	1	15/05/2024	15/05/2024		15/05/2024	15/05/2024
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	105	104
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	96	95
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	97	93
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	99	96
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	110	108
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	101
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	104	101
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	101	98
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	0.01	0.01	0	96	93
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	99	96
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	98	99
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	96	89
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	106	106
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	100	102
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	99	96
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	101	92
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	114	122
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	100	103
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	99	95
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	98	93
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	97	100
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	104	101
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	102	96
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	107	102
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	95	94
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	94	90
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	101	92
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	93	92
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	103	1	100	103	3	104	100
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	97	1	95	98	3	96	100

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	351221-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	103	1	109	104	5	102	101
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	106	1	105	105	0	103	100
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	100	1	97	97	0	94	94
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	110	1	108	104	4	108	90
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	111	1	116	110	5	111	107
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	104	1	101	101	0	103	99
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	108	1	106	103	3	107	102
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	111	1	109	105	4	108	99
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	114	1	114	114	0	116	114
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	113	1	110	106	4	108	102
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	122	1	113	120	6	122	112
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	108	1	99	103	4	104	99
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	93	1	90	88	2	86	81
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	111	1	119	110	8	116	110
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	118	1	120	113	6	116	113
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	148	1	145	159	9	160	145
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	101	1	101	95	6	93	91
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	105	1	103	101	2	101	99
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	100	1	96	92	4	94	90
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	106	1	108	100	8	100	95

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	351221-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	105	1	105	102	3	98	98
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	119	1	117	121	3	124	116
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	125	1	119	123	3	131	116

QUALITY CONTROL: Dissolved Gases in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			21/05/2024	1	21/05/2024	21/05/2024		21/05/2024	[NT]
Date analysed	-			21/05/2024	1	21/05/2024	21/05/2024		21/05/2024	[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

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 analyte/s in the sample/s. However an acceptable recovery was obtained for the LCS.

The mass inbalance may be caused by other ions that have not been measured.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200   fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 353590

Client Details

Client	CTP AFJV
Attention	Aaheli Chattopadhyay
Address	7 Figtree Dr, SYDNEY OLYMPIC PARK, NSW, 2127

Sample Details

Your Reference	**CTP Groundwater Monitoring**
Number of Samples	7 Water
Date samples received	11/06/2024
Date completed instructions received	11/06/2024

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	18/06/2024
Date of Issue	18/06/2024

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Results Approved By
Amanda Chui, LC/Air Toxics Supervisor
Diego Bigolin, Inorganics Supervisor
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Sean McAlary, Chemist (FAS)
Timothy Toll, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

VOCs in water						
Our Reference		353590-1	353590-2	353590-3	353590-4	353590-5
Your Reference	UNITS	S02_s	S02_d	S06	Bh36	BH19
Date Sampled		11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Type of sample		Water	Water	Water	Water	Water
Date Extracted	-	13/06/2024	13/06/2024	13/06/2024	14/06/2024	13/06/2024
Date Analysed	-	14/06/2024	14/06/2024	14/06/2024	17/06/2024	14/06/2024
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	2	<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

VOCs in water						
Our Reference		353590-1	353590-2	353590-3	353590-4	353590-5
Your Reference	UNITS	S02_s	S02_d	S06	Bh36	BH19
Date Sampled		11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
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	%	115	116	112	123	113
Surrogate Toluene-d8	%	100	99	99	98	99
Surrogate 4-Bromofluorobenzene	%	96	96	95	100	95

VOCs in water			
Our Reference		353590-6	353590-7
Your Reference	UNITS	Bh126	DS1
Date Sampled		11/06/2024	11/06/2024
Type of sample		Water	Water
Date Extracted	-	13/06/2024	13/06/2024
Date Analysed	-	14/06/2024	14/06/2024
Dichlorodifluoromethane	µg/L	<10	<10
Chloromethane	µg/L	<10	<10
Vinyl Chloride	µg/L	<10	<10
Bromomethane	µg/L	<10	<10
Chloroethane	µg/L	<10	<10
Trichlorofluoromethane	µg/L	<10	<10
1,1-Dichloroethene	µg/L	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1
1,1-dichloroethane	µg/L	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1
Bromochloromethane	µg/L	<1	<1
Chloroform	µg/L	<1	<1
2,2-dichloropropane	µg/L	<1	<1
1,2-dichloroethane	µg/L	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1
1,1-dichloropropene	µg/L	<1	<1
Cyclohexane	µg/L	<1	<1
Carbon tetrachloride	µg/L	<1	<1
Benzene	µg/L	<1	<1
Dibromomethane	µg/L	<1	<1
1,2-dichloropropane	µg/L	<1	<1
Trichloroethene	µg/L	<1	<1
Bromodichloromethane	µg/L	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1
Toluene	µg/L	<1	<1
1,3-dichloropropane	µg/L	<1	<1
Dibromochloromethane	µg/L	<1	<1
1,2-dibromoethane	µg/L	<1	<1
Tetrachloroethene	µg/L	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1
Chlorobenzene	µg/L	1	<1
Ethylbenzene	µg/L	<1	<1

VOCs in water			
Our Reference		353590-6	353590-7
Your Reference	UNITS	Bh126	DS1
Date Sampled		11/06/2024	11/06/2024
Type of sample		Water	Water
Bromoform	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
Styrene	µg/L	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1
o-xylene	µg/L	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1
Isopropylbenzene	µg/L	<1	<1
Bromobenzene	µg/L	<1	<1
n-propyl benzene	µg/L	<1	<1
2-chlorotoluene	µg/L	<1	<1
4-chlorotoluene	µg/L	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1
Tert-butyl benzene	µg/L	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1
Sec-butyl benzene	µg/L	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1
4-isopropyl toluene	µg/L	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1
n-butyl benzene	µg/L	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1
Hexachlorobutadiene	µg/L	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	115	115
Surrogate Toluene-d8	%	100	98
Surrogate 4-Bromofluorobenzene	%	97	95

vTRH(C6-C10)/BTEXN in Water						
Our Reference		353590-1	353590-2	353590-3	353590-4	353590-5
Your Reference	UNITS	S02_s	S02_d	S06	Bh36	BH19
Date Sampled		11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	13/06/2024	13/06/2024	13/06/2024	14/06/2024	13/06/2024
Date analysed	-	14/06/2024	14/06/2024	14/06/2024	17/06/2024	14/06/2024
TRH C_6 - C_9	µg/L	<10	<10	<10	10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	28	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	28	<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	%	115	116	112	123	113
Surrogate Toluene-d8	%	100	99	99	98	99
Surrogate 4-Bromofluorobenzene	%	96	96	95	100	95

vTRH(C6-C10)/BTEXN in Water			
Our Reference		353590-6	353590-7
Your Reference	UNITS	Bh126	DS1
Date Sampled		11/06/2024	11/06/2024
Type of sample		Water	Water
Date extracted	-	13/06/2024	13/06/2024
Date analysed	-	14/06/2024	14/06/2024
TRH C_6 - C_9	µg/L	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10
Benzene	µg/L	<1	<1
Toluene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
o-xylene	µg/L	<1	<1
Naphthalene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	115	115
Surrogate Toluene-d8	%	100	98
Surrogate 4-Bromofluorobenzene	%	97	95

svTRH (C10-C40) in Water						
Our Reference		353590-1	353590-2	353590-3	353590-4	353590-5
Your Reference	UNITS	S02_s	S02_d	S06	Bh36	BH19
Date Sampled		11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	12/06/2024	12/06/2024	12/06/2024	12/06/2024	12/06/2024
Date analysed	-	14/06/2024	14/06/2024	14/06/2024	13/06/2024	14/06/2024
TRH C_{10} - C_{14}	µg/L	<50	<50	67	<50	<50
TRH C_{15} - C_{28}	µg/L	200	<100	230	<100	<100
TRH C_{29} - C_{36}	µg/L	250	110	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	450	110	300	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	110	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	110	<50	<50
TRH >C_{16} - C_{34}	µg/L	380	170	250	<100	120
TRH >C_{34} - C_{40}	µg/L	140	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	530	170	360	<50	120
Surrogate o-Terphenyl	%	86	78	101	83	89

svTRH (C10-C40) in Water			
Our Reference		353590-6	353590-7
Your Reference	UNITS	Bh126	DS1
Date Sampled		11/06/2024	11/06/2024
Type of sample		Water	Water
Date extracted	-	12/06/2024	12/06/2024
Date analysed	-	14/06/2024	14/06/2024
TRH C_{10} - C_{14}	µg/L	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	130
TRH C_{29} - C_{36}	µg/L	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	130
TRH >C_{10} - C_{16}	µg/L	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50
TRH >C_{16} - C_{34}	µg/L	130	210
TRH >C_{34} - C_{40}	µg/L	<100	<100
Total +ve TRH (>C10-C40)	µg/L	130	210
Surrogate o-Terphenyl	%	86	89

PAHs in Water						
Our Reference		353590-1	353590-2	353590-3	353590-4	353590-5
Your Reference	UNITS	S02_s	S02_d	S06	Bh36	BH19
Date Sampled		11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	12/06/2024	12/06/2024	12/06/2024	12/06/2024	12/06/2024
Date analysed	-	13/06/2024	13/06/2024	13/06/2024	13/06/2024	13/06/2024
Naphthalene	µg/L	<0.1	<0.1	<0.1	<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	0.2	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	0.4	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	0.4	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.3	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	0.2	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	0.5	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	0.3	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	0.2	<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	0.2	<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	2.7	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	98	102	101	93	92

PAHs in Water			
Our Reference		353590-6	353590-7
Your Reference	UNITS	Bh126	DS1
Date Sampled		11/06/2024	11/06/2024
Type of sample		Water	Water
Date extracted	-	12/06/2024	12/06/2024
Date analysed	-	13/06/2024	13/06/2024
Naphthalene	µg/L	0.6	<0.1
Acenaphthylene	µg/L	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5
Total +ve PAH's	µg/L	0.62	<0.1
Surrogate p-Terphenyl-d14	%	92	101

