



Environmental Forensics Report of Analysis
Project 20230388

Report #: 1908
Date Issued: 06-Oct-2023
Page 1 of 7

Client Project Reference: Menindee-Darling Barka River Heal

Customer: Department of Planning & Environment

Attention: [REDACTED]

Report Date: 06 October 2023

Project Received: 15 September 2023

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

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]



The following samples were analysed:

Sample ID	Client ID	Sample Type	Client Sampled Date/Time	Aliquot
238524	MFK-Z-B1	Liquid	13/09/2023	
238532	MFK-Z-B1	Liquid	13/09/2023	Field Aliquot
238533	MFK-Z-B1	Liquid	13/09/2023	Field Aliquot
238548	MFK-Z-B1	Liquid	13/09/2023	Field Aliquot
238556	MFK-Z-B1	Liquid	13/09/2023	Field Aliquot
238564	MFK-Z-B1	Liquid	13/09/2023	Field Aliquot
238525	MFK-Z-B2	Liquid	13/09/2023	
238534	MFK-Z-B2	Liquid	13/09/2023	Field Aliquot
238535	MFK-Z-B2	Liquid	13/09/2023	Field Aliquot
238549	MFK-Z-B2	Liquid	13/09/2023	Field Aliquot
238557	MFK-Z-B2	Liquid	13/09/2023	Field Aliquot
238565	MFK-Z-B2	Liquid	13/09/2023	Field Aliquot
238526	MFK-Z-B3	Liquid	13/09/2023	
238536	MFK-Z-B3	Liquid	13/09/2023	Field Aliquot
238537	MFK-Z-B3	Liquid	13/09/2023	Field Aliquot
238550	MFK-Z-B3	Liquid	13/09/2023	Field Aliquot
238558	MFK-Z-B3	Liquid	13/09/2023	Field Aliquot
238566	MFK-Z-B3	Liquid	13/09/2023	Field Aliquot
238527	MFK-Z-E1	Liquid	13/09/2023	
238538	MFK-Z-E1	Liquid	13/09/2023	Field Aliquot
238539	MFK-Z-E1	Liquid	13/09/2023	Field Aliquot
238551	MFK-Z-E1	Liquid	13/09/2023	Field Aliquot
238559	MFK-Z-E1	Liquid	13/09/2023	Field Aliquot
238567	MFK-Z-E1	Liquid	13/09/2023	Field Aliquot
238572	MFK-Z-E1	Liquid	13/09/2023	Field Aliquot
238577	MFK-Z-E1	Liquid	13/09/2023	Field Aliquot
238582	MFK-Z-E1	Liquid	13/09/2023	Field Aliquot
238528	MFK-Z-E2	Liquid	13/09/2023	
238540	MFK-Z-E2	Liquid	13/09/2023	Field Aliquot

Tests not covered by NATA accreditation 3040 are denoted with *

Codes: SN = Sample Note

RN = Result Note

RC = Project Comment



238541	MFK-Z-E2	Liquid	13/09/2023	Field Aliquot
238552	MFK-Z-E2	Liquid	13/09/2023	Field Aliquot
238560	MFK-Z-E2	Liquid	13/09/2023	Field Aliquot
238568	MFK-Z-E2	Liquid	13/09/2023	Field Aliquot
238573	MFK-Z-E2	Liquid	13/09/2023	Field Aliquot
238578	MFK-Z-E2	Liquid	13/09/2023	Field Aliquot
238583	MFK-Z-E2	Liquid	13/09/2023	Field Aliquot
238529	MFK-Z-E3	Liquid	13/09/2023	
238542	MFK-Z-E3	Liquid	13/09/2023	Field Aliquot
238543	MFK-Z-E3	Liquid	13/09/2023	Field Aliquot
238553	MFK-Z-E3	Liquid	13/09/2023	Field Aliquot
238561	MFK-Z-E3	Liquid	13/09/2023	Field Aliquot
238569	MFK-Z-E3	Liquid	13/09/2023	Field Aliquot
238574	MFK-Z-E3	Liquid	13/09/2023	Field Aliquot
238579	MFK-Z-E3	Liquid	13/09/2023	Field Aliquot
238584	MFK-Z-E3	Liquid	13/09/2023	Field Aliquot
238530	MFK-Z-E4	Liquid	13/09/2023	
238544	MFK-Z-E4	Liquid	13/09/2023	Field Aliquot
238545	MFK-Z-E4	Liquid	13/09/2023	Field Aliquot
238554	MFK-Z-E4	Liquid	13/09/2023	Field Aliquot
238562	MFK-Z-E4	Liquid	13/09/2023	Field Aliquot
238570	MFK-Z-E4	Liquid	13/09/2023	Field Aliquot
238575	MFK-Z-E4	Liquid	13/09/2023	Field Aliquot
238580	MFK-Z-E4	Liquid	13/09/2023	Field Aliquot
238585	MFK-Z-E4	Liquid	13/09/2023	Field Aliquot
238531	MFK-Z-E5	Liquid	13/09/2023	
238546	MFK-Z-E5	Liquid	13/09/2023	Field Aliquot
238547	MFK-Z-E5	Liquid	13/09/2023	Field Aliquot
238555	MFK-Z-E5	Liquid	13/09/2023	Field Aliquot
238563	MFK-Z-E5	Liquid	13/09/2023	Field Aliquot
238571	MFK-Z-E5	Liquid	13/09/2023	Field Aliquot

