

QUALITY CONTROL REPORT

Work Order	: EM2213883	Page	: 1 of 7
Client	: Dept for Environment & Water	Laboratory	: Environmental Division Melbourne
Contact	: DARCY MORRIS	Contact	: Kieren Burns
Address	: GPO BOX 2834 ADELAIDE SA, AUSTRALIA 5001	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61881625130
Project	: HCHB Monitoring Program	Date Samples Received	: 22-Jul-2022
Order number	: -	Date Analysis Commenced	: 22-Jul-2022
C-O-C number	: 40286	Issue Date	: 02-Aug-2022
Sampler	: DARCY MORRIS, ROWLAND BOXALL		
Site	: 20.07.22 - HCBC Land		
Quote number	: AD/052/20 V2		
No. of samples received	: 12		
No. of samples analysed	: 12		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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>
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Jarwis Nheu	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC

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 moisture content, insufficient sample (reduced weight employed) or matrix interference.

Laboratory Duplicate (DUP) Report

Sub-Matrix: **WATER**

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: 4477908)									
EM2213882-001	Anonymous	EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	0.49	0.48	0.0	0% - 20%
EM2213882-010	Anonymous	EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	<0.02	0.0	No Limit
EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water (QC Lot: 4477910)									
EM2213883-011	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: 4477811)									
EM2213883-006	McGrath Flat North	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	60500	66000	8.8	0% - 20%
EM2213888-010	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1110	1120	0.7	0% - 20%
EM2213907-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	512	522	1.9	0% - 20%
EM2213807-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	546	468	15.3	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 4480233)									
EM2213882-010	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	77600	78800	1.6	0% - 20%
EM2213981-004	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	751	757	0.8	0% - 20%
EM2213981-014	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	912	899	1.4	0% - 20%
EM2213873-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	448	430	4.1	0% - 20%
EA045: Turbidity (QC Lot: 4476563)									
EM2213882-001	Anonymous	EA045: Turbidity	----	0.1	NTU	83.6	90.1	7.5	0% - 20%
EM2213882-010	Anonymous	EA045: Turbidity	----	0.1	NTU	9.4	9.5	1.2	0% - 20%
EA045: Turbidity (QC Lot: 4476564)									
EM2213883-011	Tilley Swamp Drain U/S Morella	EA045: Turbidity	----	0.1	NTU	2.4	2.6	9.1	0% - 20%
EM2214030-002	Anonymous	EA045: Turbidity	----	0.1	NTU	2.0	2.4	19.9	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 4481150)									



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 (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 4481150) - continued									
EM2213883-002	DS Tauwitchere	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	85	85	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	85	85	0.0	0% - 20%
EM2213921-002	Anonymous	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	410	409	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	410	409	0.0	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 4476365)									
EM2213882-009	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	34700	34700	0.2	0% - 20%
EM2213882-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	250	255	1.9	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 4476368)									
EM2214005-020	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	3420	3430	0.2	0% - 20%
EM2213883-011	Tilley Swamp Drain U/S Morella	ED045G: Chloride	16887-00-6	1	mg/L	2690	2720	0.9	0% - 20%
EG052G: Silica by Discrete Analyser (QC Lot: 4476363)									
EM2213883-001	US Tauwitchere	EG052G: Reactive Silica	----	0.05	mg/L	4.90	4.90	0.0	0% - 20%
EM2213882-001	Anonymous	EG052G: Reactive Silica	----	0.05	mg/L	3.84	3.85	0.0	0% - 20%
EG052G: Silica by Discrete Analyser (QC Lot: 4476366)									
EM2213883-011	Tilley Swamp Drain U/S Morella	EG052G: Reactive Silica	----	0.05	mg/L	12.5	12.6	1.3	0% - 20%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 4476364)									
EM2213882-010	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM2213882-001	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 4476367)									
EM2214005-019	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM2213883-011	Tilley Swamp Drain U/S Morella	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.02	0.02	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 4477909)									
EM2213882-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.02	0.0	No Limit
EM2213882-010	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 4477911)									
EM2214013-007	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM2213883-011	Tilley Swamp Drain U/S Morella	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.50	0.52	2.8	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 4476990)									
EM2213883-001	US Tauwitchere	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.3	1.2	15.2	0% - 50%
EM2213883-010	3.2km south of Salt Creek (land)	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	3.5	4.1	15.7	No Limit

Page : 4 of 7
 Work Order : EM2213883
 Client : Dept for Environment & Water
 Project : HCHB Monitoring Program