All metals in water-dissolved						
Our Reference		353590-1	353590-2	353590-3	353590-4	353590-5
Your Reference	UNITS	S02_s	S02_d	S06	Bh36	BH19
Date Sampled		11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	12/06/2024	12/06/2024	12/06/2024	12/06/2024	12/06/2024
Date analysed	-	12/06/2024	12/06/2024	12/06/2024	12/06/2024	12/06/2024
Arsenic-Dissolved	µg/L	2	<1	<1	<1	4
Boron-Dissolved	µg/L	40	100	200	280	30
Barium-Dissolved	µg/L	39	40	30	10	16
Beryllium-Dissolved	µg/L	<0.5	<0.5	<0.5	1	<0.5
Cadmium-Dissolved	µg/L	<0.1	<0.1	0.2	<0.1	<0.1
Chromium-Dissolved	µg/L	2	2	2	2	2
Copper-Dissolved	µg/L	<1	2	1	4	8
Cobalt-Dissolved	µg/L	<1	<1	<1	16	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Dissolved	µg/L	66	66	41	680	25
Molybdenum-Dissolved	µg/L	4	2	2	<1	<1
Nickel-Dissolved	µg/L	<1	<1	<1	12	2
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Antimony-Dissolved	µg/L	2	2	<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	5	6	46	31
Iron-Dissolved	µg/L	<10	40	<10	270	310

All metals in water-dissolved			
Our Reference		353590-6	353590-7
Your Reference	UNITS	Bh126	DS1
Date Sampled		11/06/2024	11/06/2024
Type of sample		Water	Water
Date prepared	-	12/06/2024	12/06/2024
Date analysed	-	12/06/2024	12/06/2024
Arsenic-Dissolved	µg/L	<1	<1
Boron-Dissolved	µg/L	20	100
Barium-Dissolved	µg/L	32	35
Beryllium-Dissolved	µg/L	<0.5	<0.5
Cadmium-Dissolved	µg/L	<0.1	<0.1
Chromium-Dissolved	µg/L	3	2
Copper-Dissolved	µg/L	9	3
Cobalt-Dissolved	µg/L	2	<1
Mercury-Dissolved	µg/L	<0.05	<0.05
Manganese-Dissolved	µg/L	14	55
Molybdenum-Dissolved	µg/L	1	2
Nickel-Dissolved	µg/L	7	<1
Lead-Dissolved	µg/L	2	<1
Antimony-Dissolved	µg/L	<1	2
Selenium-Dissolved	µg/L	<1	<1
Tin-Dissolved	µg/L	2	<1
Zinc-Dissolved	µg/L	35	4
Iron-Dissolved	µg/L	580	20

All metals in water - total						
Our Reference		353590-1	353590-2	353590-3	353590-4	353590-5
Your Reference	UNITS	S02_s	S02_d	S06	Bh36	BH19
Date Sampled		11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	12/06/2024	12/06/2024	12/06/2024	12/06/2024	12/06/2024
Date analysed	-	12/06/2024	12/06/2024	12/06/2024	12/06/2024	12/06/2024
Arsenic-Total	µg/L	12	2	3	4	4
Boron-Total	µg/L	60	100	200	230	30
Barium-Total	µg/L	380	67	97	94	24
Beryllium-Total	µg/L	1	<0.5	<0.5	4	<0.5
Cadmium-Total	µg/L	0.5	<0.1	0.1	0.2	<0.1
Chromium-Total	µg/L	38	5	9	12	3
Copper-Total	µg/L	110	19	26	63	15
Cobalt-Total	µg/L	15	<1	3	37	<1
Mercury-Total	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Manganese-Total	µg/L	900	120	170	1,400	53
Molybdenum-Total	µg/L	4	2	3	<1	<1
Nickel-Total	µg/L	26	2	6	35	3
Lead-Total	µg/L	87	4	13	37	2
Antimony-Total	µg/L	4	3	2	<1	<1
Selenium-Total	µg/L	<1	<1	<1	<1	<1
Tin-Total	µg/L	3	1	2	<1	<1
Zinc-Total	µg/L	920	95	170	180	49
Iron-Total	µg/L	26,000	2,500	6,400	17,000	890

All metals in water - total			
Our Reference		353590-6	353590-7
Your Reference	UNITS	Bh126	DS1
Date Sampled		11/06/2024	11/06/2024
Type of sample		Water	Water
Date prepared	-	12/06/2024	12/06/2024
Date analysed	-	12/06/2024	12/06/2024
Arsenic-Total	µg/L	1	3
Boron-Total	µg/L	30	100
Barium-Total	µg/L	42	90
Beryllium-Total	µg/L	<0.5	<0.5
Cadmium-Total	µg/L	<0.1	<0.1
Chromium-Total	µg/L	7	8
Copper-Total	µg/L	19	32
Cobalt-Total	µg/L	3	2
Mercury-Total	µg/L	<0.05	<0.05
Manganese-Total	µg/L	21	160
Molybdenum-Total	µg/L	1	3
Nickel-Total	µg/L	9	4
Lead-Total	µg/L	6	7
Antimony-Total	µg/L	<1	5
Selenium-Total	µg/L	<1	<1
Tin-Total	µg/L	<1	2
Zinc-Total	µg/L	54	160
Iron-Total	µg/L	1,700	4,600

Metals in Waters - Total						
Our Reference		353590-1	353590-2	353590-3	353590-4	353590-5
Your Reference	UNITS	S02_s	S02_d	S06	Bh36	BH19
Date Sampled		11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	12/06/2024	12/06/2024	12/06/2024	12/06/2024	12/06/2024
Date analysed	-	12/06/2024	12/06/2024	12/06/2024	12/06/2024	12/06/2024
Phosphorus - Total	mg/L	0.76	0.2	0.1	1.9	0.61

Metals in Waters - Total			
Our Reference		353590-6	353590-7
Your Reference	UNITS	Bh126	DS1
Date Sampled		11/06/2024	11/06/2024
Type of sample		Water	Water
Date prepared	-	12/06/2024	12/06/2024
Date analysed	-	12/06/2024	12/06/2024
Phosphorus - Total	mg/L	0.1	0.3

Miscellaneous Inorganics						
Our Reference		353590-1	353590-2	353590-3	353590-4	353590-5
Your Reference	UNITS	S02_s	S02_d	S06	Bh36	BH19
Date Sampled		11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Date analysed	-	11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Ammonia as N in water	mg/L	0.63	0.96	0.50	0.01	0.062
Nitrate as N in water	mg/L	0.02	0.59	0.11	0.23	0.26
Total Nitrogen in water	mg/L	1.1	1.8	0.9	0.6	2.1

Miscellaneous Inorganics			
Our Reference		353590-6	353590-7
Your Reference	UNITS	Bh126	DS1
Date Sampled		11/06/2024	11/06/2024
Type of sample		Water	Water
Date prepared	-	11/06/2024	11/06/2024
Date analysed	-	11/06/2024	11/06/2024
Ammonia as N in water	mg/L	0.13	0.94
Nitrate as N in water	mg/L	0.20	0.63
Total Nitrogen in water	mg/L	0.8	2.0

Ion Balance						
Our Reference		353590-1	353590-2	353590-3	353590-4	353590-5
Your Reference	UNITS	S02_s	S02_d	S06	Bh36	BH19
Date Sampled		11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Date analysed	-	11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Calcium - Dissolved	mg/L	63	64	39	0.6	10
Potassium - Dissolved	mg/L	10	8.9	7.4	5.6	5.6
Sodium - Dissolved	mg/L	79	76	16	360	12
Magnesium - Dissolved	mg/L	4	9.0	6.1	4	2
Hardness (calc) equivalent $CaCO_3$	mg/L	180	200	120	18	34
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	<5	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	270	140	190	32	50
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	<5	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	270	140	190	32	50
Sulphate, SO4	mg/L	38	36	10	210	5
Chloride, Cl	mg/L	160	150	24	310	13
Ionic Balance	%	-19	-2.0	-16	9.0	-4.0

Ion Balance			
Our Reference		353590-6	353590-7
Your Reference	UNITS	Bh126	DS1
Date Sampled		11/06/2024	11/06/2024
Type of sample		Water	Water
Date prepared	-	11/06/2024	11/06/2024
Date analysed	-	11/06/2024	11/06/2024
Calcium - Dissolved	mg/L	11	60
Potassium - Dissolved	mg/L	4	8.9
Sodium - Dissolved	mg/L	6.3	68
Magnesium - Dissolved	mg/L	1	8.2
Hardness (calc) equivalent $CaCO_3$	mg/L	34	180
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	44	140
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	44	140
Sulphate, SO4	mg/L	4	36
Chloride, Cl	mg/L	10	150
Ionic Balance	%	-9.0	-6.0

PFAS in Waters Extended						
Our Reference		353590-1	353590-2	353590-3	353590-4	353590-5
Your Reference	UNITS	S02_s	S02_d	S06	Bh36	BH19
Date Sampled		11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	12/06/2024	12/06/2024	12/06/2024	12/06/2024	12/06/2024
Date analysed	-	12/06/2024	12/06/2024	12/06/2024	12/06/2024	12/06/2024
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	0.03	<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	0.04	<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	<0.02	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01	<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	<0.01	<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 perfluorooctanesulfon amide	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	<0.02	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	100	102	97	97	98
Surrogate $^{13}C_2$ *PFOA*	%	97	97	95	96	98
Extracted ISTD $^{13}C_3$ *PFBS*	%	100	107	103	105	105
Extracted ISTD $^{18}O_2$ *PFHxS*	%	107	110	104	105	104
Extracted ISTD $^{13}C_4$ *PFOS*	%	101	104	106	107	109
Extracted ISTD $^{13}C_4$ *PFBA*	%	105	109	108	80	90

PFAS in Waters Extended						
Our Reference	UNITS	353590-1	353590-2	353590-3	353590-4	353590-5
Your Reference		S02_s	S02_d	S06	Bh36	BH19
Date Sampled		11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Type of sample		Water	Water	Water	Water	Water
Extracted ISTD $^{13}C_3$ PFPeA	%	100	106	103	103	101
Extracted ISTD $^{13}C_2$ PFHxA	%	102	104	105	99	98
Extracted ISTD $^{13}C_4$ PFHpA	%	110	115	115	114	114
Extracted ISTD $^{13}C_4$ PFOA	%	114	120	116	116	115
Extracted ISTD $^{13}C_5$ PFNA	%	127	132	132	126	133
Extracted ISTD $^{13}C_2$ PFDA	%	119	122	120	112	117
Extracted ISTD $^{13}C_2$ PFUnDA	%	117	127	122	118	123
Extracted ISTD $^{13}C_2$ PFDoDA	%	117	118	115	114	117
Extracted ISTD $^{13}C_2$ PFTeDA	%	102	100	104	98	113
Extracted ISTD $^{13}C_2$ 4:2FTS	%	83	88	87	84	94
Extracted ISTD $^{13}C_2$ 6:2FTS	%	105	109	104	95	110
Extracted ISTD $^{13}C_2$ 8:2FTS	%	131	128	132	116	122
Extracted ISTD $^{13}C_8$ FOSA	%	109	114	109	111	113
Extracted ISTD d_3 N MeFOSA	%	92	96	96	95	95
Extracted ISTD d_5 N EtFOSA	%	89	92	92	90	92
Extracted ISTD d_7 N MeFOSE	%	90	93	93	93	93
Extracted ISTD d_9 N EtFOSE	%	85	86	89	89	89
Extracted ISTD d_3 N MeFOSAA	%	107	119	119	112	115
Extracted ISTD d_5 N EtFOSAA	%	105	112	122	109	114
Total Positive PFHxS & PFOS	µg/L	0.01	<0.01	0.07	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	0.01	<0.01	0.04	<0.01	<0.01
Total Positive PFAS	µg/L	0.01	<0.01	0.07	<0.01	<0.01

