



Environmental Forensics Report of Analysis
Project 20230200

Report #: 1735
Date Issued: 21-Jul-2023
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Client Project Reference: Menindee Fish Kill - 35 (IMT 6 Jun 2)

Customer: Department of Planning & Environment

Attention: [REDACTED]

Report Date: 21 July 2023

Project Received: 07 June 2023

EF Project Contact: [REDACTED]
[REDACTED]
[REDACTED]



The following samples were analysed:

Sample ID	Client ID	Sample Type	Client Sampled Date/Time	Aliquot	Client Description
234613	B1-1	Liquid	06/06/2023 9:24AM		
234614	B1-2	Liquid	06/06/2023 9:24AM		
234615	B1-3	Liquid	06/06/2023 9:24AM		
234653	B1-3	Liquid	06/06/2023 9:24AM	Laboratory Aliquot	
234616	B1-4	Liquid	06/06/2023 9:24AM		
234617	B1-5	Liquid	06/06/2023 9:24AM		
234618	B2-1	Liquid	06/06/2023 10:00AM		
234619	B2-2	Liquid	06/06/2023 10:00AM		
234620	B2-3	Liquid	06/06/2023 10:00AM		
234654	B2-3	Liquid	06/06/2023 10:00AM	Laboratory Aliquot	
234621	B2-4	Liquid	06/06/2023 10:00AM		
234622	B2-5	Liquid	06/06/2023 10:00AM		
234623	B3-1	Liquid	06/06/2023 3:35PM		
234624	B3-2	Liquid	06/06/2023 3:35PM		
234625	B3-3	Liquid	06/06/2023 3:35PM		
234655	B3-3	Liquid	06/06/2023 3:35PM	Laboratory Aliquot	
234626	B3-4	Liquid	06/06/2023 3:35PM		
234627	B3-5	Liquid	06/06/2023 3:35PM		
234628	E1-1	Liquid	06/06/2023 1:00PM		
234629	E1-2	Liquid	06/06/2023 1:00PM		
234630	E1-3	Liquid	06/06/2023 1:00PM		
234656	E1-3	Liquid	06/06/2023 1:00PM	Laboratory Aliquot	
234631	E1-4	Liquid	06/06/2023 1:00PM		
234632	E1-5	Liquid	06/06/2023 1:00PM		
234633	E2-1	Liquid	06/06/2023 12:15PM		
234634	E2-2	Liquid	06/06/2023 12:00PM		
234635	E2-3	Liquid	06/06/2023 12:15PM		
234657	E2-3	Liquid	06/06/2023 12:15PM	Laboratory Aliquot	
234636	E2-4	Liquid	06/06/2023 12:00PM		

Tests not covered by NATA accreditation 3040 are denoted with *

Codes: SN = Sample Note

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234637	E2-5	Liquid	06/06/2023	12:15PM	
234638	E3-1	Liquid	06/06/2023	11:15AM	
234639	E3-2	Liquid	06/06/2023	11:15AM	
234640	E3-3	Liquid	06/06/2023	11:15AM	
234658	E3-3	Liquid	06/06/2023	11:15AM	Laboratory Aliquot
234641	E3-4	Liquid	06/06/2023	11:15AM	
234642	E3-5	Liquid	06/06/2023	11:15AM	
234643	E4-1	Liquid	06/06/2023	4:00PM	
234644	E4-2	Liquid	06/06/2023	4:00PM	
234645	E4-3	Liquid	06/06/2023	4:00PM	
234659	E4-3	Liquid	06/06/2023	4:00PM	Laboratory Aliquot
234646	E4-4	Liquid	06/06/2023	4:00PM	
234647	E4-5	Liquid	06/06/2023	4:00PM	
234648	E5-1	Liquid	06/06/2023	3:00PM	
234649	E5-2	Liquid	06/06/2023	3:00PM	
234650	E5-3	Liquid	06/06/2023	3:00PM	
234660	E5-3	Liquid	06/06/2023	3:00PM	Laboratory Aliquot
234651	E5-4	Liquid	06/06/2023	3:00PM	
234652	E5-5	Liquid	06/06/2023	3:00PM	
234677	MFK - Z - B1 - Filtered 1	Liquid	06/06/2023	1:00AM	Trip 10
234678	MFK - Z - B1 - Filtered 2	Liquid	06/06/2023	1:00AM	Trip 10
234679	MFK - Z - B1 - Unfiltered 1	Liquid	06/06/2023	1:00AM	Trip 10
234680	MFK - Z - B2 - Filtered 1	Liquid	06/06/2023	1:00AM	Trip 10
234681	MFK - Z - B2 - Filtered 2	Liquid	06/06/2023	1:00AM	Trip 10
234682	MFK - Z - B2 - Unfiltered 1	Liquid	06/06/2023	1:00AM	Trip 10
234683	MFK - Z - B3 - Filtered 1	Liquid	06/06/2023	1:00AM	Trip 10
234684	MFK - Z - B3 - Filtered 2	Liquid	06/06/2023	1:00AM	Trip 10
234685	MFK - Z - B3 - Unfiltered 1	Liquid	06/06/2023	1:00AM	Trip 10
234686	MFK - Z - E1 - Filtered 1	Liquid	06/06/2023	1:00AM	Trip 10
234687	MFK - Z - E1 - Filtered 2	Liquid	06/06/2023	1:00AM	Trip 10
234688	MFK - Z - E1 - Unfiltered 1	Liquid	06/06/2023	1:00AM	Trip 10

