



**Environmental Forensics Report of Analysis**  
**Project 20230172**

**Report #:** 1698  
**Date Issued:** 29-Jun-2023  
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**Client Project Reference: Menindee Fish Kill - 26 (16 May 202**

Customer: Department of Planning & Environment

Attention: [REDACTED]

Report Date: 29 June 2023

Project Received: 17 May 2023

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



**The following samples were analysed:**

Sample ID	Client ID	Sample Type	Client Sampled Date/Time	Aliquot
233781	B1	Liquid	16/05/2023 10:00AM	
233965	B1	Liquid	16/05/2023 10:00AM	Field Aliquot
233966	B1	Liquid	16/05/2023 10:00AM	Field Aliquot
233967	B1	Liquid	16/05/2023 10:00AM	Field Aliquot
233782	B2	Liquid	16/05/2023 11:00AM	
233968	B2	Liquid	16/05/2023 11:00AM	Field Aliquot
233969	B2	Liquid	16/05/2023 11:00AM	Field Aliquot
233970	B2	Liquid	16/05/2023 11:00AM	Field Aliquot
233783	MFK-BW-B2	Liquid	16/05/2023 11:00AM	
233971	MFK-BW-B2	Liquid	16/05/2023 11:00AM	Field Aliquot
233972	MFK-BW-B2	Liquid	16/05/2023 11:00AM	Field Aliquot
233973	MFK-BW-B2	Liquid	16/05/2023 11:00AM	Field Aliquot
233784	B3	Liquid	16/05/2023 2:10PM	
233974	B3	Liquid	16/05/2023 2:10PM	Field Aliquot
233975	B3	Liquid	16/05/2023 2:10PM	Field Aliquot
233976	B3	Liquid	16/05/2023 2:10PM	Field Aliquot
233785	MFK-BW-B3	Liquid	16/05/2023 2:10PM	
233977	MFK-BW-B3	Liquid	16/05/2023 2:10PM	Field Aliquot
233978	MFK-BW-B3	Liquid	16/05/2023 2:10PM	Field Aliquot
233979	MFK-BW-B3	Liquid	16/05/2023 2:10PM	Field Aliquot
233786	E1	Liquid	16/05/2023 11:45AM	
233980	E1	Liquid	16/05/2023 11:45AM	Field Aliquot
233981	E1	Liquid	16/05/2023 11:45AM	Field Aliquot
233982	E1	Liquid	16/05/2023 11:45AM	Field Aliquot
233787	MFK-BW-E1	Liquid	16/05/2023 11:45AM	
233983	MFK-BW-E1	Liquid	16/05/2023 11:45AM	Field Aliquot
233984	MFK-BW-E1	Liquid	16/05/2023 11:45AM	Field Aliquot
233985	MFK-BW-E1	Liquid	16/05/2023 11:45AM	Field Aliquot
233788	E2	Liquid	16/05/2023 12:30PM	