PFAS in Waters Extended			
Our Reference		353590-6	353590-7
Your Reference	UNITS	Bh126	DS1
Date Sampled		11/06/2024	11/06/2024
Type of sample		Water	Water
Date prepared	-	12/06/2024	12/06/2024
Date analysed	-	12/06/2024	12/06/2024
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	97	99
Surrogate $^{13}C_2$ *PFOA*	%	96	98
Extracted ISTD $^{13}C_3$ *PFBS*	%	105	105
Extracted ISTD $^{18}O_2$ *PFHxS*	%	104	109
Extracted ISTD $^{13}C_4$ *PFOS*	%	107	105
Extracted ISTD $^{13}C_4$ *PFBA*	%	110	108

PFAS in Waters Extended			
Our Reference		353590-6	353590-7
Your Reference	UNITS	Bh126	DS1
Date Sampled		11/06/2024	11/06/2024
Type of sample		Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	107	104
Extracted ISTD $^{13}C_2$ *PFHxA*	%	102	104
Extracted ISTD $^{13}C_4$ *PFHpA*	%	117	114
Extracted ISTD $^{13}C_4$ *PFOA*	%	124	117
Extracted ISTD $^{13}C_5$ *PFNA*	%	139	135
Extracted ISTD $^{13}C_2$ *PFDA*	%	156	119
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	136	117
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	113	112
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	99	92
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	91	85
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	116	106
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	#	133
Extracted ISTD $^{13}C_8$ *FOSA*	%	113	113
Extracted ISTD d_3 *N MeFOSA*	%	96	94
Extracted ISTD d_5 *N EtFOSA*	%	91	90
Extracted ISTD d_7 *N MeFOSE*	%	93	94
Extracted ISTD d_9 *N EtFOSE*	%	89	89
Extracted ISTD d_3 *N MeFOSAA*	%	121	113
Extracted ISTD d_5 *N EtFOSAA*	%	132	117
Total Positive PFHxS & PFOS	µg/L	0.01	<0.01
Total Positive PFOA & PFOS	µg/L	0.01	<0.01
Total Positive PFAS	µg/L	0.01	<0.01

Dissolved Gases in Water						
Our Reference		353590-1	353590-2	353590-3	353590-4	353590-5
Your Reference	UNITS	S02_s	S02_d	S06	Bh36	BH19
Date Sampled		11/06/2024	11/06/2024	11/06/2024	11/06/2024	11/06/2024
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	18/06/2024	18/06/2024	18/06/2024	18/06/2024	18/06/2024
Date analysed	-	18/06/2024	18/06/2024	18/06/2024	18/06/2024	18/06/2024
Methane	μg/L	<5	140	640	<5	36

Dissolved Gases in Water			
Our Reference		353590-6	353590-7
Your Reference	UNITS	Bh126	DS1
Date Sampled		11/06/2024	11/06/2024
Type of sample		Water	Water
Date prepared	-	18/06/2024	18/06/2024
Date analysed	-	18/06/2024	18/06/2024
Methane	μg/L	380	190

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.
Metals-020	Determination of various metals by ICP-AES.
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. Salt forms (e.g. FeO, PbO, ZnO) are determined stoichiometrically from the base metal concentration.
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.

Method ID	Methodology Summary
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.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date Extracted	-			14/06/2024	[NT]	[NT]	[NT]	[NT]	13/06/2024	[NT]
Date Analysed	-			17/06/2024	[NT]	[NT]	[NT]	[NT]	14/06/2024	[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]	108	[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]	110	[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]	112	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	111	[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]	105	[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]	121	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	108	[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]	105	[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]	113	[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]	102	[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]	101	[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]	102	[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]

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	104	[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	123	[NT]	[NT]	[NT]	[NT]	123	[NT]
Surrogate Toluene-d8	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			14/06/2024	[NT]	[NT]	[NT]	[NT]	13/06/2024	[NT]
Date analysed	-			17/06/2024	[NT]	[NT]	[NT]	[NT]	14/06/2024	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	103	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	103	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	102	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	123	[NT]	[NT]	[NT]	[NT]	123	[NT]
Surrogate Toluene-d8	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	353590-2
Date extracted	-			12/06/2024	1	12/06/2024	12/06/2024		12/06/2024	12/06/2024
Date analysed	-			13/06/2024	1	14/06/2024	14/06/2024		13/06/2024	14/06/2024
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	113	104
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	200	180	11	117	105
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	250	220	13	100	102
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	113	104
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	380	340	11	117	105
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	140	<100	33	100	102
Surrogate o-Terphenyl	%		Org-020	110	1	86	86	0	125	110

QUALITY CONTROL: PAHs in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	353590-2
Date extracted	-			12/06/2024	1	12/06/2024	12/06/2024		12/06/2024	12/06/2024
Date analysed	-			13/06/2024	1	13/06/2024	13/06/2024		13/06/2024	13/06/2024
Naphthalene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	119
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	97	119
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	97	131
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	0.2	0.2	0	97	115
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	0.4	0.4	0	98	119
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	0.4	0.4	0	98	119
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	1	0.3	0.3	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	1	0.2	0.2	0	93	110
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	1	0.5	0.5	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	1	0.3	0.3	0	106	128
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	1	0.2	0.2	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	0.2	0.2	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	101	1	98	95	3	93	112

QUALITY CONTROL: All metals in water-dissolved					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	353590-3
Date prepared	-			12/06/2024	2	12/06/2024	12/06/2024		12/06/2024	12/06/2024
Date analysed	-			12/06/2024	2	12/06/2024	12/06/2024		12/06/2024	12/06/2024
Arsenic-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	88	87
Boron-Dissolved	µg/L	20	Metals-022	<20	2	100	100	0	82	73
Barium-Dissolved	µg/L	1	Metals-022	<1	2	40	40	0	91	83
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	2	<0.5	<0.5	0	82	82
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	2	<0.1	<0.1	0	89	89
Chromium-Dissolved	µg/L	1	Metals-022	<1	2	2	2	0	85	83
Copper-Dissolved	µg/L	1	Metals-022	<1	2	2	2	0	83	83
Cobalt-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	87	79
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	2	<0.05	<0.05	0	109	97
Manganese-Dissolved	µg/L	5	Metals-022	<5	2	66	68	3	82	78
Molybdenum-Dissolved	µg/L	1	Metals-022	<1	2	2	2	0	85	87
Nickel-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	85	83
Lead-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	91	80
Antimony-Dissolved	µg/L	1	Metals-022	<1	2	2	2	0	85	72
Selenium-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	84	85
Tin-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	92	92
Zinc-Dissolved	µg/L	1	Metals-022	<1	2	5	7	33	83	84
Iron-Dissolved	µg/L	10	Metals-022	<10	2	40	<10	120	86	82

QUALITY CONTROL: All metals in water - total						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			12/06/2024	2	12/06/2024	12/06/2024		12/06/2024	[NT]
Date analysed	-			12/06/2024	2	12/06/2024	12/06/2024		12/06/2024	[NT]
Arsenic-Total	µg/L	1	Metals-022	<1	2	2	2	0	89	[NT]
Boron-Total	µg/L	20	Metals-022	<20	2	100	100	0	83	[NT]
Barium-Total	µg/L	1	Metals-022	<1	2	67	70	4	89	[NT]
Beryllium-Total	µg/L	0.5	Metals-022	<0.5	2	<0.5	<0.5	0	88	[NT]
Cadmium-Total	µg/L	0.1	Metals-022	<0.1	2	<0.1	<0.1	0	92	[NT]
Chromium-Total	µg/L	1	Metals-022	<1	2	5	5	0	86	[NT]
Copper-Total	µg/L	1	Metals-022	<1	2	19	19	0	85	[NT]
Cobalt-Total	µg/L	1	Metals-022	<1	2	<1	<1	0	86	[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	120	120	0	82	[NT]
Molybdenum-Total	µg/L	1	Metals-022	<1	2	2	2	0	86	[NT]
Nickel-Total	µg/L	1	Metals-022	<1	2	2	2	0	84	[NT]
Lead-Total	µg/L	1	Metals-022	<1	2	4	4	0	92	[NT]
Antimony-Total	µg/L	1	Metals-022	<1	2	3	3	0	92	[NT]
Selenium-Total	µg/L	1	Metals-022	<1	2	<1	<1	0	86	[NT]
Tin-Total	µg/L	1	Metals-022	<1	2	1	1	0	94	[NT]
Zinc-Total	µg/L	1	Metals-022	<1	2	95	95	0	86	[NT]
Iron-Total	µg/L	10	Metals-022	<10	2	2500	2600	4	88	[NT]

QUALITY CONTROL: Metals in Waters - Total					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	353590-3
Date prepared	-			12/06/2024	2	12/06/2024	12/06/2024		12/06/2024	12/06/2024
Date analysed	-			12/06/2024	2	12/06/2024	12/06/2024		12/06/2024	12/06/2024
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	2	0.2	0.2	0	83	89

QUALITY CONTROL: Miscellaneous Inorganics					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	353590-2
Date prepared	-			11/06/2024	1	11/06/2024	11/06/2024		11/06/2024	11/06/2024
Date analysed	-			11/06/2024	1	11/06/2024	11/06/2024		11/06/2024	11/06/2024
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	0.63	0.63	0	90	103
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.02	0.02	0	93	84
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	1.1	1.1	0	91	[NT]

QUALITY CONTROL: Ion Balance					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	353590-2
Date prepared	-			11/06/2024	1	11/06/2024	11/06/2024		11/06/2024	11/06/2024
Date analysed	-			11/06/2024	1	11/06/2024	11/06/2024		11/06/2024	11/06/2024
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	63	62	2	93	126
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	10	9.9	1	89	74
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	79	83	5	84	103
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	4	4	0	94	88
Hardness (calc) equivalent $CaCO_3$	mg/L	3	Metals-020	[NT]	1	180	170	6	[NT]	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	270	[NT]		[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	270	[NT]		111	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	38	[NT]		105	#
Chloride, Cl	mg/L	1	Inorg-081	<1	1	160	[NT]		98	#
Ionic Balance	%		Inorg-040	[NT]	1	-19	[NT]		[NT]	[NT]