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234689	MFK - Z - E2 - Filtered 1	Liquid	06/06/2023	1:00AM	Trip 10
234690	MFK - Z - E2 - Filtered 2	Liquid	06/06/2023	1:00AM	Trip 10
234691	MFK - Z - E2 - Unfiltered 1	Liquid	06/06/2023	1:00AM	Trip 10
234692	MFK - Z - E3 - Filtered 1	Liquid	06/06/2023	1:00AM	Trip 10
234693	MFK - Z - E3 - Filtered 2	Liquid	06/06/2023	1:00AM	Trip 10
234694	MFK - Z - E3 - Unfiltered 1	Liquid	06/06/2023	1:00AM	Trip 10
234695	MFK - Z - E4 - Filtered 1	Liquid	06/06/2023	1:00AM	Trip 10
234696	MFK - Z - E4 - Filtered 2	Liquid	06/06/2023	1:00AM	Trip 10
234697	MFK - Z - E4 - Unfiltered 1	Liquid	06/06/2023	1:00AM	Trip 10
234698	MFK - Z - E5 - Filtered 1	Liquid	06/06/2023	1:00AM	Trip 10
234699	MFK - Z - E5 - Filtered 2	Liquid	06/06/2023	1:00AM	Trip 10
234700	MFK - Z - E5 - Unfiltered 1	Liquid	06/06/2023	1:00AM	Trip 10
234701	MFK - BW - B2 - Filtered 1	Liquid	06/06/2023	1:00AM	Trip 10
234702	MFK - BW - B2 - Filtered 2	Liquid	06/06/2023	1:00AM	Trip 10
234703	MFK - BW - B2 - Unfiltered	Liquid	06/06/2023	1:00AM	Trip 10
234704	MFK - BW - B3 - Filtered 1	Liquid	06/06/2023	1:00AM	Trip 10
234705	MFK - BW - B3 - Filtered 2	Liquid	06/06/2023	1:00AM	Trip 10
234706	MFK - BW - B3 - Unfiltered	Liquid	06/06/2023	1:00AM	Trip 10
234707	MFK - BW - E1 - Filtered 1	Liquid	06/06/2023	1:00AM	Trip 10
234708	MFK - BW - E1 - Filtered 2	Liquid	06/06/2023	1:00AM	Trip 10
234709	MFK - BW - E1 - Unfiltered	Liquid	06/06/2023	1:00AM	Trip 10
234710	MFK - BW - E2 - Filtered 1	Liquid	06/06/2023	1:00AM	Trip 10
234711	MFK - BW - E2 - Filtered 2	Liquid	06/06/2023	1:00AM	Trip 10
234712	MFK - BW - E2 - Unfiltered	Liquid	06/06/2023	1:00AM	Trip 10
234713	MFK - BW - E3 - Filtered 1	Liquid	06/06/2023	1:00AM	Trip 10
234714	MFK - BW - E3 - Filtered 2	Liquid	06/06/2023	1:00AM	Trip 10
234715	MFK - BW - E3 - Unfiltered	Liquid	06/06/2023	1:00AM	Trip 10
234716	MFK - BW - E4 - Filtered 1	Liquid	06/06/2023	1:00AM	Trip 10
234717	MFK - BW - E4 - Filtered 2	Liquid	06/06/2023	1:00AM	Trip 10
234718	MFK - BW - E4 - Unfiltered	Liquid	06/06/2023	1:00AM	Trip 10
234719	MFK - BW - E5 - Filtered 1	Liquid	06/06/2023	1:00AM	Trip 10

