

CLIENT DETAILS

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Project **117623088 (PS134467) Wetherill Park**
 Order Number **117623088**
 Samples **7**

LABORATORY DETAILS

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SGS Reference **SE280099 R0**
 Date Received **20/3/2025**
 Date Reported **28/3/2025**

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

Ion Chromatography - The Limit of Reporting (LOR) has been raised due to high conductivity of the sample requiring dilution.

SIGNATORIES



Dong LIANG
 Metals/Inorganics Team Leader



Ly Kim HA
 Organic Section Head



Ying Ying ZHANG
 Laboratory Technician

VOCs in Water [AN433] Tested: 24/3/2025

PARAMETER	UOM	LOR	GW1	GW3	GW4	SW1	SW2
			WATER - 20/3/2025 SE280099.001	WATER - 20/3/2025 SE280099.002	WATER - 20/3/2025 SE280099.003	WATER - 20/3/2025 SE280099.004	WATER - 20/3/2025 SE280099.005
Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	<5	<5
Chloromethane	µg/L	5	<5	<5	<5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chloroethane	µg/L	5	<5	<5	<5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1	<1	<1	<1
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichloromethane (Methylene chloride)	µg/L	5	<5	<5	<5	<5	<5
Allyl chloride	µg/L	2	<2.0	<2.0	<2.0	<2.0	<2.0
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	<1	<1
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Iodomethane	µg/L	5	<5	<5	<5	<5	<5
Total Chlorinated Hydrocarbons	µg/L	10	<10	<10	<10	<10	<10

VOCs in Water [AN433] Tested: 24/3/2025 (continued)

PARAMETER	UOM	LOR	QC100	QC100A
			WATER - 20/3/2025 SE280099.006	WATER - 20/3/2025 SE280099.007
Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5
Chloromethane	µg/L	5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3
Chloroethane	µg/L	5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5
Dichloromethane (Methylene chloride)	µg/L	5	<5	<5
Allyl chloride	µg/L	2	<2.0	<2.0
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5
cis-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5
Bromochloromethane	µg/L	0.5	<0.5	<0.5
Chloroform (THM)	µg/L	0.5	<0.5	<0.5
2,2-dichloropropane	µg/L	0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5
Dibromomethane	µg/L	0.5	<0.5	<0.5
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	<0.5
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	<0.5
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5
Chlorobenzene	µg/L	0.5	<0.5	<0.5
Bromoform (THM)	µg/L	0.5	<0.5	<0.5
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5
trans-1,4-dichloro-2-butene	µg/L	1	<1	<1
Bromobenzene	µg/L	0.5	<0.5	<0.5
2-chlorotoluene	µg/L	0.5	<0.5	<0.5
4-chlorotoluene	µg/L	0.5	<0.5	<0.5
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5
Iodomethane	µg/L	5	<5	<5
Total Chlorinated Hydrocarbons	µg/L	10	<10	<10

Anions by Ion Chromatography in Water [AN245] Tested: 21/3/2025

PARAMETER	UOM	LOR	GW1	GW3	GW4	SW1	SW2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			20/3/2025 SE280099.001	20/3/2025 SE280099.002	20/3/2025 SE280099.003	20/3/2025 SE280099.004	20/3/2025 SE280099.005
Fluoride	mg/L	0.1	0.38	0.50	0.32	1.1	0.26
Chloride	mg/L	1	170	680	3300	310	62
Sulfate, SO4	mg/L	1	57	130	590	58	9.2
Nitrate Nitrogen, NO3-N	mg/L	0.005	0.007	<0.025 †	<0.050 †	0.033	0.026

PARAMETER	UOM	LOR	QC100	QC100A
			WATER	WATER
			-	-
			20/3/2025 SE280099.006	20/3/2025 SE280099.007
Fluoride	mg/L	0.1	1.3	1.1
Chloride	mg/L	1	310	300
Sulfate, SO4	mg/L	1	56	58
Nitrate Nitrogen, NO3-N	mg/L	0.005	0.053	0.035



ANALYTICAL RESULTS

SE280099 R0

Ammonia Nitrogen by Discrete Analyser [AN291] Tested: 21/3/2025

			GW1	GW3	GW4	SW1	SW2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			20/3/2025	20/3/2025	20/3/2025	20/3/2025	20/3/2025
PARAMETER	UOM	LOR	SE280099.001	SE280099.002	SE280099.003	SE280099.004	SE280099.005
Ammonia Nitrogen, NH ₃ as N	mg/L	0.005	2.5	1.1	0.35	2.0	0.19