QUALITY CONTROL: Ion Balance					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	4	11/06/2024	11/06/2024		[NT]	[NT]
Date analysed	-			[NT]	4	11/06/2024	11/06/2024		[NT]	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	[NT]	4	0.6	[NT]		[NT]	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	[NT]	4	5.6	[NT]		[NT]	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	[NT]	4	360	[NT]		[NT]	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	[NT]	4	4	[NT]		[NT]	[NT]
Hardness (calc) equivalent $CaCO_3$	mg/L	3	Metals-020	[NT]	4	18	[NT]		[NT]	[NT]
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	[NT]	4	<5	<5	0	[NT]	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	[NT]	4	32	32	0	[NT]	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	[NT]	4	<5	<5	0	[NT]	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	[NT]	4	32	32	0	[NT]	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	[NT]	4	210	[NT]		[NT]	[NT]
Chloride, Cl	mg/L	1	Inorg-081	[NT]	4	310	[NT]		[NT]	[NT]
Ionic Balance	%		Inorg-040	[NT]	4	9.0	[NT]		[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	353590-2
Date prepared	-			12/06/2024	1	12/06/2024	12/06/2024		12/06/2024	12/06/2024
Date analysed	-			12/06/2024	1	12/06/2024	12/06/2024		12/06/2024	12/06/2024
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	109	107
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	102	106
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	97	101
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	107
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	1	0.01	0.01	0	101	105
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	113	115
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	106	102
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	103
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	104	101
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	104	105
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	102	102
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	103	104
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	104	106
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	109	108
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	107	109
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	94	96
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	104	100
4:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	106	114
6:2 FTS	µg/L	0.01	Org-029	<0.01	1	<0.01	<0.01	0	104	109
8:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	119	119
10:2 FTS	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	137	138
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	109	111
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	111	105
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	1	<0.1	<0.1	0	106	99
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	1	<0.05	<0.05	0	112	114
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	1	<0.5	<0.5	0	110	110
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	105	104
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	1	<0.02	<0.02	0	97	100
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	101	1	100	94	6	95	105
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	97	1	97	98	1	98	99

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	353590-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	99	1	100	100	0	97	103
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	102	1	107	101	6	101	102
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	96	1	101	101	0	102	103
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	105	1	105	106	1	102	105
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	100	1	100	100	0	99	102
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	100	1	102	101	1	98	102
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	105	1	110	110	0	102	113
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	106	1	114	112	2	103	112
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	121	1	127	129	2	117	127
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	113	1	119	117	2	109	118
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	113	1	117	120	3	103	113
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	104	1	117	112	4	101	109
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	90	1	102	103	1	89	97
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	86	1	83	83	0	93	93
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	91	1	105	107	2	98	115
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	111	1	131	125	5	119	136
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	108	1	109	107	2	101	106
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	91	1	92	90	2	89	92
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	88	1	89	88	1	85	91
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	91	1	90	88	2	89	89

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	353590-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	90	1	85	84	1	85	87
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	104	1	107	108	1	105	112
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	102	1	105	108	3	106	116

QUALITY CONTROL: Dissolved Gases in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			18/06/2024	1	18/06/2024	18/06/2024		18/06/2024	[NT]
Date analysed	-			18/06/2024	1	18/06/2024	18/06/2024		18/06/2024	[NT]
Methane	µg/L	5	AT-006	<5	1	<5	<5	0	102	[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.

ION_BALANCE:
Percent recovery is not applicable due to the high concentration of the analyte/s in the sample/s. However an acceptable recovery was obtained for the LCS.

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).

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 353775

Client Details

Client	CTP AFJV
Attention	Aaheli Chattopadhyay
Address	7 Figtree Dr, SYDNEY OLYMPIC PARK, NSW, 2127

Sample Details

Your Reference	**CTP Groundwater Monitoring**
Number of Samples	2 Water
Date samples received	13/06/2024
Date completed instructions received	13/06/2024

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	20/06/2024
Date of Issue	20/06/2024

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Results Approved By
Amanda Chui, LC/Air Toxics Supervisor
Diego Bigolin, Inorganics Supervisor
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Jack Wallis, Chemist (FAS)
Jenny He, Senior Chemist
Sean McAlary, Chemist (FAS)

Authorised By
Nancy Zhang, Laboratory Manager

VOCs in water			
Our Reference		353775-1	353775-2
Your Reference	UNITS	BH715B	BH120
Date Sampled		12/06/2024	12/06/2024
Type of sample		Water	Water
Date Extracted	-	14/06/2024	14/06/2024
Date Analysed	-	17/06/2024	17/06/2024
Dichlorodifluoromethane	µg/L	<10	<10
Chloromethane	µg/L	<10	<10
Vinyl Chloride	µg/L	<10	<10
Bromomethane	µg/L	<10	<10
Chloroethane	µg/L	<10	<10
Trichlorofluoromethane	µg/L	<10	<10
1,1-Dichloroethene	µg/L	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1
1,1-dichloroethane	µg/L	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1
Bromochloromethane	µg/L	<1	<1
Chloroform	µg/L	<1	<1
2,2-dichloropropane	µg/L	<1	<1
1,2-dichloroethane	µg/L	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1
1,1-dichloropropene	µg/L	<1	<1
Cyclohexane	µg/L	<1	<1
Carbon tetrachloride	µg/L	<1	<1
Benzene	µg/L	<1	<1
Dibromomethane	µg/L	<1	<1
1,2-dichloropropane	µg/L	<1	<1
Trichloroethene	µg/L	<1	<1
Bromodichloromethane	µg/L	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1
Toluene	µg/L	<1	<1
1,3-dichloropropane	µg/L	<1	<1
Dibromochloromethane	µg/L	<1	<1
1,2-dibromoethane	µg/L	<1	<1
Tetrachloroethene	µg/L	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1
Chlorobenzene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1

VOCs in water			
Our Reference		353775-1	353775-2
Your Reference	UNITS	BH715B	BH120
Date Sampled		12/06/2024	12/06/2024
Type of sample		Water	Water
Bromoform	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
Styrene	µg/L	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1
o-xylene	µg/L	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1
Isopropylbenzene	µg/L	<1	<1
Bromobenzene	µg/L	<1	<1
n-propyl benzene	µg/L	<1	<1
2-chlorotoluene	µg/L	<1	<1
4-chlorotoluene	µg/L	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1
Tert-butyl benzene	µg/L	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1
Sec-butyl benzene	µg/L	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1
4-isopropyl toluene	µg/L	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1
n-butyl benzene	µg/L	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1
Hexachlorobutadiene	µg/L	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	124	124
Surrogate Toluene-d8	%	100	99
Surrogate 4-Bromofluorobenzene	%	100	99

vTRH(C6-C10)/BTEXN in Water			
Our Reference		353775-1	353775-2
Your Reference	UNITS	BH715B	BH120
Date Sampled		12/06/2024	12/06/2024
Type of sample		Water	Water
Date extracted	-	14/06/2024	14/06/2024
Date analysed	-	17/06/2024	17/06/2024
TRH C_6 - C_9	µg/L	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10
Benzene	µg/L	<1	<1
Toluene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
o-xylene	µg/L	<1	<1
Naphthalene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	124	124
Surrogate Toluene-d8	%	100	99
Surrogate 4-Bromofluorobenzene	%	100	99

svTRH (C10-C40) in Water			
Our Reference		353775-1	353775-2
Your Reference	UNITS	BH715B	BH120
Date Sampled		12/06/2024	12/06/2024
Type of sample		Water	Water
Date extracted	-	14/06/2024	14/06/2024
Date analysed	-	15/06/2024	15/06/2024
TRH C_{10} - C_{14}	μg/L	<50	<50
TRH C_{15} - C_{28}	μg/L	<100	<100
TRH C_{29} - C_{36}	μg/L	<100	<100
Total +ve TRH (C10-C36)	μg/L	<50	<50
TRH >C_{10} - C_{16}	μg/L	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	μg/L	<50	<50
TRH >C_{16} - C_{34}	μg/L	<100	<100
TRH >C_{34} - C_{40}	μg/L	<100	<100
Total +ve TRH (>C10-C40)	μg/L	<50	<50
Surrogate o-Terphenyl	%	101	89

PAHs in Water			
Our Reference		353775-1	353775-2
Your Reference	UNITS	BH715B	BH120
Date Sampled		12/06/2024	12/06/2024
Type of sample		Water	Water
Date extracted	-	14/06/2024	14/06/2024
Date analysed	-	14/06/2024	14/06/2024
Naphthalene	µg/L	<0.1	<0.1
Acenaphthylene	µg/L	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	91	84

All metals in water-dissolved			
Our Reference		353775-1	353775-2
Your Reference	UNITS	BH715B	BH120
Date Sampled		12/06/2024	12/06/2024
Type of sample		Water	Water
Date prepared	-	17/06/2024	17/06/2024
Date analysed	-	17/06/2024	17/06/2024
Arsenic-Dissolved	µg/L	<1	<1
Boron-Dissolved	µg/L	210	100
Barium-Dissolved	µg/L	54	66
Beryllium-Dissolved	µg/L	<0.5	<0.5
Cadmium-Dissolved	µg/L	<0.1	0.1
Chromium-Dissolved	µg/L	<1	<1
Copper-Dissolved	µg/L	<1	2
Cobalt-Dissolved	µg/L	35	14
Mercury-Dissolved	µg/L	<0.05	<0.05
Manganese-Dissolved	µg/L	2,100	230
Molybdenum-Dissolved	µg/L	3	12
Nickel-Dissolved	µg/L	10	67
Lead-Dissolved	µg/L	<1	<1
Antimony-Dissolved	µg/L	<1	<1
Selenium-Dissolved	µg/L	<1	<1
Tin-Dissolved	µg/L	<1	<1
Zinc-Dissolved	µg/L	10	16
Iron-Dissolved	µg/L	320	<10

All metals in water - total			
Our Reference		353775-1	353775-2
Your Reference	UNITS	BH715B	BH120
Date Sampled		12/06/2024	12/06/2024
Type of sample		Water	Water
Date prepared	-	14/06/2024	14/06/2024
Date analysed	-	14/06/2024	14/06/2024
Arsenic-Total	µg/L	1	<1
Boron-Total	µg/L	230	100
Barium-Total	µg/L	110	100
Beryllium-Total	µg/L	<0.5	<0.5
Cadmium-Total	µg/L	<0.1	<0.1
Chromium-Total	µg/L	4	5
Copper-Total	µg/L	10	7
Cobalt-Total	µg/L	40	16
Mercury-Total	µg/L	<0.05	<0.05
Manganese-Total	µg/L	2,400	250
Molybdenum-Total	µg/L	5	16
Nickel-Total	µg/L	16	89
Lead-Total	µg/L	1	<1
Antimony-Total	µg/L	<1	<1
Selenium-Total	µg/L	<1	<1
Tin-Total	µg/L	1	<1
Zinc-Total	µg/L	37	28
Iron-Total	µg/L	4,600	840