Tests not covered by NATA accreditation 3040 are denoted with *

Codes: SN = Sample Note

RN = Result Note

RC = Project Comment



238576	MFK-Z-E5	Liquid	13/09/2023	Field Aliquot
238581	MFK-Z-E5	Liquid	13/09/2023	Field Aliquot
238586	MFK-Z-E5	Liquid	13/09/2023	Field Aliquot

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 238524 to 238531 were sent to ALS Environmental Laboratory (NATA Accreditation no: 825) for the analysis of EA025: Total Suspended Solids dried at 104 ± 2°C and EA036: Fixed/Volatile Suspended Solids.
Samples 238548 to 238586 were also 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, and EK071G: Reactive Phosphorus as P by Discrete Analyser.
This report summarises data from the attached external report: ES2331834, dated 25-Sep-2023.

· Samples 238533, 238535, 238537, 238539, 238541, 238543, 238545, 238547 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 . 292001 dated 4-Oct-2023.

Samples 238532, 238534, 238536, 238538, 238540, 238542, 238544, 238546 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: 292001 dated 4-Oct-2023 which gives Algal Toxins analysis results and the Blue-Green Algal ID and Enumeration summary results.



Analysis Results - External Methods*

Area - EXTERNAL

	Sample ID	238532	238533	238534	238535	238536	238537	238538	238539	238540	238541	238542	238543
	Start Date	22/09/2023	30/09/2023	22/09/2023	30/09/2023	22/09/2023	30/09/2023	22/09/2023	30/09/2023	22/09/2023	30/09/2023	22/09/2023	30/09/2023
	Client ID	MFK-Z-B1	MFK-Z-B1	MFK-Z-B2	MFK-Z-B2	MFK-Z-B3	MFK-Z-B3	MFK-Z-E1	MFK-Z-E1	MFK-Z-E2	MFK-Z-E2	MFK-Z-E3	MFK-Z-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*

Area - EXTERNAL

	Sample ID	238544	238545	238546	238547
	Start Date	22/09/2023	30/09/2023	22/09/2023	30/09/2023
	Client ID	MFK-Z-E4	MFK-Z-E4	MFK-Z-E5	MFK-Z-E5
Analyte					
Algal Enumeration	-		RC		RC
Algal Identification	-		RC		RC
Algal Toxins	-	RC		RC	
Saxitoxins and PST	-	RC		RC	

Analysis Results - External Methods*

Area - EXTERNAL

	Sample ID	238548	238556	238564	238549	238557	238565	238550	238558	238566	238551	238559	238567
	Start Date	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023
	Client ID	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
	Analyte	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	<0.10			<0.10			<0.10			<0.10		
Dissolved TKN as N	mg/L		0.7			0.8			0.6			0.7	
Filtered Total Nitrogen as N	mg/L		0.7			0.8			0.6			0.7	
Filtered Total Phosphorus as P	mg/L		0.12			0.08			0.28			0.08	
Nitrite+Nitrate as N	mg/L	<0.01	0.02	0.02	<0.01	0.02	<0.01	<0.01	0.03	<0.01	<0.01	0.02	0.01
Reactive Phosphorus as P	mg/L	0.45			0.06			0.05			0.09		
Total Kjeldahl Nitrogen as N	mg/L			1.4			1.2			0.9			1
Total Nitrogen as N	mg/L			1.4			1.2			0.9			1
Total Phosphorus as P	mg/L			0.15			0.15			0.32			0.14

Tests not covered by NATA accreditation 3040 are denoted with *

Codes: SN = Sample Note

RN = Result Note

RC = Project Comment



Analysis Results - External Methods*

Area - EXTERNAL

Analyte

	<i>Sample ID</i>	238572	238577	238582	238552	238560	238568	238573	238578	238583	238553	238561	238569
	<i>Start Date</i>	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023
	<i>Client ID</i>	MFK-BW-E1	MFK-BW-E1	MFK-BW-E1	MFK-Z-E2	MFK-Z-E2	MFK-Z-E2	MFK-BW-E2	MFK-BW-E2	MFK-BW-E2	MFK-Z-E3	MFK-Z-E3	MFK-Z-E3
		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	<0.10			<0.10			<0.10			<0.10		
Dissolved TKN as N	mg/L		0.8			0.7			0.7			0.7	
Filtered Total Nitrogen as N	mg/L		0.8			0.7			0.7			0.7	
Filtered Total Phosphorus as P	mg/L		0.1			0.06			0.07			0.07	
Nitrite+Nitrate as N	mg/L	<0.01	<0.01	0.01	<0.01	0.01	0.08	<0.01	<0.01	0.01	0.02	<0.01	0.03
Reactive Phosphorus as P	mg/L	0.04			0.08			0.02			0.06		
Total Kjeldahl Nitrogen as N	mg/L			1.2			1.3			1.2			1.4
Total Nitrogen as N	mg/L			1.2			1.4			1.2			1.4
Total Phosphorus as P	mg/L			0.16			0.16			0.15			0.18

Analysis Results - External Methods*

Area - EXTERNAL

Analyte

	<i>Sample ID</i>	238574	238579	238584	238554	238562	238570	238575	238580	238585	238555	238563	238571
	<i>Start Date</i>	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023
	<i>Client ID</i>	MFK-BW-E3	MFK-BW-E3	MFK-BW-E3	MFK-Z-E4	MFK-Z-E4	MFK-Z-E4	MFK-BW-E4	MFK-BW-E4	MFK-BW-E4	MFK-Z-E5	MFK-Z-E5	MFK-Z-E5
		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	<0.10			<0.10			<0.10			<0.10		
Dissolved TKN as N	mg/L		0.7			0.7			0.7			0.7	
Filtered Total Nitrogen as N	mg/L		0.7			0.7			0.7			0.7	
Filtered Total Phosphorus as P	mg/L		0.07			0.06			0.06			0.1	
Nitrite+Nitrate as N	mg/L	<0.01	<0.01	0.01	0.01	<0.01	0.02	<0.01	0.02	0.01	<0.01	<0.01	<0.01
Reactive Phosphorus as P	mg/L	0.02			0.05			0.03			0.05		
Total Kjeldahl Nitrogen as N	mg/L			1.3			1.3			1.2			1.2
Total Nitrogen as N	mg/L			1.3			1.3			1.2			1.2
Total Phosphorus as P	mg/L			0.19			0.14			0.16			0.17

Tests not covered by NATA accreditation 3040 are denoted with *

Codes: SN = Sample Note

RN = Result Note

RC = Project Comment



Analysis Results - External Methods*

Area - EXTERNAL

	Sample ID	238576	238581	238586
	Start Date	19/09/2023	19/09/2023	19/09/2023
	Client ID	MFK-BW-E5	MFK-BW-E5	MFK-BW-E5
Analyte		Filtered-1	Filtered-2	Unfiltered
Ammonia as N	mg/L	<0.10		
Dissolved TKN as N	mg/L		0.7	
Filtered Total Nitrogen as N	mg/L		0.7	
Filtered Total Phosphorus as P	mg/L		0.08	
Nitrite+Nitrate as N	mg/L	<0.01	0.04	0.02
Reactive Phosphorus as P	mg/L	0.03		
Total Kjeldahl Nitrogen as N	mg/L			1.2
Total Nitrogen as N	mg/L			1.2
Total Phosphorus as P	mg/L			0.15

Analysis Results - External Methods*

Area - EXTERNAL

	Sample ID	238524	238525	238526	238527	238528	238529	238530	238531
	Start Date	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023
	Client ID	MFK-Z-B1	MFK-Z-B2	MFK-Z-B3	MFK-Z-E1	MFK-Z-E2	MFK-Z-E3	MFK-Z-E4	MFK-Z-E5
Analyte									
Fixed Suspended Solids @ 550°C	mg/L	<5	20	15	22	7	<5	<5	<5
Suspended Solids (SS)	mg/L	19	28	28	33	28	20	13	18
Volatile Suspended Solids @ 550°C	mg/L	19	8	13	11	21	20	13	18

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

Tests not covered by NATA accreditation 3040 are denoted with *

Codes: SN = Sample Note

RN = Result Note

RC = Project Comment