



Environmental Forensics Report of Analysis
Project 20230179

Report #: 1717
Date Issued: 13-Jul-2023
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Client Project Reference: Menindee Fish Kill Darling Barka- 2

Customer: Department of Planning & Environment

Attention: [REDACTED]

Report Date: 13 July 2023

Project Received: 24 May 2023

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



The following samples were analysed:

Sample ID	Client ID	Sample Type	Client Sampled Date/Time	Aliquot
234069	B1	Liquid	23/05/2023 9:40AM	
234078	B1	Liquid	23/05/2023 9:40AM	Field Aliquot
234086	B1	Liquid	23/05/2023 9:40AM	Field Aliquot
234094	B1	Liquid	23/05/2023 9:40AM	Field Aliquot
234102	B1	Liquid	23/05/2023 9:40AM	Field Aliquot
234110	B1	Liquid	23/05/2023 9:40AM	Field Aliquot
234404	B1	Liquid	23/05/2023 9:40AM	Field Aliquot
234412	B1	Liquid	23/05/2023 9:40AM	Field Aliquot
234420	B1	Liquid	23/05/2023 9:40AM	Field Aliquot
234070	B2	Liquid	23/05/2023 10:35AM	
234079	B2	Liquid	23/05/2023 10:35AM	Field Aliquot
234087	B2	Liquid	23/05/2023 10:35AM	Field Aliquot
234095	B2	Liquid	23/05/2023 10:35AM	Field Aliquot
234103	B2	Liquid	23/05/2023 10:35AM	Field Aliquot
234111	B2	Liquid	23/05/2023 10:35AM	Field Aliquot
234405	B2	Liquid	23/05/2023 10:35AM	Field Aliquot
234413	B2	Liquid	23/05/2023 10:35AM	Field Aliquot
234421	B2	Liquid	23/05/2023 10:35AM	Field Aliquot
234071	E1	Liquid	23/05/2023 11:25AM	
234080	E1	Liquid	23/05/2023 11:25AM	Field Aliquot
234088	E1	Liquid	23/05/2023 11:25AM	Field Aliquot
234096	E1	Liquid	23/05/2023 11:25AM	Field Aliquot
234104	E1	Liquid	23/05/2023 11:25AM	Field Aliquot
234112	E1	Liquid	23/05/2023 11:25AM	Field Aliquot
234406	E1	Liquid	23/05/2023 11:25AM	Field Aliquot
234414	E1	Liquid	23/05/2023 11:25AM	Field Aliquot
234422	E1	Liquid	23/05/2023 11:25AM	Field Aliquot
234428	E1	Liquid	23/05/2023 11:25AM	Field Aliquot
234434	E1	Liquid	23/05/2023 11:25AM	Field Aliquot