Tests not covered by NATA accreditation 3040 are denoted with \*

**Codes: SN** = Sample Note

**RN** = Result Note

**RC** = Project Comment



233986	E2	Liquid	16/05/2023	12:30PM	Field Aliquot
233987	E2	Liquid	16/05/2023	12:30PM	Field Aliquot
233988	E2	Liquid	16/05/2023	12:30PM	Field Aliquot
233789	MFK-BW-E2	Liquid	16/05/2023	12:30PM	
233989	MFK-BW-E2	Liquid	16/05/2023	12:30PM	Field Aliquot
233990	MFK-BW-E2	Liquid	16/05/2023	12:30PM	Field Aliquot
233991	MFK-BW-E2	Liquid	16/05/2023	12:30PM	Field Aliquot
233790	E3	Liquid	16/05/2023	1:20PM	
233992	E3	Liquid	16/05/2023	1:20PM	Field Aliquot
233993	E3	Liquid	16/05/2023	1:20PM	Field Aliquot
233994	E3	Liquid	16/05/2023	1:20PM	Field Aliquot
233791	MFK-BW-E3	Liquid	16/05/2023	1:20PM	
233995	MFK-BW-E3	Liquid	16/05/2023	1:20PM	Field Aliquot
233996	MFK-BW-E3	Liquid	16/05/2023	1:20PM	Field Aliquot
233997	MFK-BW-E3	Liquid	16/05/2023	1:20PM	Field Aliquot
233792	E4	Liquid	16/05/2023	1:55PM	
233998	E4	Liquid	16/05/2023	1:55PM	Field Aliquot
233999	E4	Liquid	16/05/2023	1:55PM	Field Aliquot
234000	E4	Liquid	16/05/2023	1:55PM	Field Aliquot
233793	MFK-BW-E4	Liquid	16/05/2023	1:55PM	
234001	MFK-BW-E4	Liquid	16/05/2023	1:55PM	Field Aliquot
234002	MFK-BW-E4	Liquid	16/05/2023	1:55PM	Field Aliquot
234003	MFK-BW-E4	Liquid	16/05/2023	1:55PM	Field Aliquot
233794	E5	Liquid	16/05/2023	2:45PM	
234004	E5	Liquid	16/05/2023	2:45PM	Field Aliquot
234005	E5	Liquid	16/05/2023	2:45PM	Field Aliquot
234006	E5	Liquid	16/05/2023	2:45PM	Field Aliquot
233795	MFK-BW-E5	Liquid	16/05/2023	2:45PM	
234007	MFK-BW-E5	Liquid	16/05/2023	2:45PM	Field Aliquot
234008	MFK-BW-E5	Liquid	16/05/2023	2:45PM	Field Aliquot
234009	MFK-BW-E5	Liquid	16/05/2023	2:45PM	Field Aliquot

Tests not covered by NATA accreditation 3040 are denoted with \*

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233796	E1-1	Liquid	16/05/2023	11:45AM	
233797	E1-2	Liquid	16/05/2023	11:45AM	
233798	E1-3	Liquid	16/05/2023	11:45AM	
233799	E1-4	Liquid	16/05/2023	11:45AM	
234013	E1-4	Liquid	16/05/2023	11:45AM	Field Aliquot
233800	E1-5	Liquid	16/05/2023	11:45AM	
234014	E1-5	Liquid	16/05/2023	11:45AM	Field Aliquot
233801	E2-1	Liquid	16/05/2023	12:30PM	
233802	E2-2	Liquid	16/05/2023	12:30PM	
233803	E2-3	Liquid	16/05/2023	12:30PM	
233804	E2-4	Liquid	16/05/2023	12:30PM	
233805	E2-5	Liquid	16/05/2023	12:30PM	
233806	E3-1	Liquid	16/05/2023	1:20PM	
233807	E3-2	Liquid	16/05/2023	1:20PM	
233808	E3-3	Liquid	16/05/2023	1:20PM	
233809	E3-4	Liquid	16/05/2023	1:20PM	
233810	E3-5	Liquid	16/05/2023	1:20PM	
233811	E4-1	Liquid	16/05/2023	1:55PM	
233812	E4-2	Liquid	16/05/2023	1:55PM	
233813	E4-3	Liquid	16/05/2023	1:55PM	
233814	E4-4	Liquid	16/05/2023	1:55PM	
233815	E4-5	Liquid	16/05/2023	1:55PM	
233816	E5-1	Liquid	16/05/2023	2:45PM	
233817	E5-2	Liquid	16/05/2023	2:45PM	
233818	E5-3	Liquid	16/05/2023	2:45PM	
233819	E5-4	Liquid	16/05/2023	2:45PM	
233820	E5-5	Liquid	16/05/2023	2:45PM	
233821	B1-1	Liquid	16/05/2023	10:00AM	
233822	B1-2	Liquid	16/05/2023	10:00AM	
233823	B1-3	Liquid	16/05/2023	10:00AM	
233824	B1-4	Liquid	16/05/2023	10:00AM	

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233825	B1-5	Liquid	16/05/2023	10:00AM
233826	B2-1	Liquid	16/05/2023	11:00AM
233827	B2-2	Liquid	16/05/2023	11:00AM
233828	B2-3	Liquid	16/05/2023	11:00AM
233829	B2-4	Liquid	16/05/2023	11:00AM
233830	B2-5	Liquid	16/05/2023	11:00AM
233831	B3-1	Liquid	16/05/2023	2:10AM
233832	B3-2	Liquid	16/05/2023	2:10PM
233833	B3-3	Liquid	16/05/2023	2:10PM
233834	B3-4	Liquid	16/05/2023	2:10PM
233835	B3-5	Liquid	16/05/2023	2:10AM