			QC100	QC100A
			WATER	WATER
			-	-
			20/3/2025	20/3/2025
PARAMETER	UOM	LOR	SE280099.006	SE280099.007
Ammonia Nitrogen, NH ₃ as N	mg/L	0.005	2.1	1.7



ANALYTICAL RESULTS

SE280099 R0

Alkalinity [AN135] Tested: 24/3/2025

			GW1	GW3	GW4	SW1	SW2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			20/3/2025	20/3/2025	20/3/2025	20/3/2025	20/3/2025
PARAMETER	UOM	LOR	SE280099.001	SE280099.002	SE280099.003	SE280099.004	SE280099.005
Total Alkalinity as CaCO3	mg/L	5	750	530	850	170	50

			QC100	QC100A
			WATER	WATER
			-	-
			20/3/2025	20/3/2025
PARAMETER	UOM	LOR	SE280099.006	SE280099.007
Total Alkalinity as CaCO3	mg/L	5	170	170



ANALYTICAL RESULTS

SE280099 R0

Forms of Carbon [AN190] Tested: 21/3/2025

			GW1	GW3	GW4	SW1	SW2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			20/3/2025	20/3/2025	20/3/2025	20/3/2025	20/3/2025
PARAMETER	UOM	LOR	SE280099.001	SE280099.002	SE280099.003	SE280099.004	SE280099.005
Total Organic Carbon as NPOC	mg/L	0.2	15	24	10	11	15

			QC100	QC100A
			WATER	WATER
			-	-
			20/3/2025	20/3/2025
PARAMETER	UOM	LOR	SE280099.006	SE280099.007
Total Organic Carbon as NPOC	mg/L	0.2	11	11



ANALYTICAL RESULTS

SE280099 R0

Total and Volatile Suspended Solids (TSS / VSS) [AN114] Tested: 21/3/2025

			SW1	SW2	QC100	QC100A
			WATER	WATER	WATER	WATER
			-	-	-	-
			20/3/2025	20/3/2025	20/3/2025	20/3/2025
			SE280099.004	SE280099.005	SE280099.006	SE280099.007
PARAMETER	UOM	LOR				
Total Suspended Solids Dried at 103-105°C	mg/L	5	<5	63	7	<5



ANALYTICAL RESULTS

SE280099 R0

Oil and Grease in Water [AN185] Tested: 25/3/2025

			SW1	SW2	QC100	QC100A
			WATER	WATER	WATER	WATER
			-	-	-	-
			20/3/2025	20/3/2025	20/3/2025	20/3/2025
			SE280099.004	SE280099.005	SE280099.006	SE280099.007
PARAMETER	UOM	LOR				
Oil and Grease	mg/L	5	<5	<5	<5	<5

Metals in Water (Dissolved) by ICPOES [AN320] Tested: 26/3/2025

PARAMETER	UOM	LOR	GW1	GW3	GW4	SW1	SW2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			20/3/2025 SE280099.001	20/3/2025 SE280099.002	20/3/2025 SE280099.003	20/3/2025 SE280099.004	20/3/2025 SE280099.005
Calcium, Ca	mg/L	0.2	210	19	13	38	14
Magnesium, Mg	mg/L	0.1	62	43	200	29	5.1
Sodium, Na	mg/L	0.5	150	640	1900	190	45
Potassium, K	mg/L	0.1	14	3.0	19	8.5	4.6

PARAMETER	UOM	LOR	QC100	QC100A
			WATER	WATER
			-	-
			20/3/2025 SE280099.006	20/3/2025 SE280099.007
Calcium, Ca	mg/L	0.2	38	38
Magnesium, Mg	mg/L	0.1	28	28
Sodium, Na	mg/L	0.5	190	190
Potassium, K	mg/L	0.1	8.5	8.5



ANALYTICAL RESULTS

SE280099 R0

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 25/3/2025

			GW1	GW3	GW4	SW1	SW2
			WATER - 20/3/2025 SE280099.001	WATER - 20/3/2025 SE280099.002	WATER - 20/3/2025 SE280099.003	WATER - 20/3/2025 SE280099.004	WATER - 20/3/2025 SE280099.005
PARAMETER	UOM	LOR					
Iron	µg/L	5	3400	7100	1100	330	1700
Manganese	µg/L	1	950	260	1900	100	190

			QC100	QC100A
			WATER - 20/3/2025 SE280099.006	WATER - 20/3/2025 SE280099.007
PARAMETER	UOM	LOR		
Iron	µg/L	5	380	340
Manganese	µg/L	1	110	100