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234720	MFK - BW - E5 - Filtered 2	Liquid	06/06/2023	1:00AM	Trip 10
234721	MFK - BW - E5 - Unfiltered	Liquid	06/06/2023	1:00AM	Trip 10

Report Notes

- This document has been authorised by the person whose name appears in this report.
- This report shall not be reproduced except in full. Samples analysed as received from the client.
- Results reported as 'less than' (<) indicates a result below the practical quantitation limit for the sample matrix and method used.

Project Comments

· Samples 234653 to 234660 were sent to ALS Environmental Laboratory (NATA Accreditation no: 825) for the analysis of EP202A: Phenoxyacetic Acid Herbicides by LCMS and E P204: Glyphosate and AMPA. This report summarises data from the attached external report: ES2319263, dated 16-Jun-2023.

· Samples 234617, 234622, 234627, 234632, 234637, 234642, 234647, 234652, were sent to Sydney Water Laboratory Services (NATA Accreditation no: 63 and 610) for the analysis of Blue-Green Algal ID and Enumeration. Please see detailed results in the attached Phytoplankton Analysis Report no. 286820 dated 24 June 2023.

Samples 234615, 234620, 234625, 234630, 234635, 234640, 234645, 234650 were sent to Sydney Water Laboratory Services (NATA Accreditation no: 63 and 610) for the analysis of Algal Toxins. Please see the attached Analytical Report No: 286820 dated 24 June 2023, which gives Algal Toxins analysis results and the Blue-Green Algal ID and Enumeration summary results.

· Samples 234677 to 234721 were sent to ALS Environmental Laboratory (NATA Accreditation no: 825) for the analysis of Nutrients: EK255A - Ammonia, EK259A: Nitrite and Nitrate (NO_x), EK261A - Total Kjeldahl Nitrogen, EK262A - Total Nitrogen, EK267A - Total Phosphorus (Persulfate Digestion), EK271A - Reactive Phosphorus. This report summarises data from the attached external report: ES2320682, dated 28-Jun-2023.

· Samples 234614, 234619, 234624, 234629, 234634, 234639, 234644 and 234649 were analysed outside the method holding time for Total suspended solids



Analysis Results - External Methods*		Sample ID	234615	234617	234620	234622	234625	234627	234630	234632	234635	234637	234640	234642
Area - EXTERNAL		Start Date	13/06/2023	23/06/2023	13/06/2023	23/06/2023	13/06/2023	23/06/2023	13/06/2023	23/06/2023	13/06/2023	23/06/2023	13/06/2023	23/06/2023
		Client ID	B1-3	B1-5	B2-3	B2-5	B3-3	B3-5	E1-3	E1-5	E2-3	E2-5	E3-3	E3-5
Analyte														
Algal Enumeration	-			RC		RC		RC		RC		RC		RC
Algal Identification	-			RC		RC		RC		RC		RC		RC
Algal Toxins	-		RC		RC		RC		RC		RC		RC	

Analysis Results - External Methods*		Sample ID	234645	234647	234650	234652
Area - EXTERNAL		Start Date	13/06/2023	23/06/2023	13/06/2023	23/06/2023
		Client ID	E4-3	E4-5	E5-3	E5-5
Analyte						
Algal Enumeration	-			RC		RC
Algal Identification	-			RC		RC
Algal Toxins	-		RC		RC	

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Analysis Results - External Methods*

