

QUALITY CONTROL REPORT

Work Order	: EM2115770	Page	: 1 of 7
Client	: Dept for Environment & Water	Laboratory	: Environmental Division Melbourne
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Project	: HCHB	Date Samples Received	: 11-Aug-2021
Order number	: ----	Date Analysis Commenced	: 11-Aug-2021
C-O-C number	: ----	Issue Date	: 19-Aug-2021
Sampler	: JC		
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
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Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Samantha Smith	Laboratory Coordinator	WRG Subcontracting, Springvale, VIC



General Comments

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 moisture determination has been performed, results are reported on a dry weight basis.

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.

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

Laboratory Duplicate (DUP) Report

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: 3842677)									
EM2115770-001	Murray Mouth	EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	0.12	0.12	0.0	No Limit
EM2115770-010	Villa du Yumpa	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: 3846959)									
EM2114494-008	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	133000	133000	0.1	0% - 20%
EM2115770-008	McGrath Flat North	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	67400	60200	11.3	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 3846960)									
EM2115770-019	3.2km South of Salt Creek (Land)	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	80500	81200	0.9	0% - 20%
EM2115810-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	4300	4470	3.7	0% - 20%
EA045: Turbidity (QC Lot: 3841630)									
EM2115708-021	Anonymous	EA045: Turbidity	----	0.1	NTU	42.6	41.4	2.9	0% - 20%
EM2115770-001	Murray Mouth	EA045: Turbidity	----	0.1	NTU	43.4	43.1	0.7	0% - 20%
EA045: Turbidity (QC Lot: 3841631)									
EM2115770-013	Seagull Island	EA045: Turbidity	----	0.1	NTU	11.4	11.4	0.0	0% - 20%
EM2115776-015	Anonymous	EA045: Turbidity	----	0.1	NTU	1790	1790	0.0	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 3843994)									
EM2115748-002	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	518	531	2.5	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	518	531	2.5	0% - 20%
EM2115748-012	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	246	250	1.7	0% - 20%

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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 (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 3843994) - continued									
EM2115748-012	Anonymous	ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	246	250	1.7	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 3843995)									
EM2115770-004	Mark Point	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	82	82	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	82	82	0.0	0% - 20%
EM2115770-014	Snipe Point	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	188	186	1.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	188	186	1.0	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 3840192)									
EM2115708-021	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	1300	1280	1.5	0% - 20%
EM2115770-001	Murray Mouth	ED045G: Chloride	16887-00-6	1	mg/L	2840	2880	1.6	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 3840196)									
EM2115770-013	Seagull Island	ED045G: Chloride	16887-00-6	1	mg/L	44600	45100	1.0	0% - 20%
EG052G: Silica by Discrete Analyser (QC Lot: 3840193)									
EM2115770-011	Stony Well	EG052G: Reactive Silica	----	0.05	mg/L	0.60	0.60	0.0	0% - 50%
EM2115770-001	Murray Mouth	EG052G: Reactive Silica	----	0.05	mg/L	0.58	0.56	3.5	0% - 50%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 3840190)									
EM2115770-002	US Tauwitchere	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM2115708-021	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	0.04	0.04	0.0	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 3840195)									
EM2115770-013	Seagull Island	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: 3842678)									
EM2115770-001	Murray Mouth	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.02	0.0	No Limit
EM2115770-010	Villa du Yumpa	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.02	0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 3841523)									
EM2115708-021	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.4	0.0	No Limit
EM2115747-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	0.5	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 3841525)									
EM2115770-010	Villa du Yumpa	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	3.5	3.2	9.0	No Limit
EM2115770-019	3.2km South of Salt Creek (Land)	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	4.3	<1.0	124	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 3841522)									
EM2115708-021	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.13	0.17	28.0	0% - 50%
EM2115747-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.13	0.11	15.3	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 3841524)									
EM2115770-010	Villa du Yumpa	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.18	0.35	63.2	No Limit