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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 233965 to 234009 were sent to ALS Environmental Laboratory (NATA Accreditation no: 825) for the analysis of Nutrients: EK055G - Ammonia as N by Discrete Analyser , EK059G - Nitrite plus Nitrate as N (NOx) by Discrete Analyser, EK061F - Filtered Total Kjeldahl Nitrogen as N (TKN), EK061G - Total Kjeldahl Nitrogen By Discrete Analyser, EK062F- Filtered Total Nitrogen as N, EK062G - Total Nitrogen as N (TKN + NOx) by Discrete Analyser, EK067FG - Filtered Total Phosphorus as P by Discrete Analyser, EK067G - Total Phosphorus as P by Discrete Analyser, EK071G - Reactive Phosphorus as P by discrete analyser. This report summarises data from the attached external report: ES2317066, dated 26-May-2023.

·Samples 233781, 233782, 233783, 233784, 233785, 233786, 233787, 233788, 233789, 233790, 233791, 233792, 233793, 233794 and 233795 were analysed outside the method holding time for Total suspended solids

·Samples 233800, 233805, 233810, 233815, 233820, 233825, 233830 and 233835 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. 285627 dated 3 June 2023. Samples 233798, 233803, 233808, 233813, 233818, 233823, 233828 and 233833 were sent to Sydney Water Laboratory Services (NATA Accreditation no: 63 and 610) for the analysis of Algal Toxins. Please the attached Analytical Report No: 285627 dated 3 June 2023, which gives Algal Toxins analysis results and the Blue-Green Algal ID and Enumeration summary results.

·Samples 233796, 233801, 233806, 233811, 233816, 233821, 233826, 233831 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: ES2316871, dated 25-May-2023.



Analysis Results - External Methods*		Sample ID	233798	233800	233803	233805	233808	233810	233813	233815	233818	233820	233823	233825
Area - EXTERNAL		Start Date	22/05/2023	1/06/2023	22/05/2023	1/06/2023	22/05/2023	1/06/2023	22/05/2023	1/06/2023	22/05/2023	1/06/2023	22/05/2023	1/06/2023
		Client ID	E1-3	E1-5	E2-3	E2-5	E3-3	E3-5	E4-3	E4-5	E5-3	E5-5	B1-3	B1-5
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	233828	233830	233833	233835
Area - EXTERNAL		Start Date	22/05/2023	1/06/2023	22/05/2023	1/06/2023
		Client ID	B2-3	B2-5	B3-3	B3-5
Analyte						
Algal Enumeration	-			RC		RC
Algal Identification	-			RC		RC
Algal Toxins	-		RC		RC	

Analysis Results - External Methods*		Sample ID	233965	233966	233967	233968	233969	233970	233971	233972	233973	233974	233975	233976
Area - EXTERNAL		Start Date	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023
		Client ID	B1 Filtered 1	B1 Filtered 2	B1 Unfiltered	B2 Filtered 1	B2 Filtered 2	B2 Unfiltered	MFK-BW-B2 Filtered 1	MFK-BW-B2 Filtered 2	MFK-BW-B2 Unfiltered	B3 Filtered 1	B3 Filtered 2	B3 Unfiltered
Ammonia as N	mg/L		0.01			0.03			0.02			<0.01		
Dissolved TKN as N	mg/L			0.7			0.9			0.8			0.6	
Filtered Total Nitrogen as N	mg/L			0.7			0.9			0.8			0.6	
Filtered Total Phosphorus as P	mg/L			0.02			0.10			0.09			0.23	
Nitrite+Nitrate as N	mg/L		<0.01	<0.01	<0.01	0.02	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P	mg/L		<0.01			0.08			0.07			0.24		
Total Kjeldahl Nitrogen as N	mg/L				1.1			1.2			1.1			0.9
Total Nitrogen as N	mg/L				1.1			1.2			1.1			0.9
Total Phosphorus as P	mg/L				0.09			0.18			0.17			0.34

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**Analysis Results - External Methods\***