ANALYTICAL RESULTS

SE280099 R0

Trace Metals (Total) in Water by ICPMS [AN022/AN318] Tested: 26/3/2025

			GW1	GW3	GW4	SW1	SW2
			WATER	WATER	WATER	WATER	WATER
			-	-	-	-	-
			20/3/2025	20/3/2025	20/3/2025	20/3/2025	20/3/2025
			SE280099.001	SE280099.002	SE280099.003	SE280099.004	SE280099.005
PARAMETER	UOM	LOR					
Total Iron	µg/L	5	3900	18000	1200	380	2000
Total Manganese	µg/L	1	970	270	2000	100	200

			QC100	QC100A
			WATER	WATER
			-	-
			20/3/2025	20/3/2025
			SE280099.006	SE280099.007
PARAMETER	UOM	LOR		
Total Iron	µg/L	5	460	400
Total Manganese	µg/L	1	110	110

METHOD

METHODOLOGY SUMMARY

AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN022/AN318	Following acid digestion of un filtered sample, determination of elements at trace level in waters by ICP-MS technique, referenced to USEPA 6020B and USEPA 200.8 (5.4).
AN022	The water sample is digested with Nitric Acid and made up to the original volume similar to APHA3030E.
AN114	Total Suspended and Volatile Suspended Solids: The sample is homogenised by shaking and a known volume is filtered through a pre-weighed GF/C filter paper and washed well with deionised water. The filter paper is dried and reweighed. The TSS is the residue retained by the filter per unit volume of sample. Reference APHA 2540 D. Internal Reference AN114
AN135	Alkalinity (and forms of) by Titration: The sample is titrated with standard acid to pH 8.3 (P titre) and pH 4.5 (T titre) and permanent and/or total alkalinity calculated. The results are expressed as equivalents of calcium carbonate or recalculated as bicarbonate, carbonate and hydroxide. Reference APHA 2320. Internal Reference AN135
AN185	Gravimetric Oil & Grease and Hydrocarbons: A known volume of sample is extracted using an organic solvent and the solvent layer with dissolved oils and greases is transferred to a pre-weighed beaker. The solvent is evaporated over low heating and the beaker reweighed. The concentration of oil and grease is determined by the increase in mass of the collection beaker per volume of sample extracted. O&G is suitable for lubricating oils and other high boiling point products but is not suitable for volatiles. Reference to APHA 5520 B and USEPA 1664 Revision B.. Internal Reference AN185
AN190	TOC and DOC in Water: A homogenised micro portion of sample is injected into a heated reaction chamber packed with an oxidative catalyst that converts organic carbon to carbon dioxide. The CO ₂ is measured using a non-dispersive infrared detector. The process is fully automated in a commercially available analyser. If required a sugar value can be calculated from the TOC result. Reference APHA 5310 B.
AN190	Chemical oxygen demand can be calculated/estimated based on the O ₂ /C relation as 2.67*NPOC (TOC). This is an estimate only and the factor will vary with sample matrix so results should be interpreted with caution.
AN245	Anions by Ion Chromatography: A water sample is injected into an eluent stream that passes through the ion chromatographic system where the anions of interest ie Br, Cl, NO ₂ , NO ₃ and SO ₄ are separated on their relative affinities for the active sites on the column packing material. Changes to the conductivity and the UV-visible absorbance of the eluent enable identification and quantitation of the anions based on their retention time and peak height or area. APHA 4110 B
AN291	Ammonia in solution reacts with hypochlorite ions from Sodium Dichloroisocyanate, and salicylate in the presence of Sodium Nitroprusside to form indophenol blue and measured at 660 nm by Discrete Analyser.
AN318	Determination of elements at trace level in waters by ICP-MS technique,, referenced to USEPA 6020B and USEPA 200.8 (5.4).
AN320	Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components .
AN320	Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements . Reference APHA 3120 B.
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
Calculation	Free and Total Carbon Dioxide may be calculated using alkalinity forms only when the samples TDS is <500mg/L. If TDS is >500mg/L free or total carbon dioxide cannot be reported . APHA4500CO ₂ D.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
		IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
***	Indicates that both * and ** apply.	LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be $1.6 / 2$ (0.8 mg/kg). Where only 2 analytes are being summed, the "Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the $\pm$ sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.

Note that in terms of units of radioactivity:

- 1 Bq is equivalent to 27 pCi
- 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

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