Area - EXTERNAL

Analyte	Sample ID	Start Date	Client ID	234653	234654	234655	234656	234657	234658	234659	234660
				13/06/2023	13/06/2023	13/06/2023	13/06/2023	13/06/2023	13/06/2023	13/06/2023	13/06/2023
				B1-3	B2-3	B3-3	E1-3	E2-3	E3-3	E4-3	E5-3
2.4.5-T	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.4.6-T	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.4-D	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.4-DB	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.4-DP	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.6-D	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
4-Chlorophenoxy acetic acid	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
AMPA	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Clopyralid	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Dicamba	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Fluroxypyr	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Glyphosate	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
MCPA	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
MCPB	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Mecoprop	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Pricloram	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Silvex (2.4.5-TP/Fenoprop)	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Triclopyr	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Analysis Results - External Methods*

Area - EXTERNAL

Analyte	Sample ID	Start Date	Client ID	234677	234678	234679	234680	234681	234682	234683	234684	234685	234686	234687	234688
				22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023
				MFK - Z - B1	MFK - Z - B1	MFK - Z - B1	MFK - Z - B2	MFK - Z - B2	MFK - Z - B2	MFK - Z - B3	MFK - Z - B3	MFK - Z - B3	MFK - Z - E1	MFK - Z - E1	MFK - Z - E1
				- Filtered 1	- Filtered 2	- Unfiltered	- Filtered 1	- Filtered 2	- Unfiltered	- Filtered 1	- Filtered 2	- Unfiltered	- Filtered 1	- Filtered 2	- Unfiltered
Ammonia as N	mg/L	0.006					0.073			0.010			0.061		
Nitrite+Nitrate as N	mg/L	0.007	0.003	0.004	0.006	0.005	0.007	0.004	0.015	0.005	0.025	0.016	0.017		
Reactive Phosphate	mg/L	0.006			0.188				0.723			0.192			
Total Kjeldahl Nitrogen as N	mg/L		0.69	1.21		0.74	1.11		0.54	0.88		0.73	1.10		
Total Nitrogen as N	mg/L		0.69	1.21		0.74	1.12		0.55	0.89		0.75	1.12		
Total Phosphorus as P	mg/L		<0.010	0.102		0.111	0.160		0.265	0.347		0.143	0.159		

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Analysis Results - External Methods*

Area - EXTERNAL

Analyte

	Sample ID	234689	234690	234691	234692	234693	234694	234695	234696	234697	234698	234699	234700
	Start Date	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023
	Client ID	MFK - Z - E2 - Filtered 1	MFK - Z - E2 - Filtered 2	MFK - Z - E2 - Unfiltered	MFK - Z - E3 - Filtered 1	MFK - Z - E3 - Filtered 2	MFK - Z - E3 - Unfiltered	MFK - Z - E4 - Filtered 1	MFK - Z - E4 - Filtered 2	MFK - Z - E4 - Unfiltered	MFK - Z - E5 - Filtered 1	MFK - Z - E5 - Filtered 2	MFK - Z - E5 - Unfiltered
Ammonia as N	mg/L	0.110			0.115			0.137			0.071		
Nitrite+Nitrate as N	mg/L	0.044	0.036	0.036	0.062	0.053	0.056	0.062	0.061	0.062	0.050	0.049	0.050
Reactive Phosphate	mg/L	0.207			0.190			0.150			0.305		
Total Kjeldahl Nitrogen as N	mg/L		0.78	0.98		0.81	1.20		0.84	1.16		0.72	1.22
Total Nitrogen as N	mg/L		0.82	1.02		0.86	1.26		0.90	1.22		0.77	1.27
Total Phosphorus as P	mg/L		0.120	0.165		0.112	0.174		0.097	0.189		0.155	0.224

