

QUALITY CONTROL REPORT

Work Order	: EM2106129	Page	: 1 of 7
Client	: Dept for Environment & Water	Laboratory	: Environmental Division Melbourne
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Project	: HCHB	Date Samples Received	: 09-Apr-2021
Order number	: ----	Date Analysis Commenced	: 09-Apr-2021
C-O-C number	: ----	Issue Date	: 16-Apr-2021
Sampler	: DM, PB, RB		
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>
Arenie Vijayaratham	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
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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

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: 3621784)									
EM2106129-001	Murray Mouth	EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	0.09	0.04	64.2	No Limit
EM2106129-010	Villa de Yumpa	EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	<0.02	0.00	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 3615800)									
EM2106030-016	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	5330	5750	7.58	0% - 20%
EM2106088-005	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	11300	11200	1.04	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 3615801)									
EM2106129-013	Salt Ck Outlet	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	118000	120000	1.78	0% - 20%
EM2106245-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1460	1380	6.26	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 3618790)									
EM2106086-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	8470	8330	1.64	0% - 20%
EM2106129-007	Bonneys	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	37400	41400	10.2	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 3619693)									
EM2106049-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	9910	10000	1.44	0% - 20%
EM2106129-004	Mark Point	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	20200	17500	14.4	0% - 20%
EA045: Turbidity (QC Lot: 3612282)									
EM2106053-002	Anonymous	EA045: Turbidity	----	0.1	NTU	0.2	0.2	0.00	No Limit
EM2106129-004	Mark Point	EA045: Turbidity	----	0.1	NTU	8.4	8.3	0.00	0% - 20%
EA045: Turbidity (QC Lot: 3612283)									
EM2106129-015	Morella Basin @ Outlet Regulator	EA045: Turbidity	----	0.1	NTU	42.2	41.9	0.713	0% - 20%
EM2106176-002	Anonymous	EA045: Turbidity	----	0.1	NTU	426	426	0.00	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 3616417)									
EM2106107-027	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit

Page : 3 of 7
 Work Order : EM2106129
 Client : Dept for Environment & Water
 Project : HCHB



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: 3616417) - continued									
EM2106107-027	Anonymous	ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	128	125	2.13	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	128	125	2.13	0% - 20%
EM2106129-004	Mark Point	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	110	112	1.88	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	110	112	1.88	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 3616418)									
EM2106129-014	Snipe Point	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	228	228	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	228	228	0.00	0% - 20%
EM2106194-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	179	168	6.78	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	179	168	6.78	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 3611726)									
EM2106129-011	Stony Well	ED045G: Chloride	16887-00-6	1	mg/L	60400	61300	1.48	0% - 20%
EM2106129-001	Murray Mouth	ED045G: Chloride	16887-00-6	1	mg/L	11300	11400	0.791	0% - 20%
EG052G: Silica by Discrete Analyser (QC Lot: 3611723)									
EM2106129-011	Stony Well	EG052G: Reactive Silica	----	0.05	mg/L	2.01	2.16	7.28	0% - 20%
EM2106129-001	Murray Mouth	EG052G: Reactive Silica	----	0.05	mg/L	0.23	0.20	14.6	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 3611724)									
EM2106129-010	Villa de Yumpa	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM2106129-001	Murray Mouth	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 3621783)									
EM2105946-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	5.57	5.64	1.28	0% - 20%
EM2106129-009	Parnka Point	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 3621785)									
EM2106129-020	Seagull Island	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM2106411-006	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 3613465)									
EM2106129-001	Murray Mouth	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.3	0.3	0.00	No Limit
EM2106129-010	Villa de Yumpa	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	3.4	3.2	3.83	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 3613464)									
EM2106129-001	Murray Mouth	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.17	0.10	49.4	0% - 50%
EM2106129-010	Villa de Yumpa	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.21	0.25	18.3	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 3611725)									
EM2106129-010	Villa de Yumpa	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit

Page : 4 of 7
 Work Order : EM2106129
 Client : Dept for Environment & Water
 Project : HCHB



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 (%)
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 3611725) - continued									
EM2106129-001	Murray Mouth	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP002: Dissolved Organic Carbon (DOC) (QC Lot: 3620103)									
EM2106129-001	Murray Mouth	EP002: Dissolved Organic Carbon	----	1	mg/L	5	5	0.00	No Limit
EM2106129-010	Villa de Yumpa	EP002: Dissolved Organic Carbon	----	1	mg/L	36	35	0.00	0% - 20%
EP005: Total Organic Carbon (TOC) (QC Lot: 3620102)									
EM2106086-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	1	<1	0.00	No Limit
EM2106129-006	Noonameena	EP005: Total Organic Carbon	----	1	mg/L	18	32	53.1	No Limit
EP005: Total Organic Carbon (TOC) (QC Lot: 3620104)									
EM2106129-017	1.8km West of Salt Creek	EP005: Total Organic Carbon	----	1	mg/L	53	54	0.00	0% - 20%