Metals in Waters - Total			
Our Reference		353775-1	353775-2
Your Reference	UNITS	BH715B	BH120
Date Sampled		12/06/2024	12/06/2024
Type of sample		Water	Water
Date prepared	-	14/06/2024	14/06/2024
Date analysed	-	14/06/2024	14/06/2024
Phosphorus - Total	mg/L	0.2	<0.05

Miscellaneous Inorganics			
Our Reference		353775-1	353775-2
Your Reference	UNITS	BH715B	BH120
Date Sampled		12/06/2024	12/06/2024
Type of sample		Water	Water
Date prepared	-	13/06/2024	13/06/2024
Date analysed	-	13/06/2024	13/06/2024
Ammonia as N in water	mg/L	0.74	0.91
Nitrate as N in water	mg/L	0.01	0.60
Total Nitrogen in water	mg/L	0.9	1.7

Ion Balance			
Our Reference		353775-1	353775-2
Your Reference	UNITS	BH715B	BH120
Date Sampled		12/06/2024	12/06/2024
Type of sample		Water	Water
Date prepared	-	13/06/2024	13/06/2024
Date analysed	-	13/06/2024	13/06/2024
Calcium - Dissolved	mg/L	200	310
Potassium - Dissolved	mg/L	69	70
Sodium - Dissolved	mg/L	4,200	4,800
Magnesium - Dissolved	mg/L	470	680
Hardness (calc) equivalent $CaCO_3$	mg/L	2,500	3,600
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	570	660
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	570	660
Sulphate, SO4	mg/L	900	550
Chloride, Cl	mg/L	6,700	6,100
Ionic Balance	%	4.0	18

PFAS in Waters Extended			
Our Reference		353775-1	353775-2
Your Reference	UNITS	BH715B	BH120
Date Sampled		12/06/2024	12/06/2024
Type of sample		Water	Water
Date prepared	-	14/06/2024	14/06/2024
Date analysed	-	14/06/2024	14/06/2024
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	102	98
Surrogate $^{13}C_2$ *PFOA*	%	95	100
Extracted ISTD $^{13}C_3$ *PFBS*	%	97	99
Extracted ISTD $^{18}O_2$ *PFHxS*	%	98	101
Extracted ISTD $^{13}C_4$ *PFOS*	%	97	99
Extracted ISTD $^{13}C_4$ *PFBA*	%	90	95

PFAS in Waters Extended			
Our Reference		353775-1	353775-2
Your Reference	UNITS	BH715B	BH120
Date Sampled		12/06/2024	12/06/2024
Type of sample		Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	85	89
Extracted ISTD $^{13}C_2$ *PFHxA*	%	89	91
Extracted ISTD $^{13}C_4$ *PFHpA*	%	95	100
Extracted ISTD $^{13}C_4$ *PFOA*	%	106	107
Extracted ISTD $^{13}C_5$ *PFNA*	%	109	113
Extracted ISTD $^{13}C_2$ *PFDA*	%	105	129
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	103	144
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	92	130
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	67	83
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	77	75
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	102	107
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	125	159
Extracted ISTD $^{13}C_8$ *FOSA*	%	100	110
Extracted ISTD d_3 *N MeFOSA*	%	91	97
Extracted ISTD d_5 *N EtFOSA*	%	88	90
Extracted ISTD d_7 *N MeFOSE*	%	92	94
Extracted ISTD d_9 *N EtFOSE*	%	89	93
Extracted ISTD d_3 *N MeFOSAA*	%	101	126
Extracted ISTD d_5 *N EtFOSAA*	%	94	119
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01

Dissolved Gases in Water			
Our Reference		353775-1	353775-2
Your Reference	UNITS	BH715B	BH120
Date Sampled		12/06/2024	12/06/2024
Type of sample		Water	Water
Date prepared	-	19/06/2024	19/06/2024
Date analysed	-	19/06/2024	19/06/2024
Methane	μg/L	<5	<5

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.
Metals-020	Determination of various metals by ICP-AES.
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. Salt forms (e.g. FeO, PbO, ZnO) are determined stoichiometrically from the base metal concentration.
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.

Method ID	Methodology Summary
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.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date Extracted	-			14/06/2024	[NT]	[NT]	[NT]	[NT]	14/06/2024	[NT]
Date Analysed	-			17/06/2024	[NT]	[NT]	[NT]	[NT]	17/06/2024	[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]	87	[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]	88	[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]	87	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	87	[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]	84	[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]	89	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	84	[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]	83	[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]	87	[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]	83	[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]	82	[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]	83	[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]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	83	[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	122	[NT]	[NT]	[NT]	[NT]	120	[NT]
Surrogate Toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			14/06/2024	[NT]	[NT]	[NT]	[NT]	14/06/2024	[NT]
Date analysed	-			17/06/2024	[NT]	[NT]	[NT]	[NT]	17/06/2024	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	83	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	83	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	82	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	83	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	122	[NT]	[NT]	[NT]	[NT]	120	[NT]
Surrogate Toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	353775-2
Date extracted	-			14/06/2024	1	14/06/2024	14/06/2024		14/06/2024	14/06/2024
Date analysed	-			14/06/2024	1	15/06/2024	15/06/2024		14/06/2024	15/06/2024
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	115	99
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	107	97
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	100	94
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	115	99
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	107	97
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	100	94
Surrogate o-Terphenyl	%		Org-020	99	1	101	84	18	97	112

QUALITY CONTROL: PAHs in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	353775-2
Date extracted	-			14/06/2024	1	14/06/2024	14/06/2024		14/06/2024	14/06/2024
Date analysed	-			14/06/2024	1	14/06/2024	14/06/2024		14/06/2024	14/06/2024
Naphthalene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	69	78
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	73	77
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	69	92
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	74	75
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	77	78
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	72	78
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	72	72
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	94
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	92	1	91	90	1	88	89

QUALITY CONTROL: All metals in water-dissolved					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date prepared	-			18/06/2024	[NT]	[NT]	[NT]	[NT]	17/06/2024	[NT]
Date analysed	-			18/06/2024	[NT]	[NT]	[NT]	[NT]	17/06/2024	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Boron-Dissolved	µg/L	20	Metals-022	<20	[NT]	[NT]	[NT]	[NT]	98	[NT]
Barium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	[NT]	[NT]	[NT]	[NT]	96	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	96	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	<5	[NT]	[NT]	[NT]	[NT]	94	[NT]
Molybdenum-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Antimony-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Tin-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Iron-Dissolved	µg/L	10	Metals-022	<10	[NT]	[NT]	[NT]	[NT]	93	[NT]

QUALITY CONTROL: All metals in water - total						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	353775-2
Date prepared	-			14/06/2024	1	14/06/2024	14/06/2024		14/06/2024	14/06/2024
Date analysed	-			14/06/2024	1	14/06/2024	14/06/2024		14/06/2024	14/06/2024
Arsenic-Total	µg/L	1	Metals-022	<1	1	1	[NT]		102	[NT]
Boron-Total	µg/L	20	Metals-022	<20	1	230	[NT]		109	[NT]
Barium-Total	µg/L	1	Metals-022	<1	1	110	[NT]		103	[NT]
Beryllium-Total	µg/L	0.5	Metals-022	<0.5	1	<0.5	[NT]		93	[NT]
Cadmium-Total	µg/L	0.1	Metals-022	<0.1	1	<0.1	[NT]		99	[NT]
Chromium-Total	µg/L	1	Metals-022	<1	1	4	[NT]		109	[NT]
Copper-Total	µg/L	1	Metals-022	<1	1	10	[NT]		105	[NT]
Cobalt-Total	µg/L	1	Metals-022	<1	1	40	[NT]		107	[NT]
Mercury-Total	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	105	95
Manganese-Total	µg/L	5	Metals-022	<5	1	2400	[NT]		104	[NT]
Molybdenum-Total	µg/L	1	Metals-022	<1	1	5	[NT]		101	[NT]
Nickel-Total	µg/L	1	Metals-022	<1	1	16	[NT]		106	[NT]
Lead-Total	µg/L	1	Metals-022	<1	1	1	[NT]		95	[NT]
Antimony-Total	µg/L	1	Metals-022	<1	1	<1	[NT]		99	[NT]
Selenium-Total	µg/L	1	Metals-022	<1	1	<1	[NT]		93	[NT]
Tin-Total	µg/L	1	Metals-022	<1	1	1	[NT]		105	[NT]
Zinc-Total	µg/L	1	Metals-022	<1	1	37	[NT]		105	[NT]
Iron-Total	µg/L	10	Metals-022	<10	1	4600	[NT]		106	[NT]

QUALITY CONTROL: Metals in Waters - Total					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			14/06/2024	[NT]	[NT]	[NT]	[NT]	14/06/2024	[NT]
Date analysed	-			14/06/2024	[NT]	[NT]	[NT]	[NT]	14/06/2024	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	87	[NT]

QUALITY CONTROL: Miscellaneous Inorganics					Duplicate					Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			13/06/2024	[NT]	[NT]	[NT]	[NT]	13/06/2024	[NT]
Date analysed	-			13/06/2024	[NT]	[NT]	[NT]	[NT]	13/06/2024	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	[NT]	[NT]	[NT]	[NT]	100	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	[NT]	[NT]	95	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]

QUALITY CONTROL: Ion Balance					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			13/06/2024	1	13/06/2024	13/06/2024		13/06/2024	[NT]
Date analysed	-			13/06/2024	1	13/06/2024	13/06/2024		13/06/2024	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	200	[NT]		108	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	69	[NT]		99	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	4200	[NT]		91	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	470	[NT]		111	[NT]
Hardness (calc) equivalent $CaCO_3$	mg/L	3	Metals-020	[NT]	1	2500	[NT]		[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	570	570	0	[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	570	570	0	113	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	900	[NT]		114	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	1	6700	[NT]		100	[NT]
Ionic Balance	%		Inorg-040	[NT]	1	4.0	[NT]		[NT]	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	353775-2
Date prepared	-			14/06/2024	[NT]	[NT]	[NT]	[NT]	14/06/2024	14/06/2024
Date analysed	-			14/06/2024	[NT]	[NT]	[NT]	[NT]	14/06/2024	14/06/2024
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	104	101
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	107	107
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	105	106
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	109	106
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	105	101
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	64	74
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	102	100
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	102	102
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	104	104
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	101	101
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	101	98
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	100	100
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	104	100
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	100	106
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	104	103
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	86	81
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	104	102
4:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	105	94
6:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	111	105
8:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	95	106
10:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	121	113
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	111	106
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	104	105
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	103	97
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	115	110
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	109	107
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	102	100
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	101	100
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	106	105
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	98	96

