

QUALITY CONTROL REPORT

Work Order	: EM2111820	Page	: 1 of 7
Client	: Dept for Environment & Water	Laboratory	: Environmental Division Melbourne
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Project	: HCHB	Date Samples Received	: 23-Jun-2021
Order number	: ----	Date Analysis Commenced	: 23-Jun-2021
C-O-C number	: ----	Issue Date	: 30-Jun-2021
Sampler	: DM		
Site	: ----		
Quote number	: AD/052/20 V2		
No. of samples received	: 20		
No. of samples analysed	: 20		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Kim McCabe		Townsville Inorganics, Townsville, QLD

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water (QC Lot: 3753501)									
EM2111820-001	Stony Well	EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	<0.02	0.0	No Limit
EM2111820-010	Tilley Swamp Drain U/S Morella	EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	<0.02	0.0	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 3756673)									
EM2111753-004	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	6320	6200	2.0	0% - 20%
EM2111808-006	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	11200	11300	1.2	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 3756674)									
EM2111820-009	3.2km South of Salt Creek (Land)	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	114000	101000	12.0	0% - 20%
EM2111820-018	McGrath Flat North	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	78300	76100	2.9	0% - 20%
EA045: Turbidity (QC Lot: 3753483)									
EM2111820-001	Stony Well	EA045: Turbidity	----	0.1	NTU	9.9	9.6	3.1	0% - 20%
EM2111820-010	Tilley Swamp Drain U/S Morella	EA045: Turbidity	----	0.1	NTU	3.6	3.6	0.0	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 3760331)									
EM2111820-001	Stony Well	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	203	188	7.4	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	203	188	7.4	0% - 20%
EM2111820-011	Murray Mouth	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	119	122	2.2	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	119	122	2.2	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 3753474)									

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Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
ED045G: Chloride by Discrete Analyser (QC Lot: 3753474) - continued									
EM2111820-009	3.2km South of Salt Creek (Land)	ED045G: Chloride	16887-00-6	1	mg/L	53800	51800	3.8	0% - 20%
EM2111820-001	Stony Well	ED045G: Chloride	16887-00-6	1	mg/L	51800	54000	4.2	0% - 20%
EG052G: Silica by Discrete Analyser (QC Lot: 3753473)									
EM2111820-011	Murray Mouth	EG052G: Reactive Silica	----	0.05	mg/L	0.27	0.24	9.6	No Limit
EM2111820-001	Stony Well	EG052G: Reactive Silica	----	0.05	mg/L	0.77	0.76	0.0	0% - 50%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 3753472)									
EM2111820-010	Tilley Swamp Drain U/S Morella	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.01	<0.01	0.0	No Limit
EM2111820-001	Stony Well	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 3753502)									
EM2111820-001	Stony Well	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.01	0.0	No Limit
EM2111820-010	Tilley Swamp Drain U/S Morella	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.06	0.06	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 3754066)									
EM2111802-007	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.2	0.0	No Limit
EM2111820-008	1.8km West of Salt Creek	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	3.1	3.0	3.5	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 3755523)									
EM2111820-012	US Tauwitschere	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.5	# 2.0	22.3	0% - 20%
EM2111831-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	60.6	62.8	3.6	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 3754065)									
EM2111802-003	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.04	0.03	0.0	No Limit
EM2111802-007	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.07	0.06	21.3	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 3754067)									
EM2111820-008	1.8km West of Salt Creek	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.26	0.29	11.9	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 3755522)									
EM2111820-012	US Tauwitschere	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.19	0.15	24.1	0% - 50%
EM2111831-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	6.37	6.65	4.3	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 3753475)									
EM2111820-010	Tilley Swamp Drain U/S Morella	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM2111820-001	Stony Well	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP002: Dissolved Organic Carbon (DOC) (QC Lot: 3758100)									
EM2111820-001	Stony Well	EP002: Dissolved Organic Carbon	----	1	mg/L	31	31	0.0	0% - 20%
EM2111820-010	Tilley Swamp Drain U/S Morella	EP002: Dissolved Organic Carbon	----	1	mg/L	2	2	0.0	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 3758099)									
EM2111820-001	Stony Well	EP005: Total Organic Carbon	----	1	mg/L	38	38	0.0	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP005: Total Organic Carbon (TOC) (QC Lot: 3758099) - continued									
EM2111820-010	Tilley Swamp Drain U/S Morella	EP005: Total Organic Carbon	----	1	mg/L	2	2	0.0	No Limit