Tests not covered by NATA accreditation 3040 are denoted with *

Codes: SN = Sample Note

RN = Result Note

RC = Project Comment



234440	E1	Liquid	23/05/2023	11:25AM	Field Aliquot
234072	E2	Liquid	23/05/2023		
234081	E2	Liquid	23/05/2023		Field Aliquot
234089	E2	Liquid	23/05/2023		Field Aliquot
234097	E2	Liquid	23/05/2023		Field Aliquot
234105	E2	Liquid	23/05/2023		Field Aliquot
234113	E2	Liquid	23/05/2023		Field Aliquot
234407	E2	Liquid	23/05/2023		Field Aliquot
234415	E2	Liquid	23/05/2023		Field Aliquot
234423	E2	Liquid	23/05/2023		Field Aliquot
234429	E2	Liquid	23/05/2023		Field Aliquot
234435	E2	Liquid	23/05/2023		Field Aliquot
234441	E2	Liquid	23/05/2023		Field Aliquot
234073	E3	Liquid	23/05/2023	12:50AM	
234082	E3	Liquid	23/05/2023	12:50AM	Field Aliquot
234090	E3	Liquid	23/05/2023	12:50AM	Field Aliquot
234098	E3	Liquid	23/05/2023	12:50AM	Field Aliquot
234106	E3	Liquid	23/05/2023	12:50AM	Field Aliquot
234114	E3	Liquid	23/05/2023	12:50AM	Field Aliquot
234408	E3	Liquid	23/05/2023	12:50AM	Field Aliquot
234416	E3	Liquid	23/05/2023	12:50AM	Field Aliquot
234424	E3	Liquid	23/05/2023	12:50AM	Field Aliquot
234430	E3	Liquid	23/05/2023	12:50AM	Field Aliquot
234436	E3	Liquid	23/05/2023	12:50AM	Field Aliquot
234442	E3	Liquid	23/05/2023	12:50AM	Field Aliquot
234074	E4	Liquid	23/05/2023	1:10PM	
234083	E4	Liquid	23/05/2023	1:10PM	Field Aliquot
234091	E4	Liquid	23/05/2023	1:10PM	Field Aliquot
234099	E4	Liquid	23/05/2023	1:10PM	Field Aliquot
234107	E4	Liquid	23/05/2023	1:10PM	Field Aliquot
234115	E4	Liquid	23/05/2023	1:10PM	Field Aliquot

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234409	E4	Liquid	23/05/2023	1:10PM	Field Aliquot
234417	E4	Liquid	23/05/2023	1:10PM	Field Aliquot
234425	E4	Liquid	23/05/2023	1:10PM	Field Aliquot
234431	E4	Liquid	23/05/2023	1:10PM	Field Aliquot
234437	E4	Liquid	23/05/2023	1:10PM	Field Aliquot
234443	E4	Liquid	23/05/2023	1:10PM	Field Aliquot
234075	B3	Liquid	23/05/2023	3:00PM	
234084	B3	Liquid	23/05/2023	3:00PM	Field Aliquot
234092	B3	Liquid	23/05/2023	3:00PM	Field Aliquot
234100	B3	Liquid	23/05/2023	3:00PM	Field Aliquot
234108	B3	Liquid	23/05/2023	3:00PM	Field Aliquot
234116	B3	Liquid	23/05/2023	3:00PM	Field Aliquot
234410	B3	Liquid	23/05/2023	3:00PM	Field Aliquot
234418	B3	Liquid	23/05/2023	3:00PM	Field Aliquot
234426	B3	Liquid	23/05/2023	3:00PM	Field Aliquot
234076	E5	Liquid	23/05/2023	3:20PM	
234077	E5	Liquid	23/05/2023	3:20PM	Field Aliquot
234085	E5	Liquid	23/05/2023	3:20PM	Field Aliquot
234093	E5	Liquid	23/05/2023	3:20PM	Field Aliquot
234101	E5	Liquid	23/05/2023	3:20PM	Field Aliquot
234109	E5	Liquid	23/05/2023	3:20PM	Field Aliquot
234117	E5	Liquid	23/05/2023	3:20PM	Field Aliquot
234411	E5	Liquid	23/05/2023	3:20PM	Field Aliquot
234419	E5	Liquid	23/05/2023	3:20PM	Field Aliquot
234427	E5	Liquid	23/05/2023	3:20PM	Field Aliquot
234433	E5	Liquid	23/05/2023	3:20PM	Field Aliquot
234439	E5	Liquid	23/05/2023	3:20PM	Field Aliquot
234445	E5	Liquid	23/05/2023	3:20PM	Field Aliquot

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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 234069 to 234077 were sent to ALS Environmental Laboratory (NATA Accreditation no: 825) for the analysis of EP202A - Phenoxyacetic Acid Herbicides by LCMS and EP204 - Glyphosate and AMPA. This report summarises data from the attached external report: ES2317471, dated 31-May-2023.