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	353775-2
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	98	[NT]	[NT]	[NT]	[NT]	96	98
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	97	97
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	96	99
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	105	[NT]	[NT]	[NT]	[NT]	105	93
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	100	87
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	99	[NT]	[NT]	[NT]	[NT]	98	87
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	103	95
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	112	[NT]	[NT]	[NT]	[NT]	110	105
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	117	[NT]	[NT]	[NT]	[NT]	116	111
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	128	[NT]	[NT]	[NT]	[NT]	127	121
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	138	[NT]	[NT]	[NT]	[NT]	147	128
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	114	[NT]	[NT]	[NT]	[NT]	119	115
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	82	[NT]	[NT]	[NT]	[NT]	79	76
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	117	[NT]	[NT]	[NT]	[NT]	99	78
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	123	[NT]	[NT]	[NT]	[NT]	113	94
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	180	[NT]	[NT]	[NT]	[NT]	196	142
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	109	[NT]	[NT]	[NT]	[NT]	105	106
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	95	95
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	90	[NT]	[NT]	[NT]	[NT]	88	91
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	88	91

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	353775-2
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	91	[NT]	[NT]	[NT]	[NT]	87	90
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	125	[NT]	[NT]	[NT]	[NT]	123	113
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	123	[NT]	[NT]	[NT]	[NT]	129	115

QUALITY CONTROL: Dissolved Gases in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			19/06/2024	1	19/06/2024	19/06/2024		19/06/2024	[NT]
Date analysed	-			19/06/2024	1	19/06/2024	19/06/2024		19/06/2024	[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

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).

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.

The mass inbalance may be caused by other ions that have not been measured.

APPENDIX E – WTP SAMPLING AND DISCHARGE REGISTER

The Bays WTP Sampling and Discharge Summary

Sample Date	Site / WTP	Source Water	Lab ID	Notes	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	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
				WPIA Criteria	6.5-8.5	50		100		90			1	1.3	300		1900	70	8	900	200	700	0.13	1000
				EPL Criteria	6.5-8.5	15	N	100	55	None	0.7	4.4	1	1.3	300	4.4	80	7	8	910	200	300	0.00023	30
9/01/2024	TBY C-WTP	Untreated	341214	Month 7	12.1	14000	N	<10	<10	1	0.1	56	<1	<1	20	<1	<5	<1	3	340	870	3600	0.0088	140
9/01/2024	TBY C-WTP	Treated	341214	Month 7	7.3	<5	N	27	10	1	<0.1	<1	<1	<1	20	<1	<5	<1	2	14	<5	500	<0.0002	20
8/02/2024	TBY C-WTP	Untreated	343429	Month 8	11	12000	N	<10	80	1	<0.1	50	<1	3	30	<1	<5	<1	<1	2300	400	3100	0.01	100
8/02/2024	TBY C-WTP	Treated	343429	Month 8	7.1	<5	N	<100	30	<1	<0.1	<1	<1	<1	20	<1	12	<1	2	83	60	300	0.0002	60
21/03/2024	TBY C-WTP	Untreated	347089	Month 9	10.8	6800	N	<10	<10	<1	<0.1	38	<1	<1	<10	<1	<5	<1	<1	770	500	2000	0.0038	60
21/03/2024	TBY C-WTP	Treated	347089	Month 9	7	<5	N	<10	<10	<1	<0.1	9	<1	<1	<10	<1	17	<1	2	150	80	700	0.0005	50
10/04/2024	TBY C-WTP	Untreated	348515	Month 10	12.1	6100	N	<100	90	<1	<0.1	120	<1	3	20	<1	<5	<1	<1	710	550	1600	0.0049	60
10/04/2024	TBY C-WTP	Treated	348515	Month 10	7.5	<5	N	87	<10	<1	<0.1	16	<1	<1	<10	<1	<5	2	2	10	200	300	0.001	40
08/05/2024	TBY C-WTP	Untreated	350713	Month 11	10.2	2000	N	<10	10	<1	<0.1	18	<1	<1	<10	<1	<5	<1	2	1100	550	2500	0.0055	400
08/05/2024	TBY C-WTP	Treated	350713	Month 11	7.7	<5	N	12	<10	<1	<0.1	2	<1	<1	40	<1	8	<1	4	120	100	500	0.0007	50
11/06/2024	TBY C-WTP	Untreated	353587	Month 12	8.8	4100	N	<10	20	2	<0.1	6	<1	<1	<10	<1	<5	2	2	1200	300	1600	0.0053	470
11/06/2024	TBY C-WTP	Treated	353587	Month 12	7.7	<5	N	33	20	<1	<0.1	7	<1	<1	270	<1	71	2	39	250	100	800	0.0003	50

Burwood WTP Sampling and Discharge Summary

Sample Date	Site	Source Water	Lab ID	Notes	UoM	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)
						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	6.5-8.5	15	N	100	55	90	0.7	4.4	1	1.3	300	4.4	1900	70	8	910	200	300	0.00023	30
4/04/2024	BWD	Untreated	348083		Fortnight 3	1.5	20	N	10	51000	30	0.8	1	26	73	140000	21	4100	110	19000	53	50	3300	0.0048	1100
4/04/2024	BWD	Treated	348083		Fortnight 3	7.1	5	N	10	30	4	0.1	1	1	1	50	1	64	1	860	430	400	800	0.0002	50
16/04/2024	BWD	Untreated	349054		Fortnight 4	8.8	110	N	10	220	4	0.1	3	1	1	10	1	6	2	2	300	200	1000	0.0043	130
16/04/2024	BWD	Treated	349054		Fortnight 4	8.1	5	N	10	180	8	0.1	1	1	1	190	1	440	1	120	230	70	600	0.0002	670

Sydney Olympic Park WTP Sampling and Discharge Summary

Sample Date	Site / WTP	Source Water	Lab ID	Notes	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	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
				EPL Criteria	6.5-8.5	15	N	100	55	None	0.7	4.4	1	1.3	300	4.4	80	7	8	910	200	300	0.00023	30
15/01/2024	SOP-WTP	Untreated	341580	Month 4	8.6	94000	N	100	110	2	0.2	13	1	1	10	1	13	2	6	400	300	1700	0.0003	1100
15/01/2024	SOP-WTP	Treated	341580	Month 4	7.8	5	N	15	40	10	0.1	40	1	4	10	1	10	3	8	350	750	1200	0.0002	130
7/02/2024	SOP-WTP	Untreated	343334	Month 5	8.4	260	N	10	100	2	0.1	2	1	1	10	1	10	1	1	52	520	1200	0.016	1000
7/02/2024	SOP-WTP	Treated	343334	Month 5	7.7	5	N	11	200	1	0.1	2	1	1	10	1	5	1	49	20	190	300	0.0002	40
14/03/2024	SOP-WTP	Untreated	346481	Month 6	8.1	28	N	10	20	2	0.1	13	1	5	10	1	120	5	26	1400	6500	8500	0.04	80
14/03/2024	SOP-WTP	Treated	346841	Month 6	8.2	5	N	23	60	2	0.1	6	1	1	10	1	5	3	3	15	1700	1700	0.0002	180
18/04/2024	SOP-WTP	Untreated	349281	Month 7	7.6	83	N	10	10	1	0.1	1	1	2	10	1	140	3	57	1200	800	2200	0.008	150
18/04/2024	SOP-WTP	Treated	349281	Month 7	7.8	5	N	14	10	1	0.1	1	1	1	10	1	5	1	1	62	400	400	0.0002	90
21/05/2024	SOP-WTP	Untreated	351828	Month 8	11.5	20	N	12	510	1	0.1	3	1	5	100	1	5	2	5	3500	2800	6700	0.11	80
21/05/2024	SOP-WTP	Treated	351828	Month 8	7.9	5	N	44	10	1	0.1	2	1	1	20	1	5	2	4	270	710	1000	0.0002	80
14/06/2024	SOP-WTP	Untreated	353952	Month 9	9	94	N	10	20	2	0.1	21	1	5	10	1	5	2	1	220	540	1300	0.005	140
14/06/2024	SOP-WTP	Treated	353952	Month 9	7.8	5	N	10	40	1	0.1	1	1	1	10	1	5	1	1	140	300	900	0.0002	20

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.

The Bays- WTP Discharge Summary- January 2024

Discharge Date	Site/WTP	pH units	NTU	Oil and Grease
		Probe	Probe (correlation)	Visual
		pH units	NTU	Y/N
		6.5-8.5	18	Not visible
1/01/2024	C-WTP	7	1.3	N
2/01/2024	C-WTP	7	1.6	N
3/01/2024	C-WTP	7	3.2	N
4/01/2024	C-WTP	7	4.4	N
5/01/2024	C-WTP	7	6	N
6/01/2024	C-WTP	7	1.3	N
7/01/2024	C-WTP	7	1	N
8/01/2024	C-WTP	6.99	0.2	N
9/01/2024	C-WTP	7	0.5	N
10/01/2024	C-WTP	6.9	1.6	N
11/01/2024	C-WTP	6.9	1.4	N
12/01/2024	C-WTP	7	1.4	N
13/01/2024	C-WTP	7	1.7	N
14/01/2024	C-WTP	7	1.8	N
15/01/2024	C-WTP	7	2.7	N
16/01/2024	C-WTP	7	1.5	N
17/01/2024	C-WTP	6.9	1.5	N
18/01/2024	C-WTP	6.9	1.8	N
19/01/2024	C-WTP	6.9	1.6	N
20/01/2024	C-WTP	7	1.6	N
21/01/2024	C-WTP	6.9	1.5	N
22/01/2024	C-WTP	6.9	1.5	N
23/01/2024	C-WTP	6.9	1.7	N
24/01/2024	C-WTP	6.9	1.6	N
25/01/2024	C-WTP	6.8	1.8	N
26/01/2024	C-WTP	6.8	2.1	N
27/01/2024	C-WTP	6.8	0.2	N
28/01/2024	C-WTP	6.8	0.2	N
29/01/2024	C-WTP	6.9	0.2	N
30/01/2024	C-WTP	6.9	0.4	N
31/01/2024	C-WTP	6.9	0.9	N