**Area - EXTERNAL**

*Analyte*

	<i>Sample ID</i>	233977	233978	233979	233980	233981	233982	233983	233984	233985	233986	233987	233988
	<i>Start Date</i>	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023
	<i>Client ID</i>	MFK-BW-B3 Filtered 1	MFK-BW-B3 Filtered 2	MFK-BW-B3 Unfiltered	E1 Filtered 1	E1 Filtered 2	E1 Unfiltered	MFK-BW-E1 Filtered 1	MFK-BW-E1 Filtered 2	MFK-BW-E1 Unfiltered	E2 Filtered 1	E2 Filtered 2	E2 Unfiltered
Ammonia as N	mg/L	0.01			<0.01			<0.01			<0.01		
Dissolved TKN as N	mg/L		0.6			0.7			0.8			0.7	
Filtered Total Nitrogen as N	mg/L		0.6			0.7			0.8			0.7	
Filtered Total Phosphorus as P	mg/L		0.22			0.10			0.10			0.09	
Nitrite+Nitrate as N	mg/L	<0.01	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	0.01	0.02	<0.01	0.01
Reactive Phosphorus as P	mg/L	0.23			0.07			0.06			0.07		
Total Kjeldahl Nitrogen as N	mg/L			0.8			1.2			1.3			1.0
Total Nitrogen as N	mg/L			0.8			1.2			1.3			1.0
Total Phosphorus as P	mg/L			0.28			0.16			0.18			0.17

**Analysis Results - External Methods\***

**Area - EXTERNAL**

*Analyte*

	<i>Sample ID</i>	233989	233990	233991	233992	233993	233994	233995	233996	233997	233998	233999	234000
	<i>Start Date</i>	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023
	<i>Client ID</i>	MFK-BW-E2 Filtered 1	MFK-BW-E2 Filtered 2	MFK-BW-E2 Unfiltered	E3 Filtered 1	E3 Filtered 2	E3 Unfiltered	MFK-BW-E3 Filtered 1	MFK-BW-E3 Filtered 2	MFK-BW-E3 Unfiltered	E4 Filtered 1	E4 Filtered 2	E4 Unfiltered
Ammonia as N	mg/L	0.05			0.05			0.08			0.03		
Dissolved TKN as N	mg/L		0.8			0.8			0.8			0.8	
Filtered Total Nitrogen as N	mg/L		0.8			0.8			0.8			0.8	
Filtered Total Phosphorus as P	mg/L		0.10			0.08			0.07			0.06	
Nitrite+Nitrate as N	mg/L	<0.01	0.01	0.01	0.02	0.02	0.03	0.02	0.02	0.03	0.03	0.03	0.03
Reactive Phosphorus as P	mg/L	0.08			0.06			0.06			0.04		
Total Kjeldahl Nitrogen as N	mg/L			1.1			1.1			1.1			1.3
Total Nitrogen as N	mg/L			1.1			1.1			1.1			1.3
Total Phosphorus as P	mg/L			0.18			0.14			0.15			0.14

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**Analysis Results - External Methods\***

**Area - EXTERNAL**

Analyte	mg/L	Sample ID	234001	234002	234003	234004	234005	234006	234007	234008	234009
		Start Date	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023	23/05/2023
		Client ID	MFK-BW-E4 Filtered 1	MFK-BW-E4 Filtered 2	MFK-BW-E4 Unfiltered	E5 Filtered 1	E5 Filtered 2	E5 Unfiltered	MFK-BW-E5 Filtered 1	MFK-BW-E5 Filtered 2	MFK-BW-E5 Unfiltered
Ammonia as N			0.06			0.02			0.01		
Dissolved TKN as N				0.8			0.7			0.7	
Filtered Total Nitrogen as N				0.8			0.7			0.7	
Filtered Total Phosphorus as P				0.07			0.16			0.17	
Nitrite+Nitrate as N			0.03	0.03	0.03	0.03	0.02	0.02	0.03	0.03	0.02
Reactive Phosphorus as P			0.05			0.14			0.13		
Total Kjeldahl Nitrogen as N					1.2			0.8			1.0
Total Nitrogen as N					1.2			0.8			1.0
Total Phosphorus as P					0.16			0.19			0.28