· Samples 234404 to 234445 were sent to ALS Environmental Laboratory (NATA Accreditation no: 825) for the analysis of EK055G - Ammonia as N by Discrete Analyser, EK059G - Nitrite plus Nitrate as N (NO_x) by Discrete Analyser, EK071G - Reactive Phosphorus as P by discrete analyser, EK061F - Filtered Total Kjeldahl Nitrogen as N (TKN), EK062F - Filtered Total Nitrogen as N, EK067FG - Filtered Total Phosphorus as P by Discrete Analyser, EK061G - Total Kjeldahl Nitrogen By Discrete Analyser, EK062G - Total Nitrogen as N (TKN + NO_x) by Discrete Analyser, EK067G - Total Phosphorus as P by Discrete Analyser. This report summarises data from the attached external report: ES2318510, dated 06-Jun-2023.

· Samples 234094 to 234101 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. 285934 dated 9 June 2023.

· Samples 234110 to 234117 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: 285934 dated 9 June 2023, which gives Algal Toxins analysis results and the Blue-Green Algal ID and Enumeration summary results.

· Samples 234078, 234079, 234080, 234081, 234082, 234083, 234084 and 234085 were analysed outside the method holding time for Total suspended solids



Analysis Results - External Methods*		<i>Sample ID</i>	234094	234110	234095	234111	234096	234112	234097	234113	234098	234114	234099	234115
Area - EXTERNAL		<i>Start Date</i>	8/06/2023	29/05/2023	8/06/2023	29/05/2023	8/06/2023	29/05/2023	8/06/2023	29/05/2023	8/06/2023	29/05/2023	8/06/2023	29/05/2023
		<i>Client ID</i>	B1	B1	B2	B2	E1	E1	E2	E2	E3	E3	E4	E4
<i>Analyte</i>														
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*		<i>Sample ID</i>	234100	234116	234101	234117
Area - EXTERNAL		<i>Start Date</i>	8/06/2023	29/05/2023	8/06/2023	29/05/2023
		<i>Client ID</i>	B3	B3	E5	E5
<i>Analyte</i>						
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	234069	234070	234071	234072	234073	234074	234075	234076	234077
		30/05/2023 B1	30/05/2023 B2	30/05/2023 E1	30/05/2023 E2	30/05/2023 E3	30/05/2023 E4	30/05/2023 B3	30/05/2023 E5	30/05/2023 E5
2.4.5-T	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.4.6-T	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.4-D	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.4-DB	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.4-DP	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
2.6-D	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
4-Chlorophenoxy acetic acid	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
AMPA	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
Clopyralid	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
Dicamba	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
Fluroxypyr	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
Glyphosate	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
MCPA	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
MCPB	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
Mecoprop	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10
Pricloram	µg/L	<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
Triclopyr	µg/L	<10	<10	<10	<10	<10	<10	<10	<10	<10

Analysis Results - External Methods*

Area - EXTERNAL

Analyte	Sample ID Start Date Client ID	234404	234412	234420	234405	234413	234421	234406	234414	234422	234428	234434	234440
		2/06/2023 B1 Filtered 1	2/06/2023 B1 Filtered 2	2/06/2023 B1 Unfiltered	2/06/2023 B2 Filtered 1	2/06/2023 B2 Filtered 2	2/06/2023 B2 Unfiltered	2/06/2023 E1 Filtered 1	2/06/2023 E1 Filtered 2	2/06/2023 E1 Unfiltered	2/06/2023 E1 Filtered 1 BW	2/06/2023 E1 Filtered 2 BW	2/06/2023 E1 Unfiltered
^ Filtered Total Nitrogen as N	mg/L		0.6			0.6			0.8			0.6	
^ Total Nitrogen as N	mg/L			1.0			0.9			1.0			1.0
Ammonia as N	mg/L	0.02			<0.01			<0.01			<0.01		
Dissolved TKN as N	mg/L		0.6			0.6			0.7			0.6	
Filtered Total Phosphorus as P	mg/L		0.02			0.08			0.10			0.07	
Nitrite+Nitrate as N	mg/L	<0.01	0.02	<0.01	0.01	<0.01	<0.01	0.01	0.05	0.01	0.01	0.02	0.02
Reactive Phosphorus as P	mg/L	<0.01			0.05			0.06			0.04		
Total Kjeldahl Nitrogen as N	mg/L			1.0				0.9		1.0			1.0
Total Phosphorus as P	mg/L			0.08				0.15		0.18			0.17

