



Environmental Forensics Report of Analysis
Project 20230342

Report #: 1872
Date Issued: 15-Sep-2023
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Client Project Reference: Darling-Barka River Health 4 - 22 Au

Customer: Department of Planning & Environment

Attention: [REDACTED]

Report Date: 15 September 2023

Project Received: 24 August 2023

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



The following samples were analysed:

<i>Sample ID</i>	<i>Client ID</i>	<i>Sample Type</i>	<i>Client Sampled Date/Time</i>	<i>Aliquot</i>
237628	B1	Liquid	22/08/2023	
237636	B1	Liquid	22/08/2023	Field Aliquot
237644	B1	Liquid	22/08/2023	Field Aliquot
237629	B2	Liquid	22/08/2023	
237637	B2	Liquid	22/08/2023	Field Aliquot
237645	B2	Liquid	22/08/2023	Field Aliquot
237630	B3	Liquid	22/08/2023	
237638	B3	Liquid	22/08/2023	Field Aliquot
237646	B3	Liquid	22/08/2023	Field Aliquot
237631	E1	Liquid	22/08/2023	
237639	E1	Liquid	22/08/2023	Field Aliquot
237647	E1	Liquid	22/08/2023	Field Aliquot
237632	E2	Liquid	22/08/2023	
237640	E2	Liquid	22/08/2023	Field Aliquot
237648	E2	Liquid	22/08/2023	Field Aliquot
237633	E3	Liquid	22/08/2023	
237641	E3	Liquid	22/08/2023	Field Aliquot
237649	E3	Liquid	22/08/2023	Field Aliquot
237634	E4	Liquid	22/08/2023	
237642	E4	Liquid	22/08/2023	Field Aliquot
237650	E4	Liquid	22/08/2023	Field Aliquot
237635	E5	Liquid	22/08/2023	
237643	E5	Liquid	22/08/2023	Field Aliquot
237651	E5	Liquid	22/08/2023	Field Aliquot
237652	MZK-Z-B1 F1	Liquid	22/08/2023	
237653	MZK-Z-B2 F1	Liquid	22/08/2023	
237654	MZK-Z-B3 F1	Liquid	22/08/2023	
237655	MZK-Z-E1 F1	Liquid	22/08/2023	
237656	MZK-Z-E2 F1	Liquid	22/08/2023	

Tests not covered by NATA accreditation 3040 are denoted with *

Codes: SN = Sample Note

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237657	MZK-Z-E3 F1	Liquid	22/08/2023
237658	MZK-Z-E4 F1	Liquid	22/08/2023
237659	MZK-Z-E5 F1	Liquid	22/08/2023
237660	MZK-Z-B1 F2	Liquid	22/08/2023
237661	MZK-Z-B2 F2	Liquid	22/08/2023
237662	MZK-Z-B3 F2	Liquid	22/08/2023
237663	MZK-Z-E1 F2	Liquid	22/08/2023
237664	MZK-Z-E2 F2	Liquid	22/08/2023
237665	MZK-Z-E3 F2	Liquid	22/08/2023
237666	MZK-Z-E4 F2	Liquid	22/08/2023
237667	MZK-Z-E5 F2	Liquid	22/08/2023
237745	MZK-Z-B1 UN	Liquid	22/08/2023
237746	MZK-Z-B2 UN	Liquid	22/08/2023
237747	MZK-Z-B3 UN	Liquid	22/08/2023
237748	MZK-Z-E1 UN	Liquid	22/08/2023
237749	MZK-Z-E2 UN	Liquid	22/08/2023
237750	MZK-Z-E3 UN	Liquid	22/08/2023
237751	MZK-Z-E4 UN	Liquid	22/08/2023
237752	MZK-Z-E5 UN	Liquid	22/08/2023
237753	MFK-BW-E1 F1	Liquid	22/08/2023
237754	MFK-BW-E2 F1	Liquid	22/08/2023
237755	MFK-BW-E3 F1	Liquid	22/08/2023
237756	MFK-BW-E4 F1	Liquid	22/08/2023
237757	MFK-BW-E5 F1	Liquid	22/08/2023
237758	MFK-BW-E1 F2	Liquid	22/08/2023
237759	MFK-BW-E2 F2	Liquid	22/08/2023
237760	MFK-BW-E3 F2	Liquid	22/08/2023
237761	MFK-BW-E4 F2	Liquid	22/08/2023
237762	MFK-BW-E5 F2	Liquid	22/08/2023
237763	MFK-BW-E1 Unf	Liquid	22/08/2023
237764	MFK-BW-E2 Unf	Liquid	22/08/2023