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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 (%)
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 3841524) - continued									
EM2115770-019	3.2km South of Salt Creek (Land)	EK067G: Total Phosphorus as P	----	0.01	mg/L	1.64	1.62	1.7	0% - 50%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 3840194)									
EM2115770-010	Villa du Yumpa	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EM2115770-001	Murray Mouth	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: 3845046)									
EM2115770-001	Murray Mouth	EP002: Dissolved Organic Carbon	----	1	mg/L	7	7	0.0	No Limit
EM2115770-010	Villa du Yumpa	EP002: Dissolved Organic Carbon	----	1	mg/L	23	23	0.0	0% - 20%
EP002: Dissolved Organic Carbon (DOC) (QC Lot: 3845206)									
EM2115770-016	Morella Creek @ Guage	EP002: Dissolved Organic Carbon	----	1	mg/L	6	8	26.6	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 3845045)									
EM2115770-001	Murray Mouth	EP005: Total Organic Carbon	----	1	mg/L	9	10	16.9	0% - 50%
EM2115770-010	Villa du Yumpa	EP005: Total Organic Carbon	----	1	mg/L	28	27	0.0	0% - 20%
EP005: Total Organic Carbon (TOC) (QC Lot: 3845207)									
EM2115770-016	Morella Creek @ Guage	EP005: Total Organic Carbon	----	1	mg/L	6	8	20.6	No Limit
EM2115943-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	7	5	36.1	No Limit
EP008: Chlorophyll (QC Lot: 3846172)									
EM2115770-001	Murray Mouth	EP008B: Chlorophyll b	----	1	mg/m³	<5	<5	0.0	No Limit

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				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: 3842677)								
EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	0.5 mg/L	107	81.1	124
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 3846959)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	101	91.0	110
				<10	293 mg/L	104	91.0	110
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 3846960)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	97.6	91.0	110
				<10	293 mg/L	96.2	91.0	110
EA045: Turbidity (QCLot: 3841630)								
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	102	88.1	110
EA045: Turbidity (QCLot: 3841631)								
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	100	88.1	110
ED037P: Alkalinity by PC Titrator (QCLot: 3843994)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	92.9	85.0	116
ED037P: Alkalinity by PC Titrator (QCLot: 3843995)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	102	85.0	116
ED045G: Chloride by Discrete Analyser (QCLot: 3840192)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	102	85.0	115
				<1	1000 mg/L	111	85.0	122
ED045G: Chloride by Discrete Analyser (QCLot: 3840196)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	104	85.0	115
				<1	1000 mg/L	111	85.0	122
EG052G: Silica by Discrete Analyser (QCLot: 3840193)								
EG052G: Reactive Silica	----	0.05	mg/L	<0.05	5 mg/L	104	78.9	118
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3840190)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	99.1	90.9	112
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3840195)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	100	90.9	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3842678)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	103	90.0	117
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3841523)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	93.6	70.0	117
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3841525)								

Matrix Spike (MS) Report

Sub-Matrix: **WATER**

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: 3842677)							
EM2115770-002	US Tauwitschere	EK055G-SW: Ammonia as N	7664-41-7	0.5 mg/L	100	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 3840192)							
EM2115708-022	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	82.1	70.0	142
ED045G: Chloride by Discrete Analyser (QCLot: 3840196)							
EM2115770-014	Snipe Point	ED045G: Chloride	16887-00-6	400 mg/L	# Not Determined	70.0	142
EG052G: Silica by Discrete Analyser (QCLot: 3840193)							



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG052G: Silica by Discrete Analyser (QCLot: 3840193) - continued							
EM2115770-002	US Tauwitechere	EG052G: Reactive Silica	----	5 mg/L	104	80.0	120
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3840190)							
EM2115708-022	Anonymous	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	85.8	80.0	114
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3840195)							
EM2115770-014	Snipe Point	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	83.0	80.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3842678)							
EM2115770-002	US Tauwitechere	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	93.7	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3841523)							
EM2115708-022	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	93.5	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3841525)							
EM2115770-011	Stony Well	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	98.5	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3841522)							
EM2115708-022	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	93.6	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3841524)							
EM2115770-011	Stony Well	EK067G: Total Phosphorus as P	----	1 mg/L	97.7	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 3840194)							
EM2115770-002	US Tauwitechere	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	97.7	79.0	123
EP002: Dissolved Organic Carbon (DOC) (QCLot: 3845046)							
EM2115770-002	US Tauwitechere	EP002: Dissolved Organic Carbon	----	100 mg/L	117	75.0	117
EP002: Dissolved Organic Carbon (DOC) (QCLot: 3845206)							
EM2115770-017	Salt Creek Outlet	EP002: Dissolved Organic Carbon	----	100 mg/L	116	75.0	117
EP005: Total Organic Carbon (TOC) (QCLot: 3845045)							
EM2115770-002	US Tauwitechere	EP005: Total Organic Carbon	----	100 mg/L	109	76.6	125
EP005: Total Organic Carbon (TOC) (QCLot: 3845207)							
EM2115770-017	Salt Creek Outlet	EP005: Total Organic Carbon	----	100 mg/L	113	76.6	125