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Analysis Results - External Methods*

Area - EXTERNAL

Analyte	mg/L	Sample ID	234407	234415	234423	234429	234435	234441	234408	234416	234424	234430	234436	234442
		Start Date	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023
Client ID		E2 Filtered 1	E2 Filtered 2	E2 Unfiltered	E2 Filtered 1 BW	E2 Filtered 2 BW	E2 Unfiltered	E3 Filtered 1	E3 Filtered 2	E3 Unfiltered	E3 Filtered 1 BW	E3 Filtered 2 BW	E3 Unfiltered	E3 Unfiltered
^ Filtered Total Nitrogen as N			0.7				0.9			0.7			0.8	
^ Total Nitrogen as N				1.0				1.2			1.0			1.0
Ammonia as N		0.03			0.04				0.07			0.12		
Dissolved TKN as N			0.7				0.8			0.7			0.8	
Filtered Total Phosphorus as P			0.07				0.08			0.07			0.06	
Nitrite+Nitrate as N		0.02	0.02	0.02	0.03	0.07	0.02	0.07	0.04	0.04	0.06	0.04	0.04	
Reactive Phosphorus as P		0.05			0.06				0.05			0.02		
Total Kjeldahl Nitrogen as N				1.0				1.2			1.0			1.0
Total Phosphorus as P				0.17				0.18			0.14			0.14

Analysis Results - External Methods*

Area - EXTERNAL

Analyte	mg/L	Sample ID	234409	234417	234425	234431	234437	234443	234410	234418	234426	234411	234419	234427
		Start Date	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023	2/06/2023
Client ID		E4 Filtered 1	E4 Filtered 2	E4 Unfiltered	E4 Filtered 1 BW	E4 Filtered 2 BW	E4 Unfiltered	B3 Filtered 1	B3 Filtered 2	B3 Unfiltered	E5 Filtered 1	E5 Filtered 2	E5 Unfiltered	E5 Unfiltered
^ Filtered Total Nitrogen as N			0.8				0.8			0.5			0.6	
^ Total Nitrogen as N				1.2				1.1			0.7			1.0
Ammonia as N		0.07			0.10				0.10			0.03		
Dissolved TKN as N			0.8				0.8			0.5			0.6	
Filtered Total Phosphorus as P			0.08				0.10			0.22			0.14	
Nitrite+Nitrate as N		0.05	0.04	0.05	0.08	0.05	0.04	0.04	0.01	<0.01	0.04	0.03	0.03	
Reactive Phosphorus as P		0.02			0.05				0.22			0.08		
Total Kjeldahl Nitrogen as N				1.1				1.1			0.7			1.0
Total Phosphorus as P				0.14				0.17			0.32			0.20

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Analysis Results - External Methods*

Area - EXTERNAL

	<i>Sample ID</i>	234433	234439	234445
	<i>Start Date</i>	2/06/2023	2/06/2023	2/06/2023
	<i>Client ID</i>	E5 Filtered 1	E5 Filtered 2	E5
		BW	BW	Unfiltered
<i>Analyte</i>				
^ Filtered Total Nitrogen as N	mg/L		1.3	
^ Total Nitrogen as N	mg/L			1.0
Ammonia as N	mg/L	0.04		
Dissolved TKN as N	mg/L		0.7	
Filtered Total Phosphorus as P	mg/L		0.10	
Nitrite+Nitrate as N	mg/L	0.04	0.58	0.03
Reactive Phosphorus as P	mg/L	0.06		
Total Kjeldahl Nitrogen as N	mg/L			1.0
Total Phosphorus as P	mg/L			0.21