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237765	MFK-BW-E3 Unf	Liquid	22/08/2023
237766	MFK-BW-E4 Unf	Liquid	22/08/2023
237767	MFK-BW-E5 Unf	Liquid	22/08/2023

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 237628 to 237635 were sent to ALS Environmental Laboratory (NATA Accreditation no: 825) for the analysis of EA025: Total Suspended Solids dried at 104 ± 2°C, EA03 6: Fixed/Volatile Suspended Solids. This report summarises data from the attached external report: ES2328988, dated 01-Sep-2023. Samples 237652 to 237667 and 237745 to 237767 were also 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, 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 + NO_x) 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 also summarises data from the same attached external report: ES2328988, dated 01-Sep-2023.

· Samples 237644 to 237651 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. 290781 dated 08-Sept-2023.

Samples 237636 to 237643 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. 290781 dated 08-Sept-2023, which gives the Algal Toxins analysis results and also the Blue-Green Algal ID and Enumeration summary results.



Analysis Results - External Methods*		Sample ID	237636	237644	237637	237645	237638	237646	237639	237647	237640	237648	237641	237649
Area - EXTERNAL		Start Date	28/08/2023	1/09/2023	28/08/2023	1/09/2023	28/08/2023	1/09/2023	28/08/2023	1/09/2023	28/08/2023	1/09/2023	28/08/2023	1/09/2023
		Client ID	B1	B1	B2	B2	B3	B3	E1	E1	E2	E2	E3	E3
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	
Saxitoxins and PST	-		RC		RC		RC		RC		RC		RC	

Analysis Results - External Methods*		Sample ID	237642	237650	237643	237651
Area - EXTERNAL		Start Date	28/08/2023	1/09/2023	28/08/2023	1/09/2023
		Client ID	E4	E4	E5	E5
Analyte						
Algal Enumeration	-			RC		RC
Algal Identification	-			RC		RC
Algal Toxins	-		RC		RC	
Saxitoxins and PST	-		RC		RC	

Analysis Results - External Methods*		Sample ID	237652	237653	237654	237655	237656	237657	237658	237659	237660	237661	237662	237663	
Area - EXTERNAL		Start Date	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	
		Client ID	MZK-Z-B1 F	MZK-Z-B2 F	MZK-Z-B3 F	MZK-Z-E1 F	MZK-Z-E2 F	MZK-Z-E3 F	MZK-Z-E4 F	MZK-Z-E5 F	MZK-Z-B1 F	MZK-Z-B2 F	MZK-Z-B3 F	MZK-Z-E1 F	
Analyte			1	1	1	1	1	1	1	1	2	2	2	2	
Ammonia as N	mg/L		0.03	0.02	0.06	<0.01	<0.01	<0.01	0.01	0.07					
Dissolved TKN as N	mg/L										0.7	0.7	0.7	0.6	
Filtered Total Nitrogen as N	mg/L										0.7	0.7	0.7	0.6	
Filtered Total Phosphorus as P	mg/L										0.03	0.04	0.26	0.04	
Nitrite+Nitrate as N	mg/L		0.02	0.01	0.02	0.01	0.01	0.01	<0.01	0.02	0.04	0.02	0.03	0.02	
Reactive Phosphorus as P	mg/L		0.02	0.04	0.24	0.03	0.06	0.05	0.03	0.03					

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Analysis Results - External Methods*