**Analysis Results - External Methods\***

**Area - EXTERNAL**

Analyte	µg/L	Sample ID	233796	233801	233806	233811	233816	233821	233826	233831
		Start Date	22/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023	22/05/2023
		Client ID	E1-1	E2-1	E3-1	E4-1	E5-1	B1-1	B2-1	B3-1
2.4.5-T			<10	<10	<10	<10	<10	<10	<10	<10
2.4.6-T			<10	<10	<10	<10	<10	<10	<10	<10
2.4-D			<10	<10	<10	<10	<10	<10	<10	<10
2.4-DB			<10	<10	<10	<10	<10	<10	<10	<10
2.4-DP			<10	<10	<10	<10	<10	<10	<10	<10
2.6-D			<10	<10	<10	<10	<10	<10	<10	<10
4-Chlorophenoxy acetic acid			<10	<10	<10	<10	<10	<10	<10	<10
AMPA			<10	<10	<10	<10	<10	<10	<10	<10
Clopyralid			<10	<10	<10	<10	<10	<10	<10	<10
Dicamba			<10	<10	<10	<10	<10	<10	<10	<10
Fluroxypyr			<10	<10	<10	<10	<10	<10	<10	<10
Glyphosate			<10	<10	<10	<10	<10	<10	<10	<10
MCPA			<10	<10	<10	<10	<10	<10	<10	<10
MCPB			<10	<10	<10	<10	<10	<10	<10	<10
Mecoprop			<10	<10	<10	<10	<10	<10	<10	<10
Picloram			<10	<10	<10	<10	<10	<10	<10	<10
Silvex (2.4.5-TP/Fenoprop)			<10	<10	<10	<10	<10	<10	<10	<10
Triclopyr			<10	<10	<10	<10	<10	<10	<10	<10

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**Analysis Results - ICVAASW**

**Area - INORGANIC**

**Analyte**

		233799 19/05/2023 E1-4	233804 19/05/2023 E2-4	233809 19/05/2023 E3-4	233814 19/05/2023 E4-4	233819 19/05/2023 E5-4	233824 19/05/2023 B1-4	233829 19/05/2023 B2-4	233834 19/05/2023 B3-4
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**

		233799 18/05/2023 E1-4	233804 18/05/2023 E2-4	233809 18/05/2023 E3-4	233814 18/05/2023 E4-4	233819 18/05/2023 E5-4	233824 18/05/2023 B1-4	233829 18/05/2023 B2-4	233834 18/05/2023 B3-4
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	0.11	0.11	0.11	0.12	0.10	0.14	0.11	0.09
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	35	34	35	36	32	41	34	29
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	16	15	15	16	14	22	15	12
Potassium (Lab. filtered)	mg/L	13	13	13	13	12	12	13	11
Sodium (Lab. filtered)	mg/L	45	43	44	47	42	63	43	37
Strontium (Lab. filtered)	mg/L	0.40	0.39	0.39	0.40	0.36	0.49	0.38	0.31
Sulfur (Lab. filtered)	mg/L	3.1	3.0	3.1	3.3	3.4	4.9	2.9	3.3
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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Codes: SN = Sample Note

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RC = Project Comment



**Analysis Results - ICPMS**  
**Area - INORGANIC**

Analyte	Sample ID Start Date Client ID	233799	233804	233809	233814	233819	233824	233829	233834
		18/05/2023 E1-4	18/05/2023 E2-4	18/05/2023 E3-4	18/05/2023 E4-4	18/05/2023 E5-4	18/05/2023 B1-4	18/05/2023 B2-4	18/05/2023 B3-4
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	0.004	0.004	0.003	0.003	0.004	0.002	0.003	0.006
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	0.0001	0.0002	0.0002	<0.0001
Copper (Lab. filtered)	mg/L	0.0022	0.0020	0.0019	0.0018	0.0022	0.0010	0.0023	0.0027
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	0.0021	0.0021	0.0021	0.0021	0.0016	0.0020	0.0018	0.0015
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	0.0015	0.0014	0.0015	0.0015	0.0013	0.0015	0.0015	0.0010
Nickel (Lab. filtered)	mg/L	0.0033	0.0032	0.0032	0.0032	0.0028	0.0025	0.0033	0.0023
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	0.0097	0.0098	0.0089	0.0078	0.012	0.0037	0.0095	0.018
Zinc (Lab. filtered)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001