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 (%)
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 4476991)									
EM2213883-001	US Tauwitchere	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.14	0.13	11.8	0% - 50%
EM2213883-010	3.2km south of Salt Creek (land)	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.14	0.22	46.5	No Limit
EP002: Dissolved Organic Carbon (DOC) (QC Lot: 4476551)									
EM2213883-001	US Tauwitchere	EP002: Dissolved Organic Carbon	----	1	mg/L	14	14	0.0	No Limit
EM2213883-010	3.2km south of Salt Creek (land)	EP002: Dissolved Organic Carbon	----	1	mg/L	33	33	0.0	0% - 20%
EP005: Total Organic Carbon (TOC) (QC Lot: 4476552)									
EM2213883-001	US Tauwitchere	EP005: Total Organic Carbon	----	1	mg/L	19	12	44.4	No Limit
EM2213883-010	3.2km south of Salt Creek (land)	EP005: Total Organic Carbon	----	1	mg/L	42	40	4.2	0% - 20%
EP008: Chlorophyll (QC Lot: 4481696)									
EM2213883-011	Tilley Swamp Drain U/S Morella	EP008B: Chlorophyll b	----	1	mg/m ³	<1	<1	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: 4477908)								
EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	0.5 mg/L	92.7	81.1	124
EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water (QCLot: 4477910)								
EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	0.5 mg/L	89.7	81.1	124
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 4477811)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	98.8	91.0	110
				<10	2460 mg/L	101	81.7	118
				<10	293 mg/L	102	91.0	110
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 4480233)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	110	91.0	110
				<10	2460 mg/L	98.0	81.7	118
				<10	293 mg/L	108	91.0	110
EA045: Turbidity (QCLot: 4476563)								
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	102	88.1	110
EA045: Turbidity (QCLot: 4476564)								
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	98.0	88.1	110
ED037P: Alkalinity by PC Titrator (QCLot: 4481150)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	92.4	85.0	116
ED045G: Chloride by Discrete Analyser (QCLot: 4476365)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	101	85.0	115
				<1	1000 mg/L	103	85.0	122
ED045G: Chloride by Discrete Analyser (QCLot: 4476368)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	98.6	85.0	115
				<1	1000 mg/L	104	85.0	122
EG052G: Silica by Discrete Analyser (QCLot: 4476363)								
EG052G: Reactive Silica	----	0.05	mg/L	<0.05	5 mg/L	100	78.9	118
EG052G: Silica by Discrete Analyser (QCLot: 4476366)								
EG052G: Reactive Silica	----	0.05	mg/L	<0.05	5 mg/L	100	78.9	118
EK057G: Nitrite as N by Discrete Analyser (QCLot: 4476364)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	97.9	90.9	112
EK057G: Nitrite as N by Discrete Analyser (QCLot: 4476367)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	96.6	90.9	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4477909)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	110	90.0	117



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4477911)								
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: 4476990)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	90.6	70.0	117
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 4476991)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	96.8	71.9	114
EP002: Dissolved Organic Carbon (DOC) (QCLot: 4476551)								
EP002: Dissolved Organic Carbon	----	1	mg/L	<1	100 mg/L	103	83.0	115
EP005: Total Organic Carbon (TOC) (QCLot: 4476552)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	103	81.2	110
EP008: Chlorophyll (QCLot: 4481693)								
EP008: Chlorophyll a	----	1	mg/m³	<1	20 mg/m³	95.0	70.0	130
EP008: Pheophytin a	----	1	mg/m³	<1	----	----	----	----
EP008: Chlorophyll (QCLot: 4481694)								
EP008: Chlorophyll a	----	1	mg/m³	<1	20 mg/m³	95.0	70.0	130
EP008: Pheophytin a	----	1	mg/m³	<1	----	----	----	----
EP008: Chlorophyll (QCLot: 4481695)								
EP008B: Chlorophyll b	----	1	mg/m³	<1	----	----	----	----
EP008: Chlorophyll (QCLot: 4481696)								
EP008B: Chlorophyll b	----	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	Spike Recovery (%) 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: 4477908)							
EM2213882-002	Anonymous	EK055G-SW: Ammonia as N	7664-41-7	0.5 mg/L	118	70.0	130
EK055G-SW: Ammonia as N by Discrete Analyser in Saline Water (QCLot: 4477910)							
EM2213883-012	Tilley Swamp Drain Watercourse Outlet	EK055G-SW: Ammonia as N	7664-41-7	0.5 mg/L	116	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 4476365)							
EM2213882-002	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	# Not Determined	70.0	142
ED045G: Chloride by Discrete Analyser (QCLot: 4476368)							
EM2213883-012	Tilley Swamp Drain Watercourse Outlet						



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED045G: Chloride by Discrete Analyser (QCLot: 4476368) - continued							
EM2213883-012	Tilley Swamp Drain Watercourse Outlet	ED045G: Chloride	16887-00-6	400 mg/L	# Not Determined	70.0	142
EG052G: Silica by Discrete Analyser (QCLot: 4476363)							
EM2213882-002	Anonymous	EG052G: Reactive Silica	----	5 mg/L	95.5	80.0	120
EG052G: Silica by Discrete Analyser (QCLot: 4476366)							
EM2213883-012	Tilley Swamp Drain Watercourse Outlet	EG052G: Reactive Silica	----	5 mg/L	100	80.0	120
EK057G: Nitrite as N by Discrete Analyser (QCLot: 4476364)							
EM2213882-002	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	98.2	80.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 4476367)							
EM2213883-012	Tilley Swamp Drain Watercourse Outlet	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	96.9	80.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4477909)							
EM2213882-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	95.9	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 4477911)							
EM2213883-012	Tilley Swamp Drain Watercourse Outlet	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	81.8	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 4476990)							
EM2213883-002	DS Tauwitschere	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	104	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 4476991)							
EM2213883-002	DS Tauwitschere	EK067G: Total Phosphorus as P	----	1 mg/L	116	70.0	130
EP002: Dissolved Organic Carbon (DOC) (QCLot: 4476551)							
EM2213883-002	DS Tauwitschere	EP002: Dissolved Organic Carbon	----	200 mg/L	108	75.0	117
EP005: Total Organic Carbon (TOC) (QCLot: 4476552)							
EM2213883-002	DS Tauwitschere	EP005: Total Organic Carbon	----	200 mg/L	93.8	76.6	125