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: 3621784)								
EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	0.5 mg/L	106	81.1	124
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 3615800)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	103	91.0	110
				<10	293 mg/L	101	91.0	110
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 3615801)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.1	91.0	110
				<10	293 mg/L	106	91.0	110
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 3618790)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	100	91.0	110
				<10	293 mg/L	101	91.0	110
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 3619693)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.4	91.0	110
				<10	293 mg/L	108	91.0	110
EA045: Turbidity (QCLot: 3612282)								
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	101	88.1	110
EA045: Turbidity (QCLot: 3612283)								
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	99.2	88.1	110
ED037P: Alkalinity by PC Titrator (QCLot: 3616417)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	93.7	85.0	116
ED037P: Alkalinity by PC Titrator (QCLot: 3616418)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	104	85.0	116
ED045G: Chloride by Discrete Analyser (QCLot: 3611726)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	99.0	85.0	115
				<1	1000 mg/L	107	85.0	122
EG052G: Silica by Discrete Analyser (QCLot: 3611723)								
EG052G: Reactive Silica	----	0.05	mg/L	<0.05	5 mg/L	100	78.9	118
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3611724)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	96.5	90.9	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3621783)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	96.5	90.0	117
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3621785)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	95.1	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
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3613465)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	98.5	70.0	117
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3613464)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	2.21 mg/L	95.4	71.9	114
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 3611725)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	0.5 mg/L	93.9	92.7	119
EP002: Dissolved Organic Carbon (DOC) (QCLot: 3620103)								
EP002: Dissolved Organic Carbon	----	1	mg/L	<1	100 mg/L	94.2	83.0	115
EP005: Total Organic Carbon (TOC) (QCLot: 3620102)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	96.0	81.2	110
EP005: Total Organic Carbon (TOC) (QCLot: 3620104)								
EP005: Total Organic Carbon	----	1	mg/L	<1	100 mg/L	98.0	81.2	110
EP008: Chlorophyll (QCLot: 3621490)								
EP008B: Chlorophyll b	----	1	mg/m³	<1	----	----	----	----
EP008: Chlorophyll (QCLot: 3621501)								
EP008: Chlorophyll a	----	1	mg/m³	<1	20 mg/m³	91.2	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	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: 3621784)							
EM2106129-002	US Tauwiche	EK055G-SW: Ammonia as N	7664-41-7	0.5 mg/L	105	70.0	130
ED045G: Chloride by Discrete Analyser (QCLot: 3611726)							
EM2106129-002	US Tauwiche	ED045G: Chloride	16887-00-6	400 mg/L	94.3	70.0	142
EG052G: Silica by Discrete Analyser (QCLot: 3611723)							
EM2106129-002	US Tauwiche	EG052G: Reactive Silica	----	5 mg/L	98.8	80.0	120
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3611724)							
EM2106129-002	US Tauwiche	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	90.4	80.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3621783)							
EM2106129-001	Murray Mouth	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	89.6	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3621785)							
EM2106411-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	96.8	70.0	130

Page : 7 of 7
 Work Order : EM2106129
 Client : Dept for Environment & Water
 Project : HCHB



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3613465)							
EM2106129-002	US Tauwitechere	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	99.3	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3613464)							
EM2106129-002	US Tauwitechere	EK067G: Total Phosphorus as P	----	1 mg/L	96.1	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 3611725)							
EM2106129-002	US Tauwitechere	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	88.6	79.0	123
EP002: Dissolved Organic Carbon (DOC) (QCLot: 3620103)							
EM2106129-002	US Tauwitechere	EP002: Dissolved Organic Carbon	----	500 mg/L	103	75.0	117
EP005: Total Organic Carbon (TOC) (QCLot: 3620102)							
EM2106086-003	Anonymous	EP005: Total Organic Carbon	----	100 mg/L	105	76.6	125
EP005: Total Organic Carbon (TOC) (QCLot: 3620104)							
EM2106129-018	3.2km South of Salt Creek (Land)	EP005: Total Organic Carbon	----	100 mg/L	93.9	76.6	125