Sydney Olympic Park- WTP Discharge Summary-January 2024

Discharge Date	Site/WTP	pH units	NTU	Oil and Grease
		Probe	Probe (correlation)	Visual
		pH units	NTU	Y/N
		6.5-8.5	14	Not visible
1/01/2024	SOP-WTP	7.81	3	N

2/01/2024	SOP-WTP	8.4	1	N
3/01/2024	SOP-WTP	8.3	0.3	N
4/01/2024	SOP-WTP	8	0.06	N
5/01/2024	SOP-WTP	7.2	0.1	N
6/01/2024	SOP-WTP	7.4	0.04	N
7/01/2024	SOP-WTP	7.8	0	N
8/01/2024	SOP-WTP	7.2	10	N
9/01/2024	SOP-WTP	2.9	5.7	N
10/01/2024	SOP-WTP	4.8	4.1	N
11/01/2024	SOP-WTP	8.2	1.2	N
12/01/2024	SOP-WTP	7.9	0.23	N
13/01/2024	SOP-WTP	7.6	0	N
14/01/2024	SOP-WTP	7	0.2	N
15/01/2024	SOP-WTP	7.7	0.6	N
16/01/2024	SOP-WTP	6.5	0.09	N
17/01/2024	SOP-WTP	5.4	0.9	N
18/01/2024	SOP-WTP	7.6	2	N
19/01/2024	SOP-WTP	7.5	2.2	N
20/01/2024	SOP-WTP	7.5	2.3	N
21/01/2024	SOP-WTP	7.5	1.6	N
22/01/2024	SOP-WTP	7.6	1.1	N
23/01/2024	SOP-WTP	7.7	1	N
24/01/2024	SOP-WTP	7.7	1	N
25/01/2024	SOP-WTP	7.8	1	N
26/01/2024	SOP-WTP	7.8	1	N
27/01/2024	SOP-WTP	7.8	1	N
28/01/2024	SOP-WTP	7.7	1.4	N
29/01/2024	SOP-WTP	7.7	2.5	N
30/01/2024	SOP-WTP	7.7	3.2	N
31/01/2024	SOP-WTP	7.8	3	N

The Bays- WTP Discharge Summary- February 2024

Discharge Date	Site/WTP	pH units	NTU	Oil and Grease
		Probe	Probe (correlation)	Visual
		pH units	NTU	Y/N
		6.5-8.5	18	Not visible
1/02/2024	C-WTP	6.9	1	N
2/02/2024	C-WTP	6.8	0.9	N
3/02/2024	C-WTP	6.9	0.9	N
4/02/2024	C-WTP	6.8	0.9	N
5/02/2024	C-WTP	6.8	1.2	N
6/02/2024	C-WTP	6.9	1	N
7/02/2024	C-WTP	6.9	0.9	N
8/02/2024	C-WTP	6.9	0.9	N
9/02/2024	C-WTP	7	1	N
10/02/2024	C-WTP	7	1.2	N
11/02/2024	C-WTP	6.9	1.2	N
12/02/2024	C-WTP	7	1.1	N
13/02/2024	C-WTP	7	1.2	N
14/02/2024	C-WTP	7	1.3	N
15/02/2024	C-WTP	7	1.4	N
16/02/2024	C-WTP	7	1.6	N
17/02/2024	C-WTP	6.9	1.6	N
18/02/2024	C-WTP	6.9	1.2	N
19/02/2024	C-WTP	6.9	1.5	N
20/02/2024	C-WTP	6.9	1.9	N
21/02/2024	C-WTP	6.7	2.5	N
22/02/2024	C-WTP	6.9	3.6	N
23/02/2024	C-WTP	6.9	2.4	N
24/02/2024	C-WTP	6.8	3.6	N
25/02/2024	C-WTP	6.8	7.8	N
26/02/2024	C-WTP	6.9	4.4	N
27/02/2024	C-WTP	6.9	1.5	N
28/02/2024	C-WTP	6.9	2.1	N
29/02/2024	C-WTP	6.8	0.3	N

Sydney Olympic Park- WTP Discharge Summary- February 2024

Discharge Date	Site/WTP	pH units	NTU	Oil and Grease
		Probe	Probe (correlation)	Visual
		pH units	NTU	Y/N
		6.5-8.5	14	Not visible
8/02/2024	SOP-WTP	7.7	0.8	N
10/02/2024	SOP-WTP	7.8	0.04	N
11/02/2024	SOP-WTP	7.8	0.01	N
12/02/2024	SOP-WTP	7.8	0	N

14/02/2024	SOP-WTP	7.7	0.44	N
15/02/2024	SOP-WTP	7.8	0.03	N
16/02/2024	SOP-WTP	8.1	0	N
18/02/2024	SOP-WTP	7.9	0	N
19/02/2024	SOP-WTP	7.8	0.01	N
20/02/2024	SOP-WTP	7.9	0.9	N
21/02/2024	SOP-WTP	7.8	0.9	N
22/02/2024	SOP-WTP	7.7	1	N
23/02/2024	SOP-WTP	7.6	1.3	N
24/02/2024	SOP-WTP	7.5	0.2	N
25/02/2024	SOP-WTP	7.6	0.3	N
26/02/2024	SOP-WTP	7.6	0.07	N
28/02/2024	SOP-WTP	7.7	0.01	N

The Bays- WTP Discharge Summary- March 2024

Discharge Date	Site/WTP	pH units	NTU	Oil and Grease
		Probe	Probe (correlation)	Visual
		pH units	NTU	Y/N
		6.5-8.5	18	Not visible
1/03/2024	C-WTP	7	1	N
2/03/2024	C-WTP	6.8	3.2	N
3/03/2024	C-WTP	6.9	0.2	N
4/03/2024	C-WTP	7	2.8	N
5/03/2024	C-WTP	7	4.7	N
6/03/2024	C-WTP	7	5.6	N
7/03/2024	C-WTP	7	4.7	N
8/03/2024	C-WTP	6.9	7.5	N
9/03/2024	C-WTP	7.1	9.3	N
10/03/2024	C-WTP	6.9	6.9	N
11/03/2024	C-WTP	6.9	4.7	N
12/03/2024	C-WTP	6.9	7	N
13/03/2024	C-WTP	7.1	6.4	N
14/03/2024	C-WTP	6.9	7.3	N
15/03/2024	C-WTP	7.1	8	N
16/03/2024	C-WTP	6.9	7.4	N
17/03/2024	C-WTP	7.1	4.2	N
18/03/2024	C-WTP	7.3	5.4	N
19/03/2024	C-WTP	7	6	N
20/03/2024	C-WTP	6.9	4.4	N
21/03/2024	C-WTP	6.8	0.9	N
22/03/2024	C-WTP	6.8	0.2	N
23/03/2024	C-WTP	6.9	1.4	N
24/03/2024	C-WTP	6.9	2.7	N
25/03/2024	C-WTP	7	1.6	N
26/03/2024	C-WTP	6.9	4.4	N
27/03/2024	C-WTP	6.9	3.9	N
28/03/2024	C-WTP	6.5	4.6	N
29/03/2024	C-WTP	7.2	3.8	N
30/03/2024	C-WTP	6.9	4.5	N
31/03/2024	C-WTP	6.8	7.5	N

Sydney Olympic Park- WTP Discharge Summary- March 2024

Discharge Date	Site/WTP	pH units	NTU	Oil and Grease
		Probe	Probe (correlation)	Visual
		pH units	NTU	Y/N
		6.5-8.5	14	Not visible
1/03/2024	SOP-WTP	7.67	0.02	N
2/03/2024	SOP-WTP	7.68	0.01	N
4/03/2024	SOP-WTP	7.66	2.1	N

5/03/2024	SOP-WTP	7.73	0	N
6/03/2024	SOP-WTP	7.87	0	N
7/03/2024	SOP-WTP	7.8	0	N
8/03/2024	SOP-WTP	7.83	0	N
9/03/2024	SOP-WTP	7.96	0.0066	N
11/03/2024	SOP-WTP	7.82	0.17	N
12/03/2024	SOP-WTP	7.99	0	N
13/03/2024	SOP-WTP	8.13	0	N
14/03/2024	SOP-WTP	7.98	1	N
15/03/2024	SOP-WTP	7.94	1	N
17/03/2024	SOP-WTP	7.9	1	N
18/03/2024	SOP-WTP	7.97	1	N
19/03/2024	SOP-WTP	8.15	1	N
20/03/2024	SOP-WTP	8.13	1	N
21/03/2024	SOP-WTP	8.05	1	N
22/03/2024	SOP-WTP	8.09	1	N
23/03/2024	SOP-WTP	8.11	1	N
27/03/2024	SOP-WTP	8.05	1	N

The Bays- WTP Discharge Summary- April 2024

Discharge Date	Site/WTP	pH units	NTU	Oil and Grease
		Probe	Probe (correlation)	Visual
		pH units	NTU	Y/N
		6.5-8.5	18	Not visible
1/04/2024	C-WTP	6.8	7.8	N
2/04/2024	C-WTP	6.9	4	N
3/04/2024	C-WTP	7	0.2	N
4/04/2024	C-WTP	7.3	0.7	N
5/04/2024	C-WTP	7.2	3.1	N
6/04/2024	C-WTP	6.9	2	N
8/04/2024	C-WTP	6.9	6	N
9/04/2024	C-WTP	7	3.3	N
10/04/2024	C-WTP	7	4.6	N
11/04/2024	C-WTP	7	7.7	N
12/04/2024	C-WTP	6.9	4.9	N
13/04/2024	C-WTP	6.9	3.4	N
14/04/2024	C-WTP	6.9	2.2	N
15/04/2024	C-WTP	6.9	0.2	N
16/04/2024	C-WTP	7	2.1	N
17/04/2024	C-WTP	7	4.1	N
18/04/2024	C-WTP	7	3.5	N
19/04/2024	C-WTP	7	3.2	N
20/04/2024	C-WTP	6.9	4	N
21/04/2024	C-WTP	6.9	5.2	N
22/04/2024	C-WTP	7	3.6	N
23/04/2024	C-WTP	7	2.3	N
24/04/2024	C-WTP	7	5.1	N
25/04/2024	C-WTP	7	4.2	N
26/04/2024	C-WTP	7	3.7	N
27/04/2024	C-WTP	7	3.7	N
28/04/2024	C-WTP	7	1.7	N
29/04/2024	C-WTP	7	1.1	N
30/04/2024	C-WTP	7.1	2.3	N