Analysis Results - External Methods*

Area - EXTERNAL

Analyte

	Sample ID	234701	234702	234703	234704	234705	234706	234707	234708	234709	234710	234711	234712
	Start Date	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023
	Client ID	MFK - BW - B2 - Filtered	MFK - BW - B2 - Filtered	MFK - BW - B2 -	MFK - BW - B3 - Filtered	MFK - BW - B3 - Filtered	MFK - BW - B3 -	MFK - BW - E1 - Filtered	MFK - BW - E1 - Filtered	MFK - BW - E1 -	MFK - BW - E2 - Filtered	MFK - BW - E2 - Filtered	MFK - BW - E2 -
Ammonia as N	mg/L	0.219			0.010			0.077			0.130		
Nitrite+Nitrate as N	mg/L	0.010	0.010	0.009	0.006	0.008	0.006	0.033	0.018	0.020	0.045	0.035	0.038
Reactive Phosphate	mg/L	0.238			0.634			0.215			0.234		
Total Kjeldahl Nitrogen as N	mg/L		1.11	1.43		0.69	1.12		0.90	1.28		0.96	1.21
Total Nitrogen as N	mg/L		1.12	1.44		0.70	1.13		0.92	1.30		1.00	1.25
Total Phosphorus as P	mg/L		0.148	0.248		0.295	0.419		0.129	0.191		0.154	0.208

Analysis Results - External Methods*

Area - EXTERNAL

Analyte

	Sample ID	234713	234714	234715	234716	234717	234718	234719	234720	234721
	Start Date	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023	22/06/2023
	Client ID	MFK - BW - E3 - Filtered	MFK - BW - E3 - Filtered	MFK - BW - E3 -	MFK - BW - E4 - Filtered	MFK - BW - E4 - Filtered	MFK - BW - E4 -	MFK - BW - E5 - Filtered	MFK - BW - E5 - Filtered	MFK - BW - E5 -
Ammonia as N	mg/L	0.167			0.156			0.087		
Nitrite+Nitrate as N	mg/L	0.057	0.057	0.056	0.062	0.062	0.062	0.054	0.054	0.051
Reactive Phosphate	mg/L	0.229			0.184			0.375		
Total Kjeldahl Nitrogen as N	mg/L		1.05	1.35		1.01	1.39		0.88	1.17
Total Nitrogen as N	mg/L		1.11	1.41		1.07	1.45		0.93	1.22
Total Phosphorus as P	mg/L		0.123	0.251		0.124	0.211		0.160	0.291

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Analysis Results - ICVAASW

Area - INORGANIC

Analyte

		234616 19/06/2023 B1-4	234621 19/06/2023 B2-4	234626 19/06/2023 B3-4	234631 19/06/2023 E1-4	234636 19/06/2023 E2-4	234641 19/06/2023 E3-4	234646 19/06/2023 E4-4	234651 19/06/2023 E5-4
Mercury	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Analysis Results - ICPAES

Area - INORGANIC

Analyte

		234616 8/06/2023 B1-4	234621 8/06/2023 B2-4	234626 8/06/2023 B3-4	234631 8/06/2023 E1-4	234636 8/06/2023 E2-4	234641 8/06/2023 E3-4	234646 8/06/2023 E4-4	234651 8/06/2023 E5-4
Aluminium (Lab. filtered)	mg/L	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Barium (Lab. filtered)	mg/L	0.15	0.11	0.09	0.12	0.12	0.12	0.11	0.11
Boron (Lab. filtered)	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium (Lab. filtered)	mg/L	46	36	30	37	37	36	36	34
Iron (Lab. filtered)	mg/L	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1
Magnesium (Lab. filtered)	mg/L	24	15	12	16	16	16	16	15
Potassium (Lab. filtered)	mg/L	12	13	11	13	13	13	13	12
Sodium (Lab. filtered)	mg/L	69	43	36	47	46	45	45	42
Strontium (Lab. filtered)	mg/L	0.52	0.39	0.31	0.40	0.40	0.40	0.39	0.37
Sulfur (Lab. filtered)	mg/L	5.6	3.1	3.5	3.8	3.5	3.3	3.3	3.4
Titanium (Lab. filtered)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