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Analysis Results - ICVAASW

Area - INORGANIC

		Sample ID	234102	234103	234104	234105	234106	234107	234108	234109
		Start Date	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023	30/05/2023
		Client ID	B1	B2	E1	E2	E3	E4	B3	E5
Analyte										
Mercury	µg/L		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Analysis Results - ICPAES

Area - INORGANIC

		Sample ID	234102	234103	234104	234105	234106	234107	234108	234109
		Start Date	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
		Client ID	B1	B2	E1	E2	E3	E4	B3	E5
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		0.14	0.11	0.11	0.11	0.11	0.12	0.09	0.10
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		44	38	38	37	37	38	32	35
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		23	15	15	15	16	15	13	14
Potassium (Lab. filtered)	mg/L		11	13	13	13	13	13	11	12
Sodium (Lab. filtered)	mg/L		66	45	45	44	45	45	38	42
Strontium (Lab. filtered)	mg/L		0.49	0.38	0.39	0.37	0.39	0.39	0.31	0.35
Sulfur (Lab. filtered)	mg/L		5.7	3.1	3.4	3.3	3.5	3.4	3.9	3.7
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>	234102	234103	234104	234105	234106	234107	234108	234109
	<i>Start Date</i>	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
	<i>Client ID</i>	B1	B2	E1	E2	E3	E4	B3	E5
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	0.004	0.004	0.004	0.003	0.006	0.005
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	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001
Copper (Lab. filtered)	mg/L	0.0010	0.0024	0.0025	0.0024	0.0021	0.0020	0.0028	0.0023
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	0.0022	0.0019	0.0019	0.0019	0.0019	0.0019	0.0016	0.0018
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	0.0014	0.0015	0.0015	0.0015	0.0016	0.0015	0.0011	0.0013
Nickel (Lab. filtered)	mg/L	0.0027	0.0033	0.0034	0.0034	0.0036	0.0035	0.0022	0.0029
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	0.0033	0.011	0.010	0.0098	0.0089	0.0088	0.018	0.013
Zinc (Lab. filtered)	mg/L	0.002	<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>	234102	234103	234104	234105	234106	234107	234108	234109
	<i>Start Date</i>	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
	<i>Client ID</i>	B1	B2	E1	E2	E3	E4	B3	E5
<i>Analyte</i>									
Aluminium (acid extractable)	mg/L	0.75	4.3	4.2	4.3	4.3	4.4	5.8	5.6
Barium (acid extractable)	mg/L	0.16	0.13	0.13	0.13	0.14	0.14	0.12	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	48	39	39	40	39	40	34	37
Iron (acid extractable)	mg/L	0.6	3.1	3.2	3.3	3.4	3.5	4.6	4.6
Magnesium (acid extractable)	mg/L	23	17	16	16	17	17	14	16
Manganese (acid extractable)	mg/L	0.12	0.08	0.10	0.11	0.12	0.12	0.05	0.10
Potassium (acid extractable)	mg/L	12	14	14	14	14	14	13	14
Sodium (acid extractable)	mg/L	69	45	46	46	47	47	39	44
Strontium (acid extractable)	mg/L	0.52	0.42	0.40	0.41	0.41	0.41	0.33	0.38
Sulfur (acid extractable)	mg/L	6.1	3.4	3.5	3.5	3.6	3.6	4.0	3.8
Titanium (acid extractable)	mg/L	0.02	0.13	0.12	0.11	0.11	0.10	0.10	0.11

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Analysis Results - ICPMS

Area - INORGANIC

Sample ID	234102	234103	234104	234105	234106	234107	234108	234109
Start Date	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023	24/05/2023
Client ID	B1	B2	E1	E2	E3	E4	B3	E5