Sydney Olympic Park- WTP Discharge Summary- April 2024

Discharge Date	Site/WTP	pH units	NTU	Oil and Grease
		Probe	Probe (correlation)	Visual
		pH units	NTU	Y/N
		6.5-8.5	14	Not visible
1/04/2024	SOP-WTP	7.89	1	N
3/04/2024	SOP-WTP	8.01	1.04	N
4/04/2024	SOP-WTP	8.14	1	N
5/04/2024	SOP-WTP	8.08	2.3	N
6/04/2024	SOP-WTP	7.72	2.57	N

7/04/2024	SOP-WTP	7.32	2	N
8/04/2024	SOP-WTP	7.28	5.15	N
9/04/2024	SOP-WTP	7.51	6.28	N
10/04/2024	SOP-WTP	7.73	6.87	N
11/04/2024	SOP-WTP	7.92	1.58	N
12/04/2024	SOP-WTP	8.07	0.76	N
13/04/2024	SOP-WTP	8.01	1	N
15/04/2024	SOP-WTP	7.94	1	N
17/04/2024	SOP-WTP	7.99	0	N
18/04/2024	SOP-WTP	7.97	0.0019	N
19/04/2024	SOP-WTP	7.95	0	N
22/04/2024	SOP-WTP	7.96	0	N
23/04/2024	SOP-WTP	8	0	N
24/04/2024	SOP-WTP	7.89	0	N
25/04/2024	SOP-WTP	8.02	0	N
26/04/2024	SOP-WTP	7.96	0	N
27/04/2024	SOP-WTP	7.83	0.72	N
28/04/2024	SOP-WTP	7.74	1.74	N
29/04/2024	SOP-WTP	7.62	1.63	N
30/04/2024	SOP-WTP	7.55	1	N

Burwood- WTP Discharge Summary- April 2024

Discharge Date	Site/WTP	pH units	NTU	Oil and Grease
		Probe	Probe (correlation)	Visual
		pH units	NTU	Y/N
		6.5-8.5	23	Not visible
4/04/2024	BWD-WTP	6.8	3.7	N
5/04/2024	BWD-WTP	7	5.3	N
6/04/2024	BWD-WTP	7	2.3	N
7/04/2024	BWD-WTP	7	2.3	N
8/04/2024	BWD-WTP	5.9	2.1	N
9/04/2024	BWD-WTP	7	2.8	N
10/04/2024	BWD-WTP	6.8	5.1	N
11/04/2024	BWD-WTP	4.8	1.6	N
12/04/2024	BWD-WTP	7.5	0.4	N
16/04/2024	BWD-WTP	8.1	0.1	N
17/04/2024	BWD-WTP	7.4	0.1	N
19/04/2024	BWD-WTP	7.3	0.1	N
23/04/2024	BWD-WTP	6.8	0.1	N
24/04/2024	BWD-WTP	7.4	0.1	N
29/04/2024	BWD-WTP	7.6	0.1	N
30/04/2024	BWD-WTP	7.1	0.1	N

For the dates highlighted in the Burwood- WTP Discharge Summary- April 2024:

- *The actual pH of discharged water for the period from 2.29pm on 4 April to 12.29pm*
- *The actual pH of discharged water for the period after 10.51am on 8 April 2024 to 4.21pm on 10 April 2024 is not known.*
- *The actual pH of discharged water on 11 April 2024 is not known (the precise period of time is unknown).*
- *AFJV is continuing to review discharge pH and discharge data for additional dates*

The Bays- WTP Discharge Summary- May 2024

Discharge Date	Site/WTP	pH units	NTU	Oil and Grease
		Probe	Probe (correlation)	Visual
		pH units	NTU	Y/N
		6.5-8.5	18	Not visible
1/05/2024	C-WTP	6.9	5	N
2/05/2024	C-WTP	7	3.5	N
3/05/2024	C-WTP	7.1	2.4	N
4/05/2024	C-WTP	7	0.9	N
5/05/2024	C-WTP	7.1	0.2	N
6/05/2024	C-WTP	7.1	1.7	N
7/05/2024	C-WTP	7	2.1	N
8/05/2024	C-WTP	7	1.7	N
9/05/2024	C-WTP	6.9	1.5	N
10/05/2024	C-WTP	6.9	2.2	N
11/05/2024	C-WTP	6.9	2.9	N
12/05/2024	C-WTP	7	2.4	N
13/05/2024	C-WTP	7	2.6	N
14/05/2024	C-WTP	6.9	3.4	N
15/05/2024	C-WTP	6.9	4.5	N
16/05/2024	C-WTP	6.9	5	N
17/05/2024	C-WTP	7	3.7	N
18/05/2024	C-WTP	6.9	4.6	N
19/05/2024	C-WTP	6.9	8.2	N
20/05/2024	C-WTP	7	2.8	N
21/05/2024	C-WTP	7	4.5	N
22/05/2024	C-WTP	6.9	4	N
23/05/2024	C-WTP	7	3.6	N
24/05/2024	C-WTP	7.1	5.5	N
25/05/2024	C-WTP	7	4.1	N
26/05/2024	C-WTP	7	4.7	N
27/05/2024	C-WTP	7	3.4	N
28/05/2024	C-WTP	7	1.6	N
29/05/2024	C-WTP	7.1	2.2	N
30/05/2024	C-WTP	7	1.6	N
31/05/2024	C-WTP	7.1	0.9	N

Sydney Olympic Park- WTP Discharge Summary- May 2024

Discharge Date	Site/WTP	pH units	NTU	Oil and Grease
		Probe	Probe (correlation)	Visual
		pH units	NTU	Y/N
		6.5-8.5	14	Not visible
1/05/2024	SOP-WTP	7.9	0.3	N
2/05/2024	SOP-WTP	8	1.3	N
3/05/2024	SOP-WTP	7.9	2.3	N
4/05/2024	SOP-WTP	8	2.1	N

5/05/2024	SOP-WTP	7.9	1.7	N
6/05/2024	SOP-WTP	7.9	1.9	N
7/05/2024	SOP-WTP	7.8	2.2	N
8/05/2024	SOP-WTP	8	2	N
9/05/2024	SOP-WTP	7.9	2.3	N
10/05/2024	SOP-WTP	8.1	0.5	N
11/05/2024	SOP-WTP	8	0.1	N
12/05/2024	SOP-WTP	8.4	0	N
13/05/2024	SOP-WTP	8.1	0	N
14/05/2024	SOP-WTP	8.1	0	N
15/05/2024	SOP-WTP	7.5	0.1	N
16/05/2024	SOP-WTP	7.8	0.1	N
17/05/2024	SOP-WTP	7.9	0.3	N
18/05/2024	SOP-WTP	7.8	0.1	N
19/05/2024	SOP-WTP	8	0	N
20/05/2024	SOP-WTP	8	0.4	N
21/05/2024	SOP-WTP	8	0	N
22/05/2024	SOP-WTP	7.8	0	N
28/05/2024	SOP-WTP	7.6	0	N
29/05/2024	SOP-WTP	7.8	0	N
30/05/2024	SOP-WTP	7.8	0	N
31/05/2024	SOP-WTP	7.7	0	N

The Bays- WTP Discharge Summary- June 2024

Discharge Date	Site/WTP	pH units	NTU	Oil and Grease
		Probe	Probe (correlation)	Visual
		pH units	NTU	Y/N
		6.5-8.5	18	Not visible
1/06/2024	C-WTP	7	0.6	N
2/06/2024	C-WTP	7	1.3	N
3/06/2024	C-WTP	7	0.2	N
4/06/2024	C-WTP	7	0.2	N
5/06/2024	C-WTP	6.9	0.3	N
6/06/2024	C-WTP	6.9	1	N
7/06/2024	C-WTP	7	0.4	N
8/06/2024	C-WTP	7	0.4	N
9/06/2024	C-WTP	7	0.5	N
10/06/2024	C-WTP	7	1.3	N
11/06/2024	C-WTP	7	1.4	N
12/06/2024	C-WTP	6.9	1	N
13/06/2024	C-WTP	7	0.2	N
14/06/2024	C-WTP	7	0.2	N
15/06/2024	C-WTP	7	0.3	N
16/06/2024	C-WTP	7	0.4	N
17/06/2024	C-WTP	7.1	0.2	N
18/06/2024	C-WTP	7.1	0.2	N
19/06/2024	C-WTP	7	0.9	N
20/06/2024	C-WTP	7	1.6	N
21/06/2024	C-WTP	7	1.3	N
22/06/2024	C-WTP	7	2.1	N
23/06/2024	C-WTP	7	2.9	N
24/06/2024	C-WTP	7.1	1.9	N
25/06/2024	C-WTP	7	1.7	N
26/06/2024	C-WTP	7.1	1.8	N
27/06/2024	C-WTP	7	0.6	N
28/06/2024	C-WTP	7	0.8	N
29/06/2024	C-WTP	6.9	1.4	N
30/06/2024	C-WTP	7.1	1	N

Sydney Olympic Park- WTP Discharge Summary-June- 2024

Discharge Date	Site/WTP	pH units	NTU	Oil and Grease
		Probe	Probe (correlation)	Visual
		pH units	NTU	Y/N
		6.5-8.5	14	Not visible
1/06/2024	SOP-WTP	7.78	0.42	N
2/06/2024	SOP-WTP	7.91	0.4	N
3/06/2024	SOP-WTP	8.01	0.45	N
4/06/2024	SOP-WTP	8.07	0.41	N
5/06/2024	SOP-WTP	7.71	0.42	N

6/06/2024	SOP-WTP	7.97	0.42	N
7/06/2024	SOP-WTP	7.98	0.42	N
8/06/2024	SOP-WTP	7.83	0.44	N
9/06/2024	SOP-WTP	7.97	0.45	N
11/06/2024	SOP-WTP	8.05	0.45	N
12/06/2024	SOP-WTP	8.07	0.42	N
14/06/2024	SOP-WTP	8.03	0.83	N
15/06/2024	SOP-WTP	7.97	0.86	N
16/06/2024	SOP-WTP	7.93	0.87	N
17/06/2024	SOP-WTP	7.84	0.87	N
21/06/2024	SOP-WTP	7.74	0.86	N
22/06/2024	SOP-WTP	7.92	0.86	N
23/06/2024	SOP-WTP	7.9	0.86	N
24/06/2024	SOP-WTP	7.92	0.88	N
25/06/2024	SOP-WTP	7.94	0.86	N
26/06/2024	SOP-WTP	7.89	1.44	N
27/06/2024	SOP-WTP	7.98	0.87	N
28/06/2024	SOP-WTP	7.88	0.87	N
29/06/2024	SOP-WTP	7.65	0.87	N
30/06/2024	SOP-WTP	7.79	0.87	N