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Analysis Results - ICPMS

Area - INORGANIC

Analyte

	<i>Sample ID</i>	234616	234621	234626	234631	234636	234641	234646	234651
	<i>Start Date</i>	8/06/2023	8/06/2023	8/06/2023	8/06/2023	8/06/2023	8/06/2023	8/06/2023	8/06/2023
	<i>Client ID</i>	B1-4	B2-4	B3-4	E1-4	E2-4	E3-4	E4-4	E5-4
Antimony (Lab. filtered)	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic (Lab. filtered)	mg/L	0.002	0.004	0.006	0.004	0.004	0.004	0.004	0.004
Beryllium (Lab. filtered)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cadmium (Lab. filtered)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (Lab. filtered)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt (Lab. filtered)	mg/L	0.0002	0.0002	0.0001	0.0002	0.0002	0.0002	0.0002	0.0002
Copper (Lab. filtered)	mg/L	0.0011	0.0025	0.0027	0.0022	0.0021	0.0022	0.0019	0.0022
Lead (Lab. filtered)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Lithium (Lab. filtered)	mg/L	0.0019	0.0017	0.0015	0.0016	0.0017	0.0017	0.0017	0.0016
Manganese (Lab. filtered)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum (Lab. filtered)	mg/L	0.0008	0.0012	0.0007	0.0008	0.0007	0.0010	0.0014	0.0009
Nickel (Lab. filtered)	mg/L	0.0025	0.0034	0.0022	0.0034	0.0035	0.0036	0.0036	0.0032
Selenium (Lab. filtered)	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silver (Lab. filtered)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium (Lab. filtered)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Tin (Lab. filtered)	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vanadium (Lab. filtered)	mg/L	0.0037	0.010	0.018	0.010	0.0098	0.0098	0.0092	0.013
Zinc (Lab. filtered)	mg/L	0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001

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Codes: SN = Sample Note

RN = Result Note

RC = Project Comment



Analysis Results - ICPAES

Area - INORGANIC

<i>Sample ID</i>	<i>Start Date</i>	<i>Client ID</i>	234616	234621	234626	234631	234636	234641	234646	234651
			20/06/2023	20/06/2023	20/06/2023	20/06/2023	20/06/2023	20/06/2023	20/06/2023	20/06/2023
			B1-4	B2-4	B3-4	E1-4	E2-4	E3-4	E4-4	E5-4

Analyte

Analyte	Unit	234616	234621	234626	234631	234636	234641	234646	234651
Aluminium (acid extractable)	mg/L	0.82	3.3	6.1	4.1	3.6	4.2	4.4	4.7
Barium (acid extractable)	mg/L	0.16	0.13	0.12	0.14	0.13	0.13	0.14	0.13
Boron (acid extractable)	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium (acid extractable)	mg/L	46	37	31	38	38	37	37	35
Iron (acid extractable)	mg/L	0.6	2.2	4.2	2.8	2.5	3.0	3.1	3.3
Magnesium (acid extractable)	mg/L	24	16	14	17	17	16	17	16
Manganese (acid extractable)	mg/L	0.14	0.09	0.06	0.11	0.10	0.10	0.10	0.08
Potassium (acid extractable)	mg/L	12	14	12	14	14	14	14	14
Sodium (acid extractable)	mg/L	69	45	38	47	47	46	46	43
Strontium (acid extractable)	mg/L	0.52	0.41	0.33	0.43	0.42	0.40	0.41	0.39
Sulfur (acid extractable)	mg/L	5.6	3.2	3.5	3.8	3.5	3.3	3.4	3.4
Titanium (acid extractable)	mg/L	0.02	0.08	0.11	0.08	0.07	0.08	0.09	0.09