Tests not covered by NATA accreditation 3040 are denoted with \*

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>	233799	233804	233809	233814	233819	233824	233829	233834
			19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023	19/05/2023
			E1-4	E2-4	E3-4	E4-4	E5-4	B1-4	B2-4	B3-4

**Analyte**

Aluminium (acid extractable)	mg/L		4.0	5.0	4.3	3.7	6.2	0.64	4.0	6.8
Barium (acid extractable)	mg/L		0.14	0.14	0.14	0.14	0.14	0.15	0.14	0.12
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		38	36	36	42	35	42	36	32
Iron (acid extractable)	mg/L		2.9	3.7	3.2	2.7	4.3	0.5	3.0	4.8
Magnesium (acid extractable)	mg/L		17	17	17	18	16	23	17	14
Manganese (acid extractable)	mg/L		0.11	0.12	0.13	0.14	0.11	0.09	0.10	0.05
Potassium (acid extractable)	mg/L		15	15	14	14	14	13	15	13
Sodium (acid extractable)	mg/L		46	45	45	48	43	64	45	38
Strontium (acid extractable)	mg/L		0.42	0.42	0.42	0.44	0.40	0.51	0.42	0.35
Sulfur (acid extractable)	mg/L		3.2	3.2	3.3	3.5	3.5	5.1	3.1	3.6
Titanium (acid extractable)	mg/L		0.08	0.08	0.08	0.06	0.11	0.01	0.07	0.12

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**Analysis Results - ICPMS**

**Area - INORGANIC**

**Analyte**

	<b>Sample ID</b>	<b>233799</b>	<b>233804</b>	<b>233809</b>	<b>233814</b>	<b>233819</b>	<b>233824</b>	<b>233829</b>	<b>233834</b>
	<b>Start Date</b>	<b>19/05/2023</b>	<b>19/05/2023</b>	<b>19/05/2023</b>	<b>19/05/2023</b>	<b>19/05/2023</b>	<b>19/05/2023</b>	<b>19/05/2023</b>	<b>19/05/2023</b>
	<b>Client ID</b>	<b>E1-4</b>	<b>E2-4</b>	<b>E3-4</b>	<b>E4-4</b>	<b>E5-4</b>	<b>B1-4</b>	<b>B2-4</b>	<b>B3-4</b>
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	0.004	0.004	0.004	0.004	0.005	0.002	0.004	0.006
Beryllium (acid extractable)	mg/L	<0.0001	0.0001	0.0001	<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	0.003	0.004	0.004	0.003	0.005	<0.001	0.003	0.005
Cobalt (acid extractable)	mg/L	0.0015	0.0017	0.0017	0.0016	0.0017	0.0008	0.0015	0.0014
Copper (acid extractable)	mg/L	0.0041	0.0044	0.0040	0.0036	0.0047	0.0016	0.0065	0.0054
Lead (acid extractable)	mg/L	0.0007	0.0010	0.0010	0.0010	0.0012	0.0004	0.0008	0.0010
Lithium (acid extractable)	mg/L	0.0025	0.0029	0.0028	0.0026	0.0030	0.0020	0.0026	0.0031
Molybdenum (acid extractable)	mg/L	0.0015	0.0014	0.0015	0.0015	0.0013	0.0015	0.0015	0.0010
Nickel (acid extractable)	mg/L	0.0058	0.0060	0.0058	0.0053	0.0061	0.0033	0.0056	0.0057
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	0.0005	<0.0002	<0.0002
Vanadium (acid extractable)	mg/L	0.015	0.016	0.015	0.014	0.020	0.0061	0.015	0.025
Zinc (acid extractable)	mg/L	0.006	0.008	0.030	0.015	0.008	0.002	0.007	0.008