Area - EXTERNAL

		Sample ID	237664	237665	237666	237667	237745	237746	237747	237748	237749	237750	237751	237752
		Start Date	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023
		Client ID	MZK-Z-E2 F	MZK-Z-E3 F	MZK-Z-E4 F	MZK-Z-E5 F	MZK-Z-B1	MZK-Z-B2	MZK-Z-B3	MZK-Z-E1	MZK-Z-E2	MZK-Z-E3	MZK-Z-E4	MZK-Z-E5
Analyte			2	2	2	2	UN	UN	UN	UN	UN	UN	UN	UN
Dissolved TKN as N	mg/L		0.7	0.7	0.7	0.6								
Filtered Total Nitrogen as N	mg/L		0.7	0.7	0.7	0.6								
Filtered Total Phosphorus as P	mg/L		0.06	0.05	0.05	0.04								
Nitrite+Nitrate as N	mg/L		0.02	0.02	0.02	0.01	0.03	0.06	0.02	0.01	<0.01	0.02	0.01	<0.01
Total Kjeldahl Nitrogen as N	mg/L						1.1	1.1	0.7	1	0.9	1.1	1.1	1.1
Total Nitrogen as N	mg/L						1.1	1.2	0.7	1	0.9	1.1	1.1	1.1
Total Phosphorus as P	mg/L						0.12	0.14	0.27	0.13	0.15	0.16	0.15	0.15

Analysis Results - External Methods*

Area - EXTERNAL

		Sample ID	237753	237754	237755	237756	237757	237758	237759	237760	237761	237762	237763	237764
		Start Date	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023
		Client ID	MFK-BW-E1	MFK-BW-E2	MFK-BW-E3	MFK-BW-E4	MFK-BW-E5	MFK-BW-E1	MFK-BW-E2	MFK-BW-E3	MFK-BW-E4	MFK-BW-E5	MFK-BW-E1	MFK-BW-E2
Analyte			F1	F1	F1	F1	F1	F2	F2	F2	F2	F2	Unf	Unf
Ammonia as N	mg/L		0.06	0.02	0.01	<0.01	<0.01							
Dissolved TKN as N	mg/L							0.6	0.7	0.7	0.7	0.7		
Filtered Total Nitrogen as N	mg/L							0.6	0.7	0.8	0.7	0.7		
Filtered Total Phosphorus as P	mg/L							0.04	0.05	0.06	0.05	0.04		
Nitrite+Nitrate as N	mg/L		0.01	0.02	0.02	0.01	0.04	0.02	0.03	0.05	0.02	0.02	0.01	0.02
Reactive Phosphorus as P	mg/L		0.04	0.04	0.04	0.03	0.04							
Total Kjeldahl Nitrogen as N	mg/L												1.1	1
Total Nitrogen as N	mg/L												1.1	1
Total Phosphorus as P	mg/L												0.15	0.15

Analysis Results - External Methods*

Area - EXTERNAL

		Sample ID	237765	237766	237767
		Start Date	28/08/2023	28/08/2023	28/08/2023
		Client ID	MFK-BW-E3	MFK-BW-E4	MFK-BW-E5
Analyte			Unf	Unf	Unf
Nitrite+Nitrate as N	mg/L		0.05	0.02	0.01
Total Kjeldahl Nitrogen as N	mg/L		1.1	1.1	1.2
Total Nitrogen as N	mg/L		1.2	1.1	1.2
Total Phosphorus as P	mg/L		0.16	0.15	0.17

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Analysis Results - External Methods*

Area - EXTERNAL

		237628	237629	237630	237631	237632	237633	237634	237635
	Sample ID	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023	28/08/2023
	Start Date	B1	B2	B3	E1	E2	E3	E4	E5
	Client ID								
Fixed Suspended Solids @ 550°C	mg/L	<5	25	8	32	18	<5	11	11
Suspended Solids (SS)	mg/L	22	36	20	46	41	31	38	36
Volatile Suspended Solids @ 550°C	mg/L	22	11	12	14	23	31	27	25

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

The results in this report were authorised by:

Name	Title	Area
[REDACTED]	Senior Scientist	EXTERNAL

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