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Analysis Results - ICPMS

Area - INORGANIC

Analyte	Sample ID Start Date Client ID	234616	234621	234626	234631	234636	234641	234646	234651
		20/06/2023 B1-4	20/06/2023 B2-4	20/06/2023 B3-4	20/06/2023 E1-4	20/06/2023 E2-4	20/06/2023 E3-4	20/06/2023 E4-4	20/06/2023 E5-4
Antimony (acid extractable)	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Arsenic (acid extractable)	mg/L	0.002	0.004	0.006	0.004	0.004	0.004	0.004	0.004
Beryllium (acid extractable)	mg/L	<0.0001	<0.0001	0.0002	0.0001	<0.0001	0.0001	0.0001	0.0001
Cadmium (acid extractable)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium (acid extractable)	mg/L	<0.001	0.003	0.006	0.004	0.003	0.004	0.004	0.004
Cobalt (acid extractable)	mg/L	0.0011	0.0014	0.0014	0.0016	0.0015	0.0017	0.0017	0.0015
Copper (acid extractable)	mg/L	0.0018	0.0042	0.0055	0.0043	0.0040	0.0044	0.0042	0.0046
Lead (acid extractable)	mg/L	0.0005	0.0007	0.0010	0.0008	0.0008	0.0009	0.0009	0.0010
Lithium (acid extractable)	mg/L	0.0022	0.0027	0.0032	0.0028	0.0027	0.0028	0.0029	0.0028
Molybdenum (acid extractable)	mg/L	0.0013	0.0016	0.0011	0.0016	0.0016	0.0016	0.0016	0.0014
Nickel (acid extractable)	mg/L	0.0035	0.0056	0.0059	0.0061	0.0058	0.0062	0.0062	0.0060
Selenium (acid extractable)	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silver (acid extractable)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Thallium (acid extractable)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Tin (acid extractable)	mg/L	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Vanadium (acid extractable)	mg/L	0.0066	0.015	0.026	0.016	0.015	0.016	0.016	0.020
Zinc (acid extractable)	mg/L	0.002	0.005	0.009	0.006	0.005	0.007	0.006	0.007

Analysis Results - IGRSS

Area - INORGANIC

Analyte	Sample ID Start Date Client ID	234614	234619	234624	234629	234634	234639	234644	234649
		12/07/2023 B1-2	12/07/2023 B2-2	12/07/2023 B3-2	12/07/2023 E1-2	12/07/2023 E2-2	12/07/2023 E3-2	12/07/2023 E4-2	12/07/2023 E5-2
Fixed Suspended Solids	mg/L	9	15	8	34	<10	18	23	14
Total Suspended Solids	mg/L	22	26	16	46	20	29	33	24
Volatile Suspended Solids	mg/L	13	10	9	12	14	11	11	11

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Analysis Results - QQPEST
Area - ORGANIC

Analyte	Sample ID Start Date Client ID	234613	234618	234623	234628	234633	234638	234643	234648
		9/06/2023 B1-1	9/06/2023 B2-1	9/06/2023 B3-1	9/06/2023 E1-1	9/06/2023 E2-1	9/06/2023 E3-1	9/06/2023 E4-1	9/06/2023 E5-1
Aldrin	µg/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Allethrin	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Alpha-Chlordane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
alpha-HCH	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Ametryn	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Atraton	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Atrazine	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
beta-HCH	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bifenthrin	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Bioresmethrin	µg/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carbophenothion	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Cis-permethrin	µg/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Crotoxyphos	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cyfluthrin	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cypermethrin	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DDT-p,p'	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
delta-HCH	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Deltamethrin	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorvos	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Dieldrin	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan II	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Endosulfan I	µg/L	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9	<0.9
Endosulfan Sulfate	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Endrin Aldehyde	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin Ketone	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

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Analysis Results - QQPEST
Area - ORGANIC

Analyte	Sample ID Start Date Client ID	234613	234618	234623	234628	234633	234638	234643	234648
		9/06/2023 B1-1	9/06/2023 B2-1	9/06/2023 B3-1	9/06/2023 E1-1	9/06/2023 E2-1	9/06/2023 E3-1	9/06/2023 E4-1	9/06/2023 E5-1
Fenthion	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Fenvalerate	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Gamma-Chlordane	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
gamma-HCH	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Heptachlor Epoxide	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Hexachlorobenzene	µg/L	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Hexazinone	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
L-cyhalothrin	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Malathion	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methidathion	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methyl Azinphos	µg/L	<0.4	<0.4	<0.4	<0.8	<0.4	<0.4	<0.4	<0.4
Methyl Chlorpyrifos	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Methyl Parathion	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Mevinphos	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Oxyfluorfen	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phorate	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Profenofos	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Prometon	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Prometryn	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Propargite	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Propazine	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Propetamphos	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Simazine	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Simetryn	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulprofos	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Tebuconazole	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tebuthiuron	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Terbutylazine	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Terbutryn	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachlorvinphos	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