**Analysis Results - IGRSS**

**Area - INORGANIC**

**Analyte**

	<b>Sample ID</b>	<b>233781</b>	<b>233782</b>	<b>233783</b>	<b>233784</b>	<b>233785</b>	<b>233786</b>	<b>233787</b>	<b>233788</b>	<b>233789</b>	<b>233790</b>	<b>233791</b>	<b>233792</b>
	<b>Start Date</b>	<b>24/05/2023</b>	<b>24/05/2023</b>	<b>24/05/2023</b>	<b>24/05/2023</b>	<b>24/05/2023</b>	<b>24/05/2023</b>	<b>24/05/2023</b>	<b>24/05/2023</b>	<b>24/05/2023</b>	<b>24/05/2023</b>	<b>24/05/2023</b>	<b>24/05/2023</b>
	<b>Client ID</b>	<b>B1</b>	<b>B2</b>	<b>MFK-BW-B2</b>	<b>B3</b>	<b>MFK-BW-B3</b>	<b>E1</b>	<b>MFK-BW-E1</b>	<b>E2</b>	<b>MFK-BW-E2</b>	<b>E3</b>	<b>MFK-BW-E3</b>	<b>E4</b>
Fixed Suspended Solids	mg/L	11	38	41	55	21	35	74	37	73	50	80	31
Total Suspended Solids	mg/L	18	47	50	64	27	43	86	45	85	62	93	39
Volatile Suspended Solids	mg/L	8	8	9	9	<5	8	12	9	12	12	13	8

**Analysis Results - IGRSS**

**Area - INORGANIC**

**Analyte**

	<b>Sample ID</b>	<b>233793</b>	<b>233794</b>	<b>233795</b>
	<b>Start Date</b>	<b>24/05/2023</b>	<b>24/05/2023</b>	<b>24/05/2023</b>
	<b>Client ID</b>	<b>MFK-BW-E4</b>	<b>E5</b>	<b>MFK-BW-E5</b>
Fixed Suspended Solids	mg/L	85	55	73
Total Suspended Solids	mg/L	99	65	84
Volatile Suspended Solids	mg/L	14	10	11

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**Analysis Results - QQPEST**  
**Area - ORGANIC**

Analyte	Sample ID Start Date Client ID	233797	233802	233807	233812	233817	233822	233827	233832
		23/05/2023 E1-2	23/05/2023 E2-2	23/05/2023 E3-2	23/05/2023 E4-2	23/05/2023 E5-2	23/05/2023 B1-2	23/05/2023 B2-2	23/05/2023 B3-2
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
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
Fenthion	µg/L	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4

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Analysis Results - QQPEST

Area - ORGANIC

Sample ID  
Start Date  
Client ID

Analyte

		233797 23/05/2023 E1-2	233802 23/05/2023 E2-2	233807 23/05/2023 E3-2	233812 23/05/2023 E4-2	233817 23/05/2023 E5-2	233822 23/05/2023 B1-2	233827 23/05/2023 B2-2	233832 23/05/2023 B3-2
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	<0.4	<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
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
Trans-permethrin	µg/L	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7

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**Area - ORGANIC**

Sample ID	Client ID	Method	Start Date	Result
233797	E1-2	OLCSCAN* - LC/MS Scan	19/05/2023	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).
233802	E2-2	OLCSCAN* - LC/MS Scan	19/05/2023	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).
233807	E3-2	OLCSCAN* - LC/MS Scan	19/05/2023	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).
233812	E4-2	OLCSCAN* - LC/MS Scan	19/05/2023	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).
233817	E5-2	OLCSCAN* - LC/MS Scan	19/05/2023	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).
233822	B1-2	OLCSCAN* - LC/MS Scan	19/05/2023	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).
233827	B2-2	OLCSCAN* - LC/MS Scan	19/05/2023	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).
233832	B3-2	OLCSCAN* - LC/MS Scan	19/05/2023	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).

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Codes: SN = Sample Note

RN = Result Note

RC = Project Comment



**Area - OTHER**

Sample ID	Client ID	Method	Start Date	Result
234013	E1-4	Hold* - Hold	18/05/2023	The sample is on hold pending request for additional analysis.
234014	E1-5	Hold* - Hold	18/05/2023	The sample is on hold pending request for additional analysis.

**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
Hold*	Sample held pending further requests for analysis	OTHER

**The results in this report were authorised by:**

Name	Title	Area
[REDACTED]	Senior Scientist	EXTERNAL
[REDACTED]	Scientist	INORGANIC
[REDACTED]	Scientist	ORGANIC
[REDACTED]	Senior Scientist	OTHER

Tests not covered by NATA accreditation 3040 are denoted with \*

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