

QUALITY CONTROL REPORT

Work Order	: EM2020558	Page	: 1 of 7
Client	: Dept for Environment & Water	Laboratory	: Environmental Division Melbourne
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Project	: HCHB	Date Samples Received	: 20-Nov-2020
Order number	: ----	Date Analysis Commenced	: 20-Nov-2020
C-O-C number	: ----	Issue Date	: 27-Nov-2020
Sampler	: JOSHUA CASTLE		
Site	: ----		
Quote number	: AD/052/20 V2		
No. of samples received	: 19		
No. of samples analysed	: 19		



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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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**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 3376021)									
EM2020541-009	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1060	1010	4.34	0% - 20%
EM2020556-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1970	2050	3.78	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 3376023)									
EM2020558-010	Villa de Yumpa	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	87900	87900	0.0455	0% - 20%
EM2020558-019	Tilley Swamp Drain U/S Morella	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	12600	10300	20.0	0% - 20%
EA045: Turbidity (QC Lot: 3376251)									
EM2020508-007	Anonymous	EA045: Turbidity	----	0.1	NTU	0.2	0.2	0.00	No Limit
EM2020558-005	Long Point	EA045: Turbidity	----	0.1	NTU	5.9	6.1	3.34	0% - 20%
EA045: Turbidity (QC Lot: 3376252)									
EM2020558-016	Salt Creek Outlet	EA045: Turbidity	----	0.1	NTU	11.5	11.3	1.75	0% - 20%
EM2020568-002	Anonymous	EA045: Turbidity	----	0.1	NTU	4.2	4.3	2.58	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 3380225)									
EM2020547-001	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	343	348	1.56	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	343	348	1.56	0% - 20%
EM2020558-002	US Tauwitchere	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	93	91	1.25	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	93	91	1.25	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 3380228)									
EM2020558-012	North Jacks 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

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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 (%)	Recovery Limits (%)
ED037P: Alkalinity by PC Titrator (QC Lot: 3380228) - continued									
EM2020558-012	North Jacks Point	ED037-P: Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L	230	246	6.74	0% - 20%
		ED037-P: Total Alkalinity as CaCO ₃	----	1	mg/L	230	246	6.74	0% - 20%
EM2020573-023	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO ₃	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO ₃	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO ₃	71-52-3	1	mg/L	81	82	2.22	0% - 20%
		ED037-P: Total Alkalinity as CaCO ₃	----	1	mg/L	81	82	2.22	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 3376188)									
EM2020558-009	Parnka Point	ED045G: Chloride	16887-00-6	1	mg/L	42000	42000	0.0624	0% - 20%
EM2020558-001	Murray Mouth	ED045G: Chloride	16887-00-6	1	mg/L	13100	13000	0.914	0% - 20%
EG052G: Silica by Discrete Analyser (QC Lot: 3376185)									
EM2020558-011	Stoney Well	EG052G: Reactive Silica	----	0.05	mg/L	0.68	0.67	2.50	0% - 50%
EM2020558-001	Murray Mouth	EG052G: Reactive Silica	----	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EK055G-SW: Ammonia as N by Discrete Analyser in Sea Water (QC Lot: 3384537)									
EM2020548-001	Anonymous	EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	<0.02	0.00	No Limit
EM2020558-006	Noonameena	EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	0.08	<0.02	119	No Limit
EK055G-SW: Ammonia as N by Discrete Analyser in Sea Water (QC Lot: 3384538)									
EM2020558-017	1.8km West of Salt Creek	EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	<0.02	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 3376186)									
EM2020558-010	Villa de Yumpa	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM2020558-001	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 (NO_x) by Discrete Analyser (QC Lot: 3384536)									
EM2020548-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.03	0.03	0.00	No Limit
EM2020558-006	Noonameena	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NO_x) by Discrete Analyser (QC Lot: 3384539)									
EM2020831-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.20	0.20	0.00	0% - 50%
EM2020558-017	1.8km West of Salt Creek	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: 3381285)									
EM2018560-027	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.4	0.3	0.00	No Limit
EM2020541-005	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	17.6	18.8	6.45	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 3381287)									
EM2020558-007	Bonneys	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.8	3.1	8.88	0% - 20%
EM2020558-016	Salt Creek Outlet	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	3.6	4.0	11.6	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 3381284)									
EM2018560-027	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.06	0.05	0.00	No Limit
EM2020541-005	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	5.48	5.42	1.15	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 3381286)									
EM2020558-007	Bonneys	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.34	0.38	9.66	0% - 20%
EM2020558-016	Salt Creek Outlet	EK067G: Total Phosphorus as P	----	0.01	mg/L	2.48	2.26	9.24	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 (%)	Recovery Limits (%)
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 3376187)									
EM2020558-010	Villa de Yumpa	EK071G: Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EM2020558-001	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: 3379713)									
EM2020558-001	Murray Mouth	EP002: Dissolved Organic Carbon	----	1	mg/L	4	5	0.00	No Limit
EM2020558-010	Villa de Yumpa	EP002: Dissolved Organic Carbon	----	1	mg/L	32	31	0.00	0% - 20%
EP005: Total Organic Carbon (TOC) (QC Lot: 3379712)									
EM2020558-001	Murray Mouth	EP005: Total Organic Carbon	----	1	mg/L	4	5	0.00	No Limit
EM2020558-010	Villa de Yumpa	EP005: Total Organic Carbon	----	1	mg/L	43	43	0.00	0% - 20%