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Analysis Results - QQPEST

Area - ORGANIC

Sample ID	Start Date	Client ID	234613	234618	234623	234628	234633	234638	234643	234648
			9/06/2023	9/06/2023	9/06/2023	9/06/2023	9/06/2023	9/06/2023	9/06/2023	9/06/2023
			B1-1	B2-1	B3-1	E1-1	E2-1	E3-1	E4-1	E5-1
Trans-permethrin	µg/L		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7

Sample ID	Client ID	Method	Start Date	Result
234613	B1-1	OLCSCAN* - LC/MS Scan	08/06/2023	LC/MS scan for approximately 600 pesticides was negative. A list of analysed compounds can be provided on request. Note the list doesn't include glyphosate and quaternary ammonium herbicides (e.g. Paraquat and Diquat).
234618	B2-1	OLCSCAN* - LC/MS Scan	08/06/2023	LC/MS scan for approximately 600 pesticides was negative. A list of analysed compounds can be provided on request. Note the list doesn't include glyphosate and quaternary ammonium herbicides (e.g. Paraquat and Diquat).
234623	B3-1	OLCSCAN* - LC/MS Scan	08/06/2023	LC/MS scan for approximately 600 pesticides was negative. A list of analysed compounds can be provided on request. Note the list doesn't include glyphosate and quaternary ammonium herbicides (e.g. Paraquat and Diquat).
234628	E1-1	OLCSCAN* - LC/MS Scan	08/06/2023	LC/MS scan for approximately 600 pesticides was negative. A list of analysed compounds can be provided on request. Note the list doesn't include glyphosate and quaternary ammonium herbicides (e.g. Paraquat and Diquat).
234633	E2-1	OLCSCAN* - LC/MS Scan	08/06/2023	LC/MS scan for approximately 600 pesticides was negative. A list of analysed compounds can be provided on request. Note the list doesn't include glyphosate and quaternary ammonium herbicides (e.g. Paraquat and Diquat).
234638	E3-1	OLCSCAN* - LC/MS Scan	08/06/2023	LC/MS scan for approximately 600 pesticides was negative. A list of analysed compounds can be provided on request. Note the list doesn't include glyphosate and quaternary ammonium herbicides (e.g. Paraquat and Diquat).
234643	E4-1	OLCSCAN* - LC/MS Scan	08/06/2023	LC/MS scan for approximately 600 pesticides was negative. A list of analysed compounds can be provided on request. Note the list doesn't include glyphosate and quaternary ammonium herbicides (e.g. Paraquat and Diquat).
234648	E5-1	OLCSCAN* - LC/MS Scan	08/06/2023	LC/MS scan for approximately 600 pesticides was negative. A list of analysed compounds can be provided on request. Note the list doesn't include glyphosate and quaternary ammonium herbicides (e.g. Paraquat and Diquat).

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The sample(s) referred to in this report were analysed by the following method(s):

<i>Method code</i>	<i>Method description</i>	<i>Area</i>
External Methods*	External Methods - Analysis completed externally	EXTERNAL
External Methods*	External Methods - Analysis completed externally	EXTERNAL
External Methods*	External Methods - Analysis completed externally	EXTERNAL
ICVAASW	Mercury by Cold Vapour Atomic Absorption Spectroscopy	INORGANIC
ICPAES	Dissolved element analysis by Inductively Coupled Plasma-Atomic Emission Spectrometry (ICPAES)	INORGANIC
ICPMS	Dissolved Metals by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	INORGANIC
ICPAES	Acid extractable element analysis by Inductively Coupled Plasma-Atomic Emission Spectrometry (ICPAES)	INORGANIC
ICPMS	Acid extractable Metals by Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	INORGANIC
IGRTSS	Total Suspended Solids (TSS) (includes Volatile and Fixed Suspended Solids)	INORGANIC
QQQPEST	Determination of Multiresidue Pesticides by GCMSMS	ORGANIC
OLCSCAN*	Qualitative LC/MS scan	ORGANIC

The results in this report were authorised by:

<i>Name</i>	<i>Title</i>	<i>Area</i>
██████████	Senior Scientist	EXTERNAL
██████████	Scientist	INORGANIC
██████████	Senior Scientist	ORGANIC