Analyte		234102	234103	234104	234105	234106	234107	234108	234109
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	0.004	0.004	0.004	0.004	0.006	0.005
Beryllium (acid extractable)	mg/L	<0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0002
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	0.004	0.004	0.004	0.004	0.004	0.006	0.005
Cobalt (acid extractable)	mg/L	0.0010	0.0015	0.0016	0.0017	0.0019	0.0017	0.0014	0.0017
Copper (acid extractable)	mg/L	0.0020	0.0047	0.0046	0.0048	0.0044	0.0042	0.0058	0.0051
Lead (acid extractable)	mg/L	0.0005	0.0008	0.0009	0.0009	0.0010	0.0010	0.0009	0.0011
Lithium (acid extractable)	mg/L	0.0024	0.0028	0.0030	0.0030	0.0030	0.0030	0.0034	0.0033
Molybdenum (acid extractable)	mg/L	0.0016	0.0016	0.0016	0.0016	0.0016	0.0015	0.0011	0.0013
Nickel (acid extractable)	mg/L	0.0037	0.0060	0.0061	0.0064	0.0062	0.0063	0.0060	0.0062
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	0.0062	0.017	0.016	0.016	0.016	0.016	0.027	0.021
Zinc (acid extractable)	mg/L	0.004	0.006	0.007	0.007	0.009	0.007	0.009	0.009

Analysis Results - IGRSS

Area - INORGANIC

Sample ID	234078	234079	234080	234081	234082	234083	234084	234085
Start Date	8/06/2023	8/06/2023	8/06/2023	8/06/2023	8/06/2023	8/06/2023	8/06/2023	8/06/2023
Client ID	B1	B2	E1	E2	E3	E4	B3	E5

Analyte		234078	234079	234080	234081	234082	234083	234084	234085
Fixed Suspended Solids	mg/L	9	37	34	38	59	45	15	38
Total Suspended Solids	mg/L	15	44	41	46	73	55	20	46
Volatile Suspended Solids	mg/L	6	7	7	8	14	10	5	8

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Analysis Results - QQPEST

Area - ORGANIC

Analyte	Sample ID Start Date Client ID	234086	234087	234088	234089	234090	234091	234092	234093
		25/05/2023 B1	25/05/2023 B2	25/05/2023 E1	25/05/2023 E2	25/05/2023 E3	25/05/2023 E4	25/05/2023 B3	25/05/2023 E5
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
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
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
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

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Analysis Results - QQPEST

Area - ORGANIC

Analyte

	<i>Sample ID</i>	234086	234087	234088	234089	234090	234091	234092	234093
	<i>Start Date</i>	25/05/2023	25/05/2023	25/05/2023	25/05/2023	25/05/2023	25/05/2023	25/05/2023	25/05/2023
	<i>Client ID</i>	B1	B2	E1	E2	E3	E4	B3	E5
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	<0.4	<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
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
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

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Area - ORGANIC

234086	B1	OLCSCAN* - LC/MS Scan	26/05/2023	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).
234087	B2	OLCSCAN* - LC/MS Scan	26/05/2023	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).
234088	E1	OLCSCAN* - LC/MS Scan	26/05/2023	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).
234089	E2	OLCSCAN* - LC/MS Scan	26/05/2023	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).
234090	E3	OLCSCAN* - LC/MS Scan	26/05/2023	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).
234091	E4	OLCSCAN* - LC/MS Scan	26/05/2023	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).
234092	B3	OLCSCAN* - LC/MS Scan	26/05/2023	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).
234093	E5	OLCSCAN* - LC/MS Scan	26/05/2023	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).

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

Method code	Method description	Area
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:

Name	Title	Area
██████████	Senior Scientist	EXTERNAL
██████████	Scientist	INORGANIC
██████████	Scientist	ORGANIC

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