Method Blank (MB) and Laboratory Control Spike (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 Spike (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 (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 3376021)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	99.4	91.0	110
				<10	293 mg/L	101	91.0	110
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 3376023)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	102	91.0	110
				<10	293 mg/L	102	91.0	110
EA045: Turbidity (QCLot: 3376251)								
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	99.2	88.1	110
EA045: Turbidity (QCLot: 3376252)								
EA045: Turbidity	----	0.1	NTU	<0.1	40 NTU	101	88.1	110
ED037P: Alkalinity by PC Titrator (QCLot: 3380225)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	102	85.0	116
ED037P: Alkalinity by PC Titrator (QCLot: 3380228)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	107	85.0	116
ED045G: Chloride by Discrete Analyser (QCLot: 3376188)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	97.6	85.0	115
				<1	1000 mg/L	94.1	85.0	122
EG052G: Silica by Discrete Analyser (QCLot: 3376185)								
EG052G: Reactive Silica	----	0.05	mg/L	<0.05	5 mg/L	95.8	78.9	118
EK055G-SW: Ammonia as N by Discrete Analyser in Sea Water (QCLot: 3384537)								
EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	0.5 mg/L	115	81.1	124
EK055G-SW: Ammonia as N by Discrete Analyser in Sea Water (QCLot: 3384538)								
EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	0.5 mg/L	113	81.1	124
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3376186)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	106	90.9	112
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3384536)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	116	90.0	117
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3384539)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	109	90.0	117
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3381285)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	95.0	70.0	117
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3381287)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	5 mg/L	82.6	70.0	117

Matrix Spike (MS) Report

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED045G: Chloride by Discrete Analyser (QCLot: 3376188)							
EM2020558-002	US Tauwitechere	ED045G: Chloride	16887-00-6	400 mg/L	88.9	70.0	142
EG052G: Silica by Discrete Analyser (QCLot: 3376185)							
EM2020558-002	US Tauwitechere	EG052G: Reactive Silica	----	5 mg/L	104	80.0	120
EK055G-SW: Ammonia as N by Discrete Analyser in Sea Water (QCLot: 3384537)							
EM2020548-002	Anonymous	EK055G-SW: Ammonia as N	7664-41-7	0.5 mg/L	109	70.0	130
EK055G-SW: Ammonia as N by Discrete Analyser in Sea Water (QCLot: 3384538)							
EM2020558-018	3.2km south of Salt Creek (land)	EK055G-SW: Ammonia as N	7664-41-7	0.5 mg/L	83.6	70.0	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 3376186)							
EM2020558-002	US Tauwitechere	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	100	80.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3384536)							
EM2020548-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	89.7	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3384539)							

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Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 3384539) - continued							
EM2020558-018	3.2km south of Salt Creek (land)	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	79.3	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3381285)							
EM2018560-028	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	119	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 3381287)							
EM2020558-008	McGrath Flat North	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	114	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3381284)							
EM2018560-028	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	82.4	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 3381286)							
EM2020558-008	McGrath Flat North	EK067G: Total Phosphorus as P	----	1 mg/L	74.0	70.0	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 3376187)							
EM2020558-002	US Tauwitschere	EK071G: Reactive Phosphorus as P	14265-44-2	0.5 mg/L	91.2	79.0	123
EP002: Dissolved Organic Carbon (DOC) (QCLot: 3379713)							
EM2020558-002	US Tauwitschere	EP002: Dissolved Organic Carbon	----	100 mg/L	107	75.0	117
EP005: Total Organic Carbon (TOC) (QCLot: 3379712)							
EM2020558-002	US Tauwitschere	EP005: Total Organic Carbon	----	100 mg/L	104	76.6	125