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water (QCLot: 3753501)								
EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	0.5 mg/L	83.0	81.1	124
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 3756673)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	98.6	91.0	110
				<10	293 mg/L	97.3	91.0	110
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 3756674)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	100	91.0	110
				<10	293 mg/L	98.3	91.0	110
EA045: Turbidity (QCLot: 3753483)								
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	102	88.1	110
ED037P: Alkalinity by PC Titrator (QCLot: 3760331)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	99.1	90.0	110
ED045G: Chloride by Discrete Analyser (QCLot: 3753474)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	90.0	85.0	115
				<1	1000 mg/L	100	85.0	122
EG052G: Silica by Discrete Analyser (QCLot: 3753473)								
EG052G: Reactive Silica	----	0.05	mg/L	<0.05	5 mg/L	94.7	78.9	118
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3753472)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	104	90.9	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3753502)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	111	90.0	117
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3754066)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	102	70.0	117
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3755523)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	90.7	70.0	117
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3754065)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	93.5	71.9	114
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3754067)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	95.1	71.9	114
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3755522)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	85.2	71.9	114
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 3753475)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	109	92.7	119



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EP002: Dissolved Organic Carbon (DOC) (QCLot: 3758100)								
EP002: Dissolved Organic Carbon	----	1	mg/L	<1	100 mg/L	97.0	83.0	115
EP005: Total Organic Carbon (TOC) (QCLot: 3758099)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	95.2	81.2	110
EP008: Chlorophyll (QCLot: 3758983)								
EP008B: Chlorophyll b	----	1	mg/m³	<1	----	----	----	----
EP008: Chlorophyll (QCLot: 3758984)								
EP008: Chlorophyll a	----	1	mg/m³	<1	20 mg/m³	104	70.0	130
EP008: Pheophytin a	----	1	mg/m³	<1	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number			Low	High
EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water (QCLot: 3753501)							
EM2111820-002	North Jacks Point	EK055G-SW: Ammonia as N	7664-41-7	0.5 mg/L	109	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 3753474)							
EM2111820-002	North Jacks Point	ED045G: Chloride	16887-00-6	2000 mg/L	# Not Determined	70.0	142
EG052G: Silica by Discrete Analyser (QCLot: 3753473)							
EM2111820-002	North Jacks Point	EG052G: Reactive Silica	----	5 mg/L	84.8	80.0	120
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3753472)							
EM2111820-002	North Jacks Point	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	# 79.5	80.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3753502)							
EM2111820-002	North Jacks Point	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	76.8	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3754066)							
EM2111820-009	3.2km South of Salt Creek (Land)	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	103	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3755523)							
EM2111820-013	DS Tauwiche	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	93.8	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3754065)							
EM2111802-004	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	108	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3754067)							
EM2111820-009	3.2km South of Salt Creek (Land)	EK067G: Total Phosphorus as P	----	1 mg/L	94.3	70.0	130



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3755522)							
EM2111820-013	DS Tauwitschere	EK067G: Total Phosphorus as P	----	1 mg/L	85.7	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 3753475)							
EM2111820-002	North Jacks Point	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	114	79.0	123
EP002: Dissolved Organic Carbon (DOC) (QCLot: 3758100)							
EM2111820-002	North Jacks Point	EP002: Dissolved Organic Carbon	----	100 mg/L	116	75.0	117
EP005: Total Organic Carbon (TOC) (QCLot: 3758099)							
EM2111820-002	North Jacks Point	EP005: Total Organic Carbon	----	100 mg/